

Drinking Water Studies

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Abstract – This study based on dissection of drinking water parameter in an educational institute located in Sitapura area, Jaipur, Rajasthan. This paper gives different summarization on water dissection and its treatment process in different zone, which gives the knowledge about treatment process and parameter use in paper publication.

Keyword– pH, Hardness, total dissolve solid, electrical conductivity, total alkalinity, total acidity.

I. INTRODUCTION

"Without water no life"

In present scenario surface water and ground water are polluted by the increasing in industrial area, urban area, agricultural activity and human activity.

By these activities, drinking water is affected. Treatment method is to enhance the properties of drinking water.

Drinking water should be liberated from heavy metals, pesticides and organic and inorganic compounds etc. and other like its parameter like pH, electrical conductivity, Ca, Mg, TDS, TSS, total Hardness, turbidity, acidity and alkalinity with permissible limit. BIS 10500:2012 gives detail about all this parameter. This parameter also called Physiochemical parameter.

II. MATERIAL AND METHODS

A. Study area

For study on chemical analysis of drinking water was taken from Sitapura Industrial area.

B. Water samples

Water samples are taken from the Bore well water and the Hand Pump.

C. Physiochemical Parameter

Physiochemical parameters like Electrical conductivity, total Alkalinity, Total hardness Total Dissolve Solid, Total Acidity are analyzed.

TABLE I. GENERAL PARAMETERS OF DRINKING WATER

S No.	Parameter	Value
1	pH	6.5-8.5 (Acceptable Limit)
2	Total Hardness	200mg/l (Acceptable Limit) - 600mg/l (Permissible Limit)
3	Electrical Conductivity	5.5mS/m (Acceptable Limit)
4	Total dissolved solids	500mg/l (Acceptable Limit) - 2000mg/l(Permissible Limit)
5	Total alkalinity	200mg/l (Acceptable Limit) - 600mg/l((Permissible Limit)

Standard parameters and these values according to BIS: 10500:2012

TABLE II. EXPERIMENTAL RESULTS OF COLLECTED SAMPLE

S No.	Parameter	Value
1	pH	6.65
2	Total Hardness	545mg/l
3	Electrical Conductivity	1.170mS/m
4	Total dissolved solids	1000mg/l
5	Total Alkalinity	18mg/l
6	Total Acidity	15mg/l

Parameter and value of these after study

TABLE III. METHODS FOR QUALITY PARAMETERS

S No.	Parameter	Unit	Employed
1	pH	-	Digital pH meter
2	Electrical conductivity	mS/ m	Digital conductivity meter
3	Total Hardness	mg/l	Titrimetric method(EDTA)
4	Total Dissolved Solids	mg/l	With help of Oven
5	Total Alkalinity	mg/l	Titrimetric method(HCL)
6	Total Acidity	mg/l	Titrimetric method

Parameter and units of these are mentioned above as shown.

III. RESULT AND CONCLUSION

All water quality parameter in the ground water sample are displayed in Table 2, and all the result are compared with standard value by the bureau of Indian standard (BIS) and world health organization (WHO) and council of medical research ICMR also in Table 1, and parameter units are shown in table 3.

A. pH

pH is measure the alkalinity or acidity of water. The pH of water is very important for indicating the qualities and solubility. pH has Acceptable Limit) of - 6.5-8.5.

After study pH value of water is 6.66

B. Electrical conductivity

Concentration of ions and nutrients are depending on electrical conductivity. The maximum limit of Electrical conductivity according to BIS 2012 is 5.5mg/l. Standard Permissible limit are shown in table 1,

C. Total alkalinity

According to BIS, ICMR & WHO total alkanity range from 200 mg/L to 600 mg/L. carbonate and bicarbonate is cause of alkanity.

D. Total Hardness

Hardness is the properties of water which prevent lather

formation with soap and increase Boiling point of water. It may be depending on amount of calcium salt or magnesium salt or both for domestic drinking and an industrial supplies important criterion is Hardness.

Calcium hardness may be caused by calcium salt and magnesium hardness causes by magnesium salt. Standard permissible limit of hardness is shown in table-1 and after treatment hardness is 675mg/lit.

E. Total Dissolve Solid

Total solid is important parameter use for other purpose beyond the prescribed limit, by this impart a peculiar test to water and reduce its probability. TDS are composed by carbonates and Bicarbonates and chlorides and nitrates of calcium, magnesium, sodium potassium organic matter and other particles.

F. Total Acidity

The total acidity of a solution is a measure of all the hydrogen ions, (H^+) of both the fixed and volatile acids present. These include the potential of H^+ (hydrogen ions) able to be released plus, those H^+ already released, existing as free H^+ in solution.

REFERENCES

- [1] Bureau of Indian Standard (BIS) (2012), Indian standard specification for drinking water, Delhi: BIS, IS 10500.
- [2] WHO, 2006. WHO Guidelines for drinking-water quality First addendum to third edition, World Health Organization,