iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 12 **Issue:** VIII **Month of publication:** August 2024

DOI: https://doi.org/10.22214/ijraset.2024.64116

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue VIII Aug 2024- Available at www.ijraset.com

Study of Water Quality Parameters of Water Samples from Different Places Near Wani, Dist. Yavatmal

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Abstract: ***Water is the essential source of life for all living forms and environmental health. All forms of life affected by water directly or indirectly. Water plays an important role in maintaining different activities in human life like metabolism, transport of nutrients, oxygen and wastes to cells and organs. Also it regulates body temperature. It also plays a significant role in prevention of some disease. Therefore water should be clean and free of contaminants to ensure wellness. Water bodies are contaminated by different manmade undesirable products which affects the nature of water. The present work is focused on assessment of water quality of samples through study of some physic-chemical parameters. The water samples are collected from four different locations around Wani area dist. Yavatmal. The comparative investigation of data has been done by correlation analysis of various parameters from different location samples. The results so obtained are interpreted in the light of pollution contamination status of the area and to know about the facts so that pollution control measures can be taken on time at various levels.***

Keywords: Water pollution, Physico-chemical parameters, Environmental health, Importance of water.

I. INTRODUCTION

Water is an important substance of our life cycle. Safe water is our need. Water resources are highly polluted in and around Wani area due to Disposal of Sewage, Industrial wastes and other human activities. The quality of potable water is very important for human existence and it depends on water sources like river, well and lake etc. The drinking water resources may be polluted with pathogen, toxic metal, chemical compounds such as pesticides, herbicides and other industrial waste which becomes waterborne outbreaks[1]. Clean and safe drinking water is the fundamental right of human beings. Many people do not have access to clean and safe water for drinking and sanitation. As a result, number of people dies each year due to water related diseases and disasters[2]. Increasing metal base fertilizers in agriculture field, the concentration of metal in freshwater increases due to run off. Contaminated water is the biggest problem for health because it contained high concentration of metal irons, heavy elements and harmful microorganism. Therefore, quality control of water is main policy agenda in many parts of the world[3]. Water quality and suitability for use can be assigned by its taste, odor, colour, and concentration of organic and inorganic matters[4]. The number of researcher are assessing the water quality throughout the world in terms of chemical, physical and biological analysis[5-7].

The present study deals with the collection of water samples near the wani region and collected samples were used to analyze different parameters like pH, Hardness, alkalinity, DO, BOD, COD, SO4, PO4 , turbidity, conductivity, total suspended solids (TSS), total dissolved solids (TDS), heavy metals etc.

II. EXPERIMENTAL SECTION: MATERIAL AND METHOD FOR ANALYSIS

Samples were collected in summer season. The temperature range fluctuates on average from 27 ^{0}C to 40 ^{0}C during the summer. Water sample were collected from different locations around wani area. The water resources selected for collecting water samples are the public places near wani, Dist. Yavatmal. The selection of sampling points was based on the population density, areas of industrial or anthropogenic activities such as minerals and mining activities, and the river areas. The samples were numbered from 1 to 5 against their locations and sources (Table 1). The measurement of pH of the water samples was carried out by using a pH meter. The calibration of pH meter was done with three standard solutions (pH 4.0, 7.0, and 10.0). The conductivity of the samples was measured using digital conductivity meter. Rest of the parameters of all water sample were analyzed from district water and soil analysis laboratory, chandrapur by krushi prashikshan. The results obtained were used to analyze and interpret the water quality.

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Table : 1 Sample locations

Sr.no	Sample station	Types of sources	Depth	Latitude	Longitude
1.	Farm Handpump Nandepera	Tube well	70	20.148	78.94
2.	Sarkari Handpump Nandepera	Tube well	69	20.146	78.92
3.	Sarakari handpunp Bhadewada	Tube well	72	20.128	78.88
4.	WCL Nala Bhadewada	Nala	65	20 .126	78.85
5.	Niraguda river	River	10	20.05	78.94











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III. RESULTS AND DISCUSSIONS

Table – 2, Results of Parameters for different samples near Wani region.

SrNo	Parameters	Farm Handpump Nandepera	Sarkari Handpump Nandepera	Sarakari handpunp Bhadewada	WCL Nala Bhadewada	Niraguda river	Average value
1	pH	7.93	8.29	7.78	8.00	7.84	6.5 to 8.5
2	Conductivity	0.920	0.750	1.026	0.635	1.129	Less than 0.250
3	Temperature	29	32	30	28		34
5	Calcium	3.2	3.6	3.4	5.2	4.6	0 - 10
6	Magnesium	1.2	1.4	1.2	1.6	1.4	0 – 1.25
7	Sodium	1.02	0.99	1.16	1.15	1.13	0 - 10
8	Potassium	0.68	0.62	0.82	0.60	0.65	0 - 10
9	Carbonate	2.0	2.4	2.0	2.4	3.2	0 – 1.5
10	Bicarbonate	2.0	2.0	2.4	2.5	2.4	0 -1.5
11	Chloride	2.0	2.0	2.0	2.0	2.4	0 – 2.0
12	Sulphide	0.01	0.021	0.18	1.01	0	0 – 2.0
13	Sodium Containing Capacity	0.68	0.57	0.78	0.62	0.65	Less than 10

Analysis by chemical method includes the physical properties like Odour, colour, pH, turbidity, and conductivity and chemical analysis includes TDS and TSS, Hardness etc.

pH is considered as[8] as one of the most important water quality parameters. Acidity or alkalinity of the water is decided by the measurement of pH. If pH of sample is below 7.0, the sample is considered as acidic in nature and pH is abobe 7, sample is considered as alkaline in nature. Corrossion of metals can be occurred by acidic water. The normal pH range decided by WHO and NDWQS guidelines is between 6.5 and 8.5. All the sample taken are having safe pH values that are between 6.5 two 8.5. Electrical conductivity values shows presence of different ions in the water. The conductivity values are found to be higher than the normal range indicates water samples may have high amount of ions. The ranges of different dissolved salts like calcium, magnesium, sodium , potassium, carbonates observed are in good agreement with the standard values decided by WHO. The values of sodium containing capacity are also in good agreement with the standard values decided by WHO.

