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Physico-chemical characteristics of water samples of two reservoirs of Osmanabad District.(MS)

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Abstract

Water serves as a most essential medium for the growth of animals, plants and many organisms. It plays important role for regulation and growth of organism. Water is one of the most important requirements of any living system. Better quality of water is described by its physical, chemical and biological characteristics. The quality of water is vital concerned for mankind because it is directly linked with human health. In present study water samples of two reservoirs of Osmanabad are studied for analysis of various parameters such as dissolved oxygen (DO),turbidity, P^H, Chlorides, total alkalinity, total hardness(TH), Ca,Mg,SO_4,total dissolved solids(TDS), BOD and COD. The methods employed for the analysis as per standard method recommended by ALPHA, WHO. The obtained values are compared with the standard limits. The results of this study reveal that the physico-chemical parameters of two reservoirs are within the maximum permissible limit of WHO with the some slight variations in some parameters. Hence, water is safe and suitable for domestic, irrigation and drinking purposes.

Keywords:- physico-chemical parameters, Two reservoirs, Osmanabad District.

Introduction : India is having very rich sources of in land water bodies in the form of river, lake, and reservoirs. The reservoirs are constructed by impounding the river system and flow of water. The

reservoirs are constructed for effective utilization of water for irrigation, flood control. Several investigators pointed out the importance of physic-chemical parameters in assessing the quality of water. The physic-characteristics of river, lakes and reservoirs in general have been reviewed by several workers. Trivedy and Goel (1986),Kale et al(2007), Hussain and Farooqui et al (2012).

The main object of physic-chemical and biological analysis of water in our study is to determine the nutrient status of the reservoirs from Osmanabad district of Marathwada. For the present study two reservoirs selected are Terana reservoirs and Alani reservoirs from Osmanabad district. The purpose of present study is to find out any impurities extensive on receiving water of two reservoirs of Osmanabad district.

Materials and Methods:

The water samples were collected in polythene bottles of capacity 1to2 liter in the month of Sep 2014 to Feb 2015 at every month second Sunday in between 8:00 am to 1:00 pm. The samples from reservoirs sites were collected drinking water absorbed water pump. These samples were collected from approximately 15 to 20 cm below water surface. Care must be taken not to catch any floting material or bed material into container. Firstly collected Terana reservoirs and then collected Alani reservoirs away near about 20 KM travelled by Motorcycle. The standard procedure were adopted for the determination of physico-chemical parameters given by Trivedy and Goel(1986). Each sample was analysised for important physico-chemical parameters such as dissolved oxygen(DO),turbidity, P^H,Chlorides, total alkalinity, total hardness(TH),Ca, SO_4, total dissolved solids(TDS),BOD,andCOD.

Result and discussion:-

The present article deals with the water quality parameters of two reservoirs of Osmanabad district. In this study one of Terana reservoirs at Ter tal. Osmanabad and other at Alani tal. Osmanabad reservoirs. The main objective of this paper is to determine or to check the water purity of reservoirs.

Physico-chemical characteristics of water sample of two reservoirs of Osmanabad district were studied. The main object of this study is to determine or to check the water purity of the reservoirs.

As the water content dissolved and suspended constituents in varying proportions, they have different physico-chemical properties along with biological variations.

The physic-chemical characteristics of two reservoirs of Osmanabad district are given in the table. The dissolved oxygen (DO) is an essential requirements of aquatic life. It is essential for the metabolism of all aquatic organisms that possess aerobic respiratory biochemistry. In present study areas the values of DO range from 12.00mg/lit to 12.5mg/lit, which are well above the requirement of the fishes in the reservoirs. The P^H values range from 7.9 to 8.5, which is permissible limit. The Chlorine conc. In the reservoirs varies from 16.0 to 17.6mg/lit which is well below the possible limit of 250 mg/lit as given by Goel et al(1985). This is means that the water is not polluted due to organic matter, sewage waste and other refuse in the water. Total alkalinity is the measure of the capacity of water to neutralize a strong acid. The alkalinity in the water is generally imparted by the salt of carbonates, bicarbonates, phosphates, nitriates, together with hydroxyl ions in free state. Alkalinity less than 250mg/lit is desirable limit for domestic uses. Alkalinity values of both the reservoir water samples are from 120 to 129mg/lit. From this can be judged that the reservoirs water does not contain sewage and waste disposal problem. The total hardness(TH) of water is mainly due to the presence of bicarbonates of Ca and Mg ions. TH values between 100 to 150 mg/lit means the water is hard the value greater than 300mg/lit means it is very.(Hussain 2012). In these reservoirs the hardness is very low ranging from 105 to 109mg/lit. As regards total dissolved solids (TDS), the maximum permissible limit is 1500mg/lit for drinking purpose. The values of TDS in the study area ranged from 255 to 270mg/lit, which are well below the maximum permissible limit mentioned above. In the present study the values of BOD ranges from 3.50 to 3.80, the values of normal for the growth of Plankton's and fishes in the reservoir. The BOD values are very much similar to the results obtain by Trivedy and Goel(1986). According to them the values of BOD from 2.00 to 5.00mg/lit are normal for growth of organism, where as greater than 5.00mg/lit may indicate the pollution. The COD is a test used measure pollution strength of domestic and industrial waste. COD test is useful in pin pointing toxic condition and present of biological residue substance. The value of COD in the reservoirs from 3.56to3.75mg/lit are indicating that the water is free from pollution. The physico-chemical characteristics of both reservoirs of Osmanabad district indicates that the water is free from pollution and it is good for drinking purpose. The value of BOD and COD are normal for the growth of needful living organism.

Table:- Physico-chemical characteristics of Both reservoirs of Osmanabad District.

Parameters	Ter	Alani
Water temperature ^0C	30.9	30.7
Humidity %	42	43
Dissolved oxygen (DO) mg/lit	12.5	12.00
P^H	8.3	8.5
Turbidity NTU	135	143
Chlorides mg/lit	16.8	16.9
Alkalinity mg/lit	125	123
Total Hardness(TH) mg/lit	107	109
Calcium mg/lit	69	65
Magnesium mg/lit	8.9	9.9
Sulphate mg/lit	19	21
TDS mg/lit	265	255
BOD mg/lit	3.80	3.50
COD mg/lit	3.56	3.75

The result of this study reveals that, quality of water is fit for domestic and drinking purposes it is suggested that it order to make reservoirs water free from pollution they must be well trained. There is an increasing awareness among the local people of that area to maintain reservoir water at their highest quality and purity level.

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