



A Sustainable Approach of Domestic Wastewater and Its Implication in Jolarpettai Municipality of Tirupattur District

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ABSTRACT

Domestic waste water comes from human activities such as bathing, laundry, dish washing and toilets, which is usually contains relatively small amount of contaminate of water from individual household, but even small amount of pollutants can make big impact on environment. The damage of environments due to excessive untreated waste water discharges has impacted the environment. The changes in the mineral contents of potable water are affect the human health and which is an important input for the survival of human beings. The untreated wastewater leads to severe water pollution; bacterial infection rate will be very high in this sewage wastewater. Due to lack of treatment before if it discharges into the water sources, it will harm the original quality of the water characteristic. Which leads to health hazards and harming human health may cause diarrhea, fever, cramps, and sometimes vomiting, headache, weakness, or loss of appetite and can impact on fisheries, plants, livestock and others.

Keywords: Impact, Environment, Domestic, Wastewater, Human health, Contamination and Bacterial Infection.

INTRODUCTION:

The volumes of wastewater have been steadily increasing over time with the growing population, improvements in water supply, enhanced living standards and economic growth. Each year, 380 billion m³ of municipal wastewater are generated globally every year.

Nearly 3.1% of deaths in the world are due to unhygienic and poor quality in drinking water. The World Health Organization estimates that 80% of diseases worldwide are waterborne the global burden of disease study estimated that in 2020, an unsafe water source resulted in 1.2 million deaths and 71.7 million disability-adjusted life years, including 1.1 million deaths and 61.1 million from diarrheal diseases.

Waterborne illness is caused by recreational or drinking water contaminated by disease-causing microbes or pathogens. Many waterborne pathogens can also be acquired by consuming contaminated food or beverages, from contact with animals or their environment, or through person-to-person spread.

Urbanization is the transformation of unoccupied or sparsely occupied land into densely occupied cities. Urban area can grow faster in human populations or from migration from normal to urban areas. Urbanization

often results in deforestation, habitat loss, and the extraction of freshwater from the environment, which can decrease biodiversity and alter species ranges and interactions. These can impact water quality, harm plants and animals and present risks to human health.

Globally, world urban population in 2021 was 4,454,152,526, at 1.61% increases from 2020, about 359 billion cubic meters of urban domestic waste water generate each year, about 48 percent of that water is currently released untreated. Around 2 billion people were consumed contaminated water. The consumption of such unsafe water can result in water borne diseases; around 3.1% of deaths in the world are unhygienic and poor quality of water. The World Health Organization estimates that 80% of diseases worldwide are waterborne in 2020.

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 waste water is currently released without any treatment. 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 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. Which is one fourth of the total sewage generation.

REVIEW OF LITERATURE:

Iheukwumere S et, al (2018), In this article revealed that the lack of education knowledge and awareness among the community of Awka urban, Amambra State in Nigeria. In this study nearly 56.68 percentages of the respondents are not willingness to interest to buy treated waste water for irrigation agricultural purpose and the author stated that state wise investment should be made the government and private partnership to expand the treatment facilities in the reaming area and to reduce the pollutants to safeguard the environment. And given the proper knowledge among the public about for treated waste water cultivation it will reduce the poverty level in the area.

Hemamalini J, et al (2017), In this article the researcher examine the impact of domestic and industrial waste water discharges and its impact on the ground water quality impact on irrigation and fisheries in the study area. The authors reveled that 36 water sample were collect from each season like pre-monsoon, monsoon, post monsoon. And it was examined in laboratory for physico-chemical parameters the result highlighted the levels of sodium, salinity and hardness exceeded the permissible limits in irrigation water standards. There by affecting the livelihood of the farmers. The colour of fishes in the tank also changed and their consumption impacted to the health-related issues in the village. A comparison of irrigation indices clearly reveals that the tank water, bore wells, open wells and fall between hard and very hard category, the yield can be attributed to high salinity and sodium content in the water. The water is also not suitable for livestock. The cause for fish mortality and poor quality of fishes is due to exceedance of most of the above said parameters. The wastewater discharged through the drain when analyzed shows that free ammonia, BOD and COD values are very high and exceed the maximum tolerance limit.

Ramendra Soni, et al (2021), In this article the authors, reviewed environmental and public health issues associated with the use of untreated wastewater in agriculture. The article focused on the current state of affairs concerning the wastewater treatment model and computational approach. Water resources are under threat because of the growing population. Increasing generation of wastewater (municipal, industrial, and agricultural) in developing countries especially in India and other Asian countries has the potential to serve as an alternative of freshwater resources for reuse in rice agriculture, provide appropriate treatment, and distribution measures are adopted. Wastewater treatment is one of the big challenges for many countries because increasing levels of undesired or unknown pollutants are very harmful to health as well as environment.

