Analysis of water quality using Physico-chemical parameters from different Lakes around Jagtial region, Jagtial district,Telangana.

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ABSTRACT- Water is one of the most important of all natural resources known on earth. It is important to all living organisms, most ecological systems, human health, food production and economic development. The safety of drinking water is important for the health. The safety of drinking water is affected by various contaminants which included chemical and microbiological. Such contaminants cause serious health problems. Due to these contaminants quality of the Drinking Water becomes poor. Sometimes such poor qualitywater causes many diseases in the humans so that quality of the water must be tested for both the chemical aswell as for the microbial contaminants. The objective of the present research is to provide information on the physicochemical characteristics& detailed ecological studies of Lake water (Habitat) in order to discuss it's suitability forhuman consumption. Physicochemical and bio-chemicalaspects of the water have been investigated to assessthe quality of water. The variations of the physicochemical properties ofwater samples directly influence thebiotic communities and primary productivity of the water bodies at different areas of Jagtial.

Key words- Lake water , Jagtial , Physico-chemical parameters, Comparative studies.

I. INTRODUCTION:

Water is the most important natural resource, which forms the core of ecological system. Recently there has been overall development in various fields such as agriculture, industry and urbanization in India. This has led to increase in the demand of water supply which is met mostly from exploitation of groundwater resources. Ground water quality has become an important water resources issue due to rapid increase of population, rapid industrialization, unplanned urbanization, flow of pollution from upland to lowland, and too much use of fertilizers, pesticides in agriculture. Groundwater quality depends on the quality of recharged water, atmospheric precipitation, inland surfacewater, andon sub-surface geochemical processes.

The 5 major Application of water are Hydropower, Domestics uses, Irrigation, Industrial uses, Commercial uses. The major water quality parameters considered for the examination in this study are pH, Odour, Colour, Taste, Temperature, Turbidity, Total Dissolved Solids (TDS), Dissolved oxygen (DO), Dissolved carbon dioxide, Metals and Metalloids, Total Hardness, Alkalinity.

II. SAMPLE COLLECTION:

The Sample was collected from FOUR(4) different lakes of Jagtial: jagtial lake , Thippanapet lake , Sriramulapalli lake & Raikal lake of Jagtial and Physico-chemical analysis of habited water has performed. Samples are collected from the lakes in the morning between 7-10am,in a polythene bottle and carried to the laboratory for analyzing the various both physical and chemical parameters.

III. MATERIAL AND METHODS:

The present study was carried out for four different areas and four different lakes, located in Jagtial city. In the present study the sampling was done during morning hours and all water samples were collected in the polyethylene bottles. For lake water samplecollection the closed bottle was dipped in the lake at the depth of 0.7 to 0.9 m, and then a bottle was opened inside and was closed again to bring it out at the surface. The samples were collected from three different points and were mixed together to prepare an integrated sample. From the time of sample collection and to the time of actual analysis, many physical and chemical reactionswould change the quality of water sample therefore to minimize this change the sample were preserved soon after the collection.The water samples were preserved by adding chemical preservatives and by lowering the temperature. The water temperature, Odour, Taste, TDS were analyzed immediately on the spot after the collection, Whereas the analyses of remaining parameters were done in the laboratory. The study was carried for a period of Six(6) months (July 2022 to December 2022).Thecollected water samples were brought to the measured by Turbidity meter. Alkalinity, Chloride, Calcium, Magnesium, Total Hardness, Dissolved oxygen, Dissolved carbon dioxide,Barium, Copper, Sulphate was determined by method according to table.

