



## International Journal of Current Pharmaceutical & Clinical Research



www.ijcpcr.com

### SESSIONAL VARIATION OF PHYSICO CHEMICAL PHARAMETER IN BIHAR AND BICHHIYA REVIRS AT REWA (M.P)

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#### ABSTRACT

Water is important need of human being for all most of the work. Today rapid urbanization industrialization and thus the increased to human population and thus the increased quality of waste product discharge in to water bodies exceeding the self purifying capacity of water bodies deteriorating nation water resource. Rivers are the most important source of water to global population. A huge quality of water is required in various institutions. The maximum value goes in to hospital and minimum is consumed in theaters. Water purity essential for human health. Its demand increased with exceeding population. Rewa District is situated near the north east border of M.P Rewa town falls under huzur thasil. The water sampling done in Bichhia and Bihare River. The water sampling done for measurement of the temperature and pH in different session in both rivers. The maximum temperature occurs in summer session 27.2 -31.4. The lowered temperature reported in winter session 23.2- 25.8. The higher PH reported on winter session range from 6.20-8.10 .the lower PH reported on summer session from 6.20 -7.85.

**Key words:** Self purifying capacity, Industrialization, Water sampling.

#### INTRODUCTION

Water covers 71% of the Earth's surface. It is vital for all known forms of life [1]. On Earth, 96.5% of the planet's water is found in seas and oceans, 1.7% in groundwater, 1.7% in glaciers and the ice. Only 2.5% of the Earth's water is fresh water, and 98.8% of that water is in ice and groundwater [2]. Less than 0.3% of all freshwater is in rivers, lakes, and the atmosphere, and an even smaller amount of the Earth's freshwater (0.003%) is contained within biological bodies and manufactured products [3]. Safe drinking water is essential to humans and other life forms even though it provides no calories or organic nutrients. Access to safe drinking water has improved over the last decades in almost every part of the world, but approximately one billion people still lack access to safe water and over 2.5 billion lack accesses to adequate sanitation [4]. There is a clear correlation between access to safe water and Safe and Gross domestic

product per capita [5]. Water that is not fit for drinking but is not harmful for humans when used for swimming or bathing is called by various names other than potable or drinking water, and is sometimes called safe water, or "safe for bathing"[6]. Chlorine is a skin and mucous membrane irritant that is used to make water safe for bathing or drinking. Its use is highly technical and is usually monitored by government regulations (typically 1 part per million (ppm) for drinking water, and 1–2 ppm of chlorine not yet reacted with impurities for bathing water [7]. Water, however, is not a finite resource, but rather re-circulated as potable water in precipitation in quantities many degrees of magnitude higher than human consumption. Therefore, it is the relatively small quantity of water in reserve in the earth (about 1% of our drinking water supply, which is replenished in aquifers around every 1 to 10 years), that is a non-renewable resource, and

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it is, rather, the distribution of potable and irrigation water which is scarce, rather than the actual amount of it that exists on the earth. Water-poor countries use importation of goods as the primary method of importing water (to leave enough for local human consumption), since the manufacturing process uses around 10 to 100 times products' masses in water. In the developing world, 90% of all wastewater still goes untreated into local rivers and streams [8]. Some 50 countries, with roughly a third of the world's population, also suffer from medium or high water stress, and 17 of these extract more water annually than is recharged through their natural water cycles. The strain not only affects surface freshwater bodies like rivers and lakes, but it also degrades groundwater resources. Man has been exploiting environment right from the very beginning of his existence on earth for betterment of his life, water bodies like river stream, rivulets lake, ponds etc. TO day rapid urbanization industrialization and thus the increased to human population and thus the increased quality of waste product discharge in to water bodies exceeding the self purifying capacity of water bodies deteriorating nation water resource [9]. Rivers are the most important source of water to global population. A huge quality of water is required in various institutions. The maximum value goes in to hospital and minimum is consumed in theaters. Water purity is essential for human health. Its demand increased with exceeding population [10].

#### STUDY SITE

**Location:** Rewa District is situated near the north east border of M.P Rewa town falls under huzur tahsil of the District with a total population of 12981 geographically finds. Its place at 2432 north latitude and 81-19 .north latitude with an average high of 318 meters above men sea level .

**Climate:** Rewa is located in interior of the sub tropical Indian continent and referred to have monsoonal type of climate they year can broadly be divided in to 3 distinct season wise. rainy, winter and summer. Rainy season is charatristised by heavy rains as wells high temperature. Three season described mainly depends upon three climate factors i.e. temperature, rain fall and humidity.

