

Contents lists available at Sjournals

  
Scientific Journal of  
**Environmental Sciences**  
Journal homepage: [www.Sjournals.com](http://www.Sjournals.com)



**Original article**

## Ground water quality in some rural area of khathumar thesile at alwar distrit Rajasthan, India

**A.K. Sharma<sup>\*</sup>, R. Sharma<sup>b</sup>, N. Sharma<sup>c</sup>**

<sup>a</sup>Department of Botany, S.S. Jain Subodh Girls Collage, Sanganer Jaipur (Raj.), India.

<sup>b</sup>Principal ESS. Collage of Education Dayal bag Agra, (U.P.), India.

<sup>c</sup>Department of Chemistry K.R.(P.G.) Collage, Mathura, (U.P.), India.

\*Corresponding author; Department of Botany, S.S. Jain Subodh Girls Collage, Sanganer Jaipur, (Raj.), India.

### ARTICLE INFO

*Article history,*

Received 13 December 2013

Accepted 03 January 2014

Available online 20 January 2014

*Keywords,*

Ground water

Fluoride

Calcium

Total alkalinity

Total hardness

### ABSTRACT

Water is a resource basic amenity and Universal Solvent is Shared by population. The physic-chemical quality study of Khathumer Thesil of some rural area. The water quality of 5 Hand pumps of 5 villages. Water Sampal were analyzed with respect to their potability the study revealed that most ground water sampals meet criteria for drinking water, with the exception of few sample Having Higher Values for fluoride, calcium, Total Hardness and Total alkalinity. The quality of ground water assessed in the study area is discussed in detail.

© 2014 Sjournals. All rights reserved.

### 1. Introduction

Water being a Universal Solvent has been and is being utilized by mankind time and Now of the total Amount of global water. Only 2.4% is distributed on the main- land of which only a small portion can be uitalized as fresh water. The available fresh water to main is hardly 0.3-0.5% of the total water available on the earth and theirfore is judicious use is imperative (Ganesh and Kale 1995). The fresh water is a finite and limited resources (Bouwer, 2000). The quality of ground water is deteriorating at a faster pace due to pollution rening from septic tanks (Olaniya and Saxena 1977, Gillision and patmount 1983). Land fill leacheates donmastic sewage (Eison and Anderson, 1980, Sharma and Kaur 1995. Subha Rao 1995). Agriculature renoff / agricutureal fields (Banarji 1983.

Hand 1986, Somashekar et al. 2000, Ram Chandra et. al. 1991, Dutta and Sen Gupta al. 1996). And Industrial waste (Todd 1995 and Rengray et. al. 1996, Indra raj et al. 2000.)

This is a feature common not only in developed countries but also in developing countries like India. The change in quality of ground water response to variations in physical, chemical and biological. Environment through which it passes (Singh et al. 2003). The primary Inorganic Nitrate and Ammonium nitrates both of which are widely used as fertilizers. Thus, characterization of ground water qualities is of Considerable Importance to safe Guard health and hygiene of residents. In this communications we are reporting ground water qualities from rural areas of Khathumer Thesile at Alwar district. Rajasthan (India).

## 2. Materials and methods

The ground water sample were collected in clean sterile containers from is hand pumps at different location. These were transported and were analysed immediately. Their pH Value were Measured by pH meters Standardized with buffers. Total dissolved solids, Alkalinity. Total hardness Iron and Sulphate using standard Methods (APHA 1989).

## 3. Results and discussion

The pH Value ranging between neutral alkaline (PH 6.8-8.50) were within the acceptable limit of (BIS 1991). The total dissolved solids (TDS) in the study area varied from 247-1120mg/Lt (Table 1) while its permissible limits is 500 mg/Lt. TDS signifies the inorganic pollution load of any water body (Loganayagi et. al. 2008). The Alkalinity ranged between 20- 650 mg/Lt.(Table). Indicate high alkaline nature of water in the area and some samples were found exceeding the acceptable limits of (BIS 1991). The chloride varied widely ranged from 28-298 mg/Lt.(Table1). All the value are within the permissible limits, Prescribed by (BIS 1991). It is harmless up to 1000 mg/Lt But produce salty taste above 250 mg/Lt. Calcium and Total Hardness in the water are interrelated. In the present study value of calcium 28-298 mg/Lt. and Total Hardness 105-470 mg/Lt Varied greatly (Table-I).

The study revealed the ground water of the Khathumer Thesil of Alwar District are somewhat hard. Fluoride content in the study area varied from 1.50 to 5.10mg/Lt. (Table 1) Sample were found exceeding the acceptable limits of (BIS 1991) Standards. Fluoride sample which exceeded the acceptable limits are not recommended for consumption without treatment. Fluoride is considered as essential elements through health problems. May arise from either deficiency or excess amount (Gopal et. al. 1985) Much of the fluoride entering the human body is obtained from drinking water (Sarala Kumari and Rao 1993). fluoride concentration of 0.4 ppm in drinking water caused mild type of dental fluorosis (Dinesh 1991, Gupta et. at. 1993, Yadav and Jata 2004).

The nitrate concentration in the study area ranged from 16-92 mg./Lt. (Table1) Which indicates that the ground water has not been affected by nitrate, Human and Animal wastes Industrial effluents. Application of fertilizer and chemicals. Seepage and silage through drainage system are the main source of Nitrates contamination of ground water (Robertson et al.1991 and Agrawal et al. 1999). The high concentration of Nitrates in drinking water caused methemoglobinemia infants a disease characterized by blood changes.

**Table 1**

Physico – chemical Analysis of Ground water in some village of Khathumar Thesile.

