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Article : Physico-Chemical Assement of Tamraparni River, Chandgad (Maharashtra), A Case Study

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ABSTRACT:-

Physico – chemical studies of Tamraparni River water of Tahsil Chandgad were conducted during rainy season of2009 (In flooding condition). Water samples were collected from eight sampling locations & the physico-chemical parameters like PH,TDS, Conductivity,Alkalinity, Dissolved O_2,Hardness,Ca, Mg, Chloride, Fluoride, Nitrate, Iron, Colour, Turbidity, Temp. were measured. The values of these parameters shows that, the Tamraparni River water in study area is relatively not safe for direct domestic use in rainy season .

INTRODUCTION :- Water is most abundant & familiar liquid, widely distributed in nature . About FOUR- FIFTH of the surface of the earth is covered with water. It occurs in nature in the free state &also in the combined state. The important source of water in nature are rain water, river water ,spring water, well water, & sea water. In India large rivers are the principal sources of water . Tamraparni River is one ,non- perrenial type. According to central pollution control board 90% of the water supplied in India to the town & cities is polluted. Today pollution of water resources have been most exploited due to increase in population ,modern agricultural concept , industrialization, urbanization, deforestation, increasing in living standards & broad spheres of human activities.(Sharma 2005).

Water has been a potential carrier of toxic ,inorganic & organic materials, non biodegradable matter, pathogenic microbes which can endanger health & life. The growth & distribution of the plankton depends upon physico-chemical parameters of water, like amount of dissolved gases, temp., transparency of water, intense of incident light. etc. Water quality monitoring practices are more useful to prevent diseases, hazards as well as it check the resources from going further polluted. thus monitoring of Tamraparni river water quality, has become a need of the hour.

MATERIALS AND METHODS :-

Chandgad tahsil is situated on the bank of Tamraparni river . Sampling locations were selected on the basis of residential area, surrounding land use, highly flushed (flooded) area . Water samples were collected from down stream direction in a plastic container of 2liters capacity with necessary precaution from selected locations of the river. The parameters like PH ,Electrical conductivity, TDS,(Pocket meter) Temperature, Turbidity (Secchi disc), were determined in the field at the time of sample collection , while remaining chemical & biological analysis was carried out in the college laboratory as per standard methods (APHA 1992, 18thEd.). The results obtained were evaluated with the standards prescribed by BIS 1991 &WHO.

RESULT AND DISCUSSION:-

The Tamraparni river flowing in Chandgad tahsil . The flow of water runs from West from chandgad city at 25 Km to East at 52Km away from chandgad city . The main source of water for river is rain water in rainy season while in Winter& Summer seasons water from Zambre & Jangmatti dams. The river is in irregular shape from origin to where it is to be join Ghatprabha river at Daaddi in Karnataka.

The result of various physic- chemical parameters of river water samples collected are shown in table No. 1. These results obtained were evaluated with standards prescribed by BIS (1991) & WHO.

The colour of the sample usually observed thought eyes on site after taking the sample in a glass test tube. In rainy season it is of red brown colour due to erosion of soil, also high amount of iron at some locations.(Manjunath 2009).

Hydrogen ion concentration (PH) was positively correlated with conductance & alkalinity. It was fluctuated from 7.3 – 8.3 i.e. water contains bicarbonate & carbonic acid (Sharma ,2005, BIS -1991)

The quantity of dissolved oxygen in the water body is of prime important. During the present investigation , the concentration of dissolved oxygen ranged between 6.0 -6.8 mg / lit. Rivers having dissolved oxygen of

4mg/lit. or more are considered to be healthy ,also which is able to maintain aquatic life in a water body .

Total hardness of Tamraparni river water ranges from 13.8 – 72 mg /lit. There was an increase in hardness from source to end point . In present investigation water at first four location is become a soft & water at another location is slightly hard .i.e. from the source point the river water is of very soft & at the end point it is to be slightly hard.