TABLE 1.1

Water quality test	Instrument / Method
Temparature	Thermometer
Colour (unit)	Platinum cobalt(visual comparision) method
Odour	Widemouth glass stoppered bottle
Taste	By tasting
pH	pH meter
Turbidity (NTU)	Turbidity meter
TDS (ppm)	TDS meter
Dissolved Oxygen (ppm)	Titrimetric method(iodometric)
Dissolved Carbondioxide (ppm)	Titrimetric method
Alkalinity (ppm)	Titrimetric method
Chloride (ppm)	Titrimetric method
Calcium (ppm)	Titrimetric method
Barium (ppm)	Titrimetric method
Magnesium (ppm)	Titrimetric method
Total hardness (ppm)	Titrimetric method (complexometric)
Copper (ppm)	Spectrophotometer
Sulphate (ppm)	Spectrophotometer

TABLE 1.2
SAMPLE VALUES OF LAKE WATER

S.NO	Test	Jagtial lake sample	Tippanapet lake sample	Sriramulapalli lake sample	Raikal lake sample
1	Temperature	26	23	24	21
2	Colour (unit)	< 4	< 3	< 2.5	< 3
3	Odour	Disagreeable	Disagreeable	Disagreeable	Disagreeable
4	Taste	Disagreeable	Disagreeable	Disagreeable	Disagreeable
5	pH	7.7	7.4	8.2	7.5
6	Turbidity (NTU)	8.3	9.8	11	10.08
7	TDS (ppm)	900	930	927	800
8	Dissolved Oxygen (ppm)	5.5	5.9	6	6.1
9	Dissolved Carbondioxide (ppm)	6.6	6.1	6.9	7
10	Alkalinity (ppm)	163	150	170	168
11	Chloride (ppm)	81	76	60	74
12	Calcium (ppm)	70	63.3	69.2	64
13	Barium (ppm)	39	33	30.5	36
14	Magnesium (ppm)	28.6	15.3	7.9	8.4
15	Total hardness (ppm)	280	276	350	320
16	Copper (ppm)	19.3	15.4	15.34	15.78
17	Sulphate (ppm)	72	65	59	70

