



“Gheorghe Asachi” Technical University of Iasi, Romania



PREDICTION OF WATER QUALITY INDEX OF AN INDIAN RIVER USING ARITHMETIC INDEX AND REGRESSION MODELS

Divya Airattil Haridas¹, Soloman Pooppana Antony^{2*}

¹*Environmental Engineering and Research Laboratory, Department of Chemical Engineering, Government Engineering College, Thrissur, PIN 680009, Kerala, India*

²*Department of Chemical Engineering, Government Engineering College, Thrissur, PIN 680009, Kerala, India*

Abstract

This paper focuses on the effect of some water quality parameters of river water which helps in the calculation of water quality index (*WQI*) that culminates in the development of a regression model for prediction of *WQI* of the river system in India. The index was calculated by arithmetic index method using twelve various experimentally estimated water quality parameters such as potential hydrogen, chlorides, dissolved oxygen saturation, nitrates, sulphates, phosphates, total dissolved solids, biochemical oxygen demand, electrical conductivity, total hardness, turbidity and total coliform of the water at eight locations, for a 55 km stretch of Chalakkudy river November 2013 to December 2018. It was identified that total coliform is the major parameter contributing to the bad quality of water. Water quality regression model has been developed as a function of total coliform content. The performance of the model in predicting the *WQI* has been tested by comparing with the calculated *WQI* for the following year 2018. The regression model has been found to be good with an absolute average relative error and root mean square error values of 0.693 and 0.5 respectively. The results indicate that the basin is slowly getting into a serious drinking water crisis.

Key words: arithmetic index method, Chalakkudy River, regression model, water quality index

Received: October, 2018; Revised final: March, 2019; Accepted: March, 2019; Published in final edited form: September, 2019

* Author to whom all correspondence should be addressed: e-mail: pasolomon@gmail.com