

ASSESSMENT OF WATER QUALITY ANALYSIS ON LABORATORY METHODS IN DIFFERENT VILLAGE IN DIFFERENT BLOCK IN JAIPUR (RAJASTHAN) INDIA ON YEAR 2017-2018

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Abstract: The present study was allotted to assess the ground water quality of varied location of various block of Jaipur district throughout 2017-2018. Totally {different completely different} water samples were collected from Deep Tubewell at different locations in and around totally different block. The water samples were analyzed for his or her physico-chemical characteristics, viz .pH, turbidity, chloride, total hardness, fluoride, nitrate, Iron and free atomic number 17. On scrutiny the results against water quality customary and standard values counseled by World Health Organization (WHO), it's found that the majority of the water samples area unit terribly exhausting and unsuitable for drinking functions.

Water quality analysis is a very important thanks to monitor and management pollution. The characteristics of a water system have an effect on its suitability for a selected use. Water quality analysis shows however well the standard of water will meet the wants of the user. it's outlined in terms of bound physical, chemical and biological characteristics. the target of water quality analysis is to envision the standard of water to grasp if a given sample of water is appropriate enough for a given purpose. These characteristics area unit historically collected manually from totally different water resources (i.e. lakes, rivers, and oceans), and assessed manually.

Index Terms - Ground water quality, Drinking water standards, Jaipur, Deep Tubewell, Total hardness.

I. INTRODUCTION

Water is most vital natural resources for man. the various kinds of water square measure surface water and well water. Out of this total water, 97.2% is saline confined to the ocean, departure solely a pair of.8% as recent of that concerning a pair of.2% is accessible as surface water and zero.6% as well water. well water is one among the earth's most generally distributed resources and is progressively line of work to the requirement of the domestic, industrial and agricultural sectors. well water is found within the pore house of soil and rock. the worth of well water as a resource lies within the incontrovertible fact that it's dependable even throughout the amount of inadequacy and drought, cosmopolitan and might be place into use with ease and speed. Surface water and groundwater square measure closely interconnected. The prevalence and accessibility of groundwater is ruled by the interactions of diverse environmental factors particularly climate, topography, vegetation, soil and earth science of a part. However, considering its use for drinking purpose, agriculture and business its quality assessment is important [1]. With this purpose the current study was disbursed in numerous Village of various block of Jaipur district of Rajasthan.

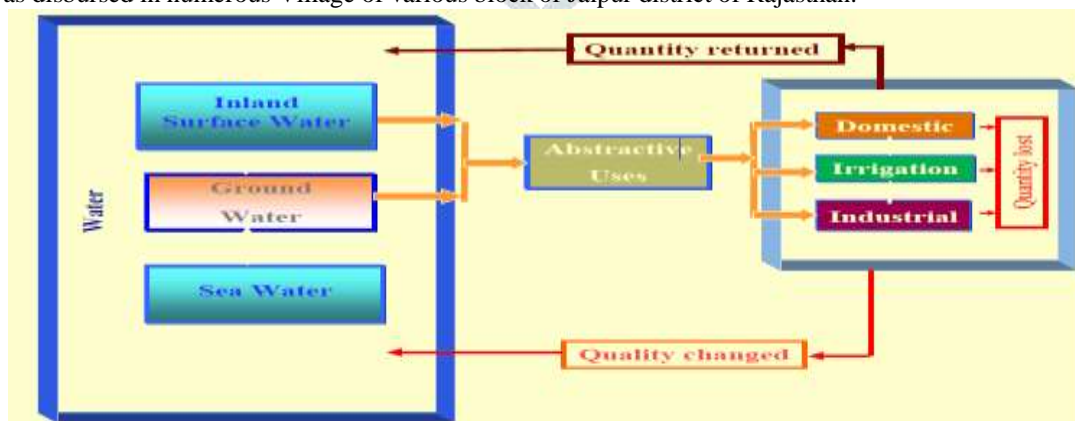


Figure 1:-Water Cycle in Different Place in Earth

The groundwater is believed to relatively cleaner and free from pollution than surface water [2]. however throughout last decade, it's ascertained that well water gets impure drastically attributable to exaggerated human activities Consequently range of cases of water born diseases has been seen that ar the causes of health hazards . Thus watching the standard of water is one amongst the essential problems with drink management.

