ScienSage

Journal of Advanced Scientific Research

Available online through http://www.sciensage.info/jasr

ISSN
0976-9595
Research Article

PHYSICO-CHEMICAL ANALYSIS OF LIMBOTI DAM WATER, DIST. NANDED, MAHARASHTRA

Sayyed Hussain[a]*, Vinod Mane[b], Vidya Pradhan[c], Mazahar Farooqui[c,d]

[a]*P G Dept of Chemistry, Sir Sayyed College, Aurangabad (MS)*
[b]*Mahatma Gandhi Mahavidyalaya, Ahmadpur, Dist Latur (MS)*
[c]*Dr. Rafiq Zakaria College for Women, Aurangabad (MS)*
[d]*Post graduate and research centre, Maulana Azad College, Aurangabad (MS)*
**Corresponding author: drhussainsyyd@yahoo.com*

ABSTRACT

The Physico chemical parameter of surface water from Limboti dam of Nanded Dist (India) is determined during August 2009 to July 2010. The Physico chemical parameters are pH, electrical conductance, DO, BOD, COD, TDS, total hardness, total alkalinity, turbidity; anions includes chlorides, fluorides, sulphates and metal cations such as magnesium, sodium, potassium, boron etc. All the parameters are found to be within the permissible limit.

Keywords: Limboti dam; surface water; physico chemical parameters; water quality; variation in water quality parameters.

1. INTRODUCTION

Water is distributed in nature as surface and Ground water in different forms like rain water constitutes to one of the most important and largest sources of water. Water pollution is due to the alteration in physical, chemical and biological characteristic which may lead to harmful effect on human beings.

Water is an indispensable part of biological life of mankind. Water is liquid of life, as there can be no life without water. Pure water is a real curse for living beings. Man during course of his civilization has settled in places where plenty of water was available. But with increase of population and in exploitation of natural resources for his own benefit, he has behaved in a wild manner by creating problem of pollution hazardous not only to aquatic life but also to his own life. While western countries have become quite sensitive to this problem. India is still contributing because of irresponsible behavior of citizens rendering water more polluted day by day and the situation is deterioting progressively.

This Limboti dam is situated about 7 km away from Kandahar and about 25km from Ahmedpur. Khandar & Ahmedpur both are taluka places but belongs to different districts i.e. Nanded & Latur respectively. Limboti is exactly at the border of Latur & Nanded districts of Maharashtra state. From Limboti water is supplied to Ahmedpur, Kandhar and Loha cities.

2. MATERIALS & METHODS

Physico-chemical parameters of water were analyzed to know the status of water pollution in a period of August 2009 to July 2010. Water samples were collected in polythene bottle. The pH was recorded at the time of sample collection by using pocket digital pH meter. Estimation of dissolved oxygen, total dissolved solids, total hardness, chlorides, total alkalinity, turbidity, calcium, boron, Bi-chemical oxygen demand, chemical oxygen demand, magnesium, sodium, fluorides was carried out as per the standard methods prescribed by APHA [1] and Guidance manual for drinking water Quality monitoring & assessment (2007) of NEERI.

3. RESULTS AND DISCUSSION

The results are represented in the form of graph [Fig 1(a) and Fig 1(b)]. In the present investigation pH varies from 8.4 to 7.6. It found maximum in the month of January and lower in the month of April. DO, BOD and COD are based on changeable anthropogenic activities and natural phenomenon therefore DO and BOD were determined to check the organic and Inorganic pollution in water. In the present observation, we found a range of 5.8 to 7.2 mg/L of DO, range of 1.24 to 3.2 mg/L of BOD & 11 to 45 mg/L of COD. Electrical conductivity measures the conducting capacity of electricity. In the present work it observes in range of 78 μ mhos/cm to 410 μ mhos/cm.

