



## **ANALYSIS OF WATER QUALITY USING PHYSICO-CHEMICAL PARAMETERS**

### **CHHATRI TALAO TANK IN AMRAVATI DISTRICT, MAHARASHTRA,INDIA**

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#### **ABSTRACT:**

The paper deals with the physico chemical parameter of the Chhatri Talao Tank in Amravati District, Maharashtra, India. Monthly changes in physical and chemical parameters such as water temperature , turbidity, total dissolved solids, PH , dissolved oxygen, free carbon dioxide and total hardness, chlorides, alkalinity were analyzed for the periods of one year from the 1<sup>st</sup> January 2012 to 31<sup>st</sup> December 2012. All parameters were exides the permissible limit. The results indicate that the tank is polluted and cannot be used for the domestic purposes.

**KEYWORDS:** Physico-Chemical Parameter, Monthly Variation, drinking water.

#### **INTRODUCTION:**

The tank occupy vital role in to local ecosystem as well as used for domestic purposes. As water is one of the most important compounds of the ecosystem, but due to increased human population, industrialisation, use of the fertilizers in the agriculture and manmade activity. The natural aquatic resources are causing heavy and varied pollution in aquatic environment leading to pollute water quality and depletion of aquatic biota.It is therefore necessary that the quality of drinking water should be checked at regular time of interval, because due to use of contaminated drinking water, human population suffers from varied of water diseases.

The present study involves the analysis of water described by the the physical water quality in terms of physico chemical parameters of Chhatri Talao, Amravati District, Maharashtra , India. This tank is basically for the fisheries and partially domestic activities. In old days, it was used for the drinking purposes.

## MATERIAL AND METHODS:

The water sample from Chhatri Talao were collected from the two different border in the morning hours between 10 to 11am in the in polythene bottle regularly for every month. The water samples were immediately brought in the laboratory for the estimation of various physico chemical parameters like water temperature and PH were recorded at time of sample collection by using the thermometer and digital PH meter. While other parameters such as DO, TDS, free CO<sub>2</sub>, hardness, alkalinity, chloride were estimated in the laboratory by using Indian Standard Procedure( **litration method**)

## RESULT AND DISCUSSION:

Month	Temp ( °C )	Turbidity (NTU)	TDS (mg/lit)	PH
January	22	30.9	610	7.65
February	23	30.7	620	7.06
March	23	30.8	640	7.33
April	23	29.7	690	7.85
May	25	29.6	600	7.65
June	24	33.9	770	7.75
July	23	32.6	680	7.55
August	24	33.2	680	7.45
September	23	31.1	680	7.15
October	22	30.9	690	7.05
November	20	30.7	620	7.45
December	22	30.7	610	7.35

**Table 1: Physical parameters Of Chhatri Talao Tank**

- a) **Climate:** There is a rapid increase in temperature after the month of January, May is the hottest month. The climate of the year in this is divided into three seasons viz. hot season from the February to May, monsoon from June to September and winter from November to January.
- b) **Water temperature:** Generally, the weather is quite cool, however the water temperature plays an important factor which influences the chemical, bio-chemical characteristic of water body. The maximum temp of 29°C was recorded in May and minimum of 20°C was recorded in month of December in year of 2012. The temperature in summer was high due to low water level, high temperature and clear atmosphere.



Month	Free CO <sub>2</sub>	Dissolved O <sub>2</sub> (mg/lit)	Total Hardness (mg/lit)	Alkalinity (mg/lit)	Chloride (mg/lit)
January	0.7	9.6	88	118	22.00
February	0.5	9.00	95	120	26.0
March	0.8	12.00	98	125	30.5
April	3.7	14.00	120	128	30.5
May	7.5	16.00	140	165	32.5
June	8.1	14.25	130	130	34
July	4.4	9.30	105	120	27
August	16.7	8.30	89	140	29.8
September	10.8	8.00	100	150	23
October	14.2	7.62	79	133	22
November	16.5	7.65	88	120	27
December	16.9	8.3	90	129	25

**Table 2: Chemical Parameters Of Chhatri Talao Tank**

- c) Turbidity:** The turbidity of water fluctuate from the 30.9NTU to 33.9 NTU. Turbidity is very high due to human activities and suspended particulate matter.
- d) Total Dissolved Solids:** The total dissolved solids fluctuate from the 600 mg/lit to 770 mg/lit. The maximum value is 770 mg/lit recorded in month of June due to heavy rainfall and minimum is 600mg/lit in the month of May.
- e) pH:** pH was alkaline values ranges from 7.05 to 7.85. The maximum PH value was recorded in the month of the April and minimum 7.05 in the month of October. Most of the bio chemical and chemical reactions are influenced by the PH.
- f) Dissolved O<sub>2</sub> :** The value of the DO fluctuate from 7.65 mg/lit to 16 mg/lit. The maximum value 16 mg/lit was recorded in The month of the May and minimum value 7.65 in the month of the November. The high DO in summer is due to increase in the temperature and duration of sunlight has influenced on the of soluble gases O<sub>2</sub> and CO<sub>2</sub>.
- g) Free CO<sub>2</sub>:** This value of free CO<sub>2</sub> ranges from 0.5 to 16.9 mg/lit. The maximum value was recorded in the month of the December and minimum value 0.5 mg/lit in the February. This may be depends upon alkalinity and hardness of water body. The CO<sub>2</sub> was high in December



which is related to the high rate of decomposition in the warmer month.

- h) Hardness:** The hardness fluctuate from 79 to 140 mg/lit. The maximum value 140 mg/lit was recorded in the month of the May and minimum 79 mg/lit in the month of October . High value of hardness during summer is due to decrease in water level and increase of rate of evaporation of water .
- i) Alkalinity:** Total alkalinity ranges from the 118 to 165 mg/lit. The maximum value 165 mg/lit was recorded in the month of May and minimum 18 in the month of the January. The alkalinity was maximum in the may due to the increase in the bicarbonate in the water and minimum in winter due to high photosynthesis rate.
- j) Chloride:** The value of chlorides ranges from 22 mg/lit to 32.5 mg/lit. The maximum value 32.5 mg/lit was recorded in the month of May and minimum in the month of January.

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