# UNRAVELING THE FUTILITY: INEFFECTIVENESS OF *Escherichia coli* REMOVAL BY TREATMENT PLANT UPON REINTRODUCTION TO POLLUTED CANALS

*S.A.P.T. Samaraweera[1]* M.M.M. Najim[2]*

Greater Kurunegala Sewage Treatment Plant (GKSTP) plays a crucial role in safeguarding public health by removing contaminants from wastewater before discharge. *Escherichia coli* (*E. coli*) is a prominent fecal contamination indicator of water. Despite the substantial investments made by treatment plants to remove pathogens from wastewater, the efficacy of this process is questioned when the treated water is reintroduced into contaminated canals. This study aimed to investigate whether the removal of microbes in a treatment plant is effective when the treated water is put back into the same polluted canal, assessing the feasibility of achieving significant pathogen removal maintaining water quality standards. Composite water samples were collected from 5 sampling sites along the canals downstream to GKSTP during the dry (DS) and wet (WS) seasons for microbiological analysis using Membrane Filtration Protocol. The *E. coli* of water was assessed for spatial and temporal variations using an Analysis of Variances (ANOVA). *E. coli* count of water along Kurunegala city canals exhibited notable spatial variation ($p<0.05$). Based on the findings, the *E. coli* counts in 100mL of water during the WS ranged from 482 to uncountable whereas in the DS it ranged from 216 to not clear (contaminated with other bacteria). *E. coli* levels remain high during the WS and this could be attributed to surface runoff from residential and agricultural areas, discharges from unconnected pipes to sewage networks, and due to intentional release of sewage during WS. Despite the presence of a GKSTP, biological parameters such as *E. coli* count cannot be effectively reduced unless all sewage pipes within the city are connected and treated. The futility of treatment costs becomes evident as reintroducing treated water into polluted canals leads to microbial recontamination, posing a significant risk to water quality standards downstream, thereby jeopardizing the safety and well-being of water users. It underscores the need for a comprehensive approach to address persistent pollution sources and ensure effective water quality management.

**Keywords:** *E. coli*; microbiological analysis; treatment plant; wastewater; water quality

[1] Department of Zoology and Environmental Management, Faculty of Science, University of Kelaniya, Sri Lanka. pamudisamaraweera@gmail.com

[2] Faculty of Agriculture, Sultan Sharif Ali Islamic University (UNISSA), Kampus Sinaut, Km 33, Jln Tutong, Kampong Sinaut, Tutong TB1741 Brunei Darussalam. najim.mujithaba@unissa.edu.bn