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### Investigation of polluted ground water in tirupur district

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**Abstract:** The extraction of natural resources has been rapidly increased due to industrialization and urbanization in and around Tirupur, the capital city of Tamil Nadu, India. In present work, the Metro waste handling private limited and Aquamate engineering pvt Ltd Industrial growth centers are selected to assess and evaluate the groundwater quality and water table status of this region. A number of Hazardous waste generating units result the surface and groundwater pollution in concern region. Water used in the manufacturing industry picks up high TDS, acidity or alkalinity and heavy metals. The physical and chemical characteristics of 10 groundwater samples collected from different locations in period of post monsoon, The trace elements i.e. EDTA, Starch, EBT, phenolphthalein in ground water were analyzed by EPA's technique. The total dissolved solids (TDS), total hardness (TH), Ca, Mg, Na, Sr, and Zn in groundwater.

**Keywords:** Alkalinity, Chloride, Sulphate, Fluoride, pH and Total hardness test, BOD and COD test

#### I. INTRODUCTION

The growth of industrialization, urbanization and advanced agricultural activity plays a key role for the development of state and the nation's economy. The water consumption for all purposes is steadily on the rise and as a result, stress on ground water is also increasing at an alarming rate. The exploitation of groundwater has increased remarkably in and around Tirupur city due to industrialization, urbanization and growth of population change in land use pattern. The ground water quality is important as the quantity. The untreated effluents from industrial units percolate into soil near the source or travel through unlined channels to shallow pits where seepage into soil and vadose zone takes place which eventually contaminates ground water. It is evident from the literature that infiltration of the effluents has led to the contamination of aquifers in different parts of India. The contamination of ground water adversely affects the plant growth and human health. The atmospheric deposition, solid waste disposal and various industrial waste discharges in the environment originate the runoff, surface and ground water pollution. Due to the spatial and temporal variations in water chemistry a monitoring campaign that will provide a representative and reliable estimation is necessary. In present investigation, groundwater samples from different locations of industrial area were collected to understand the chemical

composition of water and natural phenomena.

#### II. MATERIALS AND METHODS

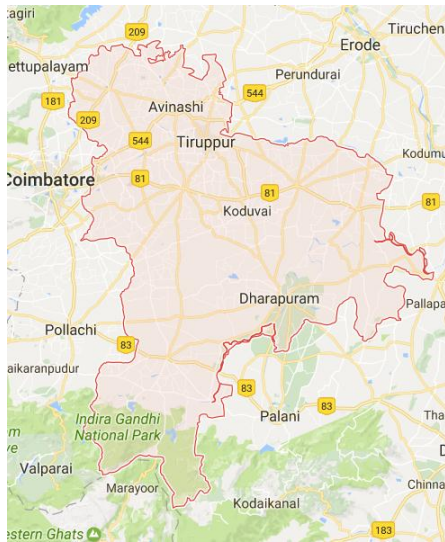
S.no	Name of test	Materials used
1	pH, Turbidity and conductivity test	Turbiditymeter, Sampletubes, conductivitymeter, small beakers, pHmeter, electrodes.
2	Hardness test	Burette, pipette, Erlenmeyer flask
3	Alkalinity test	Burette, pipette, Conical flask, methyl orange indicator, phenolphthalein.
4	Acidity Test	Burette, pipette, Conical flask, methyl orange indicator, phenolphthalein.
5	Chlorides test	Burette, pipette, Conical flask, standard silver nitrate solution, potassium chromate indicator
6	Sulphates Test	Muffle furnace, Dessicator, crucible, Heater.
7	Fluoride test	Spectrophotometer, pipette.
8	Optimum Coagulant	Laboratory flocculator with stirring paddles, glass jars, analytical balance.
9	Residual chlorine And available chlorine	Burette, pipette, Conical flask, measuring jar, Standard sodium thiosulphate solution, standard potassium iodide solution, conc. HCl, starch indicator.
10	BoD Test	Burette, pipette, Conical flask, 300ml air tight BOD bottle.
11	CoD Test	, pipette, Conical flask, measuring jar, sulphuric acid reagent, standard potassium dichromate, ferroin indicator solution
12	Total,	Muffle furnace,