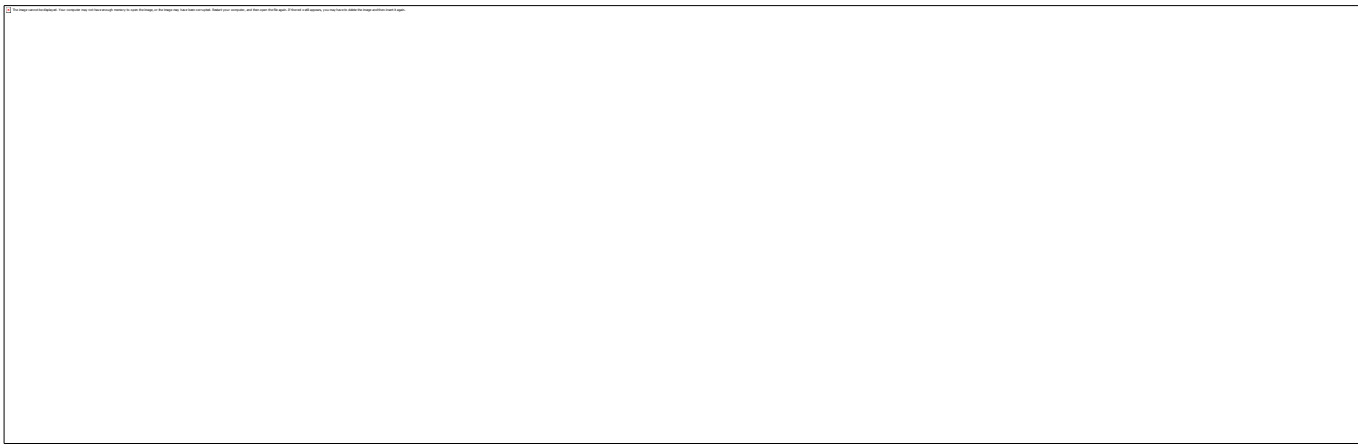
Very low hardness in water diminishes its buffering capacity & can lead to corrosion of water pipes. Again that regular consumption of very soft water may have an adverse effect on the body's mineral balance. (Manjunath 2007) . In present study , total hardness was positively correlated with chloride, ca & Mg.

Calcium & magnesium are essential elements for man & for plant growth. High calcium content in water are undesirable for washing , bathing & laundering. Calcium & Mg. ions in good tilt. Small concentration of calcium carbonate combat corrosion of metal pipes . The ca . & Mg. values fluctuated from 5.12 -20.8 mg/lit.& 1.4 -7.77mg/lit. in all sampling locations during rainy seasons. The ca. & Mg. values increases up to location 8 because hardness of water in down stream goes on increases but all these values are not beyond the desirable limit. (B.I.S. 10500,1992).

Chloride is one of the major inorganic anion in water . In potable water salty taste produced by chloride concentration. Chloride is not strictly a pollutant but at high concentration may harm agricultural crops. The values of chloride in all locations are in between 14.99 -20.99 mg/lit.

Fluoride contain in river water at all locations remains same i.e .1.0mg/lit. Nitrate was fluctuated from 10 – 50 mg/lit. . Location 1&2 recovered slightely high values of nitrate it is due to highly forest areas. (BIS 1992). The presence of nitrate in large quantities in drinking water may causes illness in infants "Methemoglobinal" or nitrate cyanosis known as "Blue Baby Syndrome"(Manjunath 2007). Iron concentration ranges from 0.2 -0.6 mg/lit. Location 1,2,6,7&8 contains higher concentration of iron. Iron in water can causes staining of cloths & Utensils. High amount of iron in water give a reddish & turbid appearance. It is harmful to aquatic system. (BIS 1992)

Table No. 1:-



CONCLUSION : - Values of all parameters are generally increases from location 1 to 8 i.e. from origin to where it is joins to Ghatprabha river , because of in & around the river number of villages are situated also surrounding land is used for agricultural ,forest etc. purposes. From the studies by comparison with standards, it is revealed that the Tamraparni river water is suitable for drinking after chlorination & also for agricultural purpose. It indicates that river ecosystem is almost in good condition.

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