

## **A Preliminary Study on the Effect of Industrial Effluent on Groundwater Quality in Selected Locations in Gampaha District**

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Groundwater represents 97% of global freshwater and is an important source of water for agriculture and industrial activities worldwide. This valuable resource is increasingly being threatened due to increase in human population and anthropogenic influences. Industrialization has also become a major threat to groundwater quality worldwide due to contamination of water with industrial effluents. This study was conducted with the objective of evaluating the effect of industries on the groundwater quality in selected locations in Gampaha district.

Water from 40 shallow wells located in close proximity to industries and 20 shallow wells located in non-industrial areas in Katana, Mahara, Biyagama, Wattala and Ja-Ela were collected from November, 2016 to December, 2016. Industrial effluents discharged from 10 industries located in the industrial area were also collected separately for the analysis. The collected industrial wastewater and well water samples were analyzed for pH, Temperature, Turbidity, Electrical Conductivity (EC), Total Suspended Solids (TSS), Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD5) and Oil & grease. The water quality data of well water collected in industrialized areas and non-industrialized areas were compared using the student t test.

Turbidity and EC values of wastewater samples collected from Wattala area exceeded the permissible limits of effluent discharge standards for inland waters of Sri Lanka. COD and BOD5 levels recorded in wastewater collected from Ja-Ela area also exceeded the permissible limits of wastewater discharge standards. EC, COD and turbidity values recorded in almost all the shallow wells located near industrial areas exceeded the permissible limit of SLS drinking water quality standards. The results of the present study suggested that EC and turbidity values in shallow well water in industrialized areas are having a close association with the industrial activities. Findings of the present study suggest the need of proper industrial waste water discharge mechanisms in order to improve groundwater quality of the area. Further studies are also required to evaluate the effects of the seasonal variations on groundwater quality.

**Keywords:** Temperature, Turbidity, Electrical Conductivity and Total Suspended Solids