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Physico-chemical analysis of various water samples of Rewa district (M.P.) India

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Abstract

The water quality is determined in rural and urban area of Rewa district. The water samples taken from Urban and rural locations of Rewa (HAL 3rd stage (Beehar river water), HRBR lay out (Beehar river water mixed with Bore well water), Borewell water (Ramnai, Rewa District and Mineral water samples). In Physico-chemical analysis, various quality parameter are measured including pH, Specific conductivity (SP), total dissolved solids (TDS), total hardness, compared with WHO standards of water quality; also in present research paper classification of water samples of various sites was investigation on the basis of TDS, anions, cations and TH. The pH of all water samples were found almost neutral. The TDS, conductance, hardness increased towards the urban water as compared to rural wate All Parameters were within the permissible limits. The results indicated and discussed.

Keywords: water samples, physico-chemical analysis, TH, TDS, COD, BOD, TDS, BOD, Nutrients and Total Hardness.

Introduction

Water plays an essential role in human life. Although statistics, the WHO reports that approximately 36% of urban and 65% of rural Indian were without access to safe drinking water (Akoto and Adiyah, 2007) ^[1]. Fresh water is one of the most important resources crucial for the survival of all the living beings. It is even more important for the human being as they depend upon it for food production, industrial and waste disposal, as well as cultural requirement (Akpoveta, *et al.* 2011) ^[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 Gurnathan, 2006 (APHA, AWWA, WPCF, 2003) ^[3]. Ground water plugs a vital role in human life. The consequences of urbanization and industrialization leads to spoil the water for agricultural purposes ground water is explored in rural especially in those areas where other sources of water like dam and river or a canal is not considerable. During last decade, this is observed that ground water get polluted drastically because of increased human activities. Consequently number of cases of water borne diseases has been seen which a cause of health hazards. An understanding of water chemistry is the bases of the knowledge of the multidimensional aspect of aquatic environmental chemistry which involves the source, composition, reactions and transportation of water. The quality of water is of vital concern for the mankind since it is directly linked with human welfare. It is a matter of history that facial pollution of drinking water caused water-borne diseases.

2. Materials and Methods

The Water Samples were collected from various sites in the Morning Hours between 9 to 11am, in Polythene Bottles. The Water samples were immediately brought in to Laboratory for the Estimation of various Physico-chemical Parameters like Water Temperature, pH were recorded by using Thermometer and Digital pH Meter. (Systronics). Specific conductivities were measured by using digital conductivity meter. The TDS values were measured by using TDS meter. While other Parameters Such as Hardness, Sodium, and potassium by Flame photometry. Manganese, Calcium & Magnesium 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. (Trivedy and Goel, 1986) ^[16].

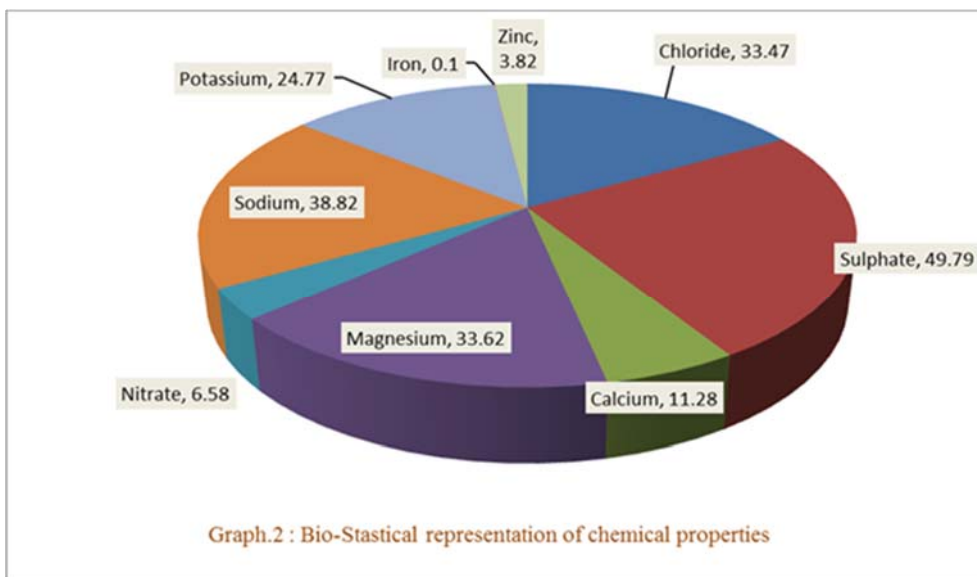
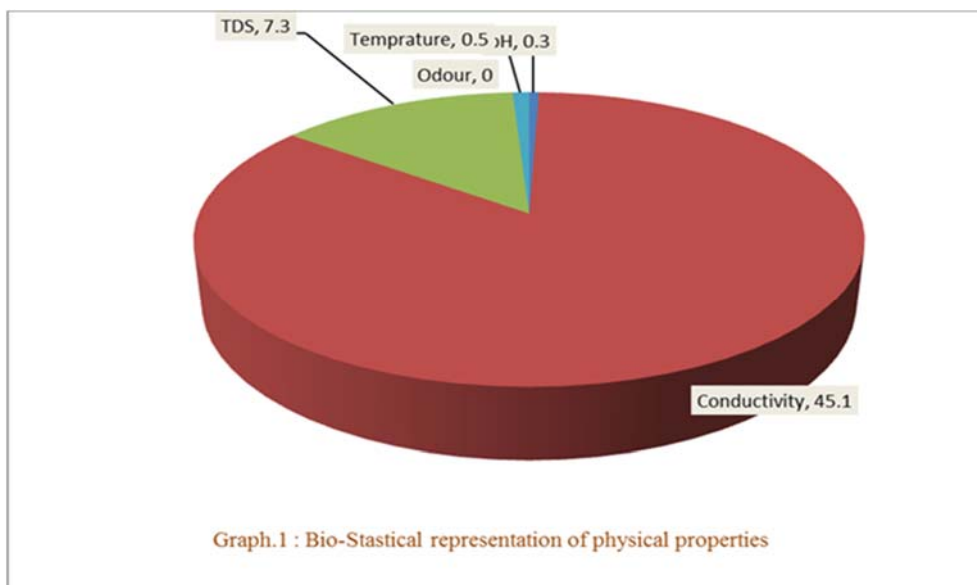
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Table 1: Physical parameters of water samples, Rewa Urban and Rural, Madhya Pradesh

