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INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)
(Int Peer Reviewed Journal)
Vol. 05, Issue 09, September 2025, pp : 1438-1440

e-ISSN : 2583-1062
Impact Factor : 7.001

STUDY OF PHYSICAL AND CHEMICAL PARAMETERS OF WATER QUALITY AT AHRAURA DAM

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DOI: https://www.doi.org/10.58257/IJPREMS43907

ABSTRACT

Nature gives us a most valuable gift i.e. water which is also called " Blue Diamond". In nature water exists in many forms like clouds, lake, river, rain, snow, ocean and fog etc. Dams, wells, tube wells, canals are man-made sources of water. . Human population suffers from water borne diseases because of contaminated water. So it is necessary to check the water quality at regular interval of time. In this paper I study parameters of water quality like Physical and Chemical parameters such as P^H, Total Dissolve Solids(TDS),Dissolved Oxygen(DO), Alkalinity, Total Hardness, temperature, electrical conductivity, taste . All parameters are used to the standard methods which are recommended by APHA.

Keywords: Physical Parameters, Chemical Parameters, Ahraura Dam, TDS, DO, Electrical Conductivity, Temperature.

1. INTRODUCTION

The second most important need of life is water after air. Definition of water is " it is the physical, chemical and biological characteristics of water .'' From the total earth surface 71% of earth surface is covered by water but only 1% of water is available. Which is using for drinking, agriculture ,domestic and industrial consumption.

Alok kushwaha and D.N. Shukla (2017) were studied on Ganga river at Mirzapur . They found that the water quality of river Ganga was not good for drinking purpose in any season. But people used it for domestic use and irrigation because it is a main source of water in this area.

Dwivedi and Chondar (1980) have studied on Rihand reservoir's water quality parameter in Sonbhadra distric. The water of dam not used for human consumption directly but useful for domestic, irrigation.

N.K.Srivastava et al were investigated at G.B.Pant Sagar reservoir in Sonbhadra distric about water quality . The reservoir water showed low to moderate dissolved oxygen (4.3 -- 7.5mg/l) and quite low nutrients contents.

Singh and Rai (2003) , study of the water quality of the Ganga river at Allahabad and found water quality are not suitable for human consumption but suitable for irrigation.

Gupta et al.(2008) study on pond and noted the physical and chemical parameters which are suitable for fishes growth.

A dam is a barrier that stops or restricts the flow of surface of water or underground streams. Reservoirs created by dams not only suppress floods but also provide water for activities such as irrigation, human consumption, industrial use, aquaculture .Hydropower is often used in conjunction with dams to generate electricity. A dam blocks the flow of water in a river or streams. On the upstream side, the water backs up into an artificial lake or reservoir for storage. Hypoxic (low dissolved oxygen) and anoxic (no dissolved oxygen) zones that can form in dam impoundments are inhospitable to aquatic species. Very low oxygen levels can also reduce leaf litter breakdown and change nutrient cycling in streams, which may alter energy availability to aquatic organisms .

Dams can disrupt the flow of rivers and change the downstream ecology, which can have a negative impact on plants and animals that rely on the natural flow of the river. Dams also cause soil erosion, sedimentation and flooding downstream .

2. MATERIALS AND METHODS

Mirzapur district lies between the parallels of 23.5 & 25.32 North latitude and 82.7 and 83.33 East longitude. Ahraura is a municipal town in Mirzapur district. The length of the Dam is 4600 feet (1.4km). From different 3 sites, samples were collected during morning at each month of January 2025 to August 2025. All samples were collected in glass bottle with sailor. After the collection of sample , instantly labeled them. All of the parameters were examine through standards protocol.

Some parameters like temperature, odour, taste of the water were examine on the spot but some parameters like TDS, DO etc. were analyzed in the laboratory to the using APHA (2002) and Trivedy and Goel (1984) standard methods.

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TABLE - 1

Sr. No.	Parameter	Methods	Instrument
1.	Temperature	Thermometry	Thermometer
2.	Taste	By tasting	By tounge
3.	Odour	By smelling	By nose
4.	P^H	Potentiometry	P^H meter
5.	Dissolved Oxygen (DO)	Wrinkler 's method	Burette
6.	Total Suspended solids[TSS]	Electrical Conductivity	Conductivity meter
7.	Total dissolved solids [TDS]	Conductometry	TDS meter
8.	Total alkalinity	Titration	Burette
9.	Total hardness	EDTA Titration	Burette
10.	Conductivity	Conductometry	

3. RESULT AND DISCUSSION

TABLE-2

		Site -1			Site-2			Site- 3		
Sr. No.	**Parameters**	**Jan-March**	**Apr-June**	**Jul-Aug**	**Jan-March**	**Apr-June**	**Jul-Aug**	**Jan-March**	**Apr-June**	**Jul-Aug**
1	Temp.(^oC)	25	32	27	24	30	26	23	33	25
2.	Taste	Agreeable	Agreeable	Disagreeable	Agreeable	Agreeable	Disagreeable	Agreeable	Disagreeable	Disagreeable
3.	Odour	Pleasant	Pleasant	Unpleasant	Pleasant	Pleasant	unpleasant	Pleasant	Unpleasant	Unpleasant
4.	P^H	7.5	7.9	7.2	7.4	7.4	7.5	7.5	7.7	7.5
5.	D.O.(mg/L)	12	09	08	8.5	7.3	7.0	8.0	6.5	6.2
6.	T.S.S.(mg/L)	55	53	51	58	57	55	62	61	59
7.	T.D.S.(mg/L)	310	325	250	412	370	390	450	415	422
8.	Total alkalinity (mg/L)	182	172	155	180	185	175	262	199	261
9.	Total hardness (mg/L)	158	118	153	157	132	151	175	170	165
10.	Conductivity (µS/cm)	292	258	216	356	378	350	585	537	445

Temperature – The average temperature of Ahraura Dam is 25-28 ^oC during given time. All sample's temperature measured by thermometry at the time of sampling on site.

Taste and Odour - Tasting of water by self tongue which is agreeable in middle but at the bank of dam not agreeale. The odour of water is agreeable in middle but not other site due to pollution .

P^H and Conductivity- The P^H of all samples are ranging from 6.6 to 7.4 which are slightly acidic at some places and slightly basic at some place. So it is permissible by WHO. The electrical conductivity is affected crop productivity . its measured range is 256µs/cm to 580µs/cm.

Dissolve Oxygen (DO)-For the index of water quality, pollution DO can be used. DO means the amount of Oxygen available in the water. Its ranges measured during study are 6.5 to 8.0 mg/L .

Total suspended solids (TSS) and Total Dissolved solid (TDS) - After evaporation some dry non filterable residue left on the filter paper which is called total suspended solids. The observable ranges from 62 to 52 during study. The filterable residues/ solids are TDS which ranges from 236 to 160 mg / L.

Total alkalinity and Total hardness- The alkalinity of water means concentration of ions such as bicarbonates, biphosphate etc. The ranges is between 250 to 152 mg/L . Hardness in water caused by cations like calcium, magnesium , ferrous ions , etc. Its range from 173 to 125 mg/L.

4. CONCLUSION

The result obtained during the study , site 1 is the least polluted and site 3 is most polluted. All parameters are compared with ISI standards. Ahraura Dam water can be used by human for many uses like bathing, irrigation, etc. This water is also useful for fishing.

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