



# “Analysis of Physical and Chemical Characteristic of Panzara River Water in Dhule City”

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## ABSTRACT

As we are known that Panzara river is most popular holy river in India, Because of the dhule a big city is developed on bank of panzara river. But Now a Days, the pollution in water of panzara river is increasing day by day due to puja waste thrown in the river sewage is directly enters to river at some places. Hence there is need to analysis of the river water and compare with the standards of the BIS, CPCB & MPCB.

The Physico-Chemical Analysis of water determines the quality of water of Panzara River at various stations in three seasons. It will gives us the results in terms of Temperature, pH, dissolved Oxygen (DO), Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) of the river water. Kipping this in view, the Physico-Chemical Properties of Panzara River at various stations of Dhule region are studying.

## INTRODUCTION

The district of dhule, formerly known as West Khandesh and categorized as district head quarters since 1960. Situated between 20°38' and 22°3' North latitude and 73°47' and 75°11' East of longitude, is the westernmost of the districts of Northern border area of Maharashtra State. Dhule city was planned by Sir Vishveshwaraya. The population of Dhule city as per 2008 census is about 3,76,093. Dhule city is situated along the bank of Panzara river. The residents mostly depend on the subsurface reservoir of water i.e. dug well, bore wells, hand pumps apart from the river water. Use of ground water in the urban area is primarily for drinking and domestic purposes. But the users of this source are unaware of the contamination in groundwater.

## Problem Statement:

The People throws the 'Puja-Waste' in the river water in large amount. Studied the physico-chemical characteristics of flowing water of Panzara River in dhule region. The results shows revealed that the discharge of untreated industrial sewage effluent have contribute considerable pollution, hence the water of this river unsafe for consumption or hum. At some stations, we found that the domestic Sewage is also in huge amount directly enters to the river. Hence, it is results in increase of BOD, COD, DO etc. So it is hazardous for irrigation.

Turbidity readings may vary between streams due to water colors and suspended particle size and composition.

## . OBJECTIVE OF PROJECT.

To determine the physical and chemical characteristic of panzara river water.

To check the value within a BIS permissible limit.

To check the water is suitable for irrigation purpose.

To investigate the point source of pollution like sewer line directly discharges in to the river water.

To determine pollution strength of panzara river in various seasons.

To check the how much amount of impurities present in river water.

## LITERATURE REVIEW

Chavan R.P. et al : Has studied various parameters the water i.e. pH, Hardness, Phosphate, Chlorides, Nitrate, BOD, COD, DO, DO Total alkanet. Also observed the effects of water pollution on people, but also to animals, fish, and birds also destroy aquatic and reduce its reproductive ability. Polluted water is unsuitable for drinking, recreation, agriculture, and industry. It diminishes the aesthetic quality of lakes and rivers. Eventually, it is a hazard to human health.

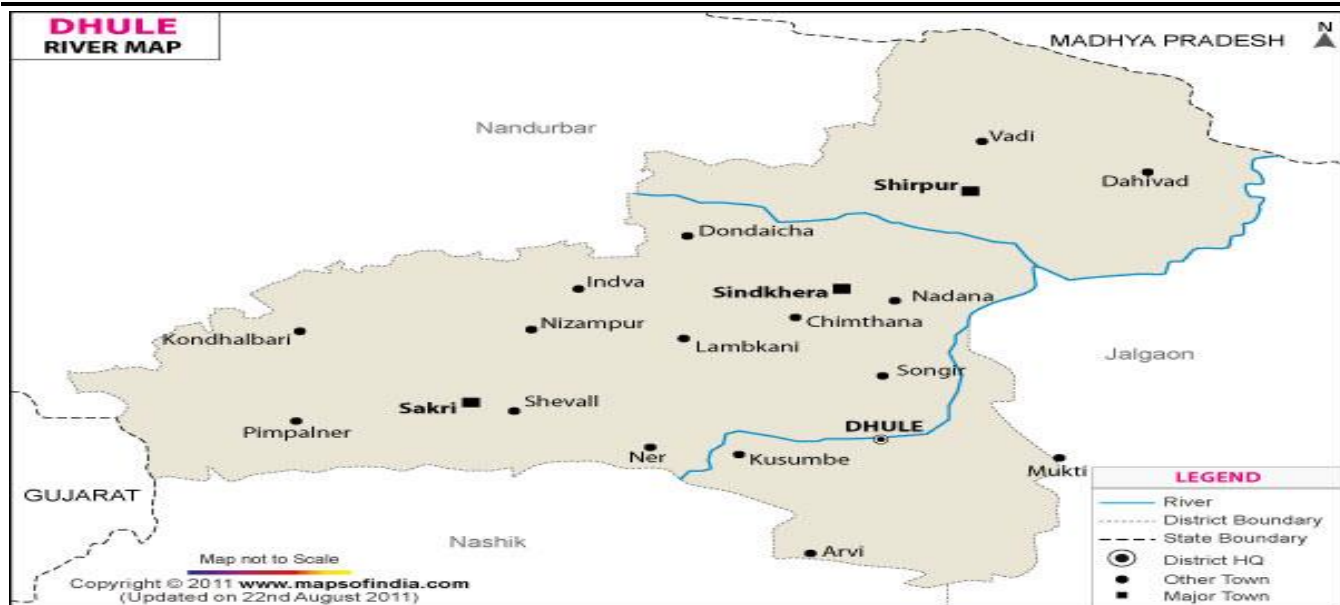
Patil P.N. et al: Have studied some chemical and physical parameters of the water which is use for the drinking, agriculture, or industrial purpose. Checked various 21 parameters of water such as color, temperature, acidity, hardness, pH, sulphate, chloride, DO, BOD, COD, alkalinity used for testing of water quality. Heavy metals such as Pb, Cr, Fe, Hg etc. were found to cross the standard limits in water samples used for various purposes which is undesirable for the drinking and other purpose.