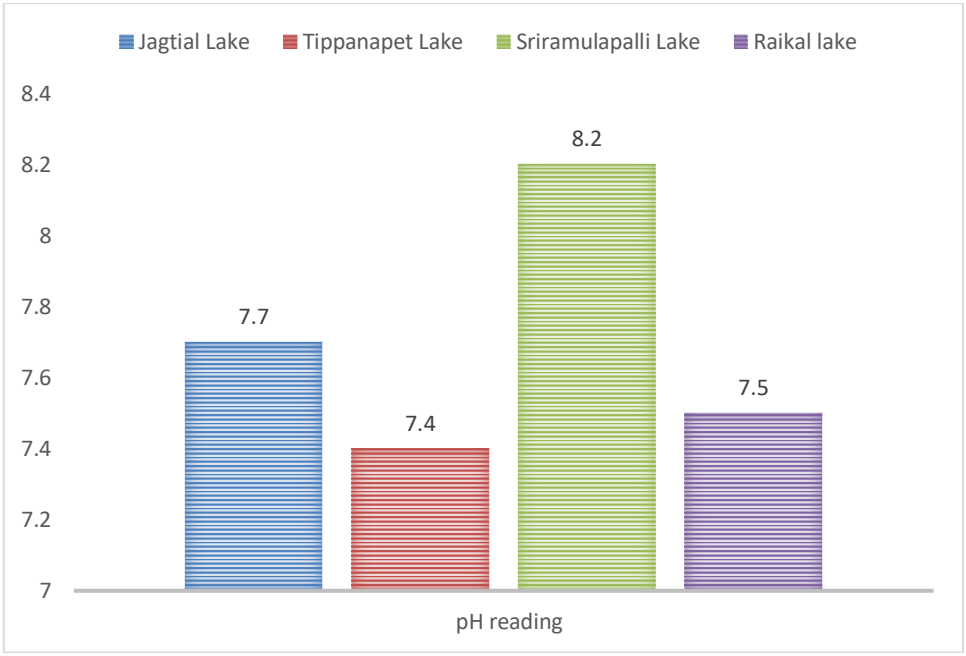

Fig: 1.3

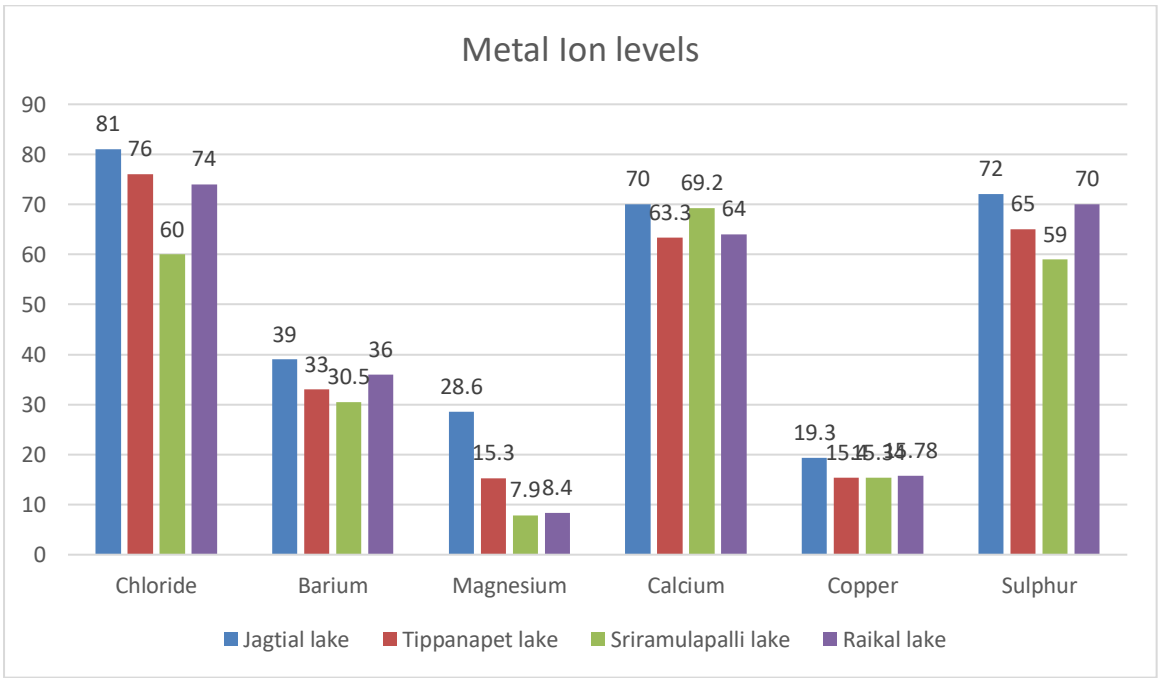

Fig: 1.4

RESULT:

Physical parameters like Temperature, Odour, Taste and Colour was Disagreeable in the lake waters. The other parameters like Turbidity, pH , Dissolved oxygen and Carbondioxide did not meet the standards of ISI standard for Drinking water. pH range of drinking water should be 6.5-7.5.TDS of water sample showed range below 1500ppm. Minerals like Calcium, Barium, magnesium, Chloride, Copper, Sulphur are essential for body. Test of these minerals were formed on Lake water sample. The results were not compiled with the given range of test for minerals. DO is the single most important gas for most aquatic organisms. If the amount of free oxygen go below than 2.0mg/lit for few days in the lake containing aquatic organisms it would lead the death of most of the biota in the aquatic system. Higher value of free carbondioxidde generally coincided with minimum dissolved oxygen. Habited water is generally used by Animals, Birds and Aquaticlife. The disturbance in this Biological and Ecological system may affect health of these lives.

IV. CONCLUSION:

The Result obtained during study was compared with ISI standards. This water is not safe enough to be consumed by Humans.Habited water is generally used by Animals, Birds and Aquatic life.The disturbance in this Biological and Ecological system may affect health of these lives.

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