Though, this study supports to assess the water quality, further detailed study can be carried out for a longer time and detailed results can be obtained by modern techniques of analysis. The obtained data can be made more comparable with scientific findings by the standardization of the sampling locations. The study can be extended by assessing concentration of different metals in human body through analysis of urine and blood to find impact on human health.

IV. CONCLUSIONS

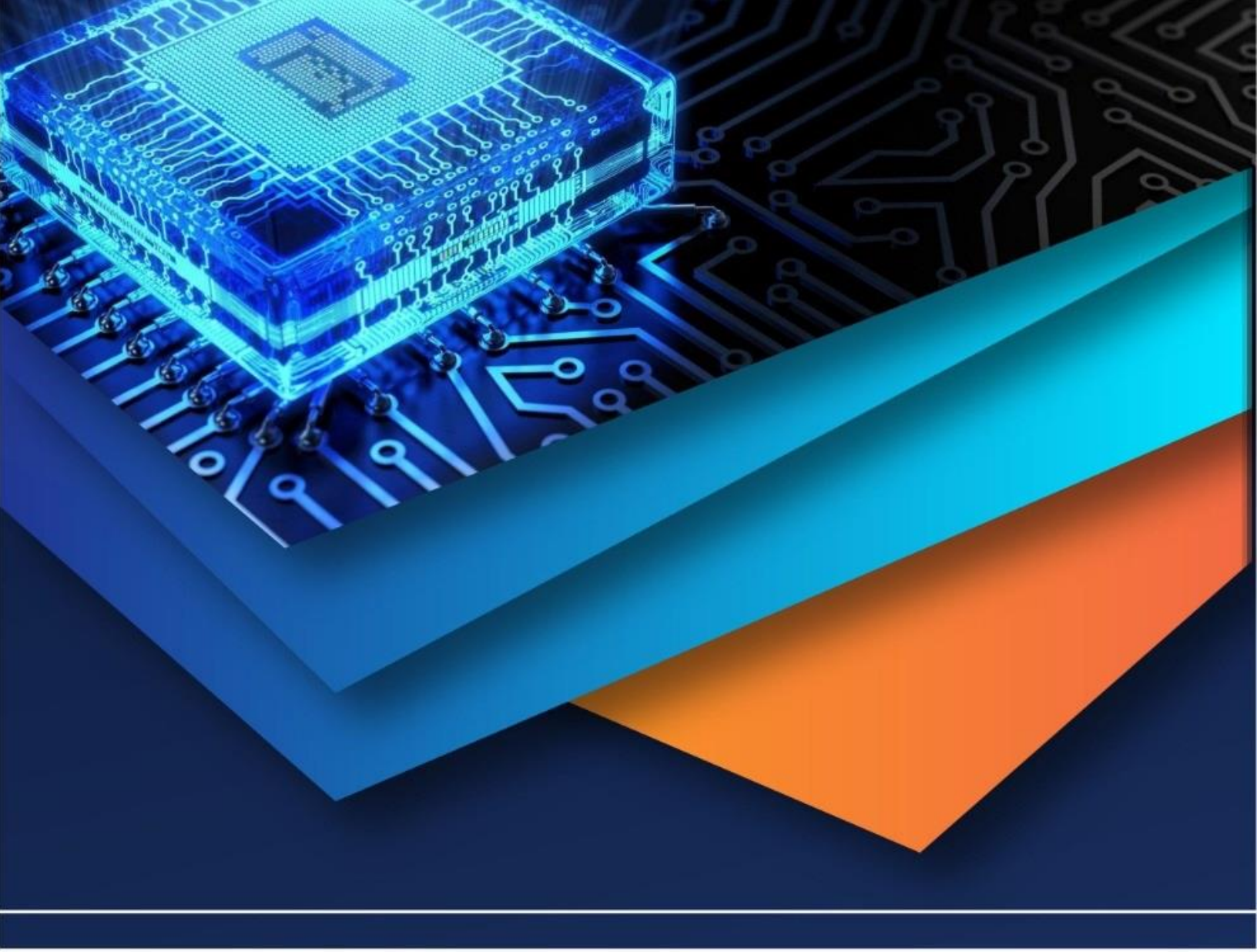
Water analysis is essential to check suitability of water Bodies for the selected use. Several Water quality parameters are compared with the standard values to determine that it should be safe or not. The value of water quality parameters of all sample collected from the residential area varies normally. The values of water quality parameters such as pH, conductivity, TSS, sodium, potassium, carbonates etc from all samples collected were found to be within the recommended limits of WHO. The study may help to decide the water quality and weather it is suitable for drinking and other purpose. However, it is important to analyze other contaminants in water such as chemicals, microbial and radiological materials for a longer period of time, including human body fluids, in order to assess the overall water quality.

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