S. No.	Parameters	Sample 1	Sample 2	Sample 3	Sample 4	SD
1.	pH	7.2	7.3	7.5	6.9	±0.3
2.	Conductivity	180	240	230	290	±45.1
3.	TDS	58	65	70	75	±7.3
4.	Odour	0	0	0	0	±0.0
5.	Temperature	29	29	30	29	±0.5

Table 2: Chemical properties (mg/L) of water samples, Rewa Urban and Rural, Madhya Pradesh with reference to WHO standards.

Chemical property (mg/L)	WHO	Sample 1	Sample 2	Sample 3	Sample 4	SD
Chloride	200	120	140	160	190	±33.47
Sulphate	200	74	120	140	180	±49.79
Calcium	100	80	73	75	90	±11.28
Magnesium	150	70	90	120	140	±33.62
Nitrate	45	28	35	38	42	±6.58
Sodium	130	30	42	58	65	±38.82
Potassium	100	35	47	56	67	±24.77
Iron	1.0	0.75	0.83	0.85	0.97	±0.10
Zinc	15	5	7	7.5	9.5	±3.82



3. Results and Discussion

The Variation in Physico-chemical Parameters is Presented in Table.

- Sample 1: Ramnai (Rewa Rural) drinking water.
- Sample 2: HRBR Layout (Rewa Urban) Drinking water

Sample 3: HAL^{3rd} Stage (Rewa Urban) (BWSSB)

Sample 4: Mineral water

There was no significant change in the pH value during the observation period; the observed values were in the range 6.9 to 7.5 Total hardness, salinity, conductance and turbidity

increased in the similar direction, i.e., from Sample 1 to Sample 4. Concentration of nutrients like Chloride, Sulphate was within the permissible limits for Sample- 3 & 4. BOD remained less than 3 in all cases, showing normal microbial activity. Physicochemical parameters affected the primary production in different Areas. The physicochemical of chemical characteristics of water samples in the study area suggested that there was no harmful chemical contamination. The sample 3 & 4 were found to be more free from various micro gram positive bacterial activities. The sample - 4 is more healthier in the long run.

