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Physico-Chemical Study Of Chambal River Water Of Dholpur City In Rajasthan During The WinterSeason

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ABSTRACT:-Water is the most important compound in shaping the land and regulating the climate. It is one of the important compound profoundly influence life. The water quality analysis is an important aspect understanding the behavior of water. This study is give us the valuable information for the properties of water quality parameters like pH, TDS, Colour, TSS, Chlorides etc. herewe collected samples from two different sites of Chambal river. Then we analyze these samples in the laboratory. We check the water quality parameter and pH, temperature, Colour, Taste, electrical conductivity (EC), Total alkalinity (TA), Total hardness (TH), Total dissolved solids (TDS), Total suspended solids (TSS), Chlorides, dissolved oxygen (DO), Biological oxygen demand (BOD), Free CO_2. After the analysis we found that the water is good for human beings for his health and other things.

Keyword: - Water, physical properties, chemical properties, Dholpur

INTRODUCTION:- Water is colourless and odourless substance found all earth. Water is made up billions of molecules. Each molecule is made of one oxygen and two hydrogen atoms held together by strong covalent bonds. Water is one of the most plentiful and essential compound, occurring as a liquid on earth's surface under normal conditions, which make it invaluable for human uses and as plant and animal's habitat. All plants and animals need water to survive.

There can no life on earth without water. Because 60 percent of our body weight is made up of water. While 67% of earth's surface is covered by water, only less than 2.7% of global water is freshwater. Due to these contaminants quality of the drinking water becomes poor. Sometimes such poor Quality water causes many diseases in the humans so that quality of the water must be tasted for both the chemical aswell as for the microbial contaminants. During the study itwas found that maximum number of physical and chemical parameter were within the desirable limit, as suggested by WHO(1971) and BIS(1991).The objective of the present research is to provide information on the physicochemical characteristics & detailed ecological studies of potable water and lake water (Habitat) in order to discuss it's suitability for human consumption. Physicochemical and biochemical aspects of the water have been investigated toassess detailed ecological studies of potable water and Lake water (Habitat) in order to discuss it's suitability for human consumption.

STUDY SITES

Sampling sites: Water samples were collected from two different Sites which areas follows:
1. Muktidham water sample
2. Rajghat water sample

METHOD AND MATERIALS

S.No.	**Parameters**	**Methods**
1	**Temperature**	Thermometer
2	**pH**	pH Meter
3	**Colour**	Visualization Method
4	**Taste**	Feel Method
5	**Conductivity**	EI Digital Conductivity Meter (NDC 736)
6	**Total Alkalinity**	Neutralization's method
7	**Total Hardness**	Complexometric titration method
8	**Total Dissolved Oxygen**	Evaporation's method

9	**Dissolved Oxygen**	Dilution & Winkler's method
10	**Biological Oxygen emand**	Dilution & Winkler's method
11	**Chloride ion**	Mohr's method
12	**Free CO_2**	Neutralization's method

RESULT

S.NO	Properties	Muktidham Sample-1	Rajghat Sample-2
1	**Temperature**	**10 °C**	**10 °C**
2	**pH**	**Alkali**	**Alkali**
3	**Colour**	**Light-yellow**	**Colourless**
4	**Conductivity**	**Good conductor**	**Good conductor**
5	**Total alkalinity**	**280.5**	**365.5**
7	**Total dissolved solid**	**200**	**400**
8	**Total suspended solid**	**3,500**	**2,800**
9	**Dissolved oxygen**	**6.48**	**8.56**
10	**Biological oxygendemand**	**5.48**	**4.86**
11	**Chloride**	**0.4721**	**0.0195**
12	**Free CO_2**	**33**	**17.6**

