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A STUDY OF WATER SAMPLES FROM HUSSAIN SAGAR LAKE IN HYDERABAD TOWN

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ABSTRACT

Hussain sagar is situated in centre of Hyderabad city. A study was carried out on Hussainsagar lake to assess the impact of sewage pollution on the water quality of the lake. Water samples from various sites were collected and analysed for physico-chemical parameters to assess the quality of the lake system. The observed values of different physico-chemical parameters like pH, electrical conducitivity, total dissolved solids (TDS), total suspended solids (TSS), Nitrates, Dissolved Oxygen (DO), Chemical oxygen demanad(COD), Total Coliform, Fecal Coliform, Free Ammonia, Boron of samples were compared with standard values recommended by world health organization (WHO). The study revealed that due to discharge of untreated sewage into the Hussain Sagar, the water quality of Hussain Sagar has been severely deteriorated and the potable nature of water is being lost.

KEYWORDS: Quality guidelines, Titremetry, Lake quality, Hyderabad, Sampling.

INTRODUCTION

Hussain sagar lake is originally designed for drinking water. It is contaminated with domestic sewage and industrial effluents. Water resources and water quality affect the economic, social and political development of the society. Comprising over 70% of the Earth's surface, water is undoubtedly the most precious natural resource that exists on our planet. Without the water life Earth would be non-existent, it is essential for everything on our planet to grow and prosper. Although humans recognize this fact, we disregard it by polluting our lakes, lakes

and oceans. Water pollution causes a number of problems such as diseases and killing the fishes. It is harmful for human beings and animals.

First of all, one of the main causes of water pollution is industrial effluent, because the factories let the polluted water go into the lakes and make the water polluted. The industry water contains various kinds of chemicals like acid, hydroxide which are harmful to the water and to aquatic life. If people drink the water, which is polluted, it can cause cancer, suppress immune systems and disrupt hormones. Also illegal dumping of chemical, kill the nature lives in the lake like fish, crab, etc. The importance of water in our daily life need not be emphasized for it is well known. Water is the basic component of life. Surface water offers a promising source of water for domestic, industrial and agricultural use. For this it is essential to study the physicochemical characteristics of surface water. Hussain sagar lake is located at 17.45^{o}N 78.5^{o}E 510 m above the sea level.[1] As it is one of the important lake, it needs to study the physic chemical characteristics of water samples from Hussain Sagar Lake in Hyderabad Town.

It is a fact that good water quality produces healthier humans than one with poor water quality. Effective maintenance of water quality is required through appropriate measurements. Physico-chemical and micro-biological characteristics may describe the quality of water, therefore, an analysis on physico-chemical parameters of Hussain Sagar water was made by many workers in literature.

In the present study various parameters pH, electrical conducitivity, total dissolved solids(TDS), total suspended solids (TSS), Nitrates, total Dissolved Oxygen(DO), Chemical oxygen demanad(COD), Total Coliform, Fecal Coliform, Free Ammonia, Boron of four water samples from different sites were analyzed.

EXPERIMENTAL

All chemical used in the present investigation were of analytical reagent grade and double distilled water was used throughout investigations. The instruments which are used in present investigation were includes, pH meter, Conductivity Meter, Turbidity Meter, Spectrophotometer and Water quality analyzer.

Water sample were collected from different sites of Hussain Sagar Lake. These samples were collected in plastic bottles. During sampling pH and temperatures were determined using pH

meter and thermometer respectively. The laboratory analysis of samples was done using standard methods. EDTA titrimetric method was used for determination of total hardness.

Hydrochloric acid solution: 0.02N Hydrochloric acid solution was prepared from standard acid solution by proper dilution.

EDTA solution(0.02N): EDTA solution was prepared by dissolving 3.723 g of EDTA in 100 distilled water.

Sodium Hydroxide Solution(1N): 40 g of NaOH was dissolved in 1000 ml diswtilled water.

Barium Chloride solution: 2.4443g of barium chloride was dissolved in 1000 ml distilled water.

Silver Nitrate solution(0.02): 4.791g of silver nitrate was dissolved in distilled water and diluted upto to 1000ml. It was further diluted to obtained 0.2N.

Potassium chromate solution(5%): 50g of potassium chromate was dissolved in distilled water. To this silver nitrate solution was added till a definite red precipitate was formed. It was allowed to stand for 12 hours and filtered. The filtrate was dilluted to 1000ml with distilled. Starch indicator and methyl orange indicator were prepared according to standard procedures.

Table 1: Physico-chemical analysis of Hussain sagar lake water at various locations in Hyderabad Town.

S.No	Parameters	At sailing club	At Lepakshi Handicrafts	At necklace road	At Budha statue
1.	pH	6.64	6.83	6.70	6.74
2.	Electrical Conductivity(µS/cm)	1340	1370	1375	1380
3.	Dissolved Oxygen	3.3	3.3	3.1	3.4
4.	Chemical oxygen demanad (mg/L)	123	110	125	117
5.	total dissolved solids (mg/L)	800	780	784	778
6.	Nitrate (mg/L)	14	12	18	30
7.	total suspended solids (mg/L)	26	23	25	50
8.	Total Coliform (MPN/100ml)	350	346	540	432
9.	Fecal Coliform (MPN/100ml)	2	3.4	6.0	6.1
10.	Free Ammonia (mg/L)	0.08	0.09	0.07	0.06
11.	Boron (mg/L)	0.05	0.33	0.2	0.02

RESULTS AND DISCUSSION

Details of water analysis are present in Table 1. It is found that the pH values of samples range from 6.64 to 6.83 all are almost in the acceptable range. The conductivity values range from 1340 µS/cm to 1380 µS/cm, the highest value being in the sample collected at budha statue. This is expected dues to the sewage and effluents enter the water streams. The values of dissolved oxygen are low indicating that the water samples are contaminated with major organic pollutants.

Some samples show deviation from acceptable range which may be due to pollution at the sample sites. The experiment shows that the information necessary for interpreting drinking water quality analysis. It focuses on testing results obtained from water supplies of different areas of city.

CONCLUSION

From the present study we conclude that hussain sagar water must be treated to reduce the contaminations.

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