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Modeling *Escherichia coli* die-off rate in submarine outfall systems

Submarine outfall systems have been presented as a problem solution for domestic wastewater in coastal cities, due to their design facilities and costs. In this study, the application of a mathematical model to predict the effects of the light intensity, salinity and volumetric ratio variables of the mixture of wastewater and seawater in the *Escherichia coli* (*E. coli*) die-off rate on the ocean were evaluated. The relationship between the variables mentioned above was established through the MATLAB software, performing laboratory tests established in a rotatable experimental design. Under each combination of factors, the concentration of *E. coli* was measured at the start of each experiment and every half hour in a total period of two (2) hours using the membrane filtration method of Standard Methods. The results of the tests were statistically analyzed through a stepwise regression, where the mathematical expression was found that allowed to relate the three (3) factors mentioned with the output variable (*E. coli* die-off rate). This model serves as a tool to predict *E. coli* die-off rate of any submarine outfall on the planet.

Biography

Miguel De Luque has his expertise in environmental modeling (Water quality, Air Pollution). Has created prediction models to evaluate impacts from anthropogenic projects. Develops environmental studies such as environmental impact assessment and contingency plans. He is currently the director of environmental engineering program at the University of Cundinamarca.

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