II. LITERATURE SURVEY

This chapter reviews the literature relevant to the target of the study, i.e., standing of water quality similarly as info on the event of adsorbent and their use within the removal of pollutants from water. a short review of the various adsorbents to get rid of the pollutants has conjointly been enclosed. A discussion on this pondering the water quality for rural individuals has conjointly been incorporated. the foremost common and wide unfold threat related to water is contamination, either directly or indirectly, by sewage, by different wastes or by human or animal excretion. If such contamination is recent, and if among the contributors, there ar carriers of communicable enteric diseases, a number of the living casual agents is also gift. The water therefore contaminated or its use within the preparation of bound foods might lead to any cases of infection.

Water quality criteria of varied groundwater has been studied from totally different sources e.g. Tube well, Dug well, Bore well etc. by variety of Researchers. many of them has been listed. Quality of ground water close to the Mae-Hia waste disposal website has been evaluated by Karnchanawong et al. (1993). it's been according that ground water within the study space wasn't appropriate for drinking thanks to high contamination of Total and soiled coliforms and moderate contamination by nitrate and atomic number 25. Nitrate pollution of groundwater in fourteen cities of Northern China thanks to N chemical has been according by Zhang et al. (1996).The potential impacts of mine wastes on ground and surface water has been studied by Herzog (1996).

In India, pioneering studies on earth science of stream and lake ecosystems were meted out by Chakrabarty et al. (1959) on stream Yamuna, Abbasi et al. (2002) on Buckinghamhum canal, Martin et al.(2003) on stream Tamiraparani, Srivastava et al. (2003) on stream Asian wild ox at Jabalpur, Sinha et al. (2004) on stream Ram Ganga, Singh et al. (2004) on stream Yamuna and Guru Prasad et al. (2004) on Sarada geographical region.

With the increasing easy generating, assembling and storing knowledge, we have a tendency to live in AN increasing universe of an excessive amount of knowledge (Sorensen & Janssens, 2003). Extracting helpful info may be a should from these copious knowledge. supported the observations and chemical analyses, a case study of the faucet water quality equipped within the Jaipur District is performed, so as to visualize the standard of water equipped. Concentrations of major chemical parts within the H₂O were associated with the space downstream from the supply, with surface water within the upstream reaches of fine quality.

III. MATERIAL AND METHODS

1) Study Site

Test in State PHED Lab Jaipur and samples collected from different village in Jaipur district the sampling point as marked describe below follows:

1. village Achrol, block Amber Jaipur Rajasthan
2. village Akedadoongar , block Amber Jaipur Rajasthan,
3. village Baskhoh, block Bassi Jaipur Rajasthan
4. village Bassi, block Bassi Jaipur Rajasthan
5. village Kanota, block Bassi Jaipur Rajasthan
6. village Salagrampura, block Chaksu Jaipur Rajasthan
7. village Akoda, block Dudu Jaipur Rajasthan,
8. village Dudu, block Dudu Jaipur Rajasthan
9. village Govindgarh, block Govindgarh Jaipur Rajasthan
10. village Khapariya, block Jalsu Jaipur Rajasthan
11. village Radhakishanpura, block Jalsu Jaipur Rajasthan
12. village Pachar, block Jhotwara Jaipur Rajasthan,
13. village Beenjahera block Kotputli Jaipur Rajasthan
14. village Keshwanagujar, block Kotputli Jaipur Rajasthan
15. village Chauru, block Phagi Jaipur Rajasthan
16. village Thala, block PhagiJaipur Rajasthan
17. village Badhalr, block Sambhar Jaipur Rajasthan,
18. village Khatwari Khurd block Sambhar Jaipur Rajasthan
19. village Dantli, block SanganerJaipur Rajasthan
20. village Jeerota ,block Sanganer Jaipur Rajasthan
21. village Lobrawas, block Shahpura Jaipur Rajasthan
22. village Surajpura, block Viratnaga Jaipur Rajasthan

And so on different villages in block amber district Jaipur in Rajasthan

2) Water Parameters

On on top of parameter in study examine some parameter like

Temperature:-It is very important to record temperature aboard the opposite parameters as this may be helpful in behavioural analysis of the parameters being measured

pH scale:-The pH of resolution an answer} is that the live of the acidity or pH scale of that solution. The pH could be a ordered series whose vary is from 0-14 with a neutral purpose being seven. Values on top of seven indicate a basic or alkalic answer Associate in nursing values below seven would indicate an acidic answer.

Hardness:-Originally taken to be the capability of a water to destroy the lather of soap, hardness resolve erstwhile by volumetric analysis with soap answer. Nowadays, the analysis includes the determination of Ca and metal that area unit the most constituents of hardness

Alkalinity:-Alkalinity in natural waters might also be because of carbonates and hydroxides. generally analysis is administrated to {differentiate to tell apart} between the pH scale parts and this is often done by victimization different indicators within the volumetric analysis procedure and by creating acceptable calculations.

