



Studies of water parameters of Sambhar Salt Lake

Garima Kumari Chaumal, Dr. Rashmi Sharma

Samrat Prithviraj Chauhan Govt. college, Ajmer, MDS University, Ajmer-305001

ABSTRACT

Water is a basic need for all animals, human beings and plants. We use water not only for drinking but also in industries and agriculture. We can not imagine our life without water. We have a limited amount of water which is useful for our drinking purpose. About 97% of water is in our seas and about 2% is frozen up in glaciers and ice caps which is not useful for us. Less than 1% of water is fresh.

Keywords-Sambhar lake, Salt, Physico-chemical, ions.

INTRODUCTION

The Sambhar salt lake is India's largest salt lake, located in Rajasthan. It has 5700 km square catchment area. Its surface area is 190-230 km square. Lake is spread in Nagaur, Jaipur and Ajmer district. Minimum and maximum temperatures during winter and summer fluctuate between 5°- 45° Celsius. Its average depth is 60cm.-3 meter.

MATERIALS & METHOD

Water sample is to be taken from different sites of lake. Water samples were collected in glass bottles and taken to the laboratory for physico-chemical analysis. Temperature and pH value were measured at the time of sampling at sampling site. Physical values like TDS and EC were evaluated by microprocessor. The conductivity values were corrected at 26° celsius. Spectrophotometry is used for estimation of SO_4^{2-} ions. Ca^{2+} , Mg^{2+} , HCO_3^- AND Cl^- were analysed using standard titrimetric methods. Flame photometer was used for Na^+ and K^+ analysis.

