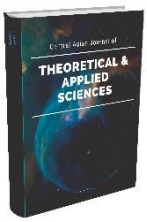

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Comparative Studies on the Assessment of Parameters of Water in Different Blocks of District Agra

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Abstract. *The aim of this study is to assessment of parameters of water in different blocks of district Agra. The samples of water were collected from the different blocks in district Agra, Uttar Pradesh (Blocks are- Barauli Ahir, Shamsabad, Fatehabad, Etmadpur and Kheragarh). Groundwater samples of various locations were analyzed for determination of degree of pollution with respect to the following physicochemical parameters (pH, TDS, total hardness, total alkalinity, turbidity, etc.). During the months of May to July, 2022. The samples were collected from the ground water of the different blocks in pre-cleaned polyethylene bottles.*

Keywords: *Physico-chemical, groundwater, urbanization.*

INTRODUCTION

Water is the most essential and prime necessity of life. It is an essential requirement for all the living's life supporting activities. Groundwater is generallyused for drinking, irrigation and power supply etc. The usual source of drinking water is from streams, rivers, wells and boreholes which are usually not treated[1]. In advanced life of present era, water has direct bearing on health of all the human beings including plants and animals. Accountable reflection of quality of water in various sectors is the subject of interest of modern life. Advancement in technology has boosted the human population and also enhance water use and simultaneously put burden on the existing water bodies to fulfill the industrial, agricultural and domestic use of water; which is said to be unending process of development [2]. Fresh water resource is becoming day-by-day at the faster rateof deterioration of the water quality is now a global problem [3].

MATERIALS AND METHODS

The groundwater samples collected from various selected locations were analyzed for physio-chemical parameters in order to determine degree of pollution. Standard methods given in " Bureau of Indian Standard (BIS) drinking water specification as per IS 10500: 2012 (II revision)" [4] were used for determination of variousphysio-chemical parameters:

1. pH; Colorimetric Method, Test Method No. IS 3025 (Part-11) was used.
2. TOTAL DISSOLVED SOLIDS: Gravimetric Method, Test Method No. IS 3025 (Part-16) was used.
3. TURBIDITY: Turbidity Method, Test Method No. IS 3025 (Part-10) was used.
4. TOTAL HARDNESS: Titration Method, Test Method No. IS 3025 (Part- 21) wasused.
5. ALKALINITY: Indicator Method, Test Method No. IS 3025 (Part-23) was used.
6. CHLORIDE: Argentometric Method, Test Method No. IS 3025 (Part-32) was used.
7. FLOURIDE: Zirconium Alizarin Method, Test Method No. IS 3025 (Part- 60) wasused.
8. SULPHATE: Turbidmetric Method, Test Method No. IS 3025 (Part-24) was used.

RESULTS AND DISCUSSION

The quantitative analysis of physiochemical parameters of five blocks of Agra district for three months (from May to July, 2022) are shown in Table no.- 1 to 3.

pH Values

The permissible limit of pH values for drinking water is specified as 6.2 to 8.5 asper WHO [5] [6] [7]. The pH values of groundwater samples were ranged from

7.30 (May), 7.32 (June) and 7.33 (July) with overall average value 7.32 in successive three months analysis.

Total Dissolved Solids

The TDS of groundwater samples ranged from 1057 (May), 892 (June) and 1103 (July) mg/L with an average value of 1017 mg/L in successive three months analysis.

Turbidity

The turbidity of groundwater samples ranged from 1.52 (May), 1.57 (June) and 1.58 (July) mg/L with an average value of 1.56 mg/L in successive three monthsanalysis.

Total hardness

The total hardness of groundwater samples ranged from 195 (May), 200 (June) and 209 (July) mg/L with overall average of 201 mg/L of successive three monthsanalysis.

Total Alkalinity

Total alkalinity of groundwater samples varies from 284 (May), 290 (June) and 289 (July) mg/L with overall average of 288 mg/L of successive three months analysis.

Chloride

The values observed are within the specified limit of 250 mg/L as per IS 10500. The chloride concentration in groundwater samples varies from 367 (May), 372 (June) and 371 (July) mg/L with overall average of 370 mg/L of successive three months analysis.

Sulphate

The sulphate ion concentration in groundwater samples varies 112 (May), 117 (June) and 115 (July) mg/L with overall average of 114.66 mg/L of successive three months analysis.

Fluoride

The fluoride ion concentrations in the study were within the specified limit and ranged from 1.15 (May), 1.22 (June) and 1.24 (July) mg/L with overall average of

1.20 mg/L in successive three months analysis. As per IS 10500 maximum fluoride concentration in drinking water is 1.50 mg/L.

Physico-Chemical Parameters of Groundwater of Different Blocksin District Agra (May)

District	Block	Month	pH	TDS	Turbidity	TH	Alkalinity	− Cl	SO_4^{-2}	F^-
Agra	Barauli Ahir	May	7.42	939	1.92	159	239	338	-	1.07
	Shamsabad	May	7.27	1095	1.85	232	329	415	137	1.22
	Fatehabad	May	7.40	1424	2.12	262	372	515	164	1.26
	Etmadpur	May	7.00	666	0.52	108	152	218	135	1.00
	Kheragarh	May	7.43	1163	1.18	214	330	347	125	1.21

Physico-Chemical Parameters of Groundwater of Different Blocks inDistrict Agra (June)

District	Block	Month	pH	TDS	Turbidity	TH	Alkalinity	− Cl	SO_4^{-2}	F^-
Agra	Barauli Ahir	June	7.41	936	1.95	158	241	339	--	1.0
	Shamsabad	June	7.29	1306	1.91	241	341	424	143	1.2
	Fatehabad	June	7.42	1425	2.18	269	379	521	169	1.3
	Etmadpur	June	7.02	675	0.57	114	154	223	141	1.1
	Kheragarh	June	7.44	1166	1.24	218	334	352	130	1.2

Physico-Chemical Parameters of Groundwater of Different Blocks inDistrict Agra (July)

District	Block	Month	pH	TDS	Turbidity	TH	Alkalinity	− Cl	SO_4^{-2}	F^-
Agra	Barauli Ahir	July	7.45	946	2.02	165	247	347	--	1.1
	Shamsabad	July	7.26	1290	1.82	255	326	407	132	1.1
	Fatehabad	July	7.43	1430	2.18	269	378	520	167	1.3
	Etmadpur	July	7.03	679	0.61	116	157	226	145	1.2
	Kheragarh	July	7.46	1169	1.26	240	337	354	131	1.2

Note:- All values except pH are in Mg/L.

CONCLUSION

It concluded that the water quality of these blocks in district Agra are acceptable for drinking purpose, irrigation as well as for other purposes. Domestic waste and agricultural activities affect groundwater quality so the monitoring of fertilizers and pesticides is needed. Treatment of wastes before discharge is necessary. Toxic material must be treated chemically and converted into harmless materials. Factories should try to recycle the waste water.

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