**Soil:** The soil is mixed type. Which is derived from crystalline rocks granites, gneisses, and quartzite?

The yellow sandy soil which is predominant in the area. The soil is generally shallow and Profile River called Bihar river. Bicchiya flow in township industrial, domestic and municipal discharge merge in to it at different points.

#### MATERIAL AND METHODS

##### Sampling situation

Seven sampling station were selected for physico chemical analysis of river water. Sampling station are classified in to 3 groups .They are

- (1) UP stream station.
  - (2) Downstream station.
  - (3) Town ship stations.
- (A) UP stream station.

Station 1: The station was established at laxman bag mandir the Bicchiya up stream.

Station 2: Second station was established at kuthuliya agriculture farm .the Bihar up stream.

(1) **Town ship station :**

Station 3: That station was established at rajgat.

Station 4: Forth station was established at nipaniya.

Station 5: The last sampling station was making at vikram bridges.

(B) Down stream station :

Station 7: The last sampling station was established at forest range office which is about 1 K.M station 6.

#### Sampling

**Water sampling:** Surface water sampling was collected in the week of each month from January 2012 to December 2013. Sample was collected in the early hours of the day. some characteristic analysed were in the laboratory like BOD, COD, pH, Turbidity, Ca, hardness ,suspended solid etc. water sampling were collected by using dussart flask sample.

#### Plant sampling

(1) Phyto plaktone sampling: To collect the phyto plankton and alge most common phyto plankton net number 25 was used. To ensure complete sedimentation 10 ml of lugali iodine was added in 1 litter of sample kept for 24 hrs, and them suspended liquid was removed.

(2) Zoo plankton sampling: Zooplaktons which are difficult to identify with a naked eye were collected by planktone net. The sampling was doning from October 2012 to may at the sampling station.

#### METHODLOGY

##### Physio-chemical analysis

##### Physical characteristics

(1) Colure: Taste and odor were determined by usual observation.

(2) Temperature: Was measured with the help of a mercury bulb centigrade thermometer.

(3) P.H: PH values were determined by electronic method with a portable grip ph.

**Procedure:** Metallic plate with central hook, good quality nylon rope and measuring tap. Now lower the plate is water till is reaching the bottom. Turbidity meter Toshiwal was used for the determination of turbidity in water.

**Total solids (T.S):** Sample evaporating dish of 100ml capacity were taken and after drying them completely their initial weights were noted

**T.S** (mg/l) =  $\frac{A-B \times 100 \times 1000}{50}$   
 Where A= Final weight of the dish in gm. B = Initial weight of the dish in gm.

Total suspended solids (TSS): Total suspended solids were determined as the difference between the total solids (TS) and total dissolved solids and presented.

TSS (MG/L) =T.S- T.D.S

Chemical characteristics:

(1) Total alkalinity

In the most natural water bicarbonates and some carbonate presenting amounts. The salt get hydrolyses in solution and produced OH ions, consequently affected the.  $M + HCO_3 + H_2O - M + H_2CO_3 + OH$

**Requirement:** SULPHURIC ACID (0.02N) phenolphthalein indicator titration assembly. If slight pink colour appears added acid colour less point appear. Now add 2 drops of methyl orange continue titration till colure change from yellow to orange.

**Calculation:** The phenolphthalein and total alikanity is measured by fallowing formula.

Phenolphthalein alkanity (p) as mg/ l of Caco3 = ml titration (p) ×100/ml of the sample.

Total alkanity (T) as of mg / l of Caco3 = ml of titration (T) ×100 / ml of the sample.

(2) Total hardness is pre dominantly caused by cation. Such as calcium magnesium, alkaline earth metal such as iron, magnesium strontium etc.

(3) Carbonate and bicarbonate of the calcium and magnesium cause temporary hardness. Sulphates and chlorides cause permanent hardness. Regents (1) buffer solution: 16.9 g of ammonium chloride and 1.25 g of magnesium salt of EDTA is 143ml of concentrated ammonium hydroxide and diluted to 250 ml with distilled water.

(3) Eriochrome Black: T indicator 0.5g of enriochrome black –T indicator is dissolved in 100 g of tri ethanolamine.

