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PHYSICO-CHEMICAL AND BIOLOGICAL PRAMETERS OF A FEW PACKAGED DRINKING WATER SAMPLES

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ABSTRACT

"Packaged Drinking Water" means water derived from any source of potable water or sea water or underground water or surface water. Pure and safe drinking water has always been a necessity. Traditionally pipe water distributed by the manipulation has been the trusted water supply for drinking purpose. The study was selected for analysis and treatment for some packaged drinking water. Twenty samples were purchased in teashop, railway station and small villages around Tiruchirappalli district. To analyze the quality of the packaged drinking samples purchased in and around Tiruchirappalli district. The results were compared with standard value. The results are tabulated and conclusions are drawn.

Keywords- Analysis, Physico-Chemical parameter, Biological parameter, water samples.

I. INTRODUCTION

Water, water everywhere, but not a drop to drink" from the Rhyme of the Ancient Mariner is perhaps a fitting description of the attitude of many consumers living in urban areas today who are increasingly looking toward bottled water as a means of meeting meet the demands of industry, agriculture and an ever-expanding population, the shortage of safe and accessible drinking-water will become a major challenge in many parts of the world. In the earlier days, water available from the wells and springs used to be considered safe and was stored in either pots or brass containers. Consumers may have various reasons for purchasing bottled drinking-water, such as taste, convenience or fashion, but for many consumers, safety and potential health benefits are important considerations. Since such considerations are often not founded on facts, these will be specifically addressed here. Drinking-water may be contaminated by a range of chemical, microbial and physical hazards that could pose risks to health if they are present at high levels. Examples of chemical hazards include lead, arsenic and benzene. The CAC (Codex Alimentarius Commission) [1] has developed a Codex Standard for Natural Mineral Waters and an associated code of practice. This Commission is currently developing a draft of a Codex Standard for Bottled/Packaged Waters to cover drinking-water other than natural mineral waters.

It is a regular sight in the city that everybody uses packaged drinking water. This it shows that people are aware of safe drinking water and water borne diseases [2]. Hence, the present work aims at studying the nature of

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packaged drinking water samples. Twenty samples were purchased in teashop, railway station and small villages around Tiruchirappalli district and physico-chemical and biological parameters were analyzed.

II. MATERIALS AND METHODS

The physical, chemical and biological parameters, such as pH ,salinity and electrical conductivity were measured with the sample analyzer. Total hardness, Total Dissolved solids[TDS],Chlorides,Sulphates,Dissolved oxygen(DO),Biochemical Oxygen Demand(BOD) and Chemical Oxygen Demand(COD) were analyzed using volumetry and colorimetry.[3]-[7]

III. RESULTS AND DISCUSSION

The data values of all the twenty samples are given in the table 1 and 2.

TABLE-1 Physical and Chemical Parameters of Water Samples

Sample No.	Physical parameter				Chemical parameter		
	pH	EC µS	Salinity ppm	TDS ppm	Hardness ppm	Fluoride ppm	Alkalinity ppm
1	7.32	65.3	20	36.9	0	0.44	0.30
2	7.52	78.3	20	45.6	0	0.50	0.30
3	7.79	105	30	61.4	0.4	0.68	0.30
4	6.93	228	70	13.2	0.3	0.60	0.50
5	7.41	120	30	45.5	0.1	0.50	0.20
6	7.33	115	70	48.2	0.1	0.60	0.20
7	7.40	182	70	56.1	0.3	0.54	0.20
8	7.79	56.2	50	15	0	0.50	0.30
9	7.35	160	50	93.1	0	0.68	0.30
10	8.01	19.9	10	11.6	0.2	0.60	0.20
11	7.14	100	30	45.4	0	0.52	0.3
12	7.35	63	40	56.1	0	0.68	0.4
13	7.14	99	30	93.1	0	0.5	0.3
14	7.41	120	30	61.4	0.1	0.65	0.2
15	7.40	72	40	13.2	0	0.4	0.2
16	6.70	56.2	50	35.4	0	0.5	0.3
17	7.40	120	20	26.8	0.1	0.52	0.3
18	7.32	18.2	40	62.8	0	0.5	0.2

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19	7.41	115	30	55.9	0	0.6	0.3
20	7.33	26.8	10	45.5	0	0.5	0.3

TABLE-2 Biological Parameters of Some Water Samples

Sample No.	COD mgL^{-1}	DO mgL^{-1}	BOD mgL^{-1}
1	7.2	5.1	NIL
2	7.2	6.5	NIL
3	18.0	6.5	0.25
4	7.2	7.3	0.20
5	14.4	7.1	0.10
6	10.8	6.41	0.20
7	7.2	6.5	0.20
8	14.4	6.7	NIL
9	18.0	6.7	NIL
10	21.6	7.0	NIL

From the result, pH of all the samples are in neutral in nature. The other physical parameters like EC, salinity, TDS were found to be within the permissible limits of WHO standards. Alkalinity standards have not been set by environmental pollution agency for drinking water. 10 samples were taken for analysis the biological treatments. DO and BOD values for some water samples are some variation from the WHO standards. This is due to the analysis is carried after the few weeks from date of purchasing. Among which boiling was found to be more effective because in chlorination bleaching powder is added this might increase total hardness of the sample.

IV. CONCLUSION

The packaged drinking water samples were analyzed for various quality parameters. The study was revealed that the physico-chemical characterizations of all the samples are the values are in within the WHO limits. . DO and BOD values for some water samples are not within the permissible limit. Hence the use of boiled out water for drinking purpose is encouraged.

IJARSE
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REFERENCES

[1] Guidelines for drinking water quality, World Health Organization, vol. 1,3rd ed.,(2004).

[2] Food borne Disease Outbreaks: Guidelines for Investigation and Control, World Health Organization,(2008).

[3] APHA,Standard methods for the examination of water and waste water;16th ed.;American public health association, Washington, (1985).

[4] N .Manivasakam , Pollution Res, *18(1),* 111(1989).

[5] B.K .Sharma and H .Kaur, Environmental chemistry, 1st ed, Goel publishing house, Meerut. (1994).

[6] R.K .Trivedy and P.K. Goel, Chemical and biological methods for water pollution Studies.

[7] Environmental publication, Karad; *35*(1986).

[8] K.Rajalakshmi, Rasayan Journal of Chemistry,vol.*3(1),*(2010).