

## Physico-chemical of drinking water from different water sources of Ghansawangi Tahshil region, district- Jalna (Maharashtra), India

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### Abstract

The potable water quality is determined in four villages that present in Ghansawangi Tahshil region from Jalna district for physico-chemical status of ground water. In physico-chemical analysis, various quality parameter are measured including pH, turbidity, electrical conductivity (EC), total dissolved solids (TDS), total hardness (TH), content of calcium ( $\text{Ca}^{2+}$ ), magnesium ( $\text{Mg}^{2+}$ ), chloride ( $\text{Cl}^-$ ), sulphate ( $\text{SO}_4^{2-}$ ), Iron (Fe) and Nitrate ( $\text{NO}_3^{2-}$ ) concentration present in drinking water. All parameters were compared with WHO standards of water quality.

**Keywords:** Potable water, physico-chemical analysis, TH, TDS, Villages.

### 1. Introduction

Water has always been an important and life-sustaining drink to humans and is essential for the survival of all known organisms [1]. Although statistics, the WHO reports that approximately 36% of urban and 65% of rural Indian were without access to safe drinking water [2]. Human and ecological use of ground water depends upon ambient water quality. Human alteration of the landscape has an extensive influence on watershed hydrology [3]. The value of water is dynamically concern for the mankind; since it is directly associated with human benefit. It is a matter of history that facial pollution of drinking water caused water-borne diseases which wiped out entire population of the studied area [4].

Water is a noble solvent and picks up impurities easily. Pure water is tasteless, colorless, and odorless is often called the universal solvent. When carbon dioxide is dissolved in water it gives very weak carbonic acid as an even better solvent result. As water moves through soil and rock, it dissolves very small amounts of minerals and holds them in solution. Calcium and magnesium dissolved in water are the two most common minerals that make water "hard." The degree of hardness becomes greater as the calcium and magnesium content rises and is related to the concentration of multivalent cations dissolved in the water. Excessive groundwater exploitation has resulted in lowering of water table in rural and urban areas of India. The water quality parameters decide the portability of water [5]. Hence we dare to assess the physico-chemical parameters of bore wells drinking water.

### 2. Materials and Methods

#### 2.1 Study area and water sampling

In the present study, the drinking water samples were collected at 8:30 AM to 10:00 AM with necessary

Precautions in Polythene bottles from five different villages of Ghansawangi Tahshil in district Jalna (Table-1).

### 3. Methodology

The Water samples were used for the assessment of various physico-chemical parameters like Temperature, pH were recorded by using Thermometer and Digital pH meter. Electrical conductivities were measured by using digital conductivity meter. The TDS values were measured by using TDS meter. Calcium, Magnesium, Iron, Chloride, Sulphate and Nitrate were Estimated in the laboratory by using standard laboratory methods. Present study involves the analysis of water quality in terms of physico-chemical methods [6].

**Table 1:** Location of drinking water samples

Sample No.	Source	Location
1.	Bore well	Shevgal
2.	Bore well	Panewadi
3.	Bore well	Shinde-wadgaon
4.	Bore well	Antarwali-dai
5.	Bore well	sarafgavhan

### 4. Results and Discussion

The physico-chemical records of the bore wells water samples are collected in January -2017. The results of the samples differ with different collecting places due to the different nature of soil contamination [7]. The physico-chemical appearances of water samples in the study area suggested that there were no any dangerous chemical impurity.

The water from the study area of has no colour, odour. Taste of the water of the potable water sample in most of the sites pleasurable in taste. The result of the physico-chemical analysis of water in the present study is given in Table-2 and Table-3. So it is essential to a make an evaluation of water given by WHO standards. The pH of water indicates variation in its ranges. It indicates that they are in range of water quality parameter permissible limits. The EC of water samples shows comprehensive variation in all five sites. The  $\text{Ca}^{2+}$  was given comprehensive variation in all the permissible limits of all regions. TA in the limits. Chloride content in water is low. Turbidity was higher in all the observed parameters of all blocks.  $\text{Mg}^{2+}$  values were within permissible the limits. Chloride and sulphate data was low in all the sites of selected region. TDS were low in all selected sites.

**Table 2:** Physical parameters of water samples of selected bore well water in Ghansawangi Tahshil, district Jalna (MS)

Sr. No.	Parameters	WHO	Shevgal	Panewadi	Shinde-wadgaon	Antarwali-dai	Saraf-gavhan
1.	Temperature ( $^{\circ}$ C)	-	13	13.5	14	12	11
2.	Odour	-	-	-	-	-	-
3.	pH	6.5-8.5	7.1	6.9	6.8	7.1	7.3
4.	Electrical Conductivity ( $\mu$ S/cm)	300	169	180	205	175	215
5.	Total dissolved Solid (mg/L)	500	302	412	299	369	355

**Table-3:** Chemical parameters of water samples of selected bore well water in Ghansawangi Tahshil, district Jalna (MS)

Sr. No.	Parameters	WHO	Shevgal	Panewadi	Shinde-wadgaon	Antarwali-dai	Saraf-gavhan
1.	Chloride (mg/L)	200	100	88	95	81	107
2.	Sulphate ( $SO_4^{2-}$ ) (mg/L)	200	80	82	85	83	95
3.	Calcium (mg/L)	75	32	36	40	45	56
4.	Magnesium (mg/L)	50	13	26	31	29	35
5.	Iron (Fe) (mg/L)	0.3	0.28	0.23	0.26	0.3	0.22
6.	Nitrate (mg/L)	45	6.51	7.25	7.12	7.33	7.69
7.	Total alkalinity (mg/L)	250	5.1	7.3	9.0	8.2	9.56
8.	Turbidity (NTU)	5	0.73	1.26	1.69	1.53	2.01
9.	Dissolved Oxygen (mg/L)	4.0	3.5	3.3	3.2	3.1	4.0

## 5. Conclusion

From above experimental analysis the ground water in the selected villages is does not follow physical parameters overhead than the anticipated limit, so it is fit for drinking. The ground water excellence valuation helps us to recognize the remarkable parameters of receiving better statistics about source of pollution. By obtaining the results it is investigated that, at present the metal ion concentration is contain at the levels which will be safe for humans. The ground water source will be healthy for drinking and other purpose.

## 6. References

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