



Economic and Environmental Impact on Domestic Waste Water in Jolarpettai Municipality, Tirupattur District, Tamil Nadu

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ABSTRACT

The TDS changes in the mineral content of the potable water are affect the human health and which is important to survival of humans. The untreated wastewater leads to severe water pollution. Waste water contains bacteria, fungi, parasites, and viruses that can cause intestinal, lung, and other infections. Bacteria may cause diarrhea, fever, cramps, and sometimes vomiting, headache, weakness, or loss of appetite.

Keywords: Impact on human health, wastewater contamination and Changes in TDS level.

INTRODUCTION:

Domestic waste water includes water from household activities. This includes overflowing latrines and privies, water seal toilets, septic system and lack of proper sewage system. Globally about 359 billion cubic meters of wastewater is produced each year about 48 percentage of the water is currently released untreated. As per the report published by the central pollution control board (CPCB) in March, 2021, sewage generation from urban areas in the country is estimated at 72,368 million liters per day (MLD), against which sewage treatment capacity of 31,841 MLD was available. About Tamil Nadu as per CPCB sewage generation from urban area is estimated 6421 million liter per day (MLD), against sewage treatment capacity of 1492 MLD was existing.

OBJECTIVES:

- To study the impact of domestic waste water and effect of ground water quality.
- To analyze the impact of domestic waste water on the human health in the study area.
- To know the water and sewage infrastrue facility in the municipality.

SELECTING OF SAMPLES:

In the study area according to 2021(estimated) population is 38,000 peoples are living and 7,140 households in the 18 ward the researcher not possible to inquire for all the people and households. So in this study we proposed to use purposive random sample methods choose 90 households including the following: economic status, family size, quality of water and health impact due to Domestic waste water, etc all the 18 wards was taken for the sampling in Jolarpettai Municipality.

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ANALYSIS AND INTERPRETATION:**Table:1 Domestic waste water TDS level Report in the Study Area**

TDS in part per million(PPM)	Remarks	East		West	
		Sample	Sample	Sample	Sample
901-1200	Less acceptable. Avoid water use	*	*	*	*
1201-2000	Water is not acceptable for any uses	*	*	*	*
Above 2001	Unacceptable	2460	2500	2310	2368

Sources: Bureau of Indian Standards (BIS) measurements

Sources: Primary sources Sample collection on 27-03-2023

In above table:1 highlighted result of wastewater samples collected and tested the TDS level in study area. As result shows the TDS level is east area 2460 PPM and 2500 PPM and the west area 2310PPM and 2368PPM. Without treated the sewage water directly discharged into the lake in east and west side. The direct effluent is damage the ground water and soil quality and which affected health of human beings and animals in the surrounding section.

Table: 2 Ground water and Municipality water TDS level Report in the study Area

TDS in (PPM)	Palatability Quotient	Municipality Water				Ground water			
		East		West		East		West	
		S1	S2	S1	S2	S1	S2	S1	S2
50-150	Excellent for drinking	*	*	*	*	*	*	*	*
151-250	Good	*	*	*	*	*	*	*	*
251-300	Fair	*	280	*	*	*	*	*	*
301-500	Poor	316	*	342	321	*	*	*	*
501-900	Less acceptable	*	*	*	*	789	823	882	890

Sources: Bureau of Indian Standards (BIS) measurements

Sources: Primary sources Sample collection on 27-03-2023

In above table:2 According to the WHO, an acceptable range for TDS levels in water is up to 300 parts per million (ppm) for it to be suitable for human consumption. Water with a TDS level greater than 300 ppm may taste salty and contain a high concentration of minerals such as sodium, potassium, and other salt. The above table shows the water sample collect and tested TDS PPM level in the study area. As the result municipality water level in east region 316 TDS PPM and 280 TDS PPM and west region 342 TDS PPM and 321 TDS PPM that is poor. On the other hand the ground water level in east region 789 TDS PPM and 823 TDS PPM and west region 882 TDS PPM and 890 TDS PPM that is less acceptable.

Table:3 Ground Water and Municipality water pH level Report in the study Area.

Denomination	pH range	Municipality Water				Ground water			
		East		West		East		West	
		S1	S2	S1	S2	S1	S2	S1	S2
Slightly alkaline	7.4-7.8	*	*	*	*	*	*	*	*
Moderately alkaline	7.9-8.4	8.4	*	8.1	8.4	7.9	8.0	8.0	8.3
Strongly alkaline	8.5-9.0	*	8.8	*	*	*	*	*	*

Sources: Primary sources Sample collection on 27-03-2023

In the above table:3 shows the water sample collect and tested pH level in the study area. As the result municipality water levels for east region 8.4 pH and 8.8 pH and west region 8.1 pH and 8.4 pH that is moderately alkaline. On the other hand the ground water levels for east region 7.9 pH and 8.0 pH and west region 8.0 pH and 8.3 pH that is moderately. The municipality without any untreated the sewage water is damage into the lake, it resulted in damage the ground water quality. On the other hand poor administrative of municipality is distribute the high 8.4 pH level content water for the people this will affect the human health.

