



# Analysis of Chloride from Manar reservoir near Barul Village of Maharashtra, India

Kedar R Solunke

*Department of Environmental Science, Indira Gandhi Senior College CIDCO, Nanded-431603, Maharashtra, India.*

## Abstract

The quality of water has profound effect on wellbeing of people. Chloride ions are one of the components found in all-natural waters. The concentration of chloride increases due to natural as well as anthropogenic activities in different water sources.

The objective of this study was to measure the chloride content in the three different selected sites in Manar reservoir. The chloride content in reservoir from different locations were monitored during January 2018 to December 2018. The chloride content of all sampling sites of manar reservoir were found below permissible limit.

**Keywords:** Water, People, Chloride, Manar reservoir.

## 1. Introduction:

Water is most important part of economy of the world because it is essential component in all processes of human development (Obi et al, 2006). it is having multiple uses due to its unique properties

The quality of available water has great effect on welfare of people, hence extensive attempts are made to obtain clean water to complete need of increasing population of the world (Odjadjare & Okoh ,2010)

Water is vital part of biological community, people depend on water to complete their different requirements like domestic, agricultural and industrial., Lakes and tanks control the climate of urban areas hence they recognize as ecological barometers (Benjamin et al.,1996)

A limit of 250 mg/l has been recommended as Acceptable limit and 1000 mg/l as the permissible for drinking water (BIS,2012)

Generally, chloride present in water in the form of sodium chloride, if the concentration of chloride is more than 200 mg/L in water the taste may be unpleasant to some consumers so a limit of 200 mg/L is normally recommended for public use (Duggal,2014)

In the present investigation important chemical parameter like chloride was monitored according to the different seasons at three selected locations of the Manar reservoir.

## 2. Study Area:

During present study Manar reservoir Near Barul village in Kandhar taluka of Nanded district in Maharashtra was selected for monitoring of chloride content in surface water. Three sampling sites were selected for monitoring of chloride from the Manar reservoir.



Three Sites Coordinates of The Manar Reservoir, Barul Village, Kandhar Taluka, Nanded District, Maharashtra, India.

## 3. Materials and Methods:

By considering the large area of the reservoir three different sampling station were selected for analysis of the chloride parameter of the Manar reservoir. These water samples were taken continuously once a month for regular analysis from the duration of January 2018 to December 2018 until one year of research was completed. The chloride content in water resource was determined using titrimetric method as described APHA (1998) and Kaul and Gautam (2002). The results were expressed in mg/lit.

## 4. Result and Discussion:

During the present study Three sampling stations were selected for analysis of Chloride in Manar Reservoir the study was carried out during January 2018 to December 2018. Results obtained from analysis of chloride were summarized in Table 1 and graph (Fig.1)

During the study period from January 2018 to December 2018, the range of Chloride content from S1 (Site 1) varied from minimum 17.04 mg/L to Maximum 36.92 mg/L. The chloride content from S2 (Site 2) varied from minimum 19.88 mg/L to Maximum 39.76 mg/L and the chloride content from S3 (Site 3) varied from Minimum 22.72 mg/L to Maximum 42.60 mg/L.

Table 1. The Chloride Levels from Manar Reservoir Barul from January to December 2018 in mg/L

Month	S1(Site 1)	S2(Site 2)	S3(Site3)
Jan.2018	28.40	29.82	32.66
Feb.2018	34.08	35.50	36.92
Mar.2018	35.50	38.34	39.76
Apr.2018	<b>36.92</b>	<b>39.76</b>	41.18
May2018	32.66	36.92	<b>42.60</b>
Jun.2018	22.72	24.14	25.56
July.2018	<b>17.04</b>	21.30	26.98
Aug.2018	18.46	<b>19.88</b>	24.14
Sep.2018	21.30	24.14	<b>22.72</b>
Oct.2018	22.72	25.56	28.40
Nov.2018	24.14	26.98	31.24
Dec.2018	25.56	28.40	29.82

