

Environmental Assessment of Shakkar and Sher River water Quality of Narmada Tributaries by Physicochemical and Biological Parameter

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Abstract—The primary water source for drinking, agriculture, fish culture, and other critical operations in central India is the Narmada Tributaries. As a result, the current research and work schedule focus on observing the chemical and physical components of the Shakkar and Sher River water flow. River pollution condition and water quality Various physico-chemical parameters, including temperature, pH, turbidity, total hardness, alkalinity, DO, BOD, COD, chloride, fluoride, nitrate, iron, zinc, were analyzed in the samples, which were taken from Shakkar and Sher River locations. Every parameter is determined using the standardized APHA and BIS and WHO approach. Since a significant volume of sewage is dumped into the Shakkar and Sher River, practically all locations' values on the water quality index show that the water is unsafe for drinking.

Keywords—Shakkar and Sher River , Water Quality Index, physico-chemical parameters.

I. INTRODUCTION

The Shakkar and Sher rivers, which are tributaries of the Narmada River in Madhya Pradesh, face pollution primarily from industrial waste (sugar mills) and domestic sewage. Due to this type of pollution, various types of pollutants are present in the river in very large quantities, which makes the situation very harmful for drinking water and aquatic life. [1]. The sugar industry pollutes the Shakkar River with its liquid waste. This sugar industry is located in Narsinghpur district. [2-3]. Industrial wastewater contains high amounts of oil and grease, which mix with other industrial waste and enter the river water, affecting the biological and physiological parameters of the river water.[4-5].

Studies in the area have revealed that wastewater has affected surface and groundwater, and some areas show very high levels of pollution, making the river water unfit for drinking. Recent studies have shown

that while surface water pollution has decreased, groundwater is still contaminated.

The Sher River, one of the main tributaries of the Narmada River, is also polluted by various sources, primarily fertilizers, domestic sewage, and industrial waste. Research on the Sher River focuses mainly on the amount of fertilizers present in the soil carried by floodwaters from agricultural fields, which contaminates the river's water.

General river pollution issues in the Narmada basin (which includes the Shakkar and Sher river) high light very low “DO” levels and high concentrations of TDS and COD, indicating a general decline in water quality that can harm aquatic life and pose health risks to local communities.

River pollution in India has now reached to a point of crisis due to unplanned urbanization and rapid growth of industrialization [6-8]. Hence, the aim of this study is water quality evaluation at different sites (polluted & non-polluted site) of Shakkar and Sher River.

II. STUDY AREA

My study area includes the Narmada River's tributaries, the Shakkar and Sher rivers. I analyzed the water from these rivers.

III. SAMPLING AND ANALYTICAL DESIGN

The water samples were collected from the Shakkar and Sher River at 4 different selected stations Site I, Site II, Site III, Site IV, All the samples were collected at morning time between 6am-9am to retain and maintain their properties. The river water samples were collected in pre-washed polyethylene bottles. Prior to collect the sample from sampling sites, the pre-cleaned polyethylene bottles were also washed

by water sample. The parameters were measured by the procedures given by APHA [10] in the laboratory.

IV. RESULT & DISCUSSION

Table 1 below indicates that the water at the Shakkar and Sher River sampling site is becoming contaminated. During the investigation, the pH values at sites 2 and 4 were found to be higher than the standard norm, ranging from 8.09 to 8.12. Alkalinity was found to be between 335 and 335 mg, which is much higher than the typical range.

