

**ANALYSIS OF WATER QUALITY USING PHYSICO-CHEMICAL
PARAMETERS OF KARGIL LAKE IN KARIMNAGAR DISTRICT
TELANGANA STATE DURING THE SEASON OF SUMMER 2013****Vanitha.B^{*1}, Nirmala Babu Rao¹**

¹Department of Botany, University College for Woman Osmania University, Hyderabad,
Telangana, India.

Article Received on
05 Nov 2014,

Revised on 30 Nov 2014,
Accepted on 25 Dec 2014

***Correspondence for
Author**

Vanitha.B

Department of Botany,
University College for
Woman Osmania
University, Hyderabad,
Telangana, India.

ABSTRACT

This paper deals with the study of physico-Chemical parameters of Kargil lake water near village Siricilla, Karimnager district Telangana state. Monthly changes in physical and chemical parameters such as Water Temperature, Transparency, Turbidity, Total Dissolved Solids, pH, Dissolved Oxygen, BOD, COD, Free Carbon dioxide, Total Hardness, Chlorides, Alkalinity, Phosphate and nitrates, were analyzed for a period of one year from february2013 to May2013. According to APHA Standard methods. And compare with WHO, ICMR and BIS standards. The result of this analysis point out the fact that all the parameters are permissible limits. The result indicates the lake is Non-polluted and can be used for Domestic and Irrigation.

KEYWORDS: Kargil Lake, Physico-Chemical parameters, DO, BOD, COD and Monthly changes.

INTRODUCTION

Water resources are of critical importance to both natural ecosystem and human development. It is essential for agriculture, human existence and industry. The healthy aquatic ecosystem is depends on the physico-chemical and biological characteristics. Quality of water resources depends on a large number of physico-chemical parameters and biological characteristics (Medudhula.Thirupathaiah et al). Water is one of the most important and abundant compounds of the ecosystem. All living organisms on the earth need water for their survival and growth. As of now only earth is the planet having about 70 % of water. But due to increased, industrialization, human population, use of fertilizers in the agriculture and

man-made activity it is highly polluted with different harmful contaminants(Patil. P.Net al). Due to increased Industrialization, Human population, Use of Fertilizers in Agriculture. The Natural Aquatic Resources are causing heavy pollution in aquatic Environment leading to water quality and depletion of aquatic biota(S. A. Manjare et al). The quality of water is vital concern for mankind because it directly linked with human health. Now a day, the menace of water borne diseases and epidemics still looms large on the horizons of developed and developing countries. The polluted water is the culprit in all such cases. Water sources were polluted by domestic wastage in rural areas whereas industrial wastages discharged into natural water sources in urban areas. Water is polluted due to various phenomenon. The rapid growing population and improved living standards, the pressure on the present water resources is increasing day by day(Ajit M. Kalwale et al). The chief source of pollution is identified as sewage constituting 84 to 92 percent of the waste water. According to surveys carried out on selected stretches of important rivers, it has been found that most of the rivers are grossly polluted. The domestic sewage discharged from a population of about 2 millions gives rise to numerous water-borne diseases like typhoid, cholera, dysentery, poliomyelitis and cysticercosis, thereby affecting the human health and deterioration of the water quality (Dhirendra Mohan Joshi et al). The usage also depends upon the linkages (channels) in the river system, as inland waterways play a major role in the assimilation and transportation of contaminants from a number of sources . (Salim Aijaz Bhat et al). Water quality is the physical, chemical and biological characteristics of water . The most common standards used to assess water quality related to drinking water safety of human contact and for the health of ecosystems. Environmental water quality, also called ambient water quality, relates to water bodies such lakes, river and oceans(M. Muniyan et al). Natural bodies of water are not absolutely pure as various organic compounds and inorganic elements remain in dissolved form. The physical and chemical nature of water differs according to the basin shape and light penetration, precipitation, location, size, depth, temperature, chemical nature of surrounding soil and dissolved minerals, pH, etc, and the biological components of the habitats depend upon them If all the physical, chemical and biological parameters are in Optimum condition the balance between these is maintained (Pratiksha Tambekar et al). The quality of natural water is generally governed by various physico-chemical and microbiological parameters. It is very necessary to understand the physico-chemical and bacteriological qualities of water. Presence of coliforms, total dissolved solids, conductivity, pH, Hardness, DO, BOD and COD are some of the significant parameters to study the water

quality. The present study was aimed to know the seasonal variations in physicochemical (Krishna et al).

2. Collection of Sample

In order to determine the water quality index four stations were chosen for sample collection from the kargil lake during the season of summer.

RESULTS

Colour

In the present study four water samples had been collected and for each sample we had observed different colours i.e, S1-Light green colour, S2-Brown colour, S3-colourless and S4-Green colour.

Water Temperature

Temperature of Lake Water ranged from 24.0 to 22.0 °C in Summer season. Water temperature was due to high air temperature and low water level.

Turbidity

In the present study water values ranged from 4.2 to 5.11 NTU. The maximum value of 5.11 NTU was recorded, it may be due to human activities, decrease in the water level and presence of suspended particulate matter.