Table: 4 Water uses in Domestic Purpose

Particulars	Frequency	Percentage
Municipality water	31	34.4
Own bore well	4	4.4
Both municipality and own bore well	19	21.1
Both Public bore well and Public tap	35	38.9
Rental water	1	1.1
Total	90	100.0

Sources: Primary data

In the above table: 4 reveals the 34.4 percent of the respondents are using Municipality water (own connection). 38.9 percent of the respondents are using water from public bore and public Municipality water supply. And 21.1 percent of the respondent are using water from municipality and own bore well, for their domestic purpose. Nearly 55.5 percent of the respondent are pay water connection tax for municipality but the state not given proper quality water for the people.

Table: 5 Contamination of Water Realized

Particulars	Frequency	Percentage
Smell	9	10.0
Color	44	48.9
Taste	22	24.4
No contamination	15	16.7
Total	90	100.0

Sources: Primary data

In the above table:5 have stated that there is a contamination in study area water sources and continuation was realized by smell, color and taste with 10%, 48.9% and 24.4%, respectively from the above table it is clear that. Average the sample, nearly 83.3% of the respondent expressed their experience water contamination.

Table: 6 Method of Drinking Water

Particulars	Frequency	Percentage
Direct	34	37.8
Filter & R O	45	50.0
Boiling	11	12.2
Total	90	100.0

Sources: Primary data

In the above table: 6 Nearly 50 percentage of the respondent are taking drinking water with filter & R O water for potable purpose. Both salinity and alkaline is present water source the respondent are to applied for Filter and R O for drinking purpose.

Table: 7 Satisfied About Municipality Water Facility

Particulars	Frequency	Percentage
Yes	40	44.4
No	50	55.6
Total	90	100.0

Sources: Primary data

In the above table:7 shows there is poor quality of water supply that 55.6 percent of the respondents have stated that they are not satisfied about municipality water facility. Respondents have expressed their, pain towards the payment of tax failure of the management of the local authority in the study area.

Table:8 Waterborne Diseases

Particulars	Frequency	Percentage
Typhoid Fever	66	73.3
Diarrhea	6	6.7
Jaundice	5	5.6
Cholera	1	1.1
Skin allergy	10	11.1
Others	2	2.2
Total	90	100.0

Sources: Primary data

In the above table:8 illustrate that almost 100 percentage of the respondents are affected with water related disease. The respondents are use filter or R O system in potable purpose only, for domestic purpose they use directly. Contamination of water is affected the human beings health condition I the study area.

Table: 9 Waste water discharges

Particulars	Frequency	Percentage
Public sewage	22	24.4
Open area	35	38.9
Water bodies	11	12.2
Dumping in own pit	22	24.4
Total	90	100.0

Sources: Primary data

In the above table:9 almost 38.9 percent of the respondents are discharging their waste water into open area. 24.4 percent of respondents are discharge their waste water into public sewage and dumping in own pit. 12percent of the respondents are discharged in to the water bodies. It shows that 75.6 percent of the respondent has no proper public sewage system in the study area.

Table: 10 Satisfied about municipality drainage system

Particulars	Frequency	Percentage
Yes	22	24.4
No	68	75.6
Total	90	100.0

Sources: Primary data

In the above table:10 shows there is poor infrastrue facilities in drainage system that 75.6 percent of the respondents are stated that there are not satisfied about municipality drainage system. Respondents are told we pay property tax form the state. The local bodies need not taken any basic require for the public for fulfill their needs.

Table:11 Correlations between contamination of water source and satisfied about municipality water facility

Correlation		Contamination of water source	Satisfied about municipality water facility system
contamination of water source	Pearson Correlation	1	-.260*
	Sig. (2-tailed)		.013
	N	90	90
satisfied about municipality water facility system	Pearson Correlation	-.260*	1
	Sig. (2-tailed)	.013	
	N	90	90
*. Correlation is significant at the 0.05 level (2-tailed).			
**. Correlation is significant at the 0.01 level (2-tailed).			

Sources: Primary data

In the above table 11 shows correlation analysis and the dependent variable is the contamination of water source and the independent variable are satisfied about municipality water facility system are statistically significant with the dependent variable is negatively significant $-.260^*$ if more polluted in the water source due to poor municipality administrative management will induce to affected the human health, environmental status and economic condition.

CONCLUSION:

The Results of this paper is based on the survey conducted. In this study almost 83.3 percent of the respondents are stated that contamination in the water sources and the result shows the impact of human health, economic condition of the respondent and surrounding environments. As a result shown the waste water TDS level is untreated sewage directly into the lake is highly damage the ground water quality. Almost 75.6 percent of the respondents have no proper public sewage system in the study area. Almost 88 percent of the respondent stated municipality tax but the state is not provide proper basic needs for people in the study area.

Image:1

Ward Map



Image: 2

Waste water Discharge into the lake



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