International Research Journal of Education and Technology
ISSN 2581-7795

ANALYSIS OF WATER QUALITY PARAMETERS OF SOME VILLAGES OF DEOLI TEHSIL (TONK)

RAMESH CHANDER KOLI

Asst.Professor, MAHARANA PRATAP COLLEGE,RAWATBHATA,CHITTORGARH(RAJ.)323307

R.C.Koli (Asst.Professor)
v/p Ladpura Mandalgarh (Bhilwara) Raj.311604

Abstract :

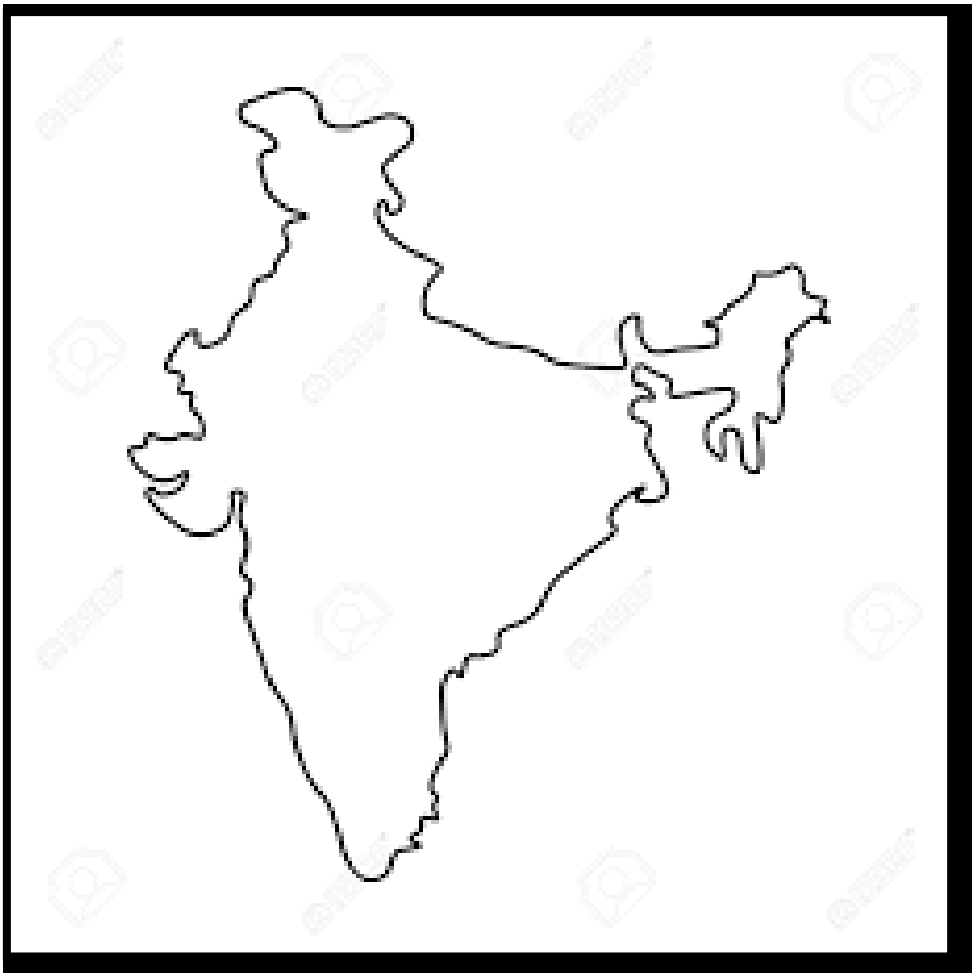
Water is the most important compound on this planet for regulating the climate. It is necessary to survive on earth. According to the national water policy, it is essential to check the quality of water on a regular basis. The feature of water generally described according to physical, chemical and biological characteristics. Fast industrialization and unsystematically use of chemical fertilizers and pesticides in agriculture are the main reasons for water pollution. Due to the use of polluted water, human beings suffer from water bear diseases. It is, therefore, necessary to check the water quality at a regular interval of time. Samples were collected from eight different villages of Deoli tehsil to analyzed pH, conductivity; total dissolved solids, total hardness, copper, alkalinity, chlorides, and fluoride. The highest value of pH was 9.2 measured in sample 5 of Panwar whereas the lowest value was 6.8 measured in sample 7 of Anva. The conductivity value of the water samples varied from 0.14 to 0.62 µs/cm. the fluoride concentration was varied from 1.74 to 4.80 mg/l. All parameters were analyzed using standard methods in a laboratory, and the results were compared with drinking water standards. The result showed that the groundwater quality was not appropriate for drinking purposes therefore some techniques should be applied to make the water suitable for consumption.