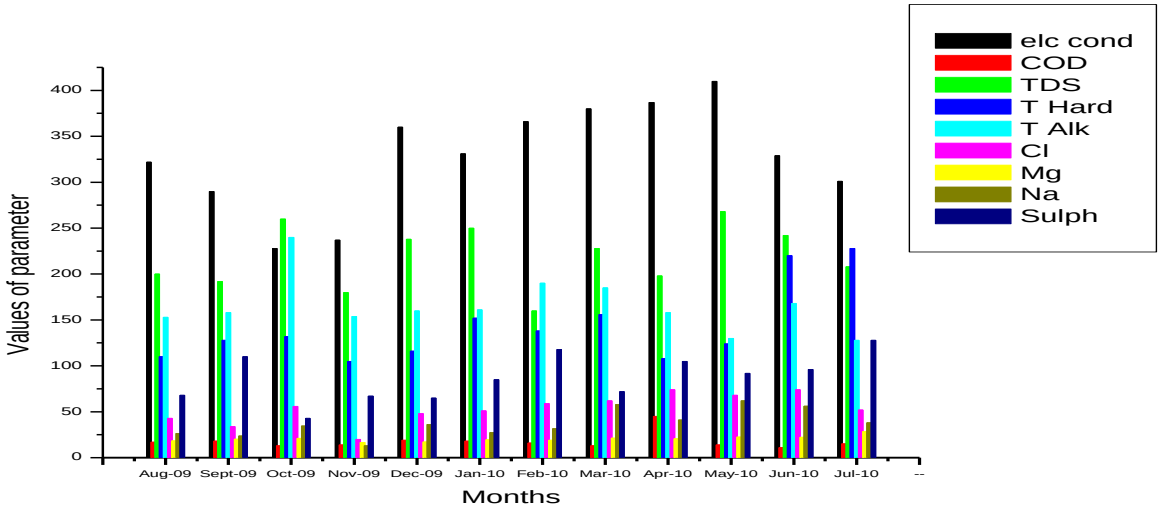

Fig 1(a): Monthwise variation in the physico chemical parameters (electrical conductance, COD, TDS, Total Hardness, Total Alkalinity, Chloride, Magnesium, Sodium, Sulphate)

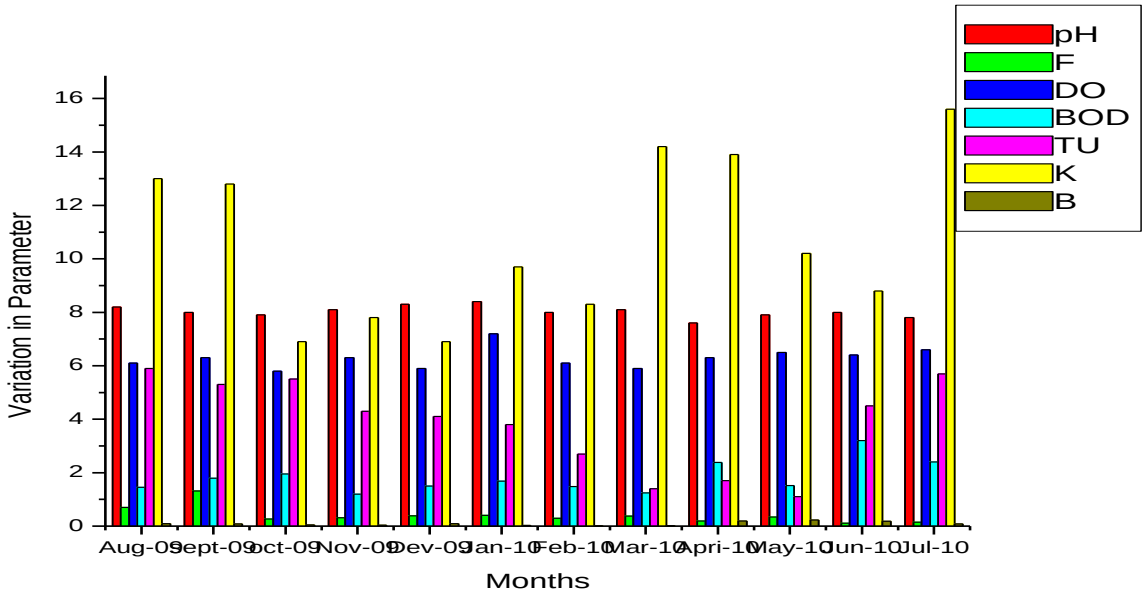

Fig 1(b): Monthwise variation in the physico chemical parameters (pH, Fluoride, DO, BOD, Turbidity, Potassium, and Boron)

In the present investigation the fluoride concentration found more than one in the month of September. It was recorded 1.32 mg/L. Dlephine Rose et *al* [2] recorded 0.6 to 2.04 mg/L of fluorine concentrate in Tamilnadu. Dhakad et *al* [3] founds 0.98 mg/L of fluoride concentration in Mod Sagar reservoir Madhya Pradesh. Total dissolved solid is the measure of the solid materials dissolved in the water. This includes salts, some organic materials and a wide range of other materials like nutrients and toxic materials. In the present investigation TDS founds in range 160 to 268 mg/L. Quadri Naveed et *al* [4] had reported range of 0.1 to 103 mg/L of TDS in Bindusara dam of Beed, Maharashtra.