4. Conclusion

Amounts of minerals such as Na, Ca, and Mg were present below than WHO recommended level but water from Urban regions of Rewa contain more amounts of these minerals than Rural place of Rewa, indicates that the required minerals are available in reasonable amounts in Rewa Urban supply than Rewa Rural supply]. The amounts of various elements in this study characterization of the physiochemical parameters of water from different locations in Rewa Rural and Urban area was carried out as studies carrier out by (Gurunathan and Shanmugam, 2006, Jafari, *et al.*, 2008, Jayabhaye, *et al.* 2006, Kumar, *et al.* 2002, Khaiwl and Garg, 2006 and Kumar, *et al.* 2005) [5-10] To assess the quality of water each parameter was compared with the standard desirable limits prescribed by World health organization (WHO) (Khan and Choudhary, 1994, Kadam, *et al.* 2007 and Kodarkar, 1992) [11-13] From the study it can be concluded that Rewa Urban water is safe for drinking purposes from the point of view of levels of pH, EC, TDS, Ca^{2+} , Mg^{2+} , Na^+ , K^+ , Cl^- , NO_3^- , SO_4^{2-} , Fe^{+2} , Zn^{+2} . But the total hardness varied in between 70 to 80 mg/L which indicates that water in the Rural Rewa is moderately hard. So, it is suggested to the Urban localities is much often softer water as indicated by Pandey, *et al.* 1993 [14], Salve and Hiware, 2008 [15] and Trivedy and Goel, 1986 [16] and similar results are reported by Jayabhaye, *et al.* 2006 [7], Salve and Hiware, 2008 [15] and WHO, 2001, 2003 & 2006 [17-19]. Further research can be carried out for detailed mapping and hydrological studies for existing water sources to show flow lines and hydrogeochemical survey in that area. It is also necessary to find out the source of contaminants which is due to soil types, industrialization, water chemistry and other human activities. This study gave us an insight that urban water is less harder and containing more dissolved ions. Than rural water collected in Rewa district, Madhya Pradesh, India.

5. Acknowledgement

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6. References

1. Akoto O, Adiyiah J. Chemical analysis of drinking water from some communities in the Brong Ahafo region, International Journal of Environmental Science and Technology. 2007; 4(2):211-214.
2. Akpoveta OV, Okoh BE, Osakwe SA. Quality assessment of borehole water used in the vicinities of Benin, Edo State and Agbor, Delta State of Nigeria, Current Research in Chemistry, 2011; 3:6269.
3. APHA, AWWA, WPCF, Standard Methods for Examination of Water and Wastewater, 20th Edition, American Public Health Association, Washington, DC, 2003.
4. APHA (1985): Standard Methods for Examination of Water and Wastewater, 20th Edition, American Public Health Association, Washington D.C., 1992.
5. Gurunathan A, Shanmugam CR. Customary Rights and their Relevance in Modern Tank Management: Select Cases in Tamil Nadu, Paper prepared for the workshop entitled 'Water, Law and the Commons' organized in Delhi from 8 to 10 December, 2006.
6. Jafari A, Mirhossaini H, Kamareii B, Dehestani S. Physicochemical analysis of drinking water in Kohdasht city Irestan, Iran, Asian Journal of Applied Science. 2008; 1:8792.
7. Jayabhaye UM, Pentewar MS, Hiware CJ. A Study on Physico- Chemical Parameters of a Minor Reservoir, Sawana, Hingoli District, Maharashtra, 2006.
8. Kumar AK, Kanchan Taruna, Sharma HR. Water quality index and suitability assessment of urban ground water of Hisar and Panipat in Haryana, Journal of Environmental Biology. 2002; 23:325-333.
9. Khaiwal R, Garg VK. Distribution of fluoride in groundwater and its suitability assessment for drinking purposes, International Journal of Environmental Health Research. 2006; 16:163-166.
10. Kumar R, Singh RD, Sharma KD. Water Resources of India, Current Science 2005; 89(5):794811.
11. Khan MAG, Choudhary SH. Physical and chemical limnology of lake Kaptai, Bangladesh. Trop. Eco 1994; 35(1):35-51.
12. Kadam MS, Pampatwar DV, Mali RP. Seasonal variations in different physico-chemical characteristics in Masoli reservoir of Parbhani district, Maharashtra, J Aqua Biol. 2007; 22(1):110-112.
13. Kodarkar MS. Methodology for water analysis, physico-chemical, Biological and Microbiological Indian Association of Aquatic Biologists, Hyderabad; Pub.2: pp. 50.
14. Pandey AK, Siddiqi SZ, Rama Rao. Physico-chemical and biological characteristics of Husain sagar, an industrially polluted lake, Hyderabad. Proc. Acad. Environ. Biol 1993; 2(2):161-167.
15. Salve VB, Hiware CJ. Study on water quality of Wanparakalpa reservoir Nagpur, Near Parli Vaijnath, District Beed. Marathwada region, J Aqua Biol. 2008; 21(2):113-117.
16. Trivedy RK, Goel PK. Chemical and biological methods for water pollution studies, Environmental Publication, Karad, Maharashtra Kaushik, 1986.
17. WHO, Water health and human rights, world water day. <http://www.Woldwaterday.com>, 2001.
18. WHO, Guidelines for drinking water quality, Geneva, 2003, Report No: WHO/SDE/WSH 03.04.
19. WHO, Guidelines for drinking water quality Geneva, 2006, Report No: WHO/SDE/WSH 06.07.