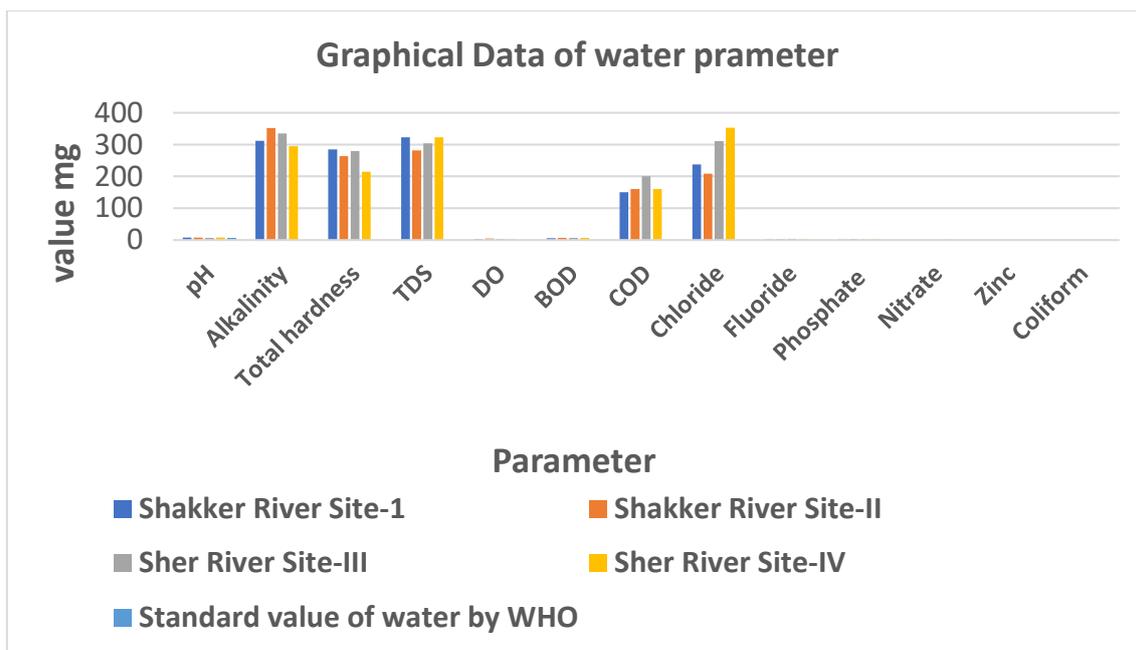
The higher the total hardness value and site number 1. I can see, the authorisation value is aided by the TDS value, which also gets a high result from the

DO's value documented in all sites. Additionally, we have some more than the permitted value, and the COD value is higher than the values when nitrate, phosphate, fluoride, and chloride levels are eliminated in water.

We can conclude that river water is being contaminated on a daily basis based on the values of water parameters if this value is higher in some sites from the Value Review Value, along with the Zinc Coliform value, which is nearly identical to the permission value. If you look at the values of TDS, pH, alkalinity, and chloride, it is higher than the value of the river being contaminated by the values. And who, through drinking water, are having a complete impact on the human body and living things.

Table -1 The physico-chemical parameter Shakkar and Sher River water investigated are presented.

S.NO.	Parameter	Shakkar River		Sher River		Standard value of water by WHO
		Site-1	Site-II	Site-III	Site-IV	
1	pH	8.06	8.09	7.06	8.12	7
2	Alkalinity	312	352	335	295	20-200mg/L
3	Total hardness	285	264	280	215	120-170mg/L
4	TDS	323	282	304	323	50-150mg/L
5	DO	3.3	4.5	3.5	3.1	4.5mg/L
6	BOD	6.2	7.2	7.1	7.2	3-5mg/L
7	COD	150	160	200	160	100-250mg/L
8	Chloride	238	209	311	353	250mg/L
9	Fluoride	2	3	4	3	0.5-1 mg/L
10	Phosphate	1.8	2.9	1.4	2.6	3 mg/L
11	Nitrate	0.7	0.5	0.8	1.6	10 mg/L
12	Zinc	0.132	0.183	0.154	0.171	5-15mg/L
13	Coliform	3500-45900	3400-63500	3500-28200	4300-68200	10,000/100ml



V. CONCLUSION

The Shakker and Sher River's water quality was found to be negatively impacted by human activity due to overcrowding, poor sanitation, and unrestricted massive waste water discharge into the water system. The following methods can be used to reduce the issue of river water pollution. Before being dumped into a river, sewage and sludge produced by municipal entities must undergo chemical and biological treatment.

Before being released into water bodies, all hazardous metallic elements should undergo chemical treatment. For improved environmental protection, the properties of wastewater must be appropriately monitored.

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