Parameter/ Sampling Site	pH	Total Dissolved solids (TDS)	Alkalinity	Chloride	Total Hardness (TH)	Fluoride	Nitrate
Nagla Madhupur	7.50	1060	650	180	470	5.10	92
Badhangarhi	7.80	980	480	220	450	4.80	90
Shokher	8.10	1100	545	265	440	4.60	89
Bhanokhar	8.50	1120	620	298	380	4.30	76
Galakheda	6.8	247	20	28	105	1.50	16

\*All Parameters Value is mg per liter

#### 4. Conclusion

Present study revealed that almost all water quality parameters were within permissible limits of ( BIS 1991). With the exception of few water samples having higher Values for Total alkalinity. Total Hardness, calcium and fluoride. Such hand pumps are not fit for human consumption through these may be used in other house hold activities so Public should be made aware of the water quality importance and hygienic conditions before use. Also it is necessary to implement, certain remedial measures.

#### Acknowledgments

The authors wish to express sincere thanks to the DR. Madhu Srivastava principal S.S.Jain Subodh Girls Collage Sanganer Jaipur providing laboratory facilities. We are also thankful to DR. Raj Maheshwari Deptt. of chemistry Govt. Collage Naguar and Prof. M.K. Pandit Deptt. of Geology Uni. of Rajasthan Jaipur for their valuable suggestion regarding the work done.

#### References

- APHA., 1989. Standard methods of Analysis of water and waste water. 17th edition. American public health association, Washington D. C., 10-203
- Agrawal, G.D., Lunked, S.K., Malkhed, T., 1999. Diffuse Agriculture nitrate pollution of ground water in india. Water sci. technol., 39 (3) 67-75.
- Banerji, A.K., 1983. Importance of evolving a Mangment plan for ground water Devlopment in the Calcutta region of the Bengol basin in Estarn India. Proc. Intl. Sympo. Ground water resources and planning koblent Germany., 45-54.
- BIS., 1991. Bureau of Indian Standord. Analysis of water and waste water . New Delhi.
- Bouwer, H., 2000. Integrated water mangment Emerging Issues and challenges. Agriculture water management: 45.
- Dutta N. C. and S. Sen. Gupta 1996. Effect of Artificial aeration on the hydrographic regive of pesticide treated aqutic system. pollut. res., 15 (4), 329-333.
- Dinesh, C., 1999. Fluoride and heath cause for concern. Indian . Env. Protect.,19 (2), 81-89.
- Eison, C., Andorson, M.P., 1980. The effect on Urbanizat on ground water quality in milwankee. Wisconsin. U.S.A. in Jackson., 378-390.
- Ganesh, R., Hegde., Kale, Y.S., 1995. Quality of lentic water of Dharwad district in north Karnataka. Indian J. Env. Health., 37 (1), 52-56.
- Gillison, R.J., Patmont, C.R., 1983. Lake phosphorous loading from septic system by seasonally Perched ground water. J. water pollut. control Fed., 55, 1297-1304.
- Gupta, S.C., Rathore, G.S., Doshi, C.S., 1993. Fluoride distribution in ground water of south eastern Rajasthan. Indian J. Env. Health., 35(2), 97-106.
- Hand, B.K., 1986. Hydrochemical Zones of India. Proe. Seminar on ground water Dev. Roorke., 439-450.
- Indra, R., 2000, Issues and objective in ground water quality Monitoring proprame in ground water quality monitoring programe under haydrology project. Proc. National symposim ground water quality monitoring Bangolare., PP. 1-7
- Loganayagi, A.S., Damodar, K., Murugeson, S., 2008. Quality of drinking water in and around thirullur District. Tamilnodu. Nature Env. poll. technol., 7(1), 133-138.
- Olaniya, M.S., Sexena, K.L., 1977. Ground water pollution by open refuse dumps at Jaipur. Env. Health., 19, 176-188.
- Rama Chandra, S.A., Narayanan., Pundarikatham, N.V., 1991. Nitrate and pesticides concentration in ground water of cultivated areas in North Madres. Indian J. Env. heth., 33(4), 421-424.
- Rangraj, S.T., Elavnpooranan, L., Elkengo., Ramalingam, V., 1996. Ground water quality in suburban regeon of Madras City. India, pollut. Res., 15(4), 325-328.
- Sarala Kumari, D., Rao, P.R., 1993. Endamic fluorosis in village Ralla. Anantapuram in Andra Pradesh An Epidemiological study, fluoride., 26 (3), 177-180.
- Sharma, H., Kaur, B.K., 1995. Env. Chem. Goel publishin House Meerut.

- Singh, K.D., 1982. Environment effect of Industrilization of ground water resource. A case Study of Ludhaina Area Punjab. India, Proc. Int. Sym. On soil geology and Landform Inpact of land uses in Devloping Countries. Bangkok., E6. 1-E6-7.
- Somashekar, R.K., Rameshaiah, V., Chethana suvarna, A., 2000. Ground water chemistry of channapatava Taluk ( Bangalore rural district) Regression and cluster Analysis J. Environment pollut., 7(2) 101-109.
- Subha, R., And, N.V., Subba, R., 1993. Ground water quality in a residential coloney, Indian J. Env. Heth., 37(4), 295-300.
- Suryanarayana, K., 1995. Effect on Ground water quality on Realth hazards in part of Eastern Ghats. Indian J. Env. protect., 15(7), 497-500.
- Yadav, J.P., Lata, S., 2004. Fluoride leavels in drinking water sources in rural area of Block Jhajjar. District Jhajjar. Haryana. J. Indian water work association., 131-136.
- Zafar, A.R., 1966. Limnology of Hussain Sagar lake Hyderobad. J. Phykos., (5), 115-126.
- Todd, D.K., 1995. Ground water hydrology John willey and sons. Newyork.