**Table 1. Temperature**

Station number	Winter Min- Max	Summer Min –Max	Rainy Min – Max
1	23.2- 25.3	28-31	24.3- 28.0
2	23.4 -25.8	29.2- 31.2	24.4- 28.0
3	23.2-25.6	27.2- 31.4	24.4 -28.0
4	23.1 – 25.7	28.8-31.4	24.4 -28.1
5	23.4 -25.8	29.6 -31.1	24.4 -28.2
6	23.2-25.4	29.0 -31.4	24.7-28.2
7	23.1 -25.2	29.0-31.2	24.3-28.2

**Table 2. pH**

Station	Winter Min-MIX	Summer Min-Max	Rainy Min-Max
1	7.10-7.5	6.94-7.60	7.00-7.45
2	7.00 -7.60	7.20-7.40	7.10-7.50
3	6.80 -7.52	7.00 -7.52	7.20-7.56
4	6.30-7.40	6.20-6.80	7.00-7.20
5	6.80-8.00	8.20-7.00	7.00 -7.72
6	6.80-8.10	8.20-7.85	7.10 -7.8o
7	7.10 -7.65	7.20 -7.06	7.10 -7.60

Calculation: Total hardness (mg/l) =T×100 /v.

Where T = Volume of titrant.

V=Volume of sample.

Chloride S Presence of chloride is natural water can mainly attribute to dissolve of salt deposited in the form of ions (cl). Higher concentration indicates pollution by sewage.

**Calculation:** chlorides = (A-B) ×N ×35.45 / sample taken in ml.

(4)Phosphates presentation in higher concentration causes water pollution. This occurs by use detergent and fertilizer.

Calculation (mg /l) = Absorbance of sample × co centration of stander × 1000 /Absorbance of stander sample taken.

(5)Temperature: Temperature plays a very important role affecting various parameter s such as salinity, salinity dissolved oxygen, electrical conductivity etc.

Apparatus required

Thermometer = 0.1 division.

Calculation: tamseparance (secchi disc trance =parence) = $(X1 \times X2) / 2$

X1 = Depth at which secchi disc disc disappears.

X2 =Depth at which secci disc reappears.

(6) PH value: PH measured the biological and chemical properties of liquid makes its determination very important. Ph range from 0-7.

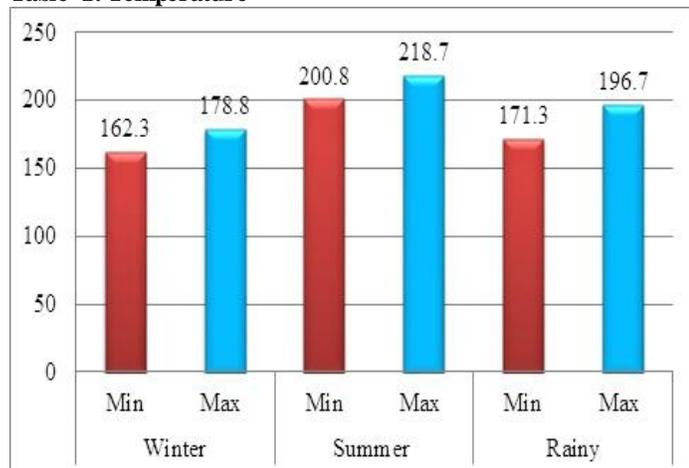
Apparatus required: PH indicator (BHD) method.

## RESULTS

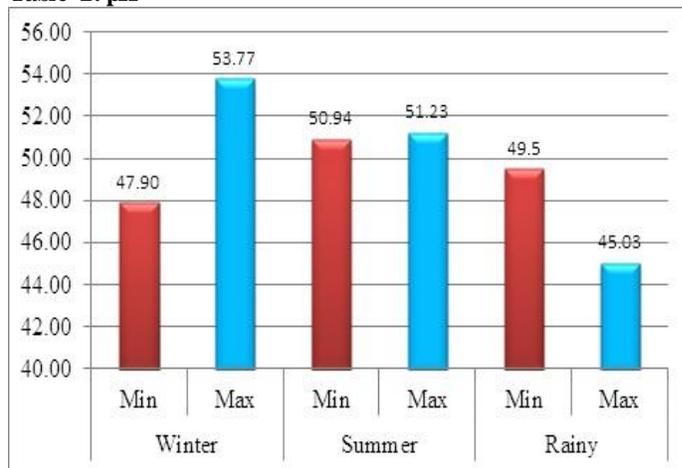
### Phsico Chemical Analysis

Seasonal temperature recodes of Bichhiya –Bihar river water. The water sampling done for measurement of the temperature and PH in different session in both rivers. The maximum temperature occurs in summer session 27.2 - 31.4. The lowered temperature reported in winter session 23.2- 25.8. The higher PH reported on winter session range from 6.20-8.10 .the lower PH reported on summer session from 6.20 -7.85.

**Table 1. Temperature**



**Table 2. pH**



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