Water Analysis of Ground Water in Nanuta Block of Saharanpur District, Uttar Pradesh

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Abstract

Ground water is the important source for drinking, domestic and several other purpose for all kinds of organisms. Toxic pollutants utimatally reach the ground water and enter into the food chain. Water quality parameters were studies include the determination of pH-values, total alkalinity (T.A.), total dissolved salt (T.D.S.) and electrical conductivity (E.C.).

In addition to it,the concentration of different metal cations sodium (Na^+),potassium(K^+),calcium(Ca^{++}),Magnisium(Mg^{++}) and anions like bicarbonate$(H\ CO_3^{..})$, $NO_3^{..}$(nitrate),F^-(fluride)and $SO_4^{..}$(sulphate) were analysed and compared with Indian standereds (IS) and World Health Organisation (WHO).

Keywords: Ground Water, Physico-Chemical Parameter And Post Monsoon, Minimum Average Value, Maximum Average Value**.**

Introduction

Nanuta block belongs to 40 km towards south from Saharanpur district, 546 km from state capital lucknow,towards east is bounded by rampur maniharan ,north thanabhawan.Hindi is the local language,people also speaks urdu and Punjabi,climate of nanuta block warm and temperate.

Due to increasing population,industraial activities and agricultural water demand is also increase,water is the one of the natural resourse of the earth.It is essential for survival,there are no substitute for water,river are the most dynamic of the earth ecosystem their major function is transport of water.Release of domestic sewage and industrial waste increase the concentration of sulphate and chloride in ground water(Mukhapadhyay & S.,Mukherjee R.2013) Soil act as natural filtration and sediments makes the ground water free from organic impurities(Karanth K.R.1989), A number of studies regarding pollution of river hindon & its tributaries have been carried out by different workers.(Verma and Mathur,1971: Verma and Dalela 1975).

The organic waste discharge from the industries were change the ground water quality (Praksh Pam, Srivastava S.k.andbhartariya K.G. (2013).Sugar mill effluent decrease the water demand for irrigation (Saranraj. P.and Stella D., 2014).

water for drinking should be colourless,odourless,tasteless and free from turbidity.The ground water are changing due to human activities(Gehrels et.al.,2001).Surface water is more polluted then ground water so demand of ground water increase(Tyagi et.al.,2009).

Objective of the Study

The main objective was to study the quality of ground water in nanuta block of Saharanpur district, uttar pradesh.

Experimental and Discussion
Materials and methods

The study was conducted in the department of chemistry, Saharanpur district of Uttar Pradesh, India. Total 42 ground water sample were collected from 14 villages of nanuta block.Three sample from each village, after post monsoon 2017. Standered solution were prepared in double distilled water. Village were Chora, Jadauda Panda, Jhabiran, Kuwakhera, Maheshpur, Tikraul, Bhojpur Kanshipur, Khudana, Mora, Pandokheri, Chanderpur, Mahespur and Sadhauli Samples were collected in glass reagent bottles and stored at very low temp to retain their original form. The samples were brought to the laboratory to determine the parameter. The reagents used for the analysis were AR grade and double

Remarking An Analisation

distilled water were used for preparation of solutions. The pH and E.C.were measured by using Eutech-Cybernetics pH meter and E.C. scan meter. Total hardness, calcium, Magnisium were measured by EDTA titration. Sodium and potassium were analysed using flame photometer. Sulphate were determined napthalometrically using ELICO-52 Nepthalometer. Bicarbonate, titration with 0.01N sulphuric acid, fluride were measured by ELICO-52 spectrophotometer, compared with Indian standereds (IS) and WHO.
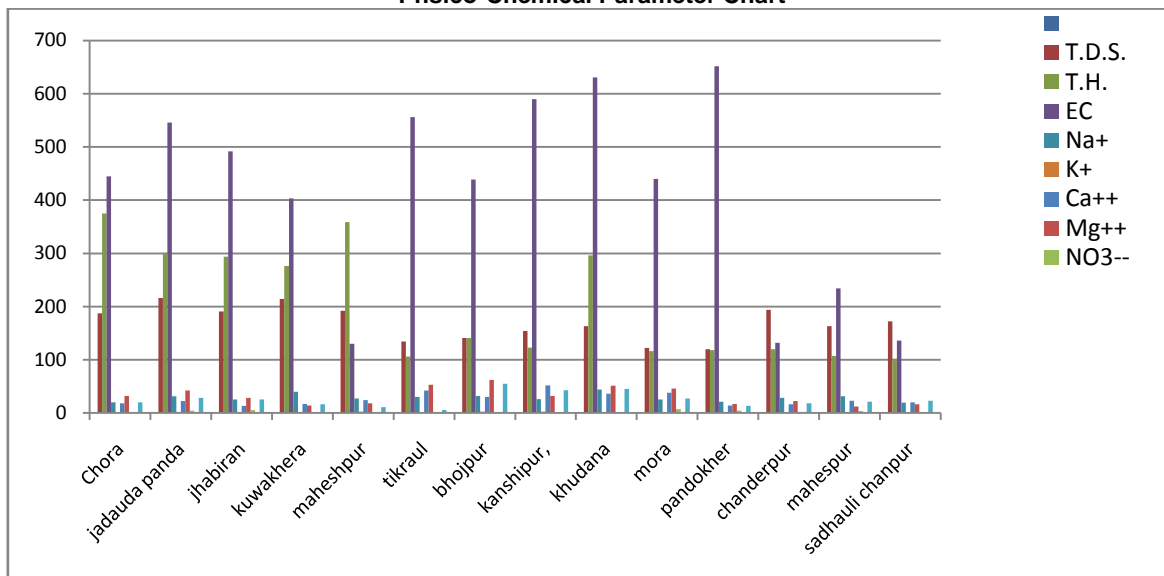
Table No.1
Physico – Chemical Parameter of Nanuta Block

