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Characterization of Na and K Level in Ujjaini River Water in Amethi, UP, India

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Abstract: ***Ujjaini River is the main source of water for aquatic life and household things related to human beings. The traditional living drinking water quality assessment can evaluate wholly the impact of river water quality on human body. Drinking water safety is an important part in water scientific field. In the presented study a number of water samples were collected from selected sites of Ujjaini River in Amethi, UP India in the month of August-2020. The collected water samples were carried out to the laboratory to analyze the Na and K level to check the suitability of water for drinking and cooking purposes, by using standard procedures. People usually identify River water pollution when people start getting sick while drinking it, once discovered River water pollution needs to be addressed, both to clean the contaminated water and to prevent its spread. At result it was found that these parameters were present in permissible limits according to the BIS and WHO standards yet we should check the quality of River water time to time. People can help to prevent the River water pollution by disposing of hazardous materials like oil, paints, unused prescriptions and solvents responsible in a facility which is certified to handle such materials.***
Keywords: Na, K, Ujjaini River water, water pollution, Amethi, etc.

I. INTRODUCTION

Availability of good means pure water for our drinking and cooking purposes is a scarcity at present. As we know that our oceans cover approximately 75% of the planet Earth. A distinct percent of our food resources come from these water including fish and plants. The River around us is what keeps the flame of life from fading and flickering out. Why would anyone pollute these precious parts of our ecosystem? Water pollution is a global plague that affects the people, animals, and plants. These life forms need water to survive. The causes are contributed greatly by the human population and human activities. Recently, laws have been passed to protect the precious drinking water. Although they are in effect, most are ignored or loop holes have been found by major corporations so they can still "legally" dump harmful waste near water supplies. There are several factors that cause River water pollution. One of the reasons that the water pollution problem is so severe is that it is not actually illegal to dump pollutants into water bodies. Sewage, sludge, garbage, and even toxic pollutants are all dumped into the water.

River water is easily available, and its temperature and quality are quite stable seasonally. At the same time, however, River water is an important element of the earth's water circulation system. Therefore, the River water environment must be conserved. Water pollution is a major problem in the global context. It has been suggested that it is the leading worldwide cause of deaths and diseases,[1] [2] and that it accounts for the deaths of more than 14,000 people daily.[2] An estimated 700 million Indians have no access to a proper toilet, and 1,000 Indian children die of diarrheal sickness every day.[3] Some 90% of China's cities suffer from some degree of water pollution,[4] and nearly 500 million people lack access to safe drinking water.[5] In addition to the acute problems of water pollution in developing countries. Industrialized countries continue to struggle with pollution problems as well. In the most recent national report on water quality in the United States, 45 percent of assessed stream miles, 47 percent of assessed lake acres, and 32 percent of assessed bay and estuarine square miles were classified as polluted.[6]

II. MATERIAL AND METHODS

River water quality comprises the physical, chemical, and biological qualities. Temperature, turbidity, color, taste, and odor make up the list of physical water quality parameters. Since most River water is colorless, odorless, and without specific taste, we are typically most concerned with its chemical and biological qualities. Although spring water products are often sold as “pure,” their water quality is different from that of pure water.

River water samples were collected during the day time between 10 am to 5.0 pm from selected sampling sites in the month of August-2020. The different sampling locations are given in table-1. The flame photometry technique is used in the presented study to analyses the Na and K level in taken water samples.

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Table -1: Sampling Locations.

S. No.	Sampling Sites	Code
1.	Thengaha	S1
2.	Maduli	S2
3.	Kamasin	S3
4.	Vaisda	S4
5.	Ghatampur	S5
6.	Arshahni	S6
7.	Thaura	S7
8.	Manirampur	S8
9.	HAL Korwa	S9
10.	Munshiganj	S10