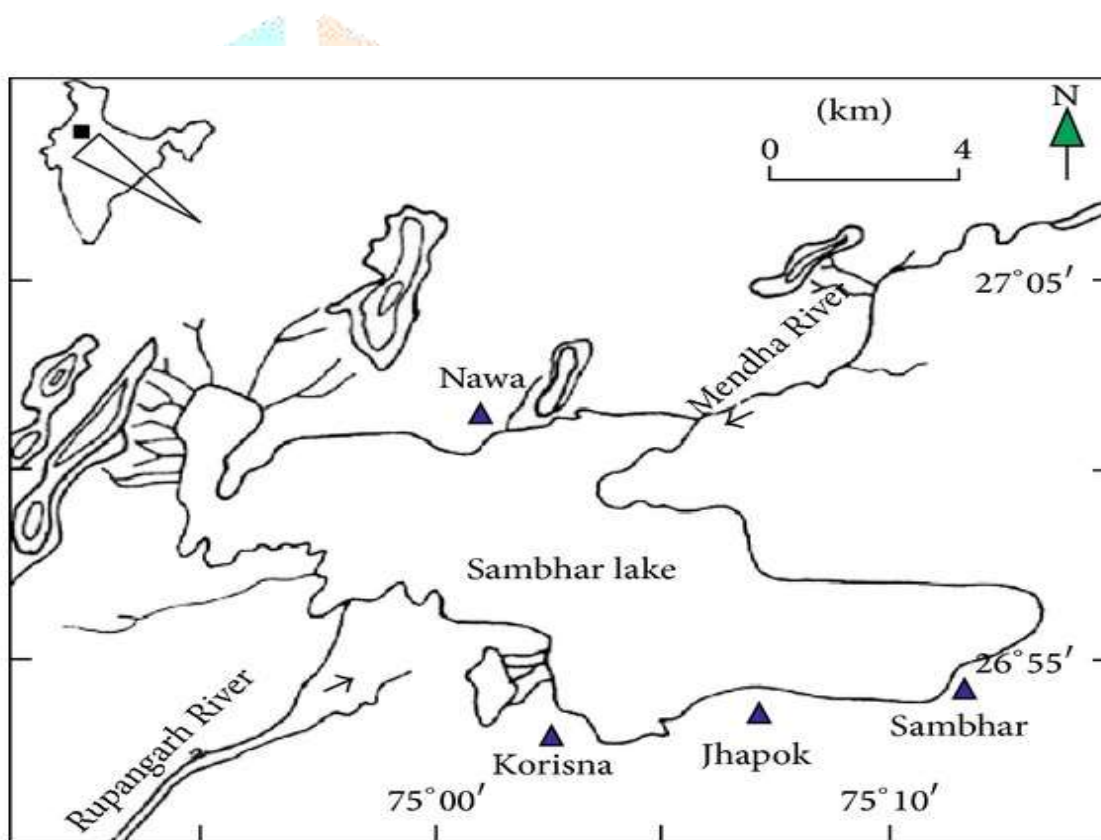
RESULT AND DISCUSSION

Table 1 shows the results of analysis of water sample. In all samples the value of pH range carries between 7.20-8.30. It means water is alkaline in nature but its not in high range so it can be used for drinking. Electrical conductivity is in the range of 1050 $\mu\text{s}/\text{cm}$ -8200 $\mu\text{s}/\text{cm}$. Carbonate and bicarbonate ions are responsible for alkalinity of water. Carbonate ions range is 90mg/lit.-400mg/lit. Bicarbonate ions range is 970mg/lit.-2900mg/lit. Minimum range of TDS is 2200mg/lit and maximum is 4600 mg/lit. Calcium ion ranges from 230mg/lit-830mg/lit. Magnesium ion ranges from 210mg/lit-780mg/lit. Sulphate ion ranges from 90mg/lit-520mg/lit. Sodium ion ranges from 90mg/lit.-175mg/lit. Potassium ion ranges 85mg/lit- 140mg/lit. Nitrate ion ranges 130mg/lit-640mg/lit. Chloride ion ranges 430mg/lit-1880mg/lit. Due to organic pollution high chloride concentration occurs. We have reached at that result, water of sambhar salt lake is reached in ions like chloride, sodium, dissolved solids etc. but it has no side effect on health it has required to be treated.

Table 1. Physico-chemical analysis of sambhar salt lake (Values in mg/l except pH and EC).

S.NO.	pH	EC ($\mu\text{S}/\text{cm}$)	TDS	Ca ²⁺	Mg ²⁺	So ₄ ²⁻	Na ⁺	K ⁺	NO ₃ ⁻	Cl ⁻	Co ₃ ²⁻	HCO ₃ ⁻
1.Sambhar lake Site I	7.60	2500	3000	410	360	230	160	115	410	1300	280	1300
2..Sambhar lake Site II	7.80	1740	2200	230	240	135	120	107	435	430	340	970
3.Sambhar lake Site III	8.10	6300	2500	810	540	180	135	135	130	1300	240	2600
4.Sambhar lake Site IV	8.20	5700	4400	280	720	520	90	95	460	880	90	2300
5.Sambhar lake Site V	7.40	3750	2700	350	750	120	140	110	640	960	100	1600
6.Sambhar lake Site VI	7.50	8200	3800	830	710	400	135	120	500	670	380	2700
7.Sambhar lake Site VII	8.00	4800	3300	390	210	90	105	140	400	580	250	2500
8.Sambhar lake Site VIII	7.20	2500	4200	450	530	110	160	116	330	1880	290	1800
9.Sambhar lake Site IX	7.90	1050	2800	800	780	140	145	85	360	870	400	2000
10.Sambhar lake Site X	8.30	7900	4600	360	370	170	175	100	390	1080	350	2900

(NOTE- All values are in mg/lit. except pH and EC)



A VIEW OF SAMB HAR SALT LAKE

SUMMARY

The aim of present study is to know the physico-chemical parameters of Sambhar Salt Lake which include pH, EC, TDS, Hardness, chloride, Nitrate, sodium, Potassium, Calcium, magnesium, sulphate etc. ions conc. in the water sample of Sambhar lake.

CONCLUSION

Based on the investigation we have to know the physico-chemical parameters of Sambhar Salt Lake. In the lake Chloride, Sulphate, magnesium, carbonate and bicarbonate all ions concentration is very high. It means the lake's water is very polluted; it is needed to be treated.

REFERENCES

1. Abed, S., Hussain, S. & Pradha, V. (2011). Seasonal variation of groundwater parameters in Godavari at Paithan town. *Archives of Applied science research*, 3(4), 296-299.
2. Bamakanta, G., Sunakar, P., Satyabhama, T. & Prasad, T.U. (2013). Seasonal variation of Nagavali River water Quality at the Vicinity of Paper Mill near Jaykaypur, Odisha, India. *International Research Journal of Environmental Science*, 2(5), 46-52.
3. Campbell, P. G. (2007). Cadmium- A priority pollutant. *Environmental chemistry*, 3(6), 387-388.
4. Erwin, K. L. (2009). Wetlands and global climate change: the role of wetland restoration in changing world. *Wetlands Ecology and management*, 17(1), 71-84.
5. Gopal, B. & Sharma, K. P. (1994). Sambhar Lake, Rajasthan, New Delhi: WWF-India.
6. Goswami, S., Dey, S. & Ghosh, U. C. (2004). Studies on removal of fluoride by hydrated zirconium oxide. *Chem. Environ. Res*, 13(1-12), 117.
7. Kumar, S. (2005). Fauna of Sambhar lake. Wetland Ecosystem Series. Edited and Published by the Director, *Zool. Surv. India, Kolkata*. 6, 1-200.
8. National Wetland Atlas. (2013). Wetlands of International Importance under Ramsar Convention, Space Applications Centre, ISRO, Ahmedabad. India, 12.
9. Pandey, R. Singh, J. (2006). Quality assessment of industrial wastewater for safe irrigation. *Indian Journal Of Environmental Protection*, 26(1), 7.
10. Sanjay Gupta, Akhalesh Kumar and Gita Seth, Seasonal Variation of Some Heavy Metals in Surface Water of Sanganer Area, Jaipur, Rajasthan, India, *J. Environ. Sci.* **10 (1)**, 75-77(2006).
11. Vakaki, E. (2012). Change Detection of Evros Wetland Ecosystem using Landsat Imagery. *South-Eastern European Journal of Earth Observation and Geomatics*, 1(1), 63-67.