ANALYSIS OF GROUNDWATER IN THE SURROUNDING AREAS OF PLASTIC INDUSTRY

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Abstract— Ground water pollution is mainly due to the process of industrialization and urbanization that has progressively developed over time without any regard for environmental consequences. The impact of waste disposal from the Tannery industries on ground water and other water resources has attracted a lot of attention because of its overwhelming environmental significance. The main objective of this study is to carry out tests on various ground water samples collected from domestic areas surrounding the Velachery plastic industry and to evaluate the water quality parameters. The results obtained are compared with the standards prescribed in the Indian Standards Drinking Water Specifications and inferences are made. The effect of plastics on groundwater quality is analysed and Recommendations for the use of water by public is given.

I. INTRODUCTION

Water is one of the most important and abundant components of the ecosystem. All living organisms on the earth need water for their survival and growth. As now only earth is the planet having about 70% of water. But due to increased human population, industrialization, use of fertilizers in the agriculture and man-made activity it is highly polluted with different harmful contaminants. Therefore it is necessary that the quality of ground water should be checked at regular time interval, because due to use if contaminated ground water, human population suffers from varied of borne diseases.

II. OBJECTIVE

1) To carry out physico -chemical analysis of water samples collected at various site of area under study.
2) To investigate of this report, the excess amount of physico -chemical contents is to be reduced.

III. EXPERIMENTAL PROGRAMME

Water samples were analysed for various physicochemical parameters after their collection. The procedure for analysis is followed as per standard methods of analysis of water (APHA 1992). The parameter analysis include; colour, odour, turbidity, TDS, electrical conductivity, pH, total alkalinity, total hardness, calcium, magnesium, sodium, potassium, iron, manganese, free ammonia, nitrite, nitrate, chloride, fluoride, sulphate, phosphate, tidys test 4 hours as O_2, BOD, COD. All chemicals used in the tests were of analytical grade. All necessary precautions were undertaken during sampling analysis and transportation of water samples to the laboratory.

IV. COLLECTION OF BORE WELL WATER

The water samples are collected from bore well, which is situated near and away from the plastic industry. The samples were collected in cans and transported to lab. It is stored in the room temperature.

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V.   CHARACTERIZATION RESULTS OF GROUND WATER

Elements	A	B	C	D	E	F	G	H	I	J
TDS (mg/l)	1452	953	1238	606	1003	716	1002	885	873	1238
pH	6.97	7.40	7.55	7.86	7.56	8.01	7.78	7.69	7.60	7.69
Total hardness (mg/l)	940	600	800	260	640	200	600	530	260	800
Calcium (mg/l)	184	120	160	80	120	78	120	88	75	140
Sodium (mg/l)	65	42	51	21	51	8	67	65	20	62
Potassium (mg/l)	15	6	4	1	9	5	19	3	4	4
Nitrite (mg/l)	0.01	0.02	0.02	0.01	0.02	0.02	0.04	0.02	0.01	0.02
Nitrate (mg/l)	2	2	2	1	1	2	2	1	2	1
Chloride (mg/l)	500	250	400	350	340	260	200	250	300	350
Sulphate (mg/l)	271	224	235	224	224	200	218	312	312	253
Phosphate (mg/l)	0.06	0.03	0.06	0.06	0.03	0.06	0.03	0.06	0.06	0.06
BOD (mg/l)	19	15	10	13	18	14	17	11	19	18
COD (mg/l)	20	15	10	13	17	11	16	18	15	13