Chloride:-Chloride exists altogether natural waters, the concentrations variable terribly wide and reaching a most in ocean water (up to 35000mg/l Cl).

Nitrite:-The significance of chemical group (at the low levels usually found in surface waters) is principally as Associate in Nursing indicator of doable waste pollution instead of as a hazard itself though, as mentioned on top of below "Nitrate" (q.v.), it's chemical group instead of nitrate that is that the direct poisonous.

The sample was collected in plastic bottles which were cleaned with acid water, followed by rinsing twice with distilled water. The analysis of water was done by State PHED Lab Jaipur.

3) Water Quality Sampling Parameters

- I. Temperature of the tap water from different Village in different block district Jaipur in Rajasthan
- II. pH value of the tap water different Village in different block district Jaipur in Rajasthan
- III. Alkalinity of the water samples from different Village different block district Jaipur in Rajasthan
- IV. Total hardness of the water samples from hall different Village in different block district Jaipur in Rajasthan
- V. Presence of residual chlorine in the water samples from different Village in different block district Jaipur in Rajasthan

The results of the analyzed parameters of tap water of the different locations of different Village different block district Jaipur in Rajasthan with the related standards for drinking water prescribed by IS:10500 and USPHS. The drinking water standard is given in the table number 1.

Table 1 :-Indian Standard 10500 Parameter of water Quality

INDIAN STANDARD SPECIFICATIONS FOR DRINKING WATER IS: 10500

S.NO.	Parameter	Requirement desirable Limit	Remarks
1.	Colour	5	May be extended up to 50 if toxic substances are suspected
2.	Turbidity	10	May be relaxed up to 25 in the absence of alternate
3.	pH	6.5 to 8.5	May be relaxed up to 9.2 in the absence
4.	Total Hardness	300	May be extended up to 600
5.	Calcium as Ca	75	May be extended up to 200
6.	Magnesium as Mg	30	May be extended up to 100
7.	Copper as Cu	0.05	May be relaxed up to 1.5
8.	Iron	0.3	May be extended up to 1
9.	Manganese	0.1	May be extended up to 0.5
10.	Chlorides	250	May be extended up to 1000
11.	Sulphates	150	May be extended up to 400
12.	Nitrates	45	No relaxation
13.	Fluoride	0.6 to 1.2	If the limit is below 0.6 water should be rejected, Max. Limit is extended to 1.5
14.	Phenols	0.001	May be relaxed up to 0.002
15.	Mercury	0.001	No relaxation

IV. RESULT AND DISCUSSION

The various physico-chemical parameters examined showed goodly variations in numerous samples. The observations area unit represented in table-4. The findings and their comparison with United Nations agency and BIS health based mostly drinking pointers area unit conferred in table-2. the information discovered a substantial variation within the water samples with regard to their chemical composition.

pH is affected not solely by the reaction of greenhouse emission however conjointly by organic and inorganic matter gift in water. Any alteration in water hydrogen ion concentration is among the modification in alternative chemistry parameters. pH varies from 7.1 to 8.49.

This shows that every one samples area unit existed at intervals the minimum and most tolerable limit of United Nations agency and BIS. The water samples were found to be slightly basic in nature in year 2017-2018.

Table 2:- Comparison of water with drinking water quality standards

S. No	Parameters	WHO	BIS	Range	
				Min.	Max.
1	pH	6.5-8.5	6.5-8.5	7.0	7.5
2	Turbidity (NTU)	5	5	5	6
3	Chloride (mg/lit.)	250	250	10	220
4	Total Hardness (mg/lit.)	300	300	200	750
5	Nitrate (mg/lit.)	50	45	10	95
6	Fluoride (mg/lit.)	1.5	1.5	0.3	1.0
7	Iron (mg/lit.)	0.3	0.3	0.3	1.0
8	Free Chlorine	-	-	Nil	Nil