Keywords: - Alkalinity, fertilizer, hardness, parameters, water policy

Introduction:

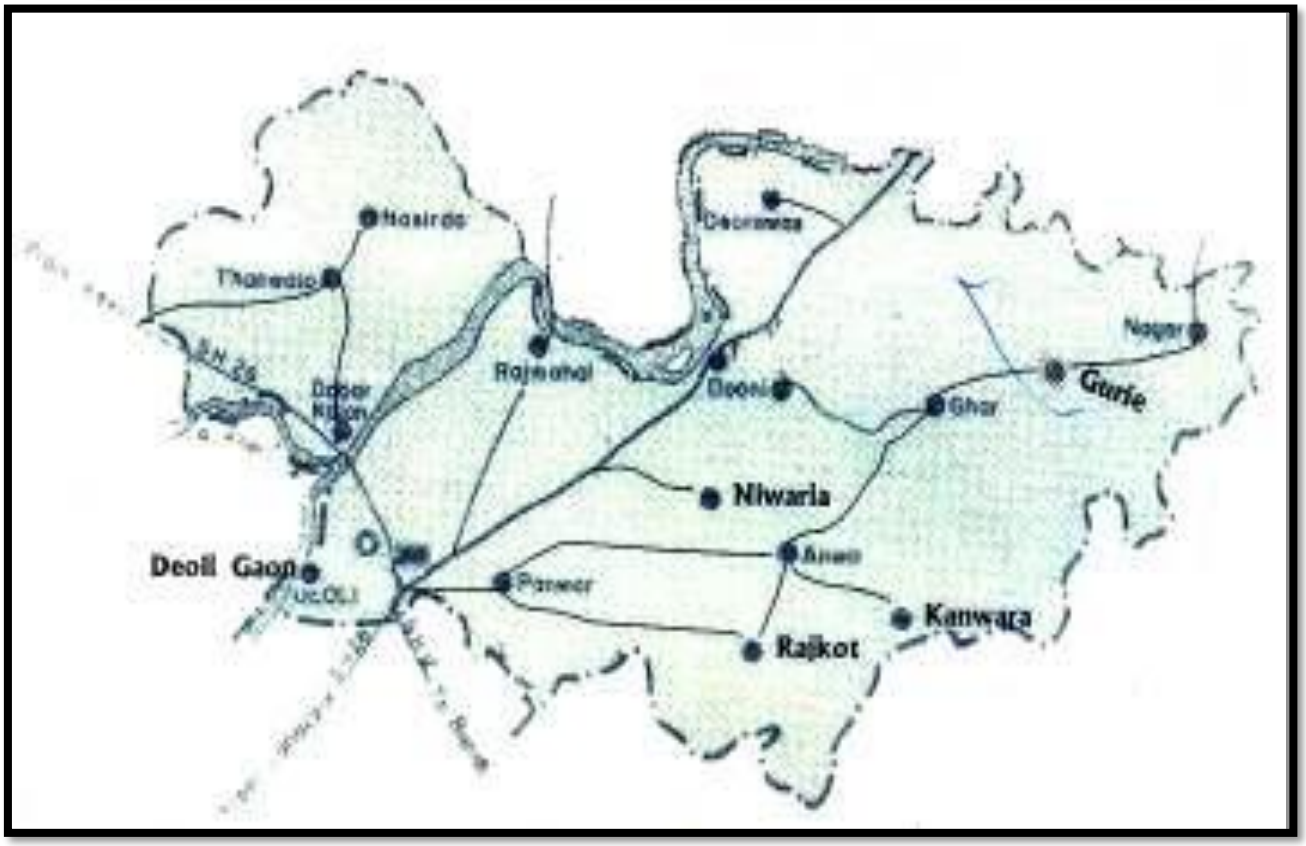
The groundwater is a basic source of drinking, irrigation and industrial purpose. any workers in our country have carried out a remarkable study on water quality for various purposes1. Water is not only essential for us and lives animals but also very useful for sanitation, power, steam generation, and used as a coolant in power plants2. Water preservation and water quality management play an important role in the sustainable development of countries such as India3. Rajasthan is the largest state of India geographically. Its area is 342,239 sq km having 10.41% of the country's area. This state has the great climatic and geological condition and it bears both the problems of quantity and quality of water4. Deoli tehsil is 62 km. away in the south from District headquarter on NH 12. It's situated in the south of the Tonk district. Its area is 1239.02 km2 Deoli is the second largest tehsil in area. Its north boundary is attached by Todaraisingh (Tonk), the south boundary is attached by Jahazpur (Bhilwara), East boundary is attached by Uniyara Tehsil (Tonk), West boundary is attached by Kekri (Ajmer) & the east-south