Suspended and dissolved Test	Dessicator,crucible,dryingoven,filterpaper.
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### III. STUDY AREA

Tirupur district:

There are four numbers of industrial growth centres and 10 Industrial Areas in the Tirupur, . . The location map of Sampling sites



**We have taken 10 samples in tirupur district**

**Mahalakshminagar  
Ganapathipalayam  
Kunkumapalayam  
Arumudampalayam  
Sedapalayam  
Chinnakarai  
Nochipalayam  
Vidyalayam  
Karaipudur  
Veerapandipirivu**

### IV. ASSESSMENT OF WATER QUALITY

Public, in general, judges the quality of water supplied based on its appearance, taste and odor at the point of its use. Although appearance, taste, odor etc., are useful indicators of the quality of drinking water, their presence may not necessarily make water unsafe to drink. In the same way, the absence of any unpleasant qualities does not guarantee water to be safe for consumption. True that drinking water should be aesthetically pleasing, ideally looking clear, colorless and well aerated with no unpalatable taste and odor. However,

suitability in terms of public health is determined by microbiological, physical, chemical and radiological characteristics. Of these, the most important is microbiological quality. Also a number of chemical contaminants (both organic and inorganic) are found in water. These cause health problems in the long run and, therefore, detailed analyses are warranted. The drinking water, thus, should be:

- Free from pathogenic (disease causing) organisms.
- Clear (with low turbidity and little color).
- Not saline (salty in taste).
- Free from offensive taste or smell.
- Free from compounds that may have adverse effects on health or harmful in long term.
- Free from chemicals that may cause corrosion of water supply system or stain clothes washed using Sit. Although in small community water supplies the water quality problems are mainly due to bacteriological contamination, a significant number of very serious problems may occur as a result of chemical contamination of water resources. To ensure safe drinking water, detailed quality standards for physical, chemical, microbiological and radiological characteristics of water have been proposed by different countries and international organizations. These guidelines provide the following information for water authorities, health officials, and consumers:
- Day-to-day operational value to ensure that the supplied water does not carry any significant risk to the consumer.
- A basis for planning and designing water supply schemes.
- Assessment of long-term trends of the performance of the system.

### V.RESULT

S.no	Name of test	Veerapandipirivu	Ganapathipalayam
1	[a] pH,	9.15	8.51
[b]	Turbidity	336NTU	330NTU
[c]	conductivity test	247.23MS	230.20MS
2	Hardness test	50ppm	42ppm
3	Alkalinity test	140mg/lit	155mg/lit
4	Acidity Test	8mg/lit	12mg/lit
5	Chlorides test	7ppm	25ppm
6	Sulphates Test	140mg/lit	171mg/lit
7	Fluoride test	0.7mg/lit	1.2mg/lit
8	Optimum Coagulant	8000mg/lit	7500mg/lit
9	[a] Residual chlorine	140mg/lit	150mg/lit

[b]	Available chlorine	241mg/lit	235mg/lit
10 [a]	DO	10mg/lit	7.5mg/lit
[b]	BoD Test	70mg/l	72mg/l
11	CoD Test	22mg/lit	18mg/lit
12 [a]	Total, Solids	500mg/l	502mg/l
[b]	Total dissolved	300mg/l	280mg/l
[c]	Total suspended	200mg/l	222mg/l

S.no	Name of test	Mahalakshminagar	Kunkumapalayam
1 [a]	pH,	7.15	6.51
[b]	Turbidity	308NTU	305NTU
[c]	conductivity test	251.23MS	245.20MS
2	Hardness test	48ppm	40ppm
3	Alkalinity test	145mg/lit	155mg/lit
4	Acidity Test	7mg/lit	13mg/lit
5	Chlorides test	5ppm	28ppm
6	Sulphates Test	150mg/lit	175mg/lit
7	Fluoride test	0.8mg/lit	1.6mg/lit
8	Optimum Coagulant	9000mg/lit	8500mg/lit
9 [a]	Residual chlorine	145mg/lit	152mg/lit

