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Modeling Escherichia coli die-off rate in submarine outfall systems**Miguel De Luque Villa and Daniel Robledo Buitrago Ing**
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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 *Escherichia coli* die-off rate on ocean was 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 *Escherichia coli* was measured at the start of each experiment and every half hour in a total period of two 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 factors mentioned with the output variable (*Escherichia coli* die-off rate). This model serves as a tool to predict *Escherichia coli* die-off rate of any submarine outfall on the planet.

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