



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 6 Issue: IV Month of publication: April 2018

DOI: <http://doi.org/10.22214/ijraset.2018.4152>

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Effect of Industrial Effluent on Groundwater: A Case Study of Kala Nala, Ichalkaranji, Kolhapur, Maharashtra, India

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Abstract: Water is the basic and most important necessity of lively-hood. Everyone knows how precious the water is! Whenever there is no water to our taps, we become helpless. No life can exist without water. Water is as essential as an air. It has been estimated that two third of human body is constituted of water. Water is essential for not only survival of human beings but also for animals, plants and other forms all living beings. Seventy percent of all the available water in India is polluted. About 73 million workdays are lost due to water related diseases.

Therefore, the evaluation of water quality of the rivers, groundwater and impact of polluted groundwater on environment and health has drawn attention of the researchers. The present study is also an attempt on the pollution level of Kala Nala basin and its effect on groundwater and vicinity area. Total thirteen groundwater samples were collected from different locations within 6 km stretch of Kala Nala and its adjoining areas. The samples of the different points were collected from surface water, dug wells and borewells, the water from which is used for drinking and other purpose. The study reveals that, the effect of industrial effluents on groundwater around in Kala Nala basin.

Keywords: Groundwater quality, Health, Social Awareness.

I. INTRODUCTION

Groundwater is one of the prime sources of fresh water. Water is used to fulfil many different needs and perform many different functions. These uses can be divided into three broad categories; water for life, water for citizens and water for development. Water for life is usually given the highest priority as it concerns the provision of water for the survival of human beings and other living beings a well. Water for citizens concerns the provision of water for public health and for public institutions, and is related to the social rights of the individual and community. This function takes in to account the interest of the society. Water for development is an economic function and is related to production activities such as irrigation, industry etc. However, development consumes the largest quantity of water from surface and groundwater resources. Due to industrial effluents groundwater continuously degraded and it affects on health of all living things.

II. STUDY AREA

The study area is bounded between latitude 16.69 N to 16.67 N and 16.66 N to 16.76 N, longitude 74.46 E to 74.49 E and 74.47 E to 74.48 E, in Survey of India Toposheet numbers 47 L/6, on scale 1:50000. The area is covered by Deccan trap of Upper Cretaceous to Lower Eocene in age. The main source of water for drinking, irrigation and industrial purposes is from dug wells, bore wells and surface water.

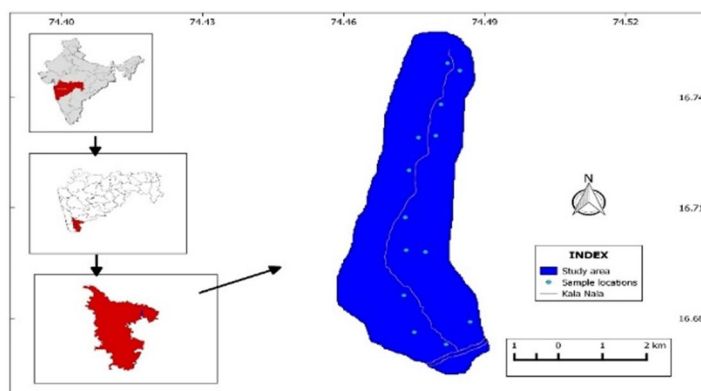


Fig.1: Study Area with sample locations

III.FIELD WORK AROUND KALA NALA

After visited area of Kala Nala basin, we observe the groundwater contamination due to industrial effluents, health of crop is seriously affected, the disease like cholera, typhoid, dysentery, infectious, hepatitis are some of water born disease observed in nearby areas. Also plastic wastes are present in this water. Without further treatment the groundwater directly meets the river.



Fig.2 a and b Groundwater contamination due industrial effluents

IV.REMEDIAL MEASURES

- A. Need to treat wastewater from Ichalkaranji before it enters into the nallas and ultimately the rivers.
- B. All industrial processes are not connected to the CETP. The processes/plants that are connected are not discharging 100% of their wastewater to CETP due to the costs involved.
- C. Need to take measures towards water quality monitoring and restoration of Kala Nala.
- D. Awareness programmes and street shows for water supply, wastewater management and water storage through involvement of youth, schools, NGO's and institutes are needed.
- E. Eutrophication and Need to promote conservation, recycling and reuse of water in industries to reduce industrial water demand, especially during summers.



a



b



Fig.3. (a, b, c, d) Sewage treatment plant and Kala Nala

V. CONCLUSIONS

On the basis of field observations, we conclude that, the groundwater is highly contaminated. The major contribution is from industrial effluents. Due to this soil effloresces has occurred and hence crop health as well as human health become affected.

VI. ACKNOWLEDGEMENT

We express our sincere thanks to our H.O.D. Prof. N. K. Patil and our college for providing us with a platform to excel in life. With a sense of regard and gratitude to our project, we would like to thank our guide Mr. A. A. Lole and Mr. S. D. Nirmale for his guidance, interest and constructive suggestion during the study course. This project would not have been possible without his support and help. We thank him for his valuable and immense knowledge and timely help, which made this, project a reality. We would also like to thank Director Dr. V. V. Kulkarni for his valuable support. We are very thankful to those who helped directly & indirectly to carry out this Project.

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