boundary is attached by Hindoli (Bundi). Deoli has sub arid climatic conditions. The average temperature value is 26.7°C & the temperature range between 25C to 44.2°C during summers. The minimum temp is 4.2°C in winter & humidity is generally 50% Deoli has 3.6% part of the total area is forest ground5.Samples were collected from Deoli village (S1), Nasirda (S2), Thanwala (S3), Rajmahal (S4), Panwar (S5), Dooni (S6), Anva (S7) and Rajkot (S8).



International Research Journal of Education and Technology
ISSN 2581-7795

International Research Journal of Education and Technology
ISSN 2581-7795



International Research Journal of Education and Technology
ISSN 2581-7795

Map of study area: Deoli Tehsil

The purpose of this was to observe the physicochemical analysis of groundwater in Deoli tehsil. In this study an effort was made to estimate the suitability of the groundwater of Deoli Tehsil, Rajasthan for the purpose of drinking, domestic, and irrigation, with reference to the recommended limit set by WHO.

Materials and Methods:

Sample collection- The samples were collected from different places of Deoli tehsil of Rajasthan for analysis. These were collected in one-liter Polythene bottles carefully cleaned with hydrochloric acid & washed with water rendered free from acid & washed with distilled water thrice & again rinsed with the water sample to be collected then filled up the bottle with the sample leaving only a small air gap at the top stopper & sealed the bottles with paraffin wax. Physical parameters like pH, TDS, and EC were calculated by digital meters. The concentration of the main cations and anions were analyzed in the laboratory using standard methods.

- Hardness (Ca and Mg) were estimated by titration with EDTA.
- Na and K were analyzed by using a flame photometer.
- Nitrate and fluoride concentration was determined by spectrophotometer.
- Sulphate concentration was estimated by UV- Visible spectrophotometer.
- Chloride was determined by titration using standard silver nitrate as a reagent.
- Carbonate and bicarbonate concentration were determined by titrimetrically.

Result and Discussion:

The systematic results of the present study are shown in table 1. All the groundwater samples collected from those hand pumps in which water was used for drinking and domestic purpose in the above villages and these were compared with WHO drinking water standards.

pH

The pH value gives information about the acidity and alkalinity of the water sample5. The WHO standard report about the pH value of groundwater should range6 between 6.5 and 8.5. The highest value of pH was 9.2 measured in sample 5 of Panwar whereas the lowest value was 6.8 measured in sample 7 of Anva . The results for all groundwater samples as mean was found 7.83 which is concord with the range 6.5 to 8.5 WHO standards.

Total hardness

The hardness of water is due to the natural gathering of salts from contact with soil and ecological formation or maybe appears due to direct pollution by industrial waste7. In this study the hardness value varied from 104 (lowest value of hardness in sample 7,) to 496 (highest value of hardness in sample 6) and the average value of all samples was found 290.25 which was high from the maximum permissible limit.

Electrical conductivity

Conductivity is the capacity of an aqueous solution to carry an electric current, depends on the presence of ions, on their total concentration, mobility, and temperature. Electrical conductivity is the appearance of dissolved salt and is an indicator of water pollution8. The conductivity value of the water samples varied from 0.14 to 0.62 µs/cm. sample 8 had the highest value and sample 3 has the lowest value of conductivity. These belong from Rajkot and Thanwala.