VI. RESULTS AND DISSCUSSION

1. Total dissolved solids
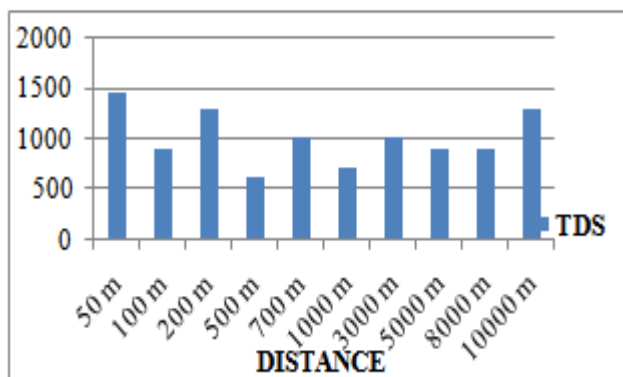

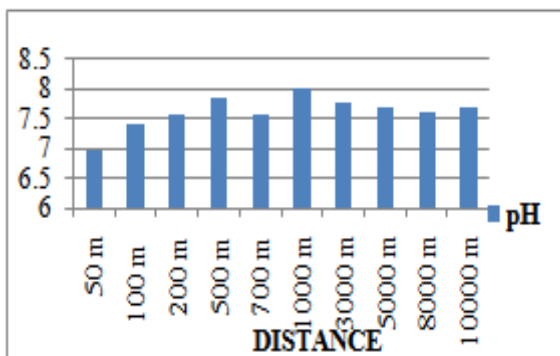Figure 1 : Total dissolved solids

2. pH
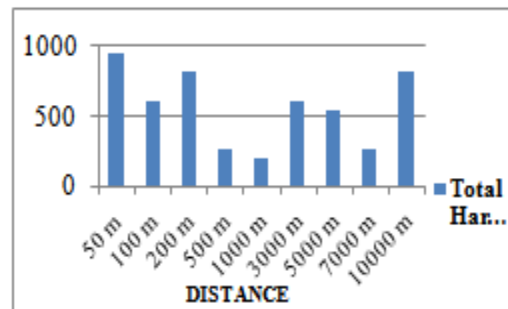

Figure 2 : pH

3. TOTAL HARDNESS

Figure 3 : Total Hardness

4. CALCIUM

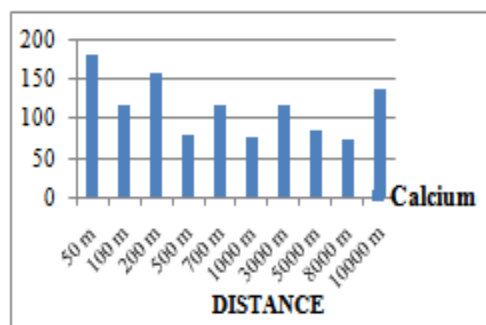
Figure 4 : Calcium

5. SODIUM
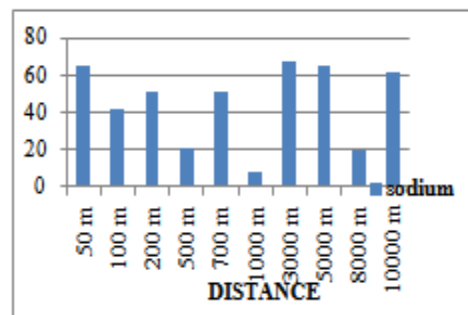
Figure 5 : Sodium

6. POTASSIUM
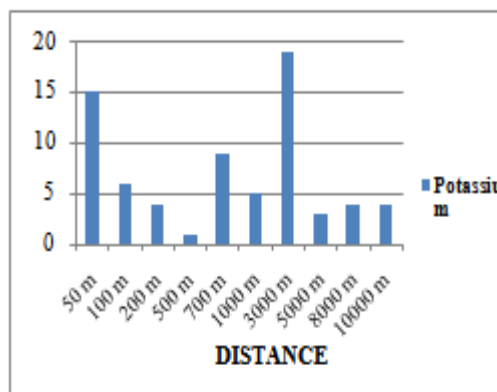
Figure 6 : Potasium

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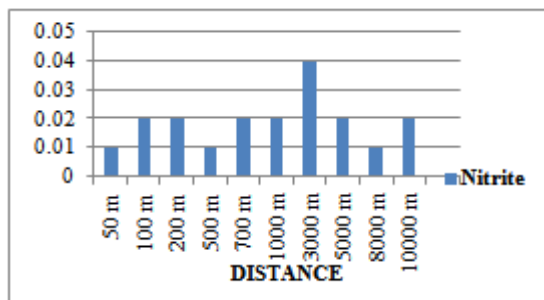
7. NITRITE