Fig 1: Monthly Variation in Chloride (mg/L) during January 2018 to Decemehr 2018



Figure 1: The Chloride Concentration in Manar Reservoir, Barul during January to December 2018 in mg/L

As per the BIS standard (IS 10500: 2012), the acceptable level of chloride in drinking water is 250 mg/L. Hence, in the present investigation chloride level is within the permissible limit. According to a seasonal study of all selected sites, chloride was highest in summer (Feb, March, Apr & May) and lowest in Monsoon period (June, July, Aug & Sep), while in the summer season it was observed in high quantity the probable reason for this may be due to low level of water quantity in the reservoir.

(Singh P, 2014) studied the water quality of Gomati River and observed the maximum value (24.7 mg/L) in summer season and minimum value (15.1 mg/L) in winter season. (Krishnamoorthi A et al. 2011) studied the veeramam lake in Tamilnadu and concluded that higher values of chloride in lake may be due to domestic waste and organic waste & also observed that higher values in summer may be due to decrease in water supply

(Rai A.K et al,2012) studied the Harmu River and recorded the minimum value 260 mg/L to Maximum value 342 mg/L in three sampling locations and concluded that it may be due to contamination of local sewage and drains.

(Fig 1.) shows that the seasonal levels of chloride were higher in summer and lower in a monsoon.

## V. Conclusion:

After analyzing the concentration of chloride from the Manar reservoir, it concluded that as per the BIS standards 2012, the level of chloride content in the Manar reservoir of all three selected sites were within permissible limits.

## References

- [1] Obi, C.L., Onabolu, B., Momba, M.N.B., Igumbor, J.O., Ramalivahna, J., Bessong, P.O., Van Rensburg, E.J., Lukoto, M., Green, E. and Mulaudzi, T.B., (2006). The interesting cross-paths of HIV/AIDS and water in Southern Africa with special reference to South Africa. *Water Sa*, 32(3), pp.323-343.
- [2] Odjadjare, E.E. and Okoh, A.I., (2010). Physicochemical quality of an urban municipal wastewater effluent and its impact on the receiving environment. *Environmental monitoring and assessment*, 170(1), pp.383-394.
- [3] Benjamin, R., Chakrapani, B.K., Devashish, K., Nagarathna, A.V. and Ramachandra, T.V., 1996. Fish mortality in Bangalore lakes, India. *Electronic Green Journal*, 1(6).
- [4] Indian Standard Drinking Water – Specification IS 10500: 2012, Second Revision, Bureau of Indian Standards Manak Bhavan, 9 Bahadur Shah Zafar Marg New Delhi 110002.
- [5] Duggal K.N. (2014) *Elements of Environmental Engineering*, S. Chand & Company pvt. Ltd, New Delhi, India
- [6] [https://en.wikipedia.org/wiki/Manar\\_Dam](https://en.wikipedia.org/wiki/Manar_Dam)
- [7] APHA, AWWA, WEF (1998): *Standard methods for examination of water and waste water*, 20th Edition, American Public Health Association, Washington D.C.
- [8] Kaul, S. N & A.Gautam (2002): *Water and Waste Water Analysis*; Daya Publishing House, Delhi.
- [9] Singh,P (2014). Studies on seasonal variations in physico-chemical parameters of the river Gomti (U.P.) India, *International Journal of Advanced Research*. 2(2), pp. 82-86.
- [10] Krishnamoorthi, A., Senthil Elango, P. and Selvakumar, S., 2011. Investigation of water quality parameters for aquaculture-A case study of Veeranam Lake in Cuddalore District, Tamilnadu. *International Journal of Current Research*, 3(3), pp.013-017.
- [11] Rai, A.K., Paul, B. and Kishor, N., 2012. A study on the sewage disposal on water quality of Harmu River in Ranchi city Jharkhand, India. *International Journal of plan, animal and environmental science*, 2(1), pp.102-106.