Total Dissolved Solid

TDS represents the net amount of minerals dissolved in the water sample9, the value of TDS varied from 247 to 694 mg/l. The sample no. 8 had a lower value and sample no. 3 had a higher value of TDS. Besides sample no. 2, 4, and 8 all others have a higher value than the maximum permissible limit.

Fluoride

The fluoride concentration in water depends upon different factors like solvent action of water on rocks and soil of the earth crust etc10. in this study the fluoride concentration was varied from 1.74 to 4.80 mg/l. all sample had a higher concentration of fluoride than maximum permissible limit.

Chloride (Cl-)

Chloride salts being extremely soluble and free from chemical reactions with mineral deposits of reservoir rocks6. In this study, the chloride concentration varied from 260 to 386. The sample no. 8 has lower value and sample no. 7 has a lower value of chloride concentration.

Copper

Copper was found in greater amount than maximum permissible limit in all samples. The sample no 6 had higher concentration and sample 8 had lower concentration of copper.

Sodium

The standard limit of Na concentration is 4.0 mg/l, in this study the sample no. 1 and 5 were at lower concentration than above and all other samples have higher value of than standard value.

International Research Journal of Education and Technology
ISSN 2581-7795

Table-1 concentration of physico- chemical analysis of ground water samples of Deoli Tehsil (Tonk)

S. No	Parameters	Deoli village (S1)	Nasirda (S2)	Thanwala (S3)	Rajmahal (S4)	Panwar (S5)	Dooni (S6)	Anva (S7)	Rajkot (S8)	Mean value	Drinking water standard
1	pH	6.9	7.7	7.8	8.7	9.2	7.1	6.8	8.5	7.8	6.5-8.5
2	EC	0.25	0.36	0.14	0.42	0.23	0.37	0.46	0.62	0.35	0.30
3	TDS	642	410	917	315	519	663	694	274	554.25	500
4	F-	3.26	2.36	4.80	2.61	2.15	3.31	3.42	1.74	2.95	1.5
5	Cl	280	360	326	287	317	418	386	260	329.2	250
6	Cu	2.06	1.16	3.26	1.23	2.80	2.62	2.69	0.92	2.09	1.0
7	N	2.6	4.9	5.8	9.6	3.2	4.9	8.5	6.4	5.73	4.0
8	Fe	0.52	0.36	0.57	0.39	0.41	0.46	0.50	0.28	0.43	0.30
9	Total Hardness	330	312	346	408	240	496	104	486	340.25	100
10	Alkalinity	650	150	424	600	238	342	247	183	354.25	-

