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Experimental Study on Underground Water Quality in Coimbatore Dump Yard Area

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Abstract- Underground water is a precious natural water resource considered as a readily available and safe source of water for domestic, agriculture and industrial uses. In Coimbatore, underground water is being contaminated because of numerous human activities. Improper solid waste management is one amongst the major sources of environmental pollution deteriorating underground water quality around landfill sites. In this view, the current study was conducted to determine the impact of the existing landfill site on the quality of subsurface water in Vellalore. So as to realize this nine underground and one pool water samples from various distances around the dump site were analyzed. Parameters analyzed are color, odour, turbidity, pH, TDS, BOD, COD, DO, total hardness, nitrate, chloride, alkalinity. Results revealed that concentration of all the parameters apart from pH scale, are unit moderate than acceptable limits for safe drink. The distance from the dump site has an impact on the quality of subsurface water. Overall, underground water is imprinted contaminated because of existing landfill site in this study area. Therefore, the municipal solid waste in this space is nice in method. As a result, there are no consequences in groundwater.

Keywords- Dump site, Underground water testing.

I. INTRODUCTION

Municipal dump is one the major threats to the ground water resources. Wastes that are placed in the open dumps are infiltration from precipitation. These gets into the anaerobic decomposition and a material called Leachate. is formed. This contains heavy amount of organic as well as inorganic compounds. This Leachate is produced under the dumpsite by the wastes dumped and percolates into soil.

Areas which are near to the dump yard have a greater risk to ground water pollution. Analytical lab experiments have used to know the contamination of ground water and in this paper it is assessed by weighted arithmetic method and the impacts of Leachate passing into aquifer and polluting the ground water.

Hence ground water quality is estimated from the nearby residential areas as well as in and around the dump site of Vellore Coimbatore.

II. OBJECTIVES AND SCOPE

- In present day the scarcity of safe drinking water is main problem in front of all over the world.
- Also at present municipal solid waste is become an global issue a huge amount of solid waste is being generated every year in the world.
- The people residential near the dump site there are using the ground water for their drinking and agriculture use so it's essential to study the impact of water quality.
- Main objective to be to study the impact of municipal solid waste Dumped on ground water sample through physical and chemical parameter.
- This study is to get a detailed idea on the quality of ground water when wastes are dumped in open areas.

III. LITERATURE REVIEW

This chapter describes the various previous studies related to the project work. Details from journals, papers are included in this chapter.

1. Previous Studies:

- Assessment of groundwater quality near the landfill site using the modified water quality index - A Talalaj Environ monit assesses-2014.
- Ground water quality near municipal solid waste dumping site at Thirupperumthurai - M Rajendran the Faculty of agricultural sciences of the Sabaragamuwa University of Sri Lanka – 2015.
- Study of Ground Water Quality In Industrial Zone Of Visakhapatnam - CH.Ramkrishana Pelagic Research library- 2016.
- Impact of Municipal Solid Waste Dump on Ground Water Quality in Chittoor district, AP- Dr.A.V.V.S.

Swamy, K. Venkateswara rao International journal of applied and Year pure science and agriculture (IJAPSA) -2017.

- Effect of solid wastes on the quality of underground water - S.I. Omonfonmwan Edo state water corporation 2013.
- Effect of waste landfill site on surface and ground water drinking quality - Eric Danso Boateng, Kofi Owusu Water and Environment Journal – 2020,

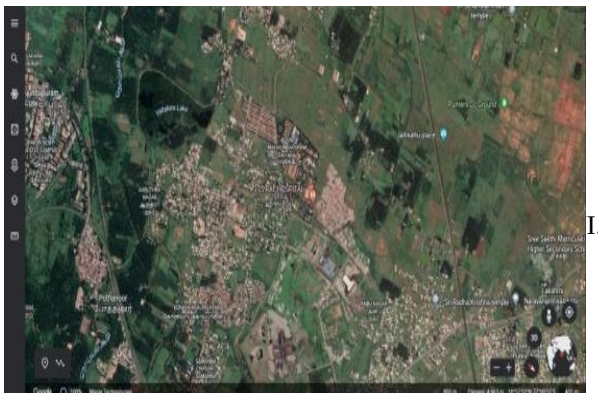
2. Summary of Literature:

90% literature review will be summary that will be 90% of groundwater will be affected by the landfill area. Because of the poor municipal soil waste management system.

IV. METHODOLOGY

LITERTURE REVIEW	→	SELECTING OF AREA NEAR DUMP SITE
COLLECTION OF WATER SAMPLE	→	TESTING OF WATER SAMPLE
USING ARCGIS SOFTWARE FOR PLOT	→	RESULT AND CONCULSION

V. COLLECTION OF WATER SAMPLES



I.

Fig.1 Vellalore dump site, Coimbatore.

Fig.2 500m Vellalore dump site, Coimbatore.

Fig.3 1Km Vellalore dump site, Coimbatore.

Fig.4 Collected water samples.

VI. TESTING OF WATER SAMPLES

We have done various tests like Colour, Odour, pH, Turbidity, Alkalinity, Hardness, Acidity and Nitrate.

VII. RESULT AND OBSERVATIONS

Table `1. Result of the Test.

Test	Sample1	Sample2	Sample3
Distance	500M	1KM	2KM
Color	Not Acceptable	Acceptable	Acceptable
Odour	Not Acceptable	Acceptable	Acceptable
pH	7.5	7	7
Turbidity	18	3	9
Alkalinity	Non Alkalinity	Non Alkalinity	Non Alkalinity
Hardness	600	100	200
Acidity	No Acidity	No Acidity	No Acidity
Nitrate	3	1	1

Table 2. Result of the test.

Test	Sample4	Sample5	Sample6
Distance	2.5KM	3KM	3.5KM
Color	Acceptable	Not Acceptable	Acceptable
Odour	Acceptable	Not Acceptable	Acceptable
pH	7	6	7
Turbidity	5	78	6
Alkalinity	Non Alkalinity	Non Alkalinity	Non Alkalinity
Hardness	400	1750	400
Acidity	No Acidity	No Acidity	No Acidity
Nitrate	1	3	2

Table 3. Results of The Tests.

Test	Sample7	Sample8	Sample9	Sample10
Distance	4.2KM	5KM	6.5KM	23KM
Color	Acceptable	Acceptable	Acceptable	Acceptable
Odour	Not Acceptable	Acceptable	Not Acceptable	Acceptable
pH	7	7	7	7
Turbidity	10	7	8	5
Alkalinity	Non Alkalinity	Non Alkalinity	Non Alkalinity	Non Alkalinity
Hardness	150	200	300	110
Acidity	No Acidity	No Acidity	No Acidity	No Acidity
Nitrate	0.5	1	1	1

VIII. CONCLUSIONS

Based on the results, it can be concluded that Municipal Solid Waste dump-site at vellalore Coimbatore, has adversely affected the groundwater. The concentration of EC, TDS, total hardness, colour, odour pollution, was normal.

The average concentrations of the above parameters were normal in the well water in the vicinity of land and hence, this underground water is found to be suitable for drinking and other domestic purposes.Leachate slowly percolates through soil but there is no changes in underground water because of good treatment process will be done in landfill area and also the polluted solid waste will be spreading by the air, they can pollute the area and around sites.

The municipal solid waste management wants to give the better treatment process. Therefore, there is a need to have an effective management programme for the existing open dumping site and the landfill to control the environmental pollution.

IX. ACKNOWLEDGEMENT

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