

# River Pollution: A Case Study of Panchaganga River

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**Abstract** - Water pollution is the major problem in the world. River water is generally polluted due to urbanization, industrialization and many more activities. Panchganga River is one of the most polluted river in Maharashtra (India) which originates at Prayag Sangam at Kolhapur and flows through border of Kolhapur. There are two big cities on the bank of river viz Kolhapur and Ichalkaranji Municipal Corporations. There are number of sugar industries, textile industries, sizing industries & many more types on the bank of this river. These all are responsible for pollution and therefore this river is now source of various waterborne diseases and being hazardous with increasing pollution. The attempt is made to analyze and discuss the causes, effects and corrective measures which can be exercised to control the pollution of Panchganga River. It will then minimize the sources of many problems and can provide healthy environment for all people, animal and aquatic life.

**Key Words:** River, Pollution, Sugar Industry, Sizing Industry, Textile Industry, Irrigation, Aquatic.

## 1. INTRODUCTION

Pollution is a significant issue since it is a moderately ongoing improvement in the planet's history. Before the nineteenth century Industrial evolution, individuals lived more in unity with their immediate environment. As industrialization has spread in immense quantity, the issue of pollution has spread with it. Water is normally referred to as contaminated when it is hindered by anthropogenic contaminants. Because of these contaminants it either doesn't useful for a human use, for example, drinking water, or experiences a stamped move in its capacity to help its biotic networks, for example, fish.

Water is one of the inexhaustible assets basic for continuing all types of life, nourishment creation, financial advancement, and for general prosperity. It is difficult to fill in for the vast majority of its uses, hard to de-polluted, costly to transport, and it is really a unique gift to humankind from nature. But because of expanding water pollution by and large from the waterway which is coming about on natural, human, and biological elements that must be considered for a solid and healthy lifestyle of people just as condition.

The Panchganga River moves through the border of Kolhapur. It originates from Prayag Sangam (Town: Chikhli, Taluka: Karveer, Dist: Kolhapur, Maharashtra). The Panchganga River has four tributaries which are Kumbhi, Kasari, Tulsi and Bhogawati.

The release of the effluents and industrial waste from the nearby industries has resulted into the pollution of the Panchganga River which has turned the water green, primarily near Ichalkaranji where there are numerous textile and seizing

Industries which are releasing their effluents without treatment. Eichhornia crassipes has developed on the river close by Ichalkaranji. Very little endeavors were taken by the neighbourhood Government Bodies to control its development. In a rainstorm the water level ascents, and clean out and seen no place until November, in December it begins to develop again, and by April the river is secured by it. Some salient features of Panchganga River are given below.

Sr.No.	Description	Quantity
1.	East-West Length of River	108 Km
2.	North-South Length of River	67 Km
3.	Total Area	2730.40 sq. m.
4.	Average width	110 m
5.	Average Minimum Depth	3 m
6.	Average Maximum Depth	14 m
7.	Average Rainfall	2501.9 mm
8.	Average Min. Temperature	28°C to 1.2°C
9.	Average Max. Temperature	14°C to 22°C

## 2. CAUSES

There are two big cities on the bank of this river- Kolhapur and Ichalkaranji. It will be easy for both the cities to take the water from the Panchganga River for their use. But as the water is polluted they are taking the water from other sources where clean water is available. Kolhapur is taking the water from Kalamawadi Dam Reservoir and Ichalkaranji from Krishna River. The waste water generated from these cities is then disposed in the Panchganga River. Due to which pollution is increased to higher level. Government can sanction the funds for water supply projects for these Corporations and they can take the water from clean source for the people living in cities. But the waste water from these cities is not treated properly before its disposal. On downstream side of these cities, the villages which are depending on this river only are consuming this polluted water. Generally Government is not sanctioning the heavy funds for villages to take the water from clean source.

There are many factors which are responsible for the current condition of Panchganga River. Industrialization near the rivers especially sugar industries, textile and sizing industries

and many others which discharge the effluents into river which contains harmful chemicals and acts as a hazardous when mixed with water. At the same time human tendencies like dumping garbage into river or on the banks of river in rural areas are also contributing for pollution. Along with this, laundering clothes on river banks is common problem due to which detergents containing harmful chemicals are mixed with water and pollute the river water.