[b]	Available chlorine	245mg/lit	233mg/lit
10 [a]	DO	11 mg/lit	8.5mg/lit
[b]	BoD Test	80mg/l	82mg/l
11	CoD Test	23mg/lit	19mg/lit
12 [a]	Total, Solids	610mg/l	600mg/l
[b]	Total dissolved	300mg/l	280mg/l
[c]	Total suspended	310mg/l	320mg/l

S.no	Name of test	Arumutham palayam	Seda palayam
1 [a]	pH,	5.15	7.51
[b]	Turbidity	316NTU	320NTU
[c]	conductivity test	257.23MS	240.20MS
2	Hardness test	40ppm	32ppm
3	Alkalinity test	130mg/lit	151mg/lit
4	Acidity Test	7mg/lit	11mg/lit
5	Chlorides test	6ppm	24ppm
6	Sulphates Test	135mg/lit	170mg/lit
7	Fluoride test	0.7mg/lit	1.2mg/lit
8	Optimum Coagulant	7000mg/lit	7500mg/lit
9 [a]	Residual chlorine	150mg/lit	160mg/lit
[b]	Available chlorine	231mg/lit	245mg/lit
10 [a]	DO	9mg/lit	7.5mg/lit
[b]	BoD Test	50mg/l	74mg/l
11	CoD Test	21mg/lit	19mg/lit
12 [a]	Total, Solids	550mg/l	508mg/l
[b]	Total dissolved	300mg/l	280mg/l
[c]	Total suspended	250mg/l	228mg/l

S.no	Name of test	Chinnakarai	Nochi palayam
1 [a]	pH,	6.25	7.53
[b]	Turbidity	315NTU	320NTU
[c]	conductivity test	241.53MS	220.10MS
2	Hardness test	40ppm	38ppm
3	Alkalinity test	120mg/lit	152mg/lit
4	Acidity Test	8.5mg/lit	11mg/lit
5	Chlorides test	6.8ppm	22ppm

6	Sulphates Test	130mg/lit	178mg/lit
7	Fluoride test	0.65mg/lit	2.2mg/lit
8	Optimum Coagulant	7500mg/lit	7200mg/lit
9	Residual chlorine	120mg/lit	140mg/lit
[a]	Available chlorine	231mg/lit	237mg/lit
[b]	DO	11 mg/lit	7.2mg/lit
10	BoD Test	80mg/l	78mg/l
[a]	CoD Test	25mg/lit	19mg/lit
[b]	Total, Solids	450mg/l	507mg/l
11	Total dissolved	250mg/l	270mg/l
[a]	Total suspended	200mg/l	237mg/l
[b]			
[c]			

[b]	Available chlorine	235mg/lit	231mg/lit
10	DO	12mg/lit	6.5mg/lit
[a]	BoD Test	60mg/l	75mg/l
[b]	CoD Test	24mg/lit	19mg/lit
11	Total, Solids	650mg/l	508mg/l
[a]	Total dissolved	260mg/l	278mg/l
[b]	Total suspended	390mg/l	230mg/l
[c]			

### V CONCLUSION

There some of crustal metals concentrations are found to be remarkable in the groundwater. The status of lower water table in the areas is being serious due to rapid industrialization and atmospheric pollutions.

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S.no	Name of test	Vidhyalaya m	Karai Pudur
1	pH,	5.15	8.51
[a]	Turbidity	456NTU	310NTU
[b]	conductivity test	274.23MS	240.20MS
[c]	Hardness test	55ppm	41ppm
2	Alkalinity test	142mg/lit	156mg/lit
3	Acidity Test	7.5mg/lit	12.5mg/lit
4	Chlorides test	8ppm	28ppm
5	Sulphates Test	150mg/lit	161mg/lit
6	Fluoride test	0.5mg/lit	1.8mg/lit
7	Optimum Coagulant	6500mg/lit	8500mg/lit
8	Residual chlorine	150mg/lit	160mg/lit
9			
[a]			