GREY WATER FOOTPRINT OF TEXTILE INDUSTRIES IN LOWER BASIN OF KELANI RIVER

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ABSTRACT

Sri Lanka river basins are facing a growing problem of discharging treated and untreated industrial effluents, agricultural runoff, domestic and municipal effluents. Rapid growth of industries located, human settlement and commercial developments are being encroached in close vicinity of the river result in damage to the water quality of natural water body. Kelani river is one of the most important water body flows through highly populated districts in Western Province. Kelani River is an important source of drinking water for the Colombo District and there are several water supply intakes in the lower river basin which covers 85% of water need of Colombo District population. It is recorded that the threats to the raw water quality is higher when comparing to other river basins in the country.

This research project conducted to identify pollution sources and calculate pollutant loads. All industries which are located in lower basin of Kelani river were inspected and obtained effluent discharged volume and discharge effluent quality parameter on Chemical Oxygen Demand (COD). Out of these industries five textile processing industries were further studied and collected five treated effluent quality parameters namely pH, Turbidity, Electrical Conductivity (EC), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD).

The study revealed that the highest pollutant load generated from the textile processing industries. As the effluent discharge has widespread impact on freshwater quality and the quantity. The calculation of grey water foot print for these textile industries has been proposed as an indicator of the impacts of the quality of freshwater recourses. It is expressed as the volume of freshwater that is required to assimilate the load of pollution and it is based on the natural background concentrations and an appropriate water quality standard. The grey water foot Print of the textile processing industries were estimated as 12659 m^3/day. For the purpose of calculation pollutant load of the grey water foot print is most important in the assessment of environmental effects on water resource.

It is recommended calculation the pollutant load as Grey water footprint concept will be more advantage to rethink about minimization on effluent discharges to natural water bodies. In order to bring down the deterioration of the water quality, it is required to work with the industries to improve the quality of their discharges by introducing cleaner production techniques, Best Management Practices (BMPs) including structural BMPs and institutional options, and wastewater treatment.

Furthermore, the study recommended that the considering discharge effluent quantity to the river should be minimized by adopting "Polluter Pay Principle" concept for high polluting industries which are locating river basin.