

Assessment of seasonal variation of physicochemical parameters on Bisalpur dam(Rajasthan)

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Abstract

The physicochemical studies of Bisalpur dam water were carried out from January 2009 to December 2011 .The examined results expressed that the water supply from the dam source is fit for potable purpose but primary treatment is necessary for drinking purpose.

Key words: Bisalpur dam, BOD, COD,pH

Introduction

The contamination and pollution of water is a great concern in the world for the developing countries. The Bisalpur dam is situated near flow in the middle line of district Ajmer, Tonk and Bhilwara Rajasthan. This dam has the capacity to reserve the water up to 118 m. On this stage the water is spread is 40 Km. far from main channel of river Banas. The dam is supply the water in Ajmer, Kishangar, Nasirabad, Beawar, Kekri, Sarwar, Sawar, Deoli, Bhilwara, Jaipur etc.

Materials and Methods

In the present studies following materials and methods have been used. Seasonal samples were collected from Bisalpur Dam in properly rinsed two liter plastic bottle. Equipments and chemicals were arranged for the site as well as in the laboratory. Water samples were analyzed for physical (Welch, 1948) and chemical (Sawyer and McCarty, 1967; APHA, *et al.*, (1975).

Table No- 1: Physicochemical characteristics of water sampler from Bisalpur Dam

Parameters	2009			2010			2011		
	S	R	W	S	R	W	S	R	W
Water Temp. (°C)	31	25	18	30	28	17	34	25.5	18
pH	7.0	7.3	7.5	7.1	7.2	7.3	7.3	7.4	7.5
Total alkalinity	463.5	426.7	465.8	469.6	442.6	472.6	477.0	432.8	450.5
Total hardness	122	73	98	136	61	89	145	83	104
Total solids	198	305	225	320	350	240	328	340	225
Chlorides	77	52	62	84	46	55	85	45	62
Dissolved oxygen	2.5	5.5	6.0	3.2	5.6	6.1	4.2	5.4	6.1

COD	1270	605	780	1305	590	780	1350	630	800
BOD	441.20	286.05	289.05	455.60	200.05	282.65	485.01	240.20	300.82
Dissolved free carbon-dioxide	7.1	2.1	4.1	8.2	1.6	4.2	8.5	3.2	4.3

All values are in mg/l except the temperature and pH,

Results and Discussion

The result of physicochemical analysis are given in Table -1. The degree and annual variations in temperature of a water body have great bearing upon the condition. It was higher in summer, lower in winter and medium in rainy season; the range being 17 to 34 °c. It has an indirect effect on the viscosity of water affecting the toxicity, intensifying de oxygenation and finally increasing the bio magnification that is why, dissolved oxygen depletion and plankton community intensify their span in summer.

Among the exploration of the chemical factors, the pH plays an important role on the biotic life of a lake system. The alkaline nature of the water was all around the years (Ph 7.0 to 7.5).The values were lower in summer and higher in rainy and winter season. The minimum and maximum values of total solids were 198 and 350 mg/l. This indicates that the dissolved solids were never excessive during the survey period. The pollution has a direct relationship with the solids (Verma *et al*.,1977; Wellershous 1978; Prasad and Saxena ,1980 Waller 1998, Neieuwenhuijsen *et al.*, 2009, Neieuwenhuijsen *et al.*,2000 Neieuwenhuijsen, 2011 and Savitz 2005 and Villanueva 2006) going in full agreement with the present investigations .But the maximum of these solids have been noted during summer only as indicated by Verma *et at.*,1977,while here the highest values were recorded in rains as has also been noted by Prakash *et al.*,1978.The hardness varied from 61 to 145 mg/l with definite seasonal variation and chlorides showed a range of 45 to 85 mg/l and carbon dioxide are reciprocal and directly influencing the ecology of water stock. It is assumed that these are inter –related. The oxygen in maintaining their balance in any living sphere. During Summer carbon dioxide concentration was elevated (maximum 8.5 mg/l) while the just reverse phase was seen of dissolved oxygen (minimum3.2mg/l) showing the spreading line of lake biomass and organic matter, As described above with the present investigations, the carbon dioxide is inversely proportional to oxygen as has also been reported by Ray and David, 1962; Deshmukh *et al.*, 1964 and Odum 1971. Richardson 2007, Plewa 2008, Richardson 2008, Grellier 2010 Lakind 2010 and Richardson 2010.

The COD and BOD were observed upto 1350 and 485.01 mg/l. respectively displaying the pollution load. As being the parameters of pollution, the higher load of them produce obnoxious conditions in the environment and they are directly concerned with the productivity (Bewtra and Radha Charan, 1968; and Maurice, 1971).

The biota in an aquatic system positively reflects the conditions existing in the environment and the data have been utilized for biological monitoring of water pollution levels. It is a basic tool for detection, evaluation and abatement of water pollution, as it affects the taste, odour, colour, and clogging of the filters.

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