Figure 7 : Nitrite
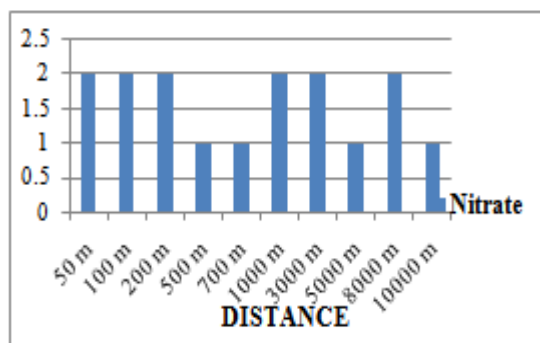
8. NITRATE

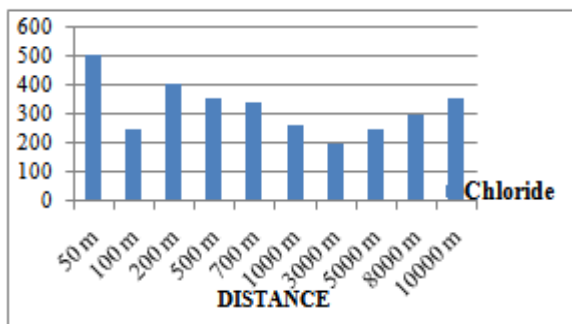**Figure 8 : Nitrate**

9. CHLORIDE

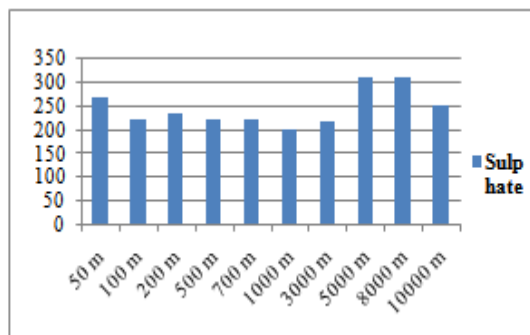

Figure 9 : Chloride

10. SULPHATE

Figure 10 : Sulphate
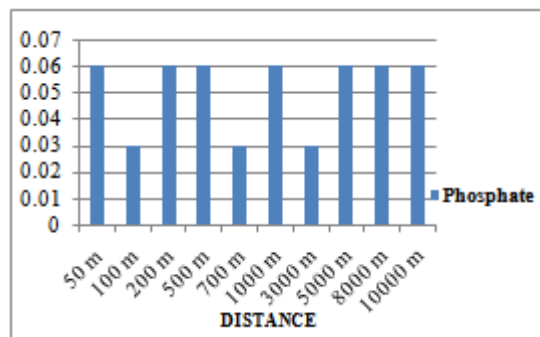
11. PHOSPHATE

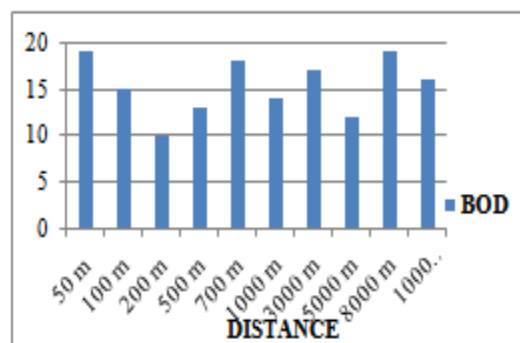

Figure 11 : Phosphate

12. B.O.D

Figure 12 : B.O.D
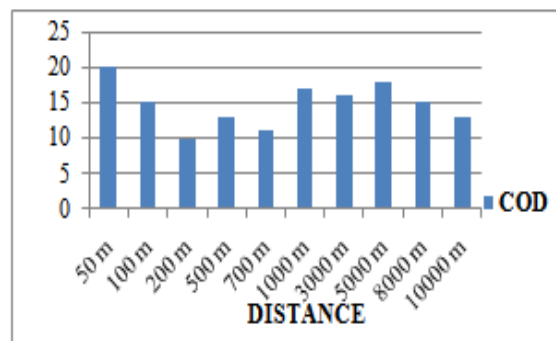
13. C.O.D

Figure 13 : C.O.D

VII.   CONCLUSION

1) Analysis of ground water condition near plastic industry has been done.
2) Various Physico-chemical parameters are found from the analysis.
3) Various analysis tests are made and finally the values are compared with the standard values.

4) By the comparison of standard values with obtained values, the level of hardness in the water sample is slightly varied.

5) So, a remedy is undertaken to reduce the level of hardness in the water samples.

6) From the remedial measures taken, hardness level in the water samples are in controlled state.

7) We suggested the municipal to take necessary steps to reduce the hardness level in the ground water. For temporary hardness the water should be boiled and permanent hardness is reduced by using washing soda or ion exchange resin.

8) Thus, the remedial water samples collected around the plastic industry is suitable for drinking as well as all other purposes.

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