III. RESULT AND DISCUSSIONS

Most water pollution doesn't begin in the water itself. Take the oceans: around 80 percent of ocean pollution enters our seas from the land. Virtually any human activity can have an effect on the quality of our water environment. When farmers fertilize the fields, the chemicals they use are gradually washed by rain into the groundwater or surface waters nearby and may reach to the river also. Sometimes the causes of water pollution are quite surprising. Chemicals released by smokestacks (chimneys) can enter the atmosphere and then fall back to earth as rain, entering seas, rivers, and lakes and causing water pollution. Water pollution has many different causes and this is one of the reasons why it is such a difficult problem to solve. Water pollution is the contamination of water bodies like river. Meride and Ayenew studied various physical,chemical and biological parameters of drinking water of Wondogenet campus, Ethiopia. The values were within permissible limits of WHO.[8] Assessment of Intra-Annual Variation in Water Quality Parameters in River Tambraparani at Murappanadu site for the period June 2018 to May 2019 by Srujana Radha, SRA, CWC, Coimbatore found that The Analysis results of such respective parameters in all the seasons were compared with the water quality standards as set by BIS and other regulatory authorities guidelines.

Water pollution affects plants and organisms living in these bodies of water, and in almost all cases the effect is damaging not only to individual species and populations, but also to the natural biological communities. Water pollution occurs when pollutants are discharged directly or indirectly into water bodies without adequate treatment to remove harmful compounds. The effects of water pollution strongly impact the balance of nature, which ultimately impacts all humans. With proper care and consideration, many of the situations that cause water pollution can be stopped or decreased. Man-made situations are typically the causes of water pollution. Often, it's unintended and unknown that actions are contributing to water pollution. Many times it's the last thought on someone's mind that their actions could significantly impact the environment locally and beyond. Recent study (Adarsh and Priya., 2020)[9] performed the spectral characterization of time series of six water quality parameters from Noyyal River using Hilbert-Huang Transform (HHT) and examined the association between EC with other water quality parameters based on CWC data. Their HHT analysis successfully captured the anthropogenic interventions at the Noyyal River in the form of frequent pollutant disposals.

In the presented research work the values of Na and K level in the Ujjaini River were in permissible limit prescribed by BIS and WHO standards. Table-1,Chart-1 and Chart-2 indicates the values and their variation from one site to another.

Table- 2: Na and K Level in Ujjaini River Water in the month of August-2020.

PARAMETERS SAMPLING SITES	Na (mg/L)	K (mg/L)
Thengaha-S1	84	3.1
Maduli-S2	80	3.2
Kamasin-S3	82	3.2

Vaisda-S4	83	3.0
Ghatampur-S5	81	3.1
Arshahni-S6	84	3.5
Thaura-S7	82	3.4
Manirampur-S8	81	3.7
HAL Korwa-S9	80	3.2
Munshiganj-S10	81	3.1

Chart-1. Variation of Na Level in Ujjaini River in the month of August-2020.

