
Physiochemical Analysis of Waste Water Collected from Three Major Rivers of Palakkad

Dr. S. Sreeremya

Department of Biotechnology

Sree Narayana Guru College, Coimbatore, Tamil Nadu

Corresponding Author Email: sreeremyasasi@gmail.com

Abstract

Waste management strategies implemented in India have failed due to various reasons, the major reasons are industrial growth and urbanization. The pollution impacts on marine communities can be observed directly to the industrialized centres, which release an series of chemical pollutants to effluent systems. These wastes encompasses a broad range of contaminants such as petroleum hydrocarbons, chlorinated hydrocarbons and heavy metals, various acids, alkalis, dyes and other chemicals which greatly change the nature of water in every aspect. In south India , as per the Kerala State Pollution Control Boards survey conducted in the year 2010 it is being stated that the quality of water is being reduced year after year. In comparison with several district, Palakkad district have also started to lose their water quality property due to the establishment of small scale industries and residential areas. So the major aim of the work is to understand the physiochemical properties of water collected from various rivers in Palakkad, majorly Kalpathy river, Kunthi river, Bharathapuzha river.

Keywords: Environmental, Water, Pollution, Rivers, Palakkad

INTRODUCTION

Waste water is a combination of different organic and inorganic compounds including residues of active pharmaceutical substances, solvents, and toxic and bio recalcitrant chemicals that controls or stops microbial activity of the activated sludge process (Sahu et al., 2009). However, composition, flow and other characteristics (pH, salinity, etc.) of the wastewater may differ considerably from day to day depending on the production stages and

intensity, making the biological treatment and downstream processing even more difficult (Krishanamoorthi et al., 2009).

The necessity to control toxic materials from the effluents is elevating which may cause serious health problems like cancer and diseases (Khan et al., 1992). Water is a vital resource for all kinds of life on this planet, but it is being adversely affected both quantitatively and qualitatively by all kinds of life. In the current terrain most of the rivers receive millions of liter sewage domestic waste and industrial effluents containing varying in characteristics from simple nutrient to highly toxic substances. In recent scenario, increasing industrialization, urbanization and developmental activities with the population explosion paves to generation of large amount of waste water from domestic, commercial, industrial and other sources. Industrial waste waters directly discharged in to river, lake, ponds and creates new pollution problem (Kolhe et al., 2011).

The waste water also includes detergents that create a mass of white foam in the river waters (Gupta et al., 2009). All these chemicals are quite harmful or even highly toxic to fish and other marine populations. One-third of the total water pollution in India comes in the form of industrial effluent discharge, solid wastes and other hazardous wastes (Singare et al., 2010). Out of this, a large portion can be traced to the processing of industrial chemicals and to the food products industry (Gran, 1952). The surface water is the major source of industries for waste disposal (Singare et al., 2010). Thus the physiochemical properties of water are assessed majorly from Palakkad. Three rivers were chosen Kalpathy river, Kunthi river, Bharathapuzha river which are more prone to contamination due to industrialization (Kapur et al., 1999).

MATERIALS AND METHOD

Palakkad (10.7867° N, 76.6548° E) is known for its serenity and paddy field. A increased amount of precipitation is received in Palakkad, majorly due to the South-West monsoon. July is the wettest month, and the total annual rainfall is around 83 inches (211 cm). There are majorly ten rivers in Palakkad of which three rivers were selected Kalpathy river, Kunthi river, Bharathapuzha river which are mostly contaminated due to the establishment of small scale industries, residential areas (building of flats and dumping the waste from the household of the bank of the river) and domestic practices.

One liter of water sample were collected for four months at a time interval of 7.30-8.00am. The samples were collected in a sterile bottle and sealed and brought to laboratory for further analysis. The samples collected were labeled and further tests were carried (Gnana Rani et al., 2005).

Several chemical and physical parameters were considered majorly assessed were Temperature, color.

RESULT

Samples were collected different rivers in Palakkad (10.7867° N, 76.6548° E) Kalpathy river, Kunthi river, Bharathapuzha river (Chaurasia et al., 2011). In the current study morphology and physiochemical features were examined based on monthly basis. In the earlier study morphology and physiochemical features were examined, and the sample was not collected based on monthly bases, but the assessment was carried out based on climatic change (Ellis, 1989).