Bhukya Ramakrishna et al Have studied the Godavari river water characteristics at BASARA. They collected the water samples from various stations along the Godavari river in Basara city and checked parameters of that samples like PH, Electrical Conductivity, Alkalinity, Hardness, TDS, TSS, TS, DO, BOD, COD, Fluorides, Nitrates

Dr. L. G. Patil et al Analyze the Godavari river water quality in nashik city area. The study covers about 24 km of river starting from Gangapur dam to Dasak village. Fifteen locations were selected for collection of water samples from the Godavari river and water samples were analyzed for water quality parameters. It was observed that untreated or partially treated sewage along with industrial wastewater is entering into the river at twelve prominent locations in the study stretch. This data was used to compute the value of National Sanitation Foundation Water Quality Index (NSFWQI), mostly applicable in USA and India.

## METHODOLOGY

The study area under investigation is dhule one of the most rural districts of Maharashtra (India). The district of dhule, formerly known as West Khandesh and categorized as district head quarters since 1960. Situated between 20°38' and 22°3' North latitude and 73°47' and 75°11' East of longitude, is the westernmost of the districts of Northern border area of Maharashtra State. Dhule city was planned by Sir Vishveshwaraya. The population of Dhule city as per 2008 census is about 3,76,093. Dhule city is situated along the bank of Panzara river. The residents mostly depend on the subsurface reservoir of water i.e. dug well, bore wells, hand pumps apart from the river water. Use of ground water in the urban area is primarily for drinking and domestic purposes. But the users of this source are unaware of the contamination in groundwater.



### ANALYSIS OF PHYSICAL CHEMICAL CHARACTERISTIC OF RIVER WATER

The Panzara river water have been tasted for its physic-chemical characteristics as per standard methods.

Sr. No.	TEST	STANDARD CODE REFERENCES
1	Temperature	BIS
2	pH	BIS
3	Turbidity	IS 3025[ part 10] Reaffirmed 2003
4	Dissolve Oxygen	IS 3025[ part 11] Reaffirmed 2003
5	Total Dissolved Solids	IS 3025 [part 15] 2009
6	Biochemical Oxygen Demand	IS 3025 [part 16] 2009
7	Chemical Oxygen Demand	IS 3025[ part 17 ] 2009

Name of Station &amp; Codes:

Sr.No.	Station	Station
1.	Morane	A1
2.	Hanuman Tekadi	A2
3.	Ganapati Bridge	A3
4.	Big bridge	A4
5.	Ekvira Temple	A5
6.	Biladi Road	A6
7.	Varkhedi goathan area	A7