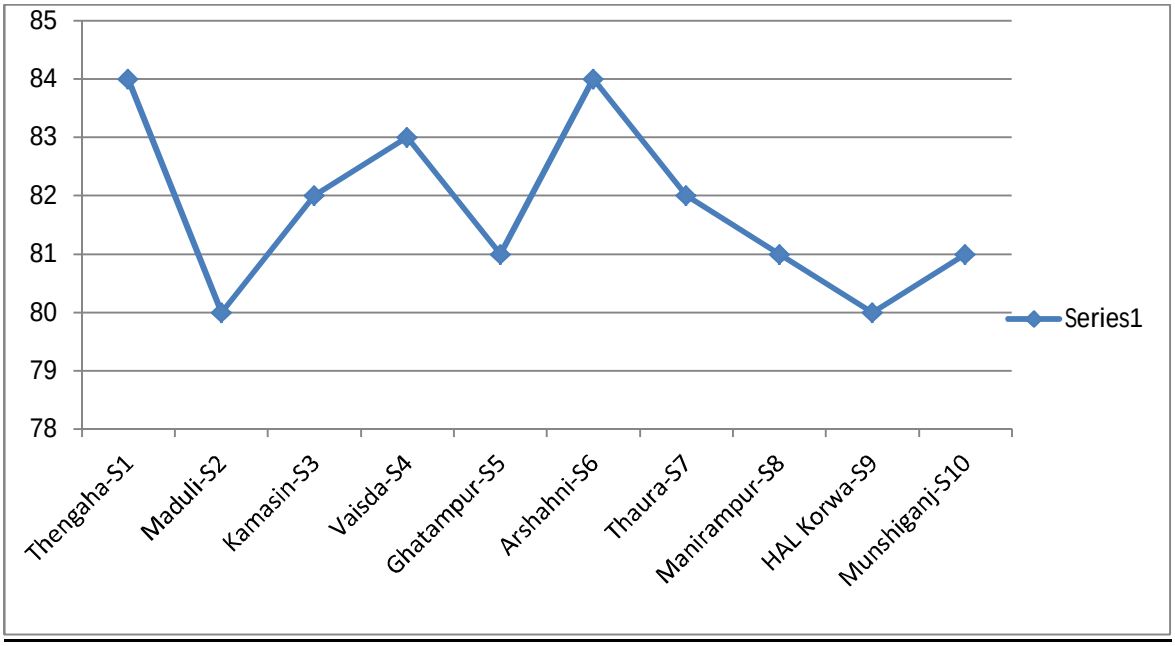
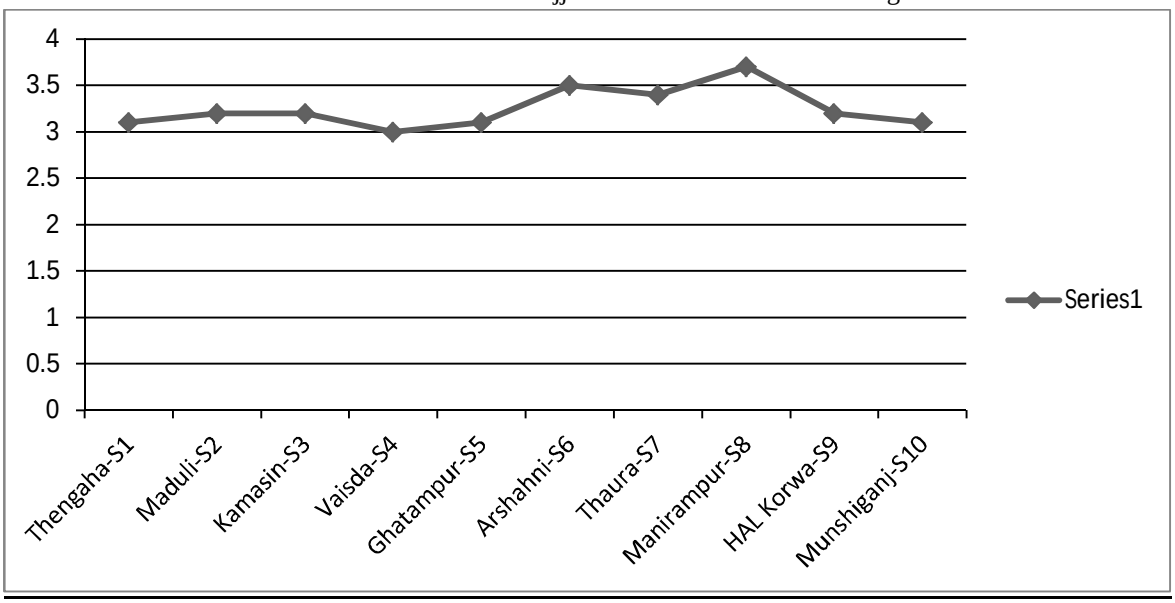


Chart-2: Variation of K Level in Ujjaini River in the Month of August-2020.



IV. CONCLUSION

In the presented work on the basis of data analysis among ten water samples analyzed from different located sites it was found that the Na values ranges from 80 to 84 and the K values ranges from 3.0 to 3.7. It was concluded that except few water samples, all other water samples were found in permissible limits according to the WHO and BIS standard yet a regular monitoring should be carried out to check the level of different parameters in the River water to develop a healthy society.

It was also found that the River water quality was contaminated at few sampling sites due to domestic wastes. It may be said that river water is though fit for domestic and drinking purposes but need treatment to minimize the contamination.

