

# Ground Water Quality of various villages of Dousa District of Rajasthan

## Abstract

The recent study were carried out to identified the magnitude of the physic-chemical parameter of the ground water of four villages of the Dousa District. The water quality result shown that the ground water has fluoride problem, fluoride content exceeded the maximum permissible limit in same sample. Iron content was present in sample and exceeded the maximum permissible limit other parameter TDS, total hardness, calcium, megnium, alkalinity, phosphate, potassium, sodium, were within limit.

**Keywords:** Dousa, Ground Water

## Introduction

Ground water forms the major source of drinking, agriculture in the rural area of Rajasthan. Generally ground water is clear and colourless. Ground water is free from bacteria and other living organisms because they are filtered out while percolating through the subsoil. Water on land surface seeps in to the soil as ground water. The soil below the natural water table is sustained by the underlying clay and rock strata. Ground water does not remain stationary but move up above the water table and there by maintains a continuous supply of water to the surface layer of soil. Under ground water resource is the aquifer. It exists above impermeable rock strata. Water percolates through the porous rock and forms under ground lake or reservoirs. From these aquifers, water can be extracted by sinking wells, tube wells and pumping it to the surface.

Today human activities are constantly adding numerous wastes to ground water reservoirs at an alarming rate. Ground water contamination is generally irreversible. Once it is contaminated it is difficult to restore the original water quality of the aquifers. The extent of water pollution depends on the following factors.

1. Rain fall factor
2. Depth of water table.
3. Distance from the source of contamination.
4. Soil properties such as texture, structure and fittratico rate.

Determination of ground water quality is important to observe the suitability of water for a drinking and agriculture use. The problem of ground water quality are more acute in the areas that are densely populated and with high agriculture practice.

Fluoride and nitrate contamination are the major problem of ground water.

## Aim of Study

Ground water one of the prime sources of fresh water. In my study various physic-chemical analysis studies are done to check the ground water quality. This study aim to identified the suitability of the ground water for the domestic and agriculture use. Present study in involved analyzed for for physic- chemical data from ground water samples collected in Dousa from selected villages in order to assess suitability of drinking water.

## Experimental

Water sample were collected in the month of May. The sample were analysed for relevant physical and chemical parameter. The parameters analyzed in this study were pH, Colour, Total hardness, chloride, Total Dissolved solids, Alkalinity, Turbidity, Fluoride, Nitrate and salinity. The heavy metals analyzed were, calcium, iron, Magnesium and Potassium.

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**Result of water quality in ground water of Dousa District**

S. No.	Parameters and Units	Govt. Handpump of village Bagri, Tehsil Lalsot (Dousa)	Govt. Handpump of village Nangal, Tehsil Lalsot (Dousa)	Govt. Handpump (main market) village lalsot Tehsil Lalsot (Dousa)	Govt. Handpump Irrigation office Village Kankaria, Tehsil Lalsot (Dousa)
1	Temperature ( <sup>o</sup> c)	27	28.5	27.5	27
2	Colour	Colourless	Colourless	Colourless	Colourless
3	Taste	Saline	Normal	Normal	Normal
4	Turbidity	Nil	4.0	6.0	Nil
5	pH	7.1	7.7	6.9	7.6
6	Conductivity (m Mhos cm.)	1950.0	1080.0	990.0	1020
7	TDS (mg/l.)	1480	686	610	724
8	Total Hardness (mg/l.)	730	150	350	260
9	Total Alkalinity(mg/l)	550	390	300	410
10	Nitrate (mg/l.)	2.1	2.0	1.0	1.1
11	Chloride (mg/l.)	455	195	145	190
12	Fluoride (mg/l.)	3.2	2.5	3.2	1.5
13	Phosphate (mg/l.)	5.4	3.3	BDL	BDL
14	Sodium (mg/l.)	158	111	79	113
15	Potassium (mg/l.)	3.0	1.0	9.0	1.0
16	Calcium (mg/l.)	140	32	80	68.1
17	Magnesium (mg/l.)	92.3	17.0	36.4	22.0
18	Iron (mg/l.)	2.4	1.2	5.4	0.36
19	Salinity (mg/l.)	821	352	261.5	343

BDL = Indicator Below Detectable limit

**Result and Discussion**

Ground water sample of Dousa is Colourless and normal Taste but Govt. hand pump of Bagri village of Dousa Was saline in taste. The Concentration of nitrate was ranging from 1.0 to 2.1 mg/ liter. The Concentration of maghesium and calcium was ranging 17.0 to 92.3 and 32 to 140 mg/ liter. Temperature of all the water samples were in the range of 27 to 28.5 <sup>o</sup>c the temperature of water generally depends on the atmospheric condition. pH range of all water sample were found 6.9 to 7.7. The water of Govt. hand pump of main market of Lalsot in silitly acidic. Fluoride level Was found in the range 1.5 to 3.2 mg/ leter that is much high than the maximum permissible range. At drinking water concentration between 0.9- 1.2 mg/ liter fluoride may give rise to mild dental fluorises but values exceeding 2 mg/ leter may have very high chances of dental and skeletal fluorosis. Fluoride can have serious effects on skeletal tissues as well, with adverse changes in bone structure. Total dissolve solid concentration describe the presence of inorganic salt and small amount of organic matter in water. The electronic conductivity was ranging 990.0 to 1950.0. Electronic conductivity is the measure of water capacity to conduct electrical current. The concentration of iron was ranging 0.36 to 5.4 mg/ liter. In ground water may contain iron (ii) at concentrations of up to several milligrams per liter without discoloration or turbidity in the water when directly pumped from a well, although turbidity and colour may develop in piped system at iron levels above 0.05 – 0.1 mg/ liter.

**Conclusion**

On the bases of result the quality of ground water was found to be unfit for drinking due to high amount of Total dissolved solids, Iron, fluoride, electronic conductivity. High Concentration of salts can damage crops, affect plant growth, degrade drinking water and damage industrial equipment. Iron was found in ground water samples of village Bagri and Lalsot and their concentration higher than the prescribed limit. These parameter have high values, which may be due to the fertilizers in the irrigation field ground water can be used after removing the above mentioned harmful parameters. The quality of ground water can be controlled by recharging ground water through rain water harvesting and Regular monitoring of the water should be done.

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