Table 3:- Sampling Points of different location in Jaipur Rajasthan

1	StateName	Dist Name	Block	VillageName	TypeOfSource	Lab	LabTestingDate	testid
2	Rajasthan	Jaipur	Amber	Achrol	Deep Tubewell	State PHED Lab Jaipur	12/03/2018	L0024180772
3	Rajasthan	Jaipur	Amber	Khora Meena	Deep Tubewell	State PHED Lab Jaipur	20/02/2018	L0024182300
4	Rajasthan	Jaipur	Amber	Chandawas	Deep Tubewell	State PHED Lab Jaipur	11/10/2017	L0023298528
5	Rajasthan	Jaipur	Bassi	Bagrana	Deep Tubewell	State PHED Lab Jaipur	30/08/2017	L0023299782
6	Rajasthan	Jaipur	Bassi	Madhogarh	Deep Tubewell	State PHED Lab Jaipur	25/07/2017	L0023496568
7	Rajasthan	Jaipur	Chaksu	Akodiya	Deep Tubewell	State PHED Lab Jaipur	12/02/2018	L0024151532
8	Rajasthan	Jaipur	Chaksu	Barkhera	Deep Tubewell	State PHED Lab Jaipur	09/02/2018	L0024148343
9	Rajasthan	Jaipur	Dudu	Akoda	Deep Tubewell	State PHED Lab Jaipur	31/07/2017	L0023561435
10	Rajasthan	Jaipur	Govindgar	Dhobolai	Deep Tubewell	State PHED Lab Jaipur	13/09/2017	L0023566552
11	Rajasthan	Jaipur	Govindgar	Govindgarh	Deep Tubewell	State PHED Lab Jaipur	23/03/2018	L0024181887
12	Rajasthan	Jaipur	Jalsu	Pratappura Kalan	Deep Tubewell	State PHED Lab Jaipur	30/06/2017	L0023642478
13	Rajasthan	Jaipur	Jamwa Ra	Bhanpur Kalan	Deep Tubewell	State PHED Lab Jaipur	16/10/2017	L0023714550
14	Rajasthan	Jaipur	Jamwa Ra	Langareeywas	Deep Tubewell	State PHED Lab Jaipur	26/09/2017	L0023746749
15	Rajasthan	Jaipur	Jhotwara	Begas	Deep Tubewell	State PHED Lab Jaipur	20/09/2017	L0023865934
16	Rajasthan	Jaipur	Kotputli	Bhojawas	Deep Tubewell	State PHED Lab Jaipur	16/11/2017	L0023873584
17	Rajasthan	Jaipur	Paota	Dwarikapura	Deep Tubewell	State PHED Lab Jaipur	16/11/2017	L0023874205
18	Rajasthan	Jaipur	Phagi	Bhojpura	Deep Tubewell	State PHED Lab Jaipur	15/02/2018	L0024171699
19	Rajasthan	Jaipur	Phagi	Jhadla	Deep Tubewell	State PHED Lab Jaipur	15/02/2018	L0024154690
20	Rajasthan	Jaipur	Sambhar	Bagawas	Deep Tubewell	State PHED Lab Jaipur	26/09/2017	L0024010988
21	Rajasthan	Jaipur	Sanganer	Bagru Rawan	Deep Tubewell	State PHED Lab Jaipur	05/10/2017	L0024029758
22	Rajasthan	Jaipur	Sanganer	Siroli	Deep Tubewell	State PHED Lab Jaipur	30/08/2017	L0024039879
23	Rajasthan	Jaipur	Viratnaga	Amloda	Deep Tubewell	State PHED Lab Jaipur	18/07/2017	L0024073628

Chloride varies from 30-1230 mg/lit. All the water samples area unit below the permissible limits as of UN agency. Chloride isn't harmful to human at low concentration however may alter the style of water at concentration higher than 250mg/lit.

Hardness is incredibly vital in decreasing the nephrotoxic impact of toxic part. Hardness is measured in terms of total hardness and metal hardness. Total hardness varies type 100-1480 mg/ lit largely exceeds the utmost permissible limits of UN agency. Hardness though has no health effects it will take a leak unsuitable for domestic and industrial use.

Table 3:-Lab Results of different Sampling Points of different location in Jaipur Rajasthan

1	Parameter	pH(ph)	Chloride(mg/l)	Fluoride(mg/l)	Nitrate(mg/l)	TDS(mg/l)	Alkalinity(mg/l)	Hardness(mg/l)
2	Test id	6.5 to 8.5	250 to 1000	0.6 to 1.2	45	500	20 to 200	300 to 600
3	L0024180772	8.11	70	0.29	45	455	210	340
4	L0024182300	8.32	90	0.73	28	780	440	130
5	L0023298528	8.22	310	0.99	25	1440	500	260
6	L0023299782	7.86	1230	1.56	20	3240	580	420
7	L0023496568	8.49	90	2.4	16	1020	290	140
8	L0024151532	8.21	50	3.56	40	845	550	130
9	L0024148343	7.1	430	1.06	2	1950	580	270
10	L0023561435	8.2	200	4.4	52	1440	760	140
11	L0023566552	8.11	30	0.29	33	540	240	110
12	L0024181887	7.67	350	0.73	101	1755	350	200
13	L0023642478	8.4	70	0.6	31	540	390	130
14	L0023714550	7.5	80	0.42	41	600	240	220
15	L0023746749	8.11	180	2	2	1020	490	170
16	L0023865934	7.5	250	0.88	64	900	220	150
17	L0023873584	8.2	700	3.2	252	2520	570	630
18	L0023874205	7.8	120	0.47	63	600	230	280
19	L0024171699	8.19	130	4.29	7	975	520	160
20	L0024154690	8.4	200	4.63	23	1365	710	190
21	L0024010988	7.7	250	1.44	14	1080	300	100
22	L0024029758	8.11	150	0.55	35	720	220	140
23	L0024039879	8.1	960	0.99	280	3420	360	1480
24	L0024073628	7.67	70	0.55	8	600	260	290