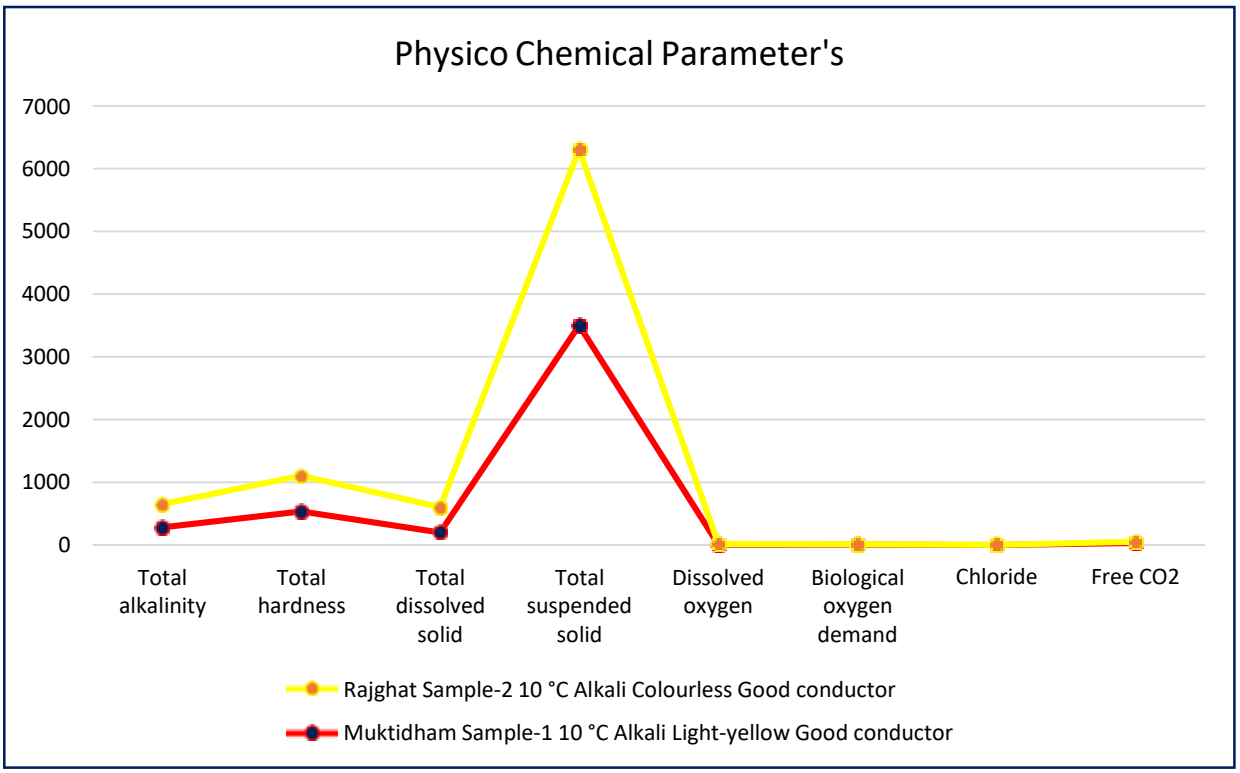

Fig 1:

DISCUSSION

Temperature :- Water Temperature is a physical property expressing how hot or cold water is. As hot andcold are both arbitrary terms, temperature can further be defined as a measurement of the average thermal energy of a substance. Muktidham and Rajghat water samples (10 ^{0}C) temperature are equal.

pH:- In its purest form, water has a pH of 7, which is at the exact center of the pH scale. Particles in the water can change the pH of the water, and most water for use has apH of somewhere between 6.5 and 8.5. Keep reading to learn more about the pH of water. Muktidham (6.57) and Rajghat (7.03) water was found alkali due to the presenceof some alkali salts in the water sample like hydroxide ion.

Conductivity:- Mostly all two samples are good conductor. Maximum conductivity was found (19.75 mg/l) in Rajghat water sample because of the presence ofhigher concentration of ions, come from dissolved salts and inorganic materials

such as alkalis, chlorides and sulfides. Minimum conductivity was found (17.15 mg/l) in Muktidham water sample because reverse osmosistechnology dissolved impurities (Salts and Organics) so due to the presence of lower concentration of ions Muktidham water sample shows minimum conductivity.

Total Alkalinity:- Maximum alkalinity was found in (365.5 mg/l) Rajghat water sample because of the presence of alkali salts such as Calcium Carbonate or other compounds which are from industries and transportation. Minimum alkalinity was found in (280.5 mg/l) Muktidham water sample. Because of lower quantity of alkali salts.

Total Hardness:- The maximum hardness was found in(566 mg/l) Rajghat water sample because the hardness inwater is caused by dissolved Calcium and to a lesser extent, Magnesium ions. The minimum hardness wasfound (536 mg/l) in muktidham water sample because thereverse osmosis technology dissolved all the impurities and purify the water so the lower presence of calcium & magnesium ion it has minimum hardness.

TDS:- The maximum TDS was found (400 mg/l) in the Rajghat water sample. Because potassium, calcium & sodium presence in higher quantity these ions have little or no short-term effects, but toxic ions (lead arsenic, cadmium, nitrate and others) may also dissolved in the water. The minimum TDS was found (200 mg/l) in Muktidham water sample because in the reverse osmosis technology dissolved all the ions & impurities so that's why Muktidham water has minimum TDS.

TSS :- The maximum quantity of TSS was found (3,500 mg/l) in the Muktidham water sample TSS could be anything that floats or "suspends" in water, including sand, sediment, and plankton. When certain water sources are contaminated with decaying plants or animals, the organic particles released into the water are usually suspended solids. The minimum quantity of TSS was found (2,800 mg/l).

DO:- The maximum quantity of DO was found (8.56 mg/l) in Rajghat water sample because the sample of Rajghat water is in the touch of open atmosphere. So theoxygen dissolved in the Rajghat water directly. The minimum quantity of DO was found (6.48 mg/l) in Muktidham water sample because the Muktidham water is not in the touch of open atmosphere. So Muktidham water does not have maximum quantity of DO as much as Rajghat water have.

BOD:- The maximum quantity of BOD was found (5.48mg/l) in the Muktidham water sample because the Muktidham in the touch of open atmosphere. The Muktidham water have sufficient oxygen is available, aerobic biological decomposition by microorganisms willcontinue unit all waste is consumed. The Minimum quantity of BOD ions was found (4.86 mg/l) in the Rajghat water sample. Because of Rajghat water have notsufficient oxygen.

Chloride:- The maximum quantity of chloride ions wasfound (0.4721 mg/l) in the Muktidham water sample because Muktidham water is in the touch of open atmosphere. So it has many impurities and salts such as sodium chloride. So it has maximum chloride ions. Theminimum quantity of chloride ions was found (0.0195 mg/l) in Rajghat water sample. In the reverse osmosis technology, dissolved all the impurities and salts, and purify the water. So the Rajghat water has minimum quantity of chloride ions.

Free CO_2:- The maximum quantity of Free CO_2 was found (33 mg/l) in the Muktidham water sample because Muktidham water is in the touch of open atmosphere. Free Carbon dioxide that exists in the environment. So it is present in water in the form of a dissolved gas. So it has maximum Free CO_2. The minimum quantity of free CO_2 ions was found (17.6 mg/l).

CONCLUSION:

From this results of this study it has been concludethat: The physicochemical analysis of the studyrevealed that. All the River water samples collected were having the concentrations of many parameters are within the standard limits BIS /WHO and few parameters are below and above the permissible limits. By using pressure filters and doublefiltration we can reduce the total dissolved solids, the quality of river water is objectionable in few parameters and most of the parameters are good for drinking and domestic uses.

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