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PHYSICO-CHEMICAL ASSESSMENT OF GROUNDWATER OF THE NORTHERN PART OF BUDHI GANDAK AREA AKBARPUR IN MUSHAHARI BLOCK MUZAFFARPUR DISTRICT, BIHAR

[1]Mamata Kumari and [2]Satya Brat Shastri

Industrial Fish & Fisheries, R.D.S. College, Muzaffarpur, Bihar
[2]Lecturer, B.D.B.C. College, Muzaffarpur, Bihar

Review Paper

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ABSTRACT

During investigation, carried out the quality of water sample from tube wells at different places besides the said area Akbarpur in Mushahri Block Muzaffarpur District of Bihar state during June 2017 to May2018. Parameters such as pH, TDS, DO, EC, alkalinity, total hardness Ca, Mg, Po_4---, No_3-, So_4– and arsenic have been studied. Some samples exceeded the maximum permissible limit of TDS and Iron also according to medical science. Another water samples along Budhi Gandak area under examination which even exceeded the maximum permissible level. Arsenic contamination in the ground water of this belt is a serious concern about human health.

No. of Pages: 3 **References: 7**

Keywords: Budhi Gandak Area, Physico-chemical Parameters, Groundwater Quality, Tube wells.

INTRODUCTION

Water is essential for survival of all living organisms. Survival of human drinking water is life sustaining. Its' needed for metabolic processes and serving as a solvent for body solutes. Water is normally polluted by the activities of creatures. Nature disaster such as storms, earthquake and volcanoes also causes changes in water quality and the ecological standard of water. Ground water pollution is harder to recognize until after illness has occurred.

It has been recognized that water pollution is the vital cause of deaths and diseases, and that it concerns for death of more than 5 to ten people in this area. Testing of water samples regularly is the only way to be ensured that the groundwater is not contaminated.

In continuation of my work at 4-8 locations, I have, in the present research, studied quality of water samples from tube wells at different locations including the Akbarpur of Budhi Gandak area in Mushahari Block, Muzaffarpur of Bihar during the experimental year 2017-18 with respect to water quality Parameters, such as, total hardness, Ca, Mg, Po_4---,No_3-, So_4-- and Arsenic (Acharya, S.K., 2005) and as besides several Physico- chemical parameters such as pH, TDS, DO, EC, alkalinity and chloride comparisons have been made with a series of national and International standards for drinking water.

MATERIALS AND METHOD

Water samples were collected from 4 sites of different regions besides Akbarpur Budhi Gandak area from Mushahari from June 2017 to May 2018 in side District. The samples were collected in cleaned glass jar with necessary precautions. The pH and DO were measured at the sampling sites. The other parameters like total hardness, Ca, Mg, Po_4---,No_3-, So_4-- and

*Corresponding author: *drmamatakumari@gmail.com*

arsenic were calculated by using standard method by me to determine the physico-chemical and metal parameters. Several informations are available on the Physico-chemical parameters of groundwater in India (APHA, 1996., Trivedi, R.K. & Goel P.K., 1984).

Table 1: Physico-chemical parameter of groundwater of Tube wells.

S.No.	Parameters Physico-chemical	June To August 2017	September To Nov 2017	December2017 To Feb 2018	March To May 2018
1	pH	7.54	7.12	7.00	6.76
2	DO	6.1	5.3	4.8	4.2
3	TDS	930	690	780	290 mg/L
4	EC	1560	750	650	1620
5	Alkalinity	211	190	154	120 mg/L
6	Ca	76	47	55	105
7	Mg	45	40	30	50
8	Phosphate	.173	.157	.160	.184
9	Sulphate	1.11	0.94	1.58	1.48
10	Nitrate	.26	.20	.15	.23
11	Arsenic	.006	.008	.009	.007

RESULT & DISCUSSION

In the course of research, marked variations were seen in water quality. The analysis of the ground water quality parameters revealed that there was wide variation in range of pH, Do, TDS, Ec, alkalinity along with total hardness, Ca, Mg, Po_4---,No_3-, So_4-- and arsenic .

The pH of ground water is indicator of it's' quality. Study area of pH value varied from 6.76 to 7.54. Values of the samples under examination are under the limits of Bureau of Indian Standards for all type of uses.

D.O. range shown in this work is 6.1 to 4.2 ppm. It was observed that dissolved oxygen in G. water is never a stress point. D.O. depends upon the dissolved organic matter.

TDS occurs due to large amount of fine clay particles or organic debris in the ground water. Its' range found in the research are 930 to 290 mg/L.

The presence of carbonates, bicarbonates and hydroxides is the main cause of alkalinity in natural water. The alkalinity value in the ground water varied from 154 to 211 mg/L.

When water goes through sand, soil and rock, it contains very small amounts of minerals and holds them in solution. Magnesium and calcium dissolved in water which makes water hard along with their carbonates, sulphates and chlorides in groundwater. Total hardness in the present research is varied.

CONCLUSION

Physico-chemical properties shown in this research revealed that the groundwater of Akbarpur in Mushahari block indicates the presence of ionic concentrations. Here some samples show high content of TDS which may cause aesthetic problems and other physic-chemical parameters which are well within the respective maximum limits. Arsenic is found in permissible limits in which one sample is a matter of deepest concern and is a potential health risk of the local residents.

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