S.No	Parameter	Standard parameters			Summer season			
		WHO	ICMR	BIS	S1	S2	S3	S4
1	Colour	—	—	—	Light green	brown	Color less	Greenish
2	TempOC	—	—	—	24.0	24.5	23.0	22.0
3	Turbidity NTU	10	10	10	4.2	4.6	5.7	5.11
4	TDS	500	500	500	246	213	246	210
5	PH	6.5-9.2	7-8.5	6.5-8.5	7.9	7.8	7.6	7.8
6	EC us/cm	300	300	300	250	258	249	239
7	DO	4-6	4-6	4-6	15.5	15.8	15.0	14.5
8	BOD	06	—	—	3.8	3.9	4.8	4.2
9	COD	10	—	—	7.4	8.9	9.2	8.2
10	Total Hardness	600	600	600	236	228	223	182
11	Chlorides	250	250	250	34.30	36.60	33.20	28
12	Phospate	0.1	—	—	3.8	4.8	4.2	3.7
13	Nitrate	—	—	—	8.9	9.2	8.3	7.5
14	Mg	150	150	150	73	85	80	59
15	Ca	200	200	200	130	137.5	148	132.5

Total Dissolved Solids

TDS analysis has great implications in the control of biological and physical waste water treatment processes. Total dissolved solids value ranged from 246 to 210 mg/l.

pH

During present water pH values were S1-7.9, S2-7.8, S3-7.6 and S4-7.8. It is indicating alkalinity nature throughout the study period. Most of bio-chemical and chemical reactions are influenced by the pH. The reduced rate of photosynthetic activities reduces the assimilation of carbon dioxide and bicarbonates which are ultimately responsible for increase in pH, the low oxygen values coincided with high temperature during the summer month (Kamble, S. M. et al.).

EC us/cm: The EC values for the four samples of Summer season are as follows- S1-250, S2-258, S3-249, S4-239.

Dissolved Oxygen: The DO values for the four samples of Summer season are :S1-15.5, S2-15.8, S3-15.0, S4-14.5.

BOD: The BOD values obtained for the four samples are as follows: S1-3.8, S2-3.9, S3-4.8, S4-4.2.

COD: The COD values obtained for the four samples are as follows: S1-7.4, S2-8.9, S3-9.2, S4-8.2.

Total Hardness: The total Hardness values obtained for the four samples are as follows: S1-236, S2-228, S3-223 and S4-182.

Chlorides: Amount of Chlorides present in each sample is as follows: S1-34.30, S2-36.60, S3-33.20 and S4-28.

Phosphate: Amount of Phosphates present in each sample are as follows: S1-3.8, S2-4.8, S3-4.2, S4-3.7.

Nitrate: Amount of Nitrates present in each sample are as follows: S1-8.9, S2-9.2, S3-8.3 and S4-7.5.

Mg: The amount of Mg ions present in the above samples is: S1-73, S2-85, S3-80 and S4-59.

Ca: The amount of Ca ions present in the above samples is: S1-130, S2-137.5, S3-148 and S4-132.5.

REFERENCES

1. Ajit M. Kalwale , Padmakar A. Savale; Determination of Physico-Chemical Parameters of Deoli Bhorus Dam water; *Advances in Applied Science Research*, 2012.
2. Dharendra Mohan Joshi, Alok, and Namita Agrawal; Studies On Physicochemical Parameters To Assess The Water Quality Of River Ganga For Drinking Purpose In Haridwar District; *Rasayan journal of chemistry*; Vol.2.
3. Krishna, Shankar Hosmani and Dr. M. Jayashnakar; Physico-Chemical And Bacteriological Parameters Of Kaveri River At Talakaveri Region - A Comparative Study; *National Monthly Refereed Journal Of Reasearch In Science & Technology*; Volume No.1.
4. M. Muniyan and G. Ambedkar; Seasonal Variations in Physicochemical Parameters of Water Collected from Kedilam River, at Visoor Cuddalore District, Tamil Nadu, India; *International Journal of Environmental Biology*, 2011.
5. Medudhula.Thirupathaiah, Ch.Samatha, Chintha Sammaiah; Analysis of water quality using physico-chemical parameters in lower manair reservoir of Karimnagar district, Andhra Pradesh; *International Journal Of Environmental Sciences*, 2012; 3.
6. Patil. P.N, Sawant. D.V, Deshmukh. R.N; Physico-chemical parameters for testing of water – A review; *International Journal Of Environmental Sciences* ;Volume 3; 2012.
7. Pratiksha Tambekar, Pravin Morey, R. J. Batra and R. G. Weginwar; Quality assessment of drinking water: A case study of Chandrapur District (M.S.); *Journal of Chemical and Pharmaceutical Research*, 2012.
8. S. A. Manjare, S. A. Vhanalakar and D. V. Muley; Analysis Of Water Quality Using Physico-Chemical Parameters Tamdalge Tank In Kolhapur District, Maharashtra; *International Journal of Advanced Biotechnology and Research*, 2010; 1.
9. Salim Aijaz Bhat, Gowhar Meraj, Sayar Yaseen and Ashok K. Pandit; Statistical Assessment of Water Quality Parameters for Pollution Source Identification in Sukhnag Stream: An Inflow Stream of Lake Wular (Ramsar Site), Kashmir Himalaya; *Journal of Ecosystems*, 2014.