S.No.	Name of Village	T.D.S. mg/l	T.H. mg/l	EC mg/l	pH
1.	Chora	187	375	445	6.9
2.	Jadauda Panda	216	301	546	7.1
3.	Jhabiran	191	294	492	7.4
4.	Kuwakhera	214	276	403	7.3
5.	Maheshpur	192	359	130	7.5
6.	Tikraul	134	106	556	6.7
7.	Bhojpur	141	141	439	6.6
8.	Kanshipur,	154	123	590	7.4
9.	Khudana	163	296	631	7.2
10.	Mora	122	116	440	7.3
11.	Pandokheri	120	118	652	7.5
12.	Chanderpur	194	120	132	6.8
13.	Mahespur	163	107	234	6.4
14.	Sadhauli	172	102	136	6.3
	Min.Ave.V.	120	102	130	6.3
	Max.Ave.V.	216	375	652	7.5

Table No.2
Physico – Chemical Parameters of Different Villages of Nanuota Block (Cations and Anions)

S.No.	Name of Village	Na$^+$ (mg/l)	K$^+$ (mg/l)	Ca^{++} (mg/l)	Mg^{++} (mg/l)	NO$_3^-$ mg/l	F$^-$ mg/l	SO$_4^-$ mg/l	HCO$_3^-$ mg/l
1.	Chora	20	1.2	18	32	1.2	0.46	20	0.26
2.	jadauda panda	31	1.6	22	42	4.1	0.65	28	0.27
3.	jhabiran	25	2.1	13	28	5.3	0.51	25	0.26
4.	kuwakhera	40	1.6	17	14	0.19	0.2	16	0.25
5.	maheshpur	27	2.3	24	18	1.4	0.21	11	0.28
6.	tikraul	30	1.5	42	53	0.03	0.19	5.6	0.24
7.	bhojpur	32	2.5	30	62	0.4	0.63	55	0.22
8.	kanshipur,	26	2.3	52	32	0.02	0.43	43	0.23
9.	khudana	44	1.9	36	51	0.05	0.45	45	0.24
10.	mora	25	1.5	38	46	7.5	0.3	27	0.21
11.	pandokheri	21	1.7	14	17	4.3	0.44	13	0.28
12.	chanderpur	28	1.3	16	22	2.1	0.23	18	0.25
13.	mahespur	31	1.8	23	12	3.4	0.15	21	0.2
14.	sadhauli	19	1.4	20	16	1.5	0.34	23	0.23
	min.ave.v.	19	1.2	14	12	0.02	0.15	11	0.2
	max.ave.v.	44	2.5	52	62	7.5	0.65	55	0.28

Min.Ave.V. – Minimum Average Value, Max. Ave.V.-Maximum Average Value
Phsico-Chemical Parameter Chart

TableNo.-3

Different parameter according to **Acceptable limit (IS), Permissible limit (IS) and Permissible limit (WHO)**

S.No.	parameter	Acceptable limit(IS)	Permissible limit(IS)	Permissible limit(WHO)
1.	pH	6.5-8.5	6.5-8.5	6.5-8.0
2.	T.D.S.	500mg/l	2000mg/l	1000mg/l
3.	Ca	75mg/l	200mg/l	75mg/l
4.	Cl	250mg/l	1000mg/l	250mg/l
5.	Mg	30mg/l	100mg/l	50mg/l
6.	So_4^{--}	200mg/l	400mg/l	150mg/l
7.	T.H.	200mg/l	600mg/l	500mg/l
8.	T.A.	200mg/l	600mg/l	-
9.	HCO_3^-	300mg/l	-	-
10.	Na	200mg/l(BIS)	-	200mg/l
11.	D.O.	4-6mg/l(USPH)	-	-

Result and Discussion

The chemicals dissolved in ground water were analysed quantitavily for major cation and anions.The overall range of nanuta block of Ca^{++} was 13-52mg/l, Mg^{++} was 12-62mg/l, Na^+ was 19-44mg/l and K^+ was1.2-2.5mg/l, the range of cations were, $Mg^{++} > Ca^{++} >$, $Na^+ > K^+$ .anions range NO_3^{--} was 0.02-7.5mg/l , F^- was 0.15-0.65mg/l , $SO_4^-$was 11-55mg/l, HCO_3^{--} mg/l ˙0.20-0.28 ˙, the range of anions were $SO_4^{--} > NO_3^{--} > F^- > HCO_3^{--}$ .Mg^{++} ion concentration ,large in titraul,bhojpur and khudana.The T.D.S .range was 120-216mg/l, T.H. range 102-375mg/l, E.C. range130-652mg/l, pH range 6.3-7.5. The ground water of different villages were less polluted.

Suggestion

Waste water treatment is done by filtration, activated charcoal, synthetic resin, electrodialysis, reverse osmosis (De A.K. & De A.K. 2017).

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