As Western Maharashtra is sugar belt area, there are many sugar industries on the bank of this river. Ichalkaranji is known as Manchester City so there are many textile and processing industries near and around the city. There is tendency of these all industries of disposing the waste water without any treatment because of improper control of pollution control board. Good quality of river sand is needed for construction hence it leads to sand dredging in which dredging operators deploy kerosene and diesel operated watercraft manned by cheap labours which results into again pollution.

Farmers are using chemical fertilizers, pesticides, fungicides, herbicides for agriculture which contains strong chemicals joins to river slowly by running along with surface runoff water and it leads to pollution river water. This is happening near Panchganga River to harvest the cash crops rapidly.

One of the most important reason of pollution of this river is water is stagnant many a times. Water is not continuously flowing. Water is discharged from the dam as and when required. Therefore pollutants are get deposited in the river bed only.

### 3. EFFECTS

1. Waterborne diseases and human health- Waterborne diseases like Cholera, Jaundice, Typhoid, skin diseases and dysentery are slow risk diseases spreading many time. But sometimes due to highly polluted water there may be chances of spreading these diseases to major level resulting in to casualty. In the year 1989 two pregnant ladies were suffered because of Jaundice. (Daily Sakal, 16<sup>th</sup> January 2011, local supplement, Kolhapur today, page 1).
2. Impact on aquatic life- Due to chemicals, effluents, sewage as well as detergents from laundering clothes containing strong compounds affects the several species of aquatic life. Due to pollutants the life of flora and fauna became endangered.
3. Loss of livelihood- Fishermen and fish farms that one's flourished on banks of Panchganga River are finding it increasingly difficult to find sufficient catch of edible fish. Such aquatic life forms have moved away from the river. Due to polluted water in Panchganga River thousands of fishes had died.

4. Agriculture- Generally agricultural lands on the banks of river are irrigated by water from river directly through small canals or by lift irrigation. Due to pollutants with high chemical contents adversely affects on agriculture. When this polluted water comes in contact with pesticides it become more hazardous for the crops and led to reduction in yield.
5. Loss of export revenue- Freshwater fish like Katla, Hilsa and Rohu once had high demand in other regions of India as well as foreign countries. But due to highly polluted river water these varieties of fishes are contaminated with diseases due to which demand from other sources is rapidly reduced. This resulted into loss of export revenue.

### 4. CORRECTIVE MEASURES

The most serious source of pollution of Panchganga River is discharge of large quantity of untreated wastewater and effluents from industries. There are number of textile, sizing and sugar industries on banks of river which are contributing to the pollution. Hence it is essential to treat the waste water and effluent by proper treatment processes at the industry only to bring the contaminants to safe level and then discharge into the river. For this every industry should have their own Effluent Treatment Plants (ETP).

All the industries should obey the rules and regulations laid down by Maharashtra Pollution Control Board (MPCB) to minimize the pollution. There should be proper system with MPCB of surprise visit and inspection of ETP and checking the quality effluent which is discharged from industries.

The two big cities situated on banks of Panchganga River viz. Kolhapur and Ichalkaranji should have their efficiently working waste water treatment plants. At the same time they should have their solid waste treatment plant. The working of all the plants should be checked regularly and the quality of the effluent. There should be sudden inspection of MPCB to check the working of these plants.

On the other hand it is necessary to have eco-friendly crops and efficient irrigation that reduces the need for water and energy efficient food production, especially in the sugarcane farming on the banks of Panchganga River. For fast growth of sugarcane and revenue, there is trend in the farmers to use chemical fertilizers, pesticides and insecticides which can contaminate the river water during runoff. Hence there should be limiting use of modern pesticides and insecticides in agriculture to minimize pollution.

The sand dredging operation should be supervised and controlled to minimize river pollution. The equipment used for sand dredging must be maintained and inspected properly along with any leakages. The license for sand dredging should be permitted after considering all these factors.

The laundering of clothes, washing vehicles, washing pets and dumping of garbage near to the banks of river should be avoided. It cannot totally de-pollute the Panchganga River water but definitely controls the contaminations of detergents, chemicals, oil and fuels which can be hazardous for aquatic life and surrounding environment.

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