Though, the hardness of water is not the indicator of water pollution but indicates the quality of water. In our study, it was observed that total hardness ranges from 105 to 228 mg/L. Turbidity founds in range 1.1 to 5.09 NTU. Fotedar and Fotedar [5] have also reported turbidity range 5.09 to 8.2 NTU in Neeru river dam water.

Table 1. Monthwise variation in the physico chemical parameters

Parameter	Month											
	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09	Jan 10	Feb 10	Mar 10	Apr 10	May 10	June 10	July 10
pH	8.2	8	7.9	8.1	8.3	8.4	8	8.1	7.6	7.9	8	7.8
F	0.7	1.32	0.27	0.31	0.388	0.401	0.29	0.38	0.192	0.34	0.11	0.15
Ele. Cond.	322	290	228	237	360	331	366	380	387	410	329	301
DO	6.1	6.3	5.8	6.3	5.9	7.2	6.1	5.9	6.3	6.5	6.4	6.6
BOD	1.45	1.79	1.95	1.20	2.5	1.68	1.48	1.24	2.38	1.52	3.20	2.4
COD	17	18	13	14	19	18	16	13	45	14	11	15
TDS	200	192	260	180	238	250	160	228	198	268	242	208
T. Hardness	110	128	132	105	116	152	138	156	108	124	220	228
T.ALK.	153	158	240	154	160	161	190	185	158	130	168	128
Tu.	5.9	5.3	5.5	4.3	4.1	3.8	2.7	1.4	1.7	1.1	4.5	5.7
Cl	42.88	34	56	20	48	41	59	62	74	68	74	52
Mg	18.37	20.2	21.1	16.76	17.29	19.43	18.94	21.24	20.61	22.61	22.38	28.52
Na	26.54	23.72	34.56	13	36.13	27.36	31.57	58	41	62	56.2	38.1
K	13	12.8	6.9	7.8	6.9	9.7	8.3	14.2	13.9	10.2	9.8	15.6
Sulfate	68	110	43	67	65	85	118	72	105	92	96	128
Boron	0.09	0.08	0.05	0.04	0.094	0.032	0.01	0.026	0.19	0.23	0.18	0.08

Another important characteristic of water is its Alkalinity. In the present investigation it has been observed that Alkalinity ranges from 130 to 240 mg/L. A range of 98 to 116 mg/L of total Alkalinity was found in Kathralu pond water to Banker et *al* [6].

Sodium, potassium & calcium were analyzed and found to be within the permissible levels. Values obtained from the present study ranged from 13 to 62 mg/L, 6.9 to 15.6 mg/L, 238 to 38.7 mg/L for sodium (Na) potassium (K) and calcium (Ca) respectively. Magnesium also occurs in all kinds of natural water with calcium. Here in this present investigation magnesium concentration ranges between 16.76 to 28.52mg/L.

Sulfates were analyzed in the water samples which indicated that it was present in the range of 43 to 128 mg/L. Boron is the only parameter which found rarely in natural water. In the present investigation, boron concentration founds in range of 0.01 to 0.26 mg/L.

.

4. CONCLUSION

Comparing present values of selected parameters with the permissible limits prescribed by bureau of Indian standards (IS 101500) & WHO, it can be concluded that the water of Limboti dam is useful for water supply. But before supplying to urban population this must be treated by water department to maintain water quality as required for drinking purposes.

5. REFERENCES

1. APHA. Standard methods all examination of water and waste water, 20th edition, APHA, AWWA and WEF, M. W. Washington D C. 2007.
2. Delphine Rose MR, Jeyaseeli A, Jicemary A, Rani JA. *J aqua Bio,* 2008; **23(1):** 44-50.
3. Dhakad et al. *J Aqua Biol*, 2010; **25(1):** 61-65.
4. Quadri Naveed N, Seema H, Asif Iqbal, Mohd Shaker. *J Aqua Biol*, 2010; **25(2):** 100-103.
5. Fotedar A, Loan BA, Fotedar BK. *J Aqua Biol*, 2010; **25(2):** 75-84.
6. Bankar AB, Poogitha S, Thirumala S, Manjappa ET Puttaia, *J Aqua Biol,* 2010; **25(2):** 70-74.