

STUDY OF MUNICIPAL SOLID WASTE WATER AROUND AYAPAKKAM DUMPYARD REGION USING CHARCOAL FILTRATION

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ABS TRACT:

Water is essential for life. Municipal solid waste describes the stream of solid waste generated by household, commercial establishment, industries and institution. Improper disposal of M SW has serious repercussions for the environment and human health. One of the serious problem is ground water contamination. Due to the rapid growth in solid waste generation rate and open dumping practice. As the water percolates through M SW, it makes leachate that consist of decomposing organic matter combines with iron, mercury, lead, zinc and other metal, which is the cause for the groundwater contamination in the nearby areas. So there is need for groundwater analysis around the dumpsite.

Keywords-charcoal treatment process.

INTRODUCTION:

Athipattu dumpsite near ayapakkam is an area which are located at census town of greater Chennai. This area has a dumpsite where water is contaminated due to the open landfills and this is one of the transferring site. This dumped solid water are transferred to the perungudi and kodugaiyur area where large amount of M SW are dumped. This municipal solid waste and hazardous waste are the main causes for pollution in ground water. The heavy metal present in water will causes human health issues. This study is about to attempt to make known of the concentrated heavy metal in ground water around the ayapakkam dumpsite.

STUDY AREA:

Ayapakkam is an area in which census town of greater Chennai in Thiruvallur district. Ayappakkam lies in N13°.07'69", E80°.15'19". This area has an dump yard where water is contaminated due to the landfill. From this dumpsite the municipal solid waste is taken to the perungudi area where large number of waste is dumped. This municipal solid waste in that area are the main cause of pollution in the ground water. The heavy metals present in the water will cause human health issues.

Samples needed:

For this study we need 9 numbers of contaminated water samples and a sample of leachate water

EXPERIMENTS :

Tests were taken such as pH, TDS, COD,BOD, Turbidity, Conductivity, Alkalinity and Heavy metals.

METHODOLY:

1. Surveying of the landfill site.
2. Collection of 10 numbers ground water samples (9 numbers of bore well and tube well samples and 1 numbers of leachate water) .
3. Experimental tests.
4. Analysis of physical and chemical properties.
5. Results obtained.
6. the contamination by charcoal treatment process.

The bore well water and tube water is taken in the dried plastic bottles from the residential area located nearer to the dumpsite. The sample are collected with its coordinates.

Then check the as pH, TDS, COD, BOD, Turbidity,

Conductivity, Alkalinity and Heavy metals. Along with the samples and the leachate standards of drinking (IS:10500) water is compared.

NAMING OF SAMPLES :

1. Aparna nagar
2. Baba temple
3. 6628, Ayapakkam Housing board
4. Thendral kudil, TNHB
5. Srinivasa nagar
6. Ganesh nagar
7. 9106, Ayapakkam Housingboard
8. Lake view Rd
9. 508, B Ayapakkam Housingboard Rd
10. Atthipet dumpsite.

COORDINATES OF THE COLLECTED WATER SAMPLES :

S.No	Sample No	Source	Latitude	Longitude
1	Sample 1	Bore Well	13°5'56.85"	80°9'2.14 56"
2	Sample 2	Bore Well	13°5'59.5788"	80°8'53.23 56"
3	Sample 3	Bore Well	13°6'19.458"	80°8'8.5056"
4	Sample 4	Bore Well	13°6'13.0824"	80°8'16.1808"
5	Sample 5	Bore Well	13°6'0.5616"	80°8'5.7876"
6	Sample 6	Bore Well	13°6'7.7148"	80°7'44.3712"
7	Sample 7	Bore Well	13°5'48.9768"	80°8'29.4756"
8	Sample 8	Bore Well	13°5'58.0056"	80°8'17.1672"
9	Sample 9	Bore Well	13°5'57.8184"	80°8'17.448"
10	Sample 10	Bore Well	13°5'57.6528"	80°9'2.3256"

Tests were taken such as pH, TDS, COD, BOD, Turbidity, Conductivity, Leachate water is taken in dried plastic bottles which present in the water logged area around the dumpsite

Alkalinity and Heavy metals and result are shown down.

S. NO	PARAMETERS	RANGE	ACCEPTABLE LIMIT
1	Total Hardness	418-686	300
2	Iron	0.09-0.43	0.3
3	pH	6.2-7.4	6.5-8
4	Tss	17-34	500
5	Chloride	672-856	250
6	Tds	115-536	500
7	Turbidity	0.4-1.4	1
8	Conductivity	2550-3397	-
9	Alalinity	70-240	200
10	Calcium	79-159	75
11	M Aganese	0.1-2.36	30
12	Nitrate	21.04-26.37	45
13	Cadm Ium	0.008-0.02	0.01
14	Chrom Ium	0.02-0.09	0.05
15	Nickel	1.22-9.52	0.02

CONCLUSION:

As the result of the observation attempt, the chemical characteristic of the samples was suggested to be in above the permissible limits. The concentration of the heavy metals Cr, Cd, Cu and Iron in the ground water samples are beyond the permissible limit. But the survey shows that the leachate sample is percolating from the landfill site to the ground water and it also affects the other subsurface water sources. Due to the penetration of the leachate produced from the landfill site, contaminates the existing landfill site.

Although, the concentrations of few contaminants do not exceed drinking water standard even then the ground water quality represent a significant threat to public health. Urgent attention therefore, needs to be paid to the groundwater supply from this region and proper remedial should be taken to reduce further

contamination of Groundwater. The findings indicate the contamination is severe in localities around the dumpsite. longterm exposure of excessive amount of copper and cadmium causes kidney damage and lung cancer.

Chromium is also said to cause cancer if exposed for long time. So serious concentrations should be taken to control the contamination. Hence charcoal filter process reduces the partial contamination of leachate so the treated leachate is not desirable for drinking and irrigational purpose. Due to its reduction of partial contaminants, this treated leachate prevents the ground water contamination in the surrounding area.

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