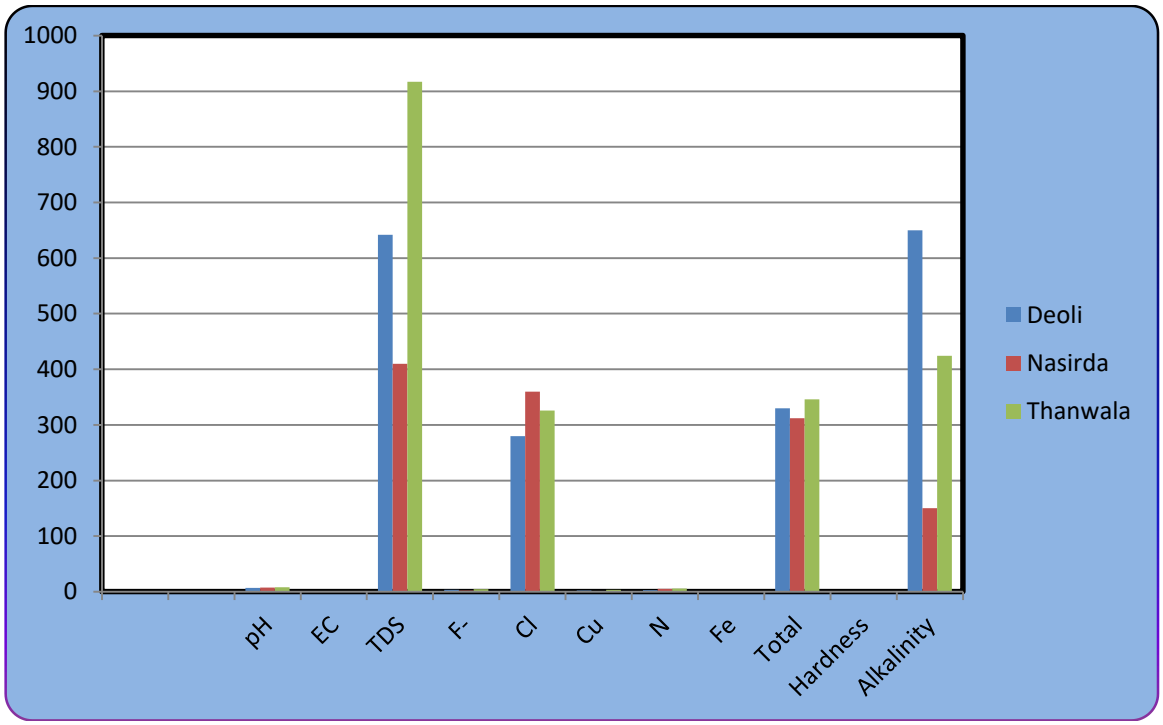


Fig. 1 A

International Research Journal of Education and Technology
ISSN 2581-7795

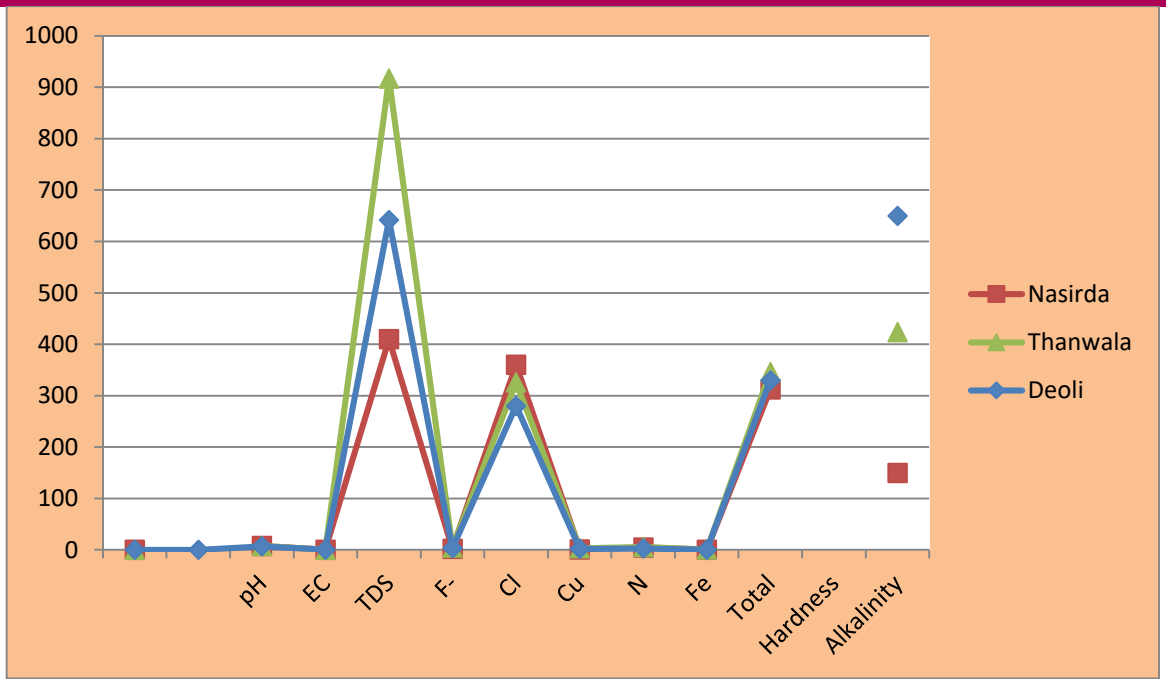


Fig. 1 B

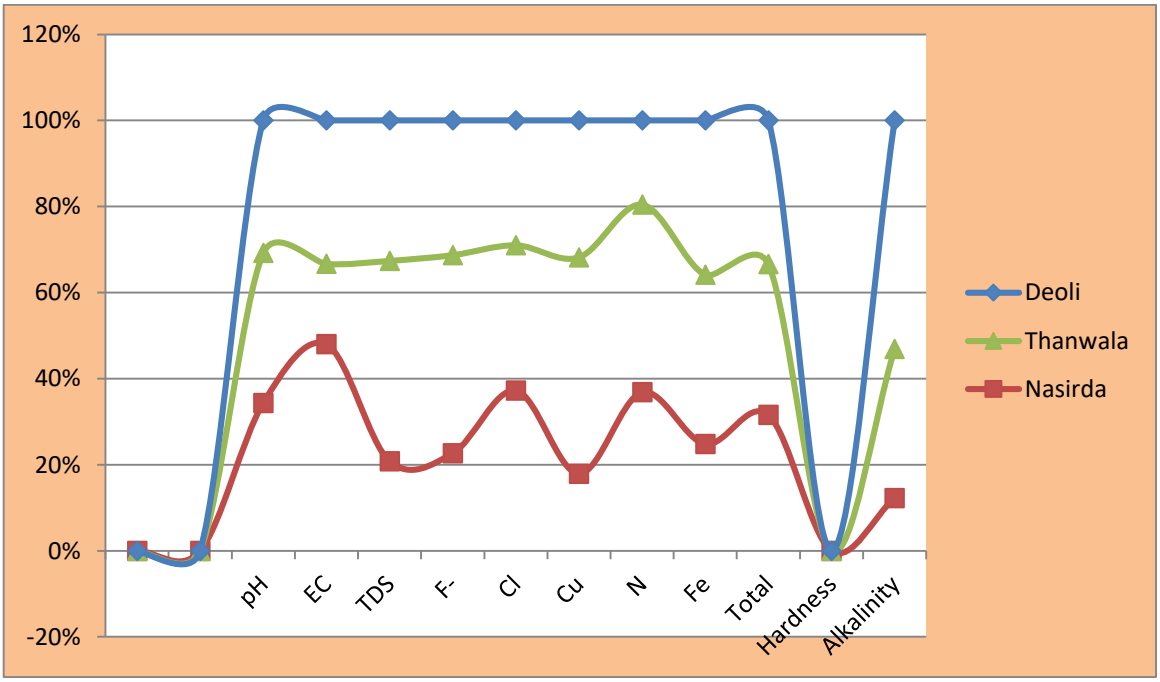


Fig. 1 C

Fig. 1A, 1B and 1C: showing the different parameters variations

Conclusion:

The present study provides the status of groundwater of above eight villages of Deoli tehsil. On the basis of this, it may concluded that all the parameters like pH, EC, TDS, F-, Cl, N, Fe, Total hardness and alkalinity were higher than maximum permissible limit so the groundwater quality was not appropriate for drinking purposes, therefore, some techniques should be applied to make the water suitable for consumption.

References:

[1]. Sen P and Singh D, *M.Phil thesis*,.**2009**, 8.

[2]. Tank D.K and Chandel C.P, *Report and opinion*, 2(5), **2010**, 1.

[3]. Saxena S, and Saxena U, *International journal of environmental sciences*., 3, 2013, 2251.

[4]. Yadav A K, Khan P and Sharma S K, *E-Journal of Chemistry*, 7,**2010**, 428.

[5]. Dubey R K, Hussain J, Malhotra N and Mehta A, *International journal of Research in Engineering and Technology*.,3, **2014**, 85.

[6]. Saxena S and Saxena U, *International journal of environmental sciences*., 3, **2013**, 2251.

[7]. Dubey R K, Hussain J, Malhotra N and Mehta A, *International journal of Research in Engineering and Technology*., 3, **2014**, 85

[8]. Meena B S and Bhargava N, *Rasayan J. Chemistry*., 4, **2012**, 438.

[9]. Khanam Z and SinghV, *International Journal Of Recent Scientific Research*.,5,2014, 362.

[10]. Meena B S and Bhargava N, *Rasayan J. Chemistry*., 4,**2012**,438.