

PHYSICO-CHEMICAL STUDIES OF WATER QUALITY IN DIFFERENT PONDS OF BARACHATTI BLOCK AT GAYA DISTRICT.

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Abstract

The present paper deals with Physico-chemical studies of water quality in different ponds of barachatti block. Water samples were collected from four sampling ponds i.e. shobh (P1), Bibipheshra (P2) Bajarker (3) and Rohi (P4) and the parameter like temperature, pH, total hardness, Ca, Mg, Nitrate, Nitrite, were measured. The value of these parameters are indicated in the table-1 which shows that water quality is totally unfit for drinking purpose of pond (P3) and (P4) but pond (P1) and (P2) is fit for domestic works.

Key words: Physico-chemical studies, Pond water, water quality.

INTRODUCTION

Barachatti is a block at Gaya district .It is situated 45 km. towards south of district headquarters of Gaya. It localized 42°15 – 42° 49 Latitude and 84°50 - 84°01 longitude. Water is one of the most essential constituents of the environments. It is the vital source of a kind of life on earth. The present realization is clear about the limited resources and competing demands. This indeed has placed an urgency on the protection of quality of water a vital natural resources.

The natural and man made factors responsible for water pollution. Sewage sullage solid wastes etc produces significant amount of chemical besides heavy metals which could adversely effect the human health, vegetation aquatic life forms and ecosystem. A part from these ions introduction of several other inorganic and organic wastes disturb the quality of water. Such as hardness, Ca and Mg hardness, pH Increase in the concentration of these parameters beyond permissible limit adversely effect the aquatic flora and fauna which in turn effect the ecosystem of water body sometimes causing adverse damages. The present study was undertaken to ascertain the quality of water in different ponds of barachatti block of Gaya district.

OBJECTIVE

The objective of the present investigation has been made to understand the chemical characteristics of pond water quality of barachatti block.

STUDY AREA

In the present investigation, there are five water samples from different areas of both Gaya block were collected in the month of December 2016 to estimate quality of pond water. These water were extensively used for domestic purposes. The sampling stations are Shobh (P1), Bibipheshra (P2), Bajarker (P3) and Rohi (P4).

MATERIAL AND METHODS

The water samples were analysed for physico-chemical parameters according to the standard methods. Water samples from different ponds (P1, P2, P3 and P4) were collected in the month of May 2016. Samples were usually collected in the 7.30 A.M. to 10:30 A.M. Water qualities undergo both seasonal and yearly fluctuations.

Physico-chemical analysis

1. Temperature : Temp of the pond was recorded at the time of collecting the samples.

2. pH : pH of the water is very important for the aquatic growth it was determined with the help of pH meter.

3. Total hardness: The metallic cations other than those of alkali metals when expressed as equivalent to CaCO_3 represent the total hardness.

Table - 1: Showing different Parameters of water quality of pond water of Barachatti Block Gaya, 2016

S . N o .	Parameters	Unit	P1	P2	P3	P4
1	Temp	oC	30.34	31.34	39.34	30.67
2	pH		6.84	7.88	6.87	8.85
3	Total Hardness	mg/L	103.44	108.22	106.78	181.08
4	Ca Hardness	—	85.60	56.61	65.53	120.70
5	Mg Hardness	—	10.59	8.95	6.02	8.28

4. Ca hardness: The quantities in natural water generally vary from 10 to 100 mg/L. Calcium as such has no hazardous effects on human health. In fact, it is one of the important nutrients required by the organisms.

5. Mg hardness: Magnesium also occurs in all kinds of natural waters with calcium but its concentration remains generally lower than the calcium. Its high concentrations as 500 mg/L is responsible for unpleasant taste to the water.

RESULTS AND DISCUSSION

The ground water are quality parameters given in Table-1. and data are comparing with WHO (2011) and IS: 10500 standards for drinking water.

The results shows that at all the four ponds in the water system the value of pH was observed in the range of 6.84 to 8.84. High pH value induces formation of trihalomethane which are toxic in nature. The value of total hardness, Ca-H and Mg-H were observed in the range of 103-184, 56- 61 and 6.02-10.592 mg/L. Mg-H is absolutely essential for chlorophyll bearing algae and plants whereas Ca-H normally occur in combination with carbonate ions.

In the present study some of the parameters are well within the permissible limit of WHO (1978) and ISI while some are exceeded beyond the limit. It shows the water is unfit for drinking and cooking purpose but is more suitable for fish culture. But with adequate treatment processes the water could be made available for drinking purpose.

SUGGESTION

The detail investigation may be carried out on other living organisms to avoid the hazardous/ injurious impact of the water.

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