

## Analysis of water quality by using physico- chemical parameters of Sangamner Tahashil, Ahilyanagar District, Maharashtra.

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### Abstract

In this research work, important water quality parameters like temperature, pH, electrical conductivity, dissolved oxygen, total dissolved solids, and total hardness were analysed. Soil and water are important abiotic factor of environment. Today most of the rivers of world receive millions of liters of sewage, industrial and agricultural leachates containing substances varying in characteristics from simple nutrients to highly toxic / hazardous substances. Water is essential for drinking, household, industrial and agriculture purposes. Increasing in growth of population of human is directly related industrialization there is also increasing urbanization. The water quality assessment of Pravara river was undertaken for studying chemical parameters of water. Fifteen river water samples were collected and identified for analysis during pre-monsoon season. The result of analysis was compared with water quality standards of BIS (2003) and WHO (2006). The river water was neutral to alkaline in nature of pH ranging 7.79 to 8.29.

**Keywords:** Pravara river, Sangamner, chemical parameters

### Introduction

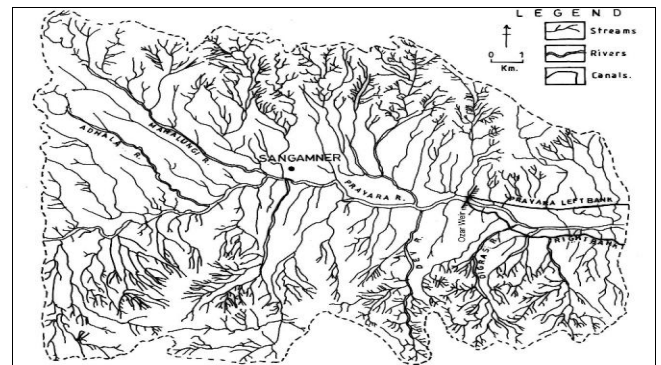
The present investigation deals with the seasonal variation in water quality of water from Sangamner of Pravara river. Sangamner area is located in the northern part of the Ahmednagar district of Maharashtra State. The Sangamner tahsil lies between 180 36' N and 1901' N latitude and between 740 1' W and 740 56' W longitude. The area is drained by the Pravara river, which originates in the hilly region of Western Ghats at Ratangarh. Geologically, basalts underlay the Pravara basin. In general, the climate is dry and hot the average maximum temperature during summer is as high as 42°C in month of May and average minimum temperature falls up to 10°C during the month of December. The area receives rainfall, chiefly from the south west monsoon between June and September as the area falls under the rain shadow zone of Western Ghat and receives very low precipitation, annual rainfall ranging from 290 to 594 mm.

Water quality of Sangamner was assessed during April 2022 to March 2023, to study seasonal variation and varying physico-chemical parameters such as pH, temperature, EC, dissolved oxygen etc. The cities and industries continue to be the most significant causes of pollution of aquatic ecosystems due to a diverse kind of wastes produced (Trivedy and Goel, 1984)<sup>[1]</sup>. The quality of water plays an important role concern to human being.

### Study area

The Sangamner town is located on the confluence streams of Pravara and the Mhalungi rivers, which is at a distance of

150 km from Pune, on Pune-Nasik National Highway No. NH-50. The area is drained by the Pravara river, which originates in the hilly region of Western Ghats at Ratangarh. Geologically, basalts underlay the Pravara basin.



### Materials and methods

Monthly water samples were collected from stations for period of April 2022 to March 2023. Water samples were collected in one litre plastic containers & each sample was labeled properly. The pH and EC were measured immediately by using portable kits to avoid changes in pH and EC. Total dissolved solids, total hardness, dissolved oxygen & biological oxygen demand (BOD) were analyzed in the laboratory by standard methods (APHA 1992, 1998)<sup>[1, 2, 3]</sup>.

### Result and Discussion

**Table 1:** Monthly variations in physico-chemical parameters of water samples of Sangamner of Pravara river.

Parameters	Jan	Feb	Mar	Api	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Temp.	18	19	20	26	29	29	28	27	25	23	24	20
PH	7.82	7.91	8.23	8.11	8.36	8.33	8.05	8.24	8.19	8.15	8.06	7.99
EC dSm-1	0.65	0.69	0.85	0.81	0.82	0.84	0.87	0.88	0.78	0.75	0.76	0.78
TDS (mg/l)	431	452	443	443	490	484	480	416	388	435	390	417
Chlorides (mg/l)	30.8	39.3	38.6	35.3	35.7	28.5	24.7	26.8	24.2	25.3	20.1	20.5
Total hardness	123	128	132	153	162	158	205	281	296	301	304	305

DO (mg/l)	6.7	6.9	6.4	11.6	10.7	11.8	12.7	12.0	13.9	14.0	14.6	13.6
BOD (mg/l)	142	148	103	132	168	195	186	173	165	150	148	137

**Table 2:** Physico-chemical profile of Sangamner of Pravara river

Sr.no.	Parameters	Standard limits (Drinking water)	Range
1	Temp.	-	
2	pH	6.5-9.2	7.82-8.36
3	EC	0.75	0.65 -0.88
4	Total Dissolved Solids(mg/l)	500	388 - 490
5	Total hardness	600	123-305
6	Chlorides (mg/l)	10	20.1 -39.3
7	Dissolved Oxygen (mg/l)	-	6.7 - 14.7
8	Biological Oxygen Demand (mg/l)	-	103 -195

During the study period water temp. varied in summer and winter season. The pH of waters reflects the balance between dissolved carbon dioxide from atmosphere and biological activity. pH value ranged from 7.82 to 8.36. Low pH values were recorded in monsoon, and low in electrical conductivity. Total Dissolved Solids were variable and ranged between 388 to 490 mg/l. in winter season minimum values of total dissolved solids and maximum during summer. The hardness is an important criterion for determining the

usability of water for domestic, drinking and many other industrial purposes. Total hardness ranged between 123 to 305 mg/l, higher values were recorded during summer and lower values were recorded during winter. Dissolved oxygen is great importance to all living organisms. In the present study the dissolved oxygen values ranges from 6.7 to 14.7 mg/l. Chlorides occur generally in natural water. Chlorides values from between 20.1 to 39.3mg/l Biological oxygen demand is an indicator parameter to know the presence of biodegradable matter in waste and express degree of contamination. BOD values ranged from 103 to 195mg/l.

### Conclusion

It was observed that the water quality is being changed due to input of sewage from houses around it. and it is not suitable for direct use for domestic and another purpose before treatment.

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