**RESULT AND DISCUSSION****Result of Monsoon Season (September):**

Sr.No.	Tests Characteristics	WHO standards		Station Codes & Results						
		DPL(mg/l)	MPL(mg/l)	A1	A2	A3	A4	A5	A6	A7
1	Temp.(°c)	27	27	24.7	24.8	24.7	25.1	25.2	24.9	24.6
2	pH	7.5-9	9	8.52	8.49	9.24	9.21	9.45	9.49	9.64
3	Turbidity(NTU)	0-2.5	10	3.6	2.1	15.8	10.1	3.8	1.9	2.7
4	D.O.(mg/l)	4-6	8	6.10	7.40	7.10	7.10	6.80	6.50	5.90
5	T.D.S.(mg/l)	500	1500	200	400	1200	1000	600	600	600
6	T.S.S.(mg/l)	100	1000	200	200	600	600	600	400	200
7	BOD.(mg/l)	30	100	3.6	3	4.0	3.2	2.7	3.4	6
8	COD.(mg/l)	250	250	28	20	32	28	44	24	16

**Test Result of Winter Season (January):**

Sr.No.	Tests Characteristics	WHO Standard		Station Codes & Results						
		DPL(mg/l)	MP(mg/l)	A1	A2	A3	A4	A5	A6	A7
1	Temp.(°c)	27	27	23	22.4	22.2	22.3	21.1	21.8	22.4
2	pH	7.5-9	9	8.11	8.18	7.39	8.60	9.2	7.33	8.04
3	Turbidity(NTU)	8	10	9.9	8.7	6.1	6.1	4.5	11.4	7.8
4	D.O.(mg/l)	10	8	4.6	4.3	6.2	5.6	6.5	5.8	7.2
5	T.D.S.(mg/l)	500	1500	1600	400	2400	1600	800	1600	400
6	T.S.S.(mg/l)	500	1000	600	200	1200	800	400	1000	200
7	BOD.(mg/l)	30	100	2.7	3.4	4.0	5.2	2.4	2.2	3.2
8	COD.(mg/l)	250	250	18	16	28	42	20	28	12

**Test Result of Summer Season (March):**

Sr.No.	Tests Characteristics	WHO Standard		Station Codes & Results						
		DPL(mg/l)	MP(mg/l)	A1	A2	A3	A4	A5	A6	A7
1	Temp.(°c)	27	27	23	22.4	22.2	22.3	21.1	21.8	22.4
2	pH	7.5-9	9	8.11	8.18	7.39	8.60	9.2	7.33	8.04
3	Turbidity(NTU)	8	10	9.9	8.7	6.1	6.1	4.5	11.4	7.8
4	D.O.(mg/l)	10	8	4.6	4.3	6.2	5.6	6.5	5.8	7.2
5	T.D.S.(mg/l)	500	1500	1600	400	2400	1600	800	1600	400
6	T.S.S.(mg/l)	500	1000	600	200	1200	800	400	1000	200
7	BOD.(mg/l)	30	100	2.7	3.4	4.0	5.2	2.4	2.2	3.2

## Conclusion

All the Panzara river water sample are tested the physical and chemical parameter the value is

all sample is different.

The permissible limit is temperature, Ph, DO, TDS, Turbidity is not permissible some stations. The COD and BOD value is within a permissible limit.

The river water is useful in agricultural purpose.

The some station are collect the sample they are contain maximum amount of waste water is mixed.

River water in more polluted in the summer season at all the station

The sources of waste water from industrial and domestic sewage, washing clothes, cars and dumping of garbage was observed at some stations.

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. Test Result of Summer Season (March):

Table No.06 Result Comparison with IS standards

Sr. No.	Tests Characteristics	WHO Standard		Station Codes & Results						
		DPL (mg/l)	MPL (mg/l)	A1	A2	A3	A4	A5	A6	A7
s1	Temp.(°c)	27	27	33	31.5	29.1	29.9	30.8	30.3	32.1
2	pH	7-9.5	9	6.35	7.15	7.05	6.78	7.60	6.65	7.30
3	Turbidity (NTU)	8	10	1.0	1.10	6.60	0.30	0.50	0.10	0.90
4	D.O.(mg/l)	10	8	6.4	7.4	4.7	5.1	4.9	6.1	5.7
5	T.D.S.(mg/l)	500	1500	1400	600	1600	1200	600	1200	200
6	T.S.S.(mg/l)	500	1000	400	200	800	600	400	800	200
7	BOD.(mg/l)	30	100	2.6	2.0	2.4	2.8	2.8	2.2	3.0
8	COD.(mg/l)	250	250	30	16	24	24	44	32	20

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