Abdullahi Idris-Nda, et, al (2013), the authors highlighted the challenges of domestic wastewater management in Nigeria and collecting 304 sample in way of random sample methods as the result on 65% of the households discharge the waste water into the flows on the surface in planned drainage system. Remaining 35% of the wastewater generated goes into the soak away pit. The households are not aware of any government regulations on wastewater management. Lack of awareness will lead affect the health problems have been identified include malaria, typhoid and diarrhea. The collected wastewater could be recycle for all domestic activities except cooking and drinking which fortunately accounts for only 4% of water usage in the study area. The researcher pointed out the during the summer seasons lack of availability in water sources for agricultural purpose and that will lead affected the production of food grains and that will impact in food chain system in the country. So that the researcher says treated wastewater can effectively be harnessed for irrigating farmland for dry season production of crops and vegetables, and also uses in fish farmers for farming fish cultivation.

OBJECTIVES:

- To study the impact of domestic waste water on 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 infrastructure facility in the municipality.

SELECTING OF SAMPLES:

In the study area according to 2023 the (estimated) population is 40,000 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.

ANALYSIS AND INTERPRETATION:**Table:1 Ground Water pH level report in summer and monsoon season.**

Denomination	pH level	Ground water (summer)				Ground water (monsoon)			
		East		West		East		West	
		S1	S2	S1	S2	S1	S2	S1	S2
Slightly alkaline	7.4-7.8	Nil	Nil	Nil	Nil	Nil	7.8	Nil	Nil
Moderately alkaline	7.9-8.4	Nil	8.0	Nil	8.4	8.0	Nil	Nil	7.9
Strongly alkaline	8.5-9.0	8.5	Nil	8.8	Nil	Nil	Nil	8.5	Nil

Sources: Primary sources Sample collection on 27-03-2023 & 9-11-2023

In the above table:1 in shows that the ground water sample of pH level compared in with the seasons studies summer and monsoon season, with affected area and normal area. As the result of ground water levels for east region 8.5 pH at the summer time in the affected area, on the other hand 8.0 pH in normal area. In the west region level was 8.8 pH which strongly alkaline in the affected area and 8.4 pH moderately alkaline in normal area. On the other hand in monsoon season the ground water pH levels in the east region 8.0 pH in the affected area and 7.8 pH in normal area and the west region with 8.5 pH in affected area and 7.9 pH in normal area that is moderately. As the results shows that compare to monsoon season ground water quality is highly affected in summer season. Without any untreated the sewage water into the lake will have negative impact of is the ground water quality with pH level 8.5.

Table: 2 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: 2 reveals that among the sample nearly 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. nearly 21.1 percent of the respondent are using municipality water and own bore well for their domestic purpose. Nearly 55.5 percent of the respondents are paying water connection tax for municipality but the municipality not given proper quality water for the people.

Table: 3 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:3, have stated that there is a water contamination in study area and it was realized by smell, color and taste with 10%, 48.9% and 24.4%, respectively from the above table it is clear that. Nearly 83.3% of the respondents expressed their experience water contamination.

Table: 4 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: 4 Nearly 50 percentage of the respondent are using drinking water with filter & R O water for potable purpose. Both salinity and alkaline is present in the drinking water source, the respondents have installed Filter and R O for purifying drinking sources.

Table: 5 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:5 it shows there is poor quality of water supply in 55.6 percent of the respondents are stated that they are not satisfied about municipality water quality. Respondents have expressed their, pain towards the payment of tax failure of the management of the local authority in the study area, to provide in drinking water.

Table:6 Water borne 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

Table:6 illustrate that almost 100 percentage of the respondents are affected with water related disease. So that the respondents are protecting themselves by using boiling, filter or R O system in potable water source only, for domestic purpose they having using directly, with this contamination. It affects the human health condition in the study area.

Table: 7 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:7 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. Nearly 12percent of the respondents have discharged their waste water 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: 8 Satisfied about municipality drainage system

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

Sources: Primary data

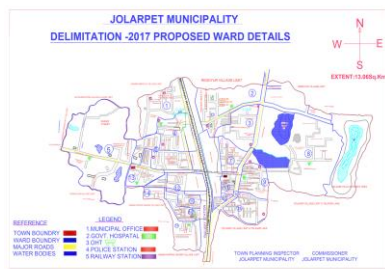
In table:8 it shows there is poor infrastrue facilities in drainage system with 75.6 percent of the respondents have stated that they have not satisfied about municipality drainage system and their management moors. Respondents are told we pay property tax to the authority. The local bodies failed to address the basic requirement for the public for fulfill their needs.

CONCLUSION:

In this study almost, 83.3 percent of the respondents have stated that the 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 untreated sewage directly drained into the lake is highly damaging 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 respondents have stated that we pay municipality tax but the municipality is not providing proper basic needs for people in the study area. The local authority most activate its role and responsibility in providing basic in fracture facility and enhancing good hygienic environment in the study area.

Image:1

Ward Map



Images: 2 & 3

Waste water Discharge into the lake



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