Hence our study concludes that the underground water quality in this region shows a variation in different parameters against standards. So it is highly important to take periodical monitoring of the River water quality for our future sustainability.

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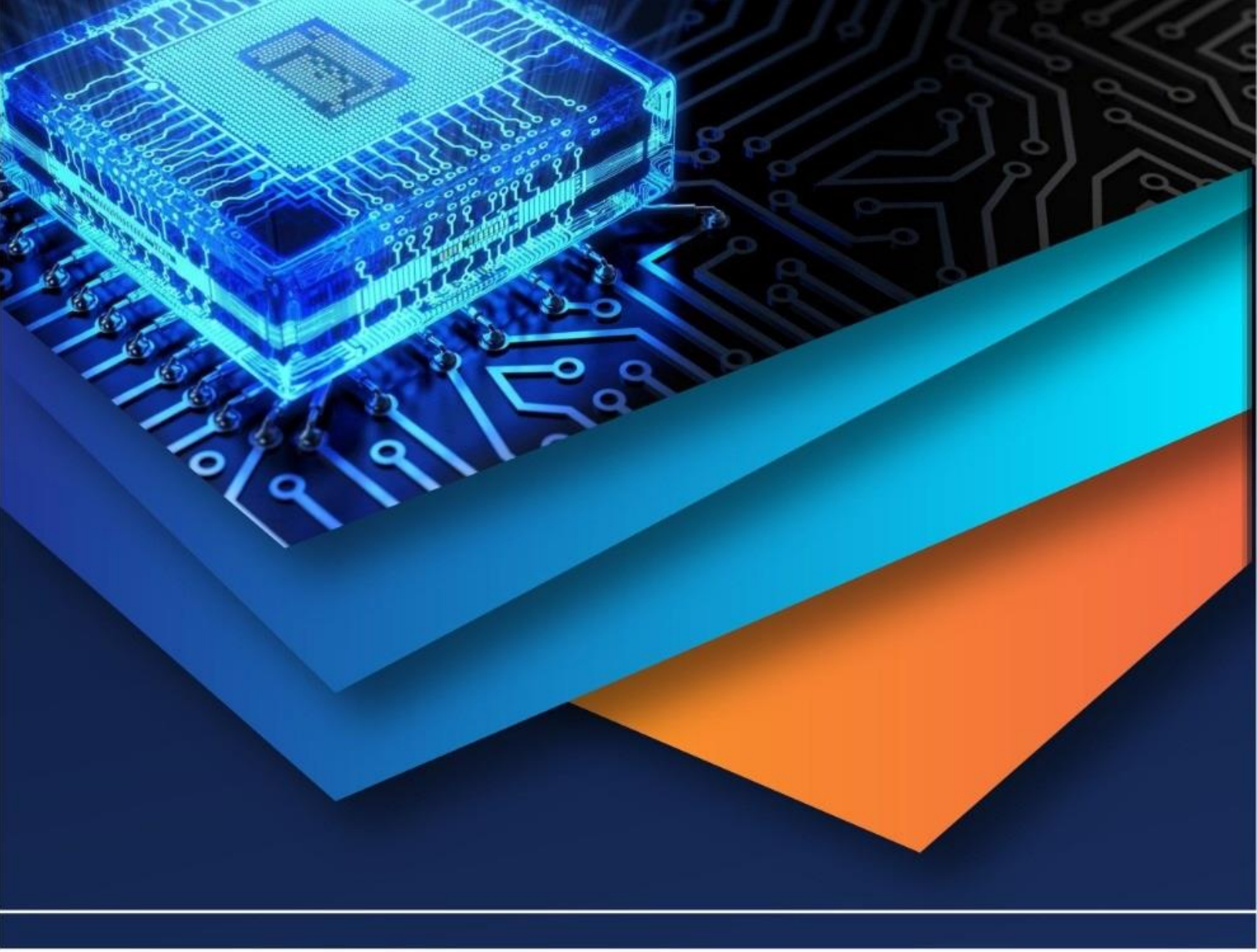

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