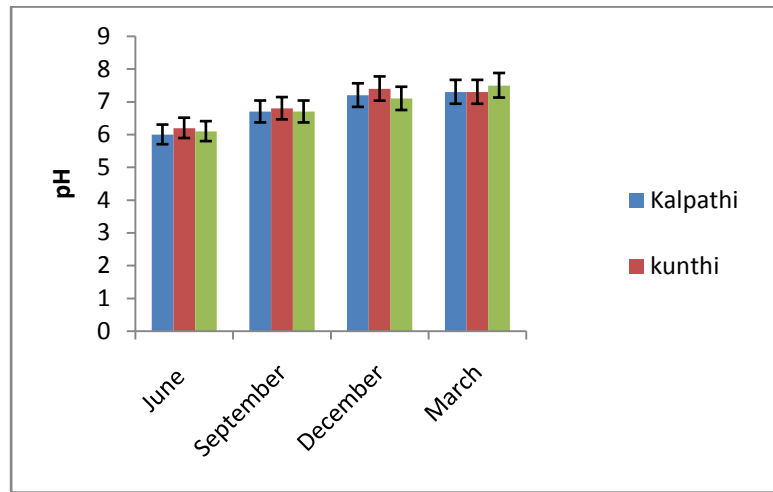
MORPHOLOGICAL EXAMINATION

Table no: 1

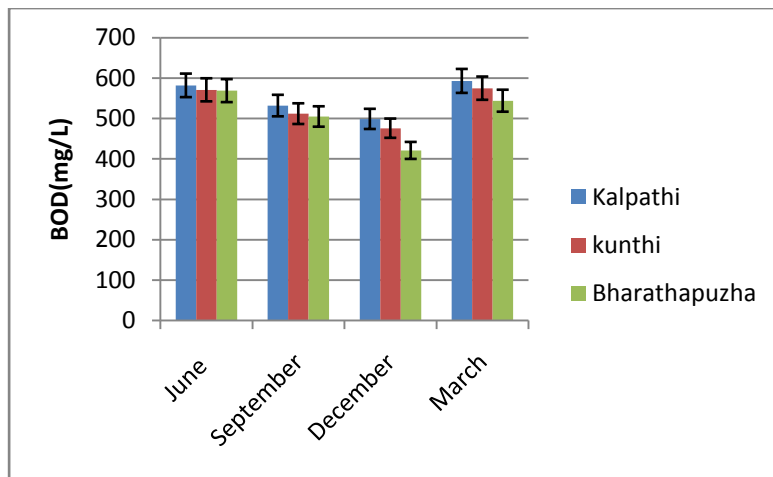
RIVER SAMPLE	TEMPERATURE(°C)				COLOR			
	JUNE	SEPTEMBER	DECEMBER	MARCH	JUNE	SEPTEMBER	DECEMBER	MARCH
Kalpathi	29±0.04	31.3±0.05	31.2±0.07	34.4±0.04	Dark Brown	Pale Brown	Blackish	Blackish
Kunthi	29.4±0.03	31.4±0.04	31.4±0.06	34.7±0.02	Dark Brown	Pale Brown	Blackish	Blackish
Bharathapuzha	29±0.01	31.2±0.02	31.4±0.01	34.9±0.06	Dark Brown	Pale Brown	Blackish	Blackish