Nitrate varies from 2-280 mg/lit. Though only 2 samples check id L0023873584 and L0024039879 exceeds the permissible limit and shows high concentration. Nitrate indicates the pollution in water because of agricultural activities, waste product percolation at a lower place the surface. Presence of nitrate in water indicates the ultimate stage of mineralization. The main resource of halide is amphiboles, apatite, flour and transparent substance. It's concentration in natural waters typically shouldn't exceed 235mg/lit..

For water contamination with halide square measure geologic factors like weathering of minerals, rock dissolution and decomposition. Containing halide over an extended amount of your time leading to the natural action it into water. associate degree phylogeny issue like process liberates higher concentration of halide into atmosphere.

The concentration of halide within the studied water samples varies from zero.29 to 4.4 mg/li. High halide concentration causes dental pathology and additional skeletal pathology whereas the low concentration or absence of halide in beverage leads to caries in youngsters notably once the halide concentration is a smaller amount than zero.5 mg/lit30.

The free chlorine was found to be studied water samples varies from 30 to 1230 mg/li. Chloride happens naturally in water, however is found in larger concentrations wherever water and run-off from road salts (salts went to de-ice icy roads) will create their method into water sources. As such, well owners near snowy roads or road salting storage facilities are especially at risk for high levels of sodium chloride.

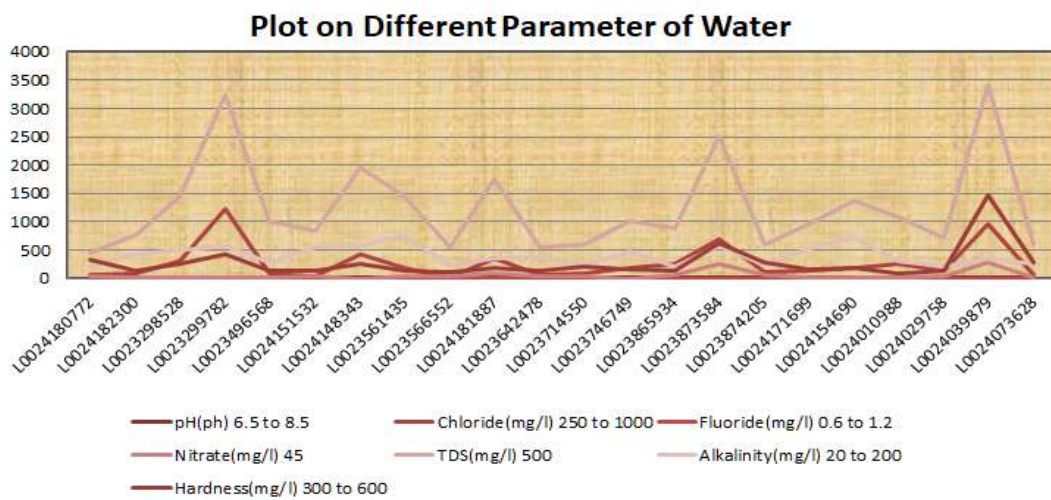


Figure 3:- Graph plot on the basis of Lab Results in Different Test id basis.

V. CONCLUSION

The A water quality normal could be a rule or law comprised of the uses to be made from a water body or phase and therefore the water quality criteria necessary to guard that uses. The aim of this paper is to usually summary the water quality observance in several place in Rajasthan geographic region and describe the performed

The analysis of the physico-chemical parameters of water from 10 totally different locations in Jaipur block shows that the pH, turbidity, chloride and halide were at intervals permissible limit. Extremely exceeded worth of total hardness, nitrate and iron were rumored at some locations of study space. The ascertained variance for the parameters .From this it's ended that numerous parameter concentration area unit variable extremely in several location of Different Village in Jaipur.

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