



# Analysis of Water Quality Parameters of Purna River in the Buldhana district.

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## Abstract

The present study focuses on determining the physico-chemical parameters of water samples from various sampling points, including temperature, pH, electrical conductivity (EC), hardness, chlorides, alkalinity, dissolved oxygen (DO), biological oxygen demand (BOD), chemical oxygen demand (COD), phosphate, and sulfate. An increase in pollution concentration indicates a higher pollution load due to local sewage, industrial effluents, anthropogenic activities, and waste discharge into the river in the Erode district. Water samples were collected from the Purna River in Purna buldhana district for this study. The findings reveal the contamination of the Purna River by effluents from small-scale industries and waste dumping from bazaars and domestic sources. Consequently, urgent water quality management is necessary to meet the water quality standards established by the WHO. The correlation coefficient demonstrated highly significant positive and negative relationships.

## Keyword:

Environment, Purna River Basin, Heavy Metals Pollution, River Water Quality

## INTRODUCTION:

Buldhana district is located in the Amravati division of Maharashtra, India. It is situated at the western border of Vidarbha region and is 500km away from the state capital, Mumbai. The district has town and cities like shegaon, Malkapur, Khamgaon, Lonar, Mehkar, and Chikhli. the district consists of six subdivision and thirteen tahsils comprising 1444 villages. The district headquarters is at Buldhana.

The principal river in the district are painganga and purna. The district forms part of Godavari abd Tapi basin.purna and painganga River are the main rivers flowing through the district. The other important river are the khandapurna, Nalganga,Vishwaganaga Gyanganga form the, Gyanganga and Banganga. The principal of tributariesof purna are nalganga, Vishwaganga and south.Generally 42% of southern and eastern part of our district is occupied by penganga and khadakpurna river area these are tributaries of river Godavari with the remaining part comes under purna and its tributaries. There are abought thirtythree major and minor rivers darning across buldhana district. Buldhana district comprised of tapi & Godavari basin enter district is a part of purna watershed & penganga watershed.Purna flow in transseries direction on north district, penganga flows in transverse direction

from southern part of district. Penganga river enters near Buldhana district. Purna river enters near dudgaon in malkapur district and exists near kodi in sangrampur taluka. Purna river (Godavari enters near chinchkhed in Deulgaon raja taluka and exists near wazur in lonar Taluka. Heavy metals have the property of environmental persistence and bioaccumulation, and can enter the aquatic system through various routes (Jarup, 2003). Heavy metals pollution in river water is mainly due to anthropogenic and natural activities. Over the last few decades, the concentration of these heavy metals in river water and sediments has increased rapidly which may cause distressing effects on the ecological balance of the aquatic environment, the direct consumption of water by human beings, the domestic water supply is considered to be most important use of water and drinking use has been given first priority on utilization of water resource, River bank and use river water and discharge treated and untreated wastes. People living downstream use the water for their irrigation, drinking and other local activities. According to the survey conducted, about 130 dyeing units and 10 tanneries operate in the basin and are expected to discharge trade effluents (treated and untreated) either directly or indirectly into the sewers. This study was aimed at analyzing some important wastewater characteristics considered here for Purna river water in cabbage shegaon Tq& Nadura Tq. Physico-chemical parameters such as pH, temperature, EC, TS, TDS, TSS, chloride content, hardness, alkalinity, DO, BOD, COD, SO<sub>4</sub>, PO<sub>4</sub> etc. were performed.

### Method

The Purna river water in the shegaon and nadura tailings ponds consists of many small tanning and dyeing units which discharge most of their effluents into the river without proper sewage treatment. In addition, the water source was used for local and fishing purposes. Water samples from all sites were collected in sterile glass bottles, transported to the laboratory, processed within 1-5 hours, and stored at -27°C for further analysis. The following physicochemical properties were studied. Total dissolved solid (TDS) of water and fixed residue were measured by evaporation method. Dissolved oxygen (DO) and biochemical oxygen demand (BOD) of water were measured by the sodium thiosulfate titration method. Chemical oxygen demand (COD) was measured by titration of potassium dichromate and sodium thiosulfate.

**Table 1 Physico-chemical parameters of Purna river water in  
Shegaon and Nandura Taluka.**

		(Mean ±SD)	(Mean± SD)	(Mean ±SD)	(Mean ± SD)	Standard
1	Temperature°C	2.8 ± 0.1	26 ± 0.14	26± 0.14	26 ± 0.26	-
2	pH	7.43 ±0.08	7.36 ± 0.07	7.30 ± 0.15	7.43 ± 0.08	6.5 to 8.5
3	EC (µS/cm-1)	682 ±45.5	720 ±28.55	564 ±12.08	543 ± 16.52	-
4	TS (mg/l)	1677 ±247.36	1570 ±69.6	1305 ±105.33	1450 ±61.38	-
5	TDS (mg/l)	800 ±342.9	806 ±235.36	1203 ±257	1005 ±218	1200
6	TSS (mg/l)	841 ±121.86	780 ±81.85	651±67.55	63.78 ±59.1	-
7	TH (mg/l)	130 ±21.20	130 ±41.73	160±8.77	130 ±16.78	700
8	Chloride (mg/l)	180 ±58.25	170 ±20.54	220 ±22.57	155 ±8.38	450
9	DO (mg/l)	5.04 ±0.61	4.67 ±0.32	5.421±0.28	5.46 ±0.28	-
10	COD (mg/l)	160 ±37.05	203 ±64.25	156 ±17.24	155 ±11.32	340
11	BOD5 (mg/l)	44 ±1.8	35 ±3.24	32 ±3.05	23 ±2.05	-
12	PO4 (mg/l)	5.03 ±0.61	5±0.42	6.32±0.28	3.55 ±0.27	0.3
13	SO4 (mg/l)	58 ±2.76	51 ±5.1	25±1.04	32 ±2.04	-

## Results and Discussion

Water samples were analyzed for physicochemical properties. Physico-chemical parameters were analyzed namely temperature, pH, EC, TS, TDS, TSS, total hardness, DO, COD, BOD5, chloride, PO4 and SO4 (Table 1).

Fluctuations in river water temperature often depend on season, geographic location, time of sampling, and temperature of wastes entering the stream.

## Referances

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