PHYSIOCHEMICAL ANALYSIS

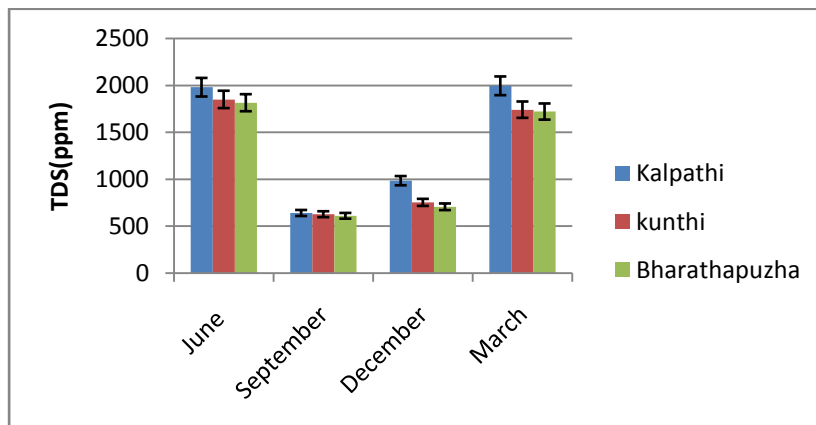
pH



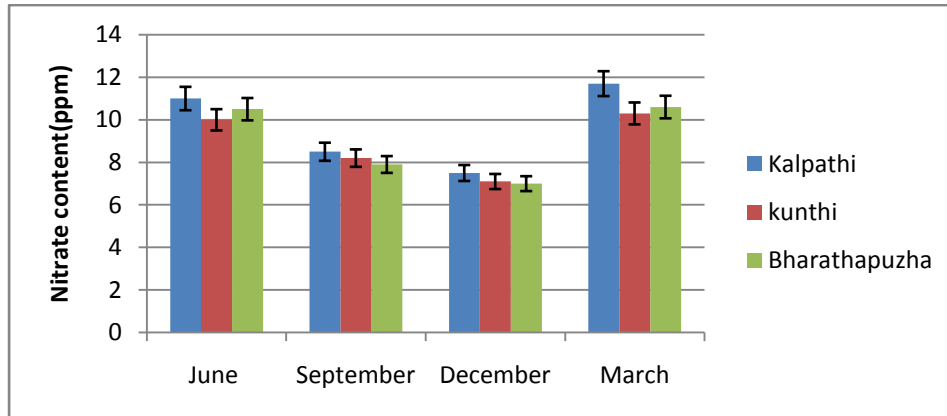
BOD



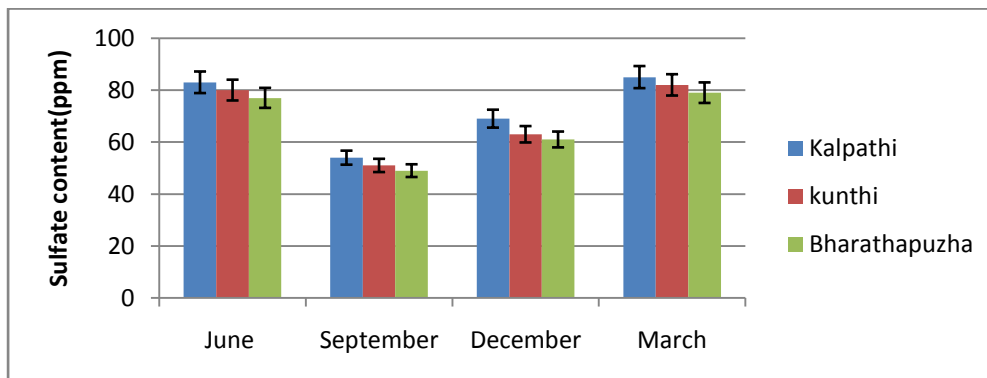
TDS



NITRATE CONCENTRATION



SULFATE CONCENTRATION



CONCLUSION

Water being the elixir of life, it is the responsibility of human beings is to use the resource of water wisely and to protect the water bodies thereby avoiding contamination. This paper garners the information regarding the morphological and physiochemical analysis of water. From the physiochemical analysis, nitrate, sulphur concentration were found to be higher in the season of march.

REFERENCES

1. Chaurasia N.K. and Tiwari R.K., (2011).Advances in Applied Science Research, 2, 207.
2. Ellis, K.V., (1989), Surface water pollution and its control” Macmillan press Ltd, Hound mill, Basingstoke, Hampshire RG 21 2xs and London, 3-18, pp 97,100,101 and 208.

3. Gnana Rani, D. F., Arunkumar, K., Sivakumar, S. R., (2005), Physio-chemical analysis of waste water from cement units, *Journal of Industrial Pollution Control*, 21(2), 337-340.
4. Gran, G., (1952), Determination of the equivalence point in potentiometric titrations. Part II. *Analyst*, 77, pp 661-671.
5. Gupta, D. P., Sunita and J. P. Saharan, (2009), Physiochemical Analysis of Ground Water of Selected Area of Kaithal City (Haryana) India, *Researcher*, 1(2), pp 1-5.
6. Kapur, A., Kansal, A., Prasad, R. K. and Gupta, S (1999) Performance evaluation of Sewage Treatment Plant and Sludge bio- methanation, *Indian Journal of Environmental Protection*, 19. 96 - 100.
7. Kolhe A.S. and V. P. Pawar (2011), Physico-chemical analysis of effluents from dairy industry, *Recent Research in Science and Technology*, 3(5): 29-32.
8. Khan M. A. and Ahmad S. I. (1992). Performance evaluation of pilot waste stabilization ponds in subtropical region, *Wat. Sci. Tech.* 26: 1717-1728.
9. Krishnamoorthi S, Sivakumar V, Saravanan K, Prabhu S (2009). Treatment and Reuse of Tannery Waste Water by Embedded System. *Modern Appl. Sci.*, 3(1): 129-134.
10. Sahu, S.K., Ajmal, P.Y., Pandit, G.G., and Puranik, V.D., 2009, Vertical distribution of polychlorinated biphenyl congeners in sediment core from Thane Creek area of Mumbai, India., *Journal of hazardous materials*, 164(2-3), 1573-1579
11. Singare, P.U., Lokhande, R.S., and Pathak, P.P., 2010, Soil Pollution along Kalwa Bridge at Thane Creek of Maharashtra, India., *J. Environmental Protection*, 1(1), 121-128
12. Singare, P.U., Lokhande, R.S., and Pathak, P.P., (2010), Study on Physico-Chemical properties and Heavy Metal Content of the Soil Samples from Thane Creek of Maharashtra, India., *Interdisciplinary Environmental Review*, 11(1), 38-56