UNIVERSITI TEKNOLOGI MARA

REGRESSION AND FORECASTING STUDY ON WATER QUALITY IN MALAYSIA

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ABSTRACT

Water pollution is a serious problem in Malaysia and affect negatively on the sustainability of water resources. In addition, it also causing negative impacts on plants and organism living, people's health and the country's economy. The tremendous quantity of water resources available in the catchment unfortunately does not guarantee enough supply to all users because of the river pollution. To overcome this problem, water pollution control plant was chosen as advanced wastewater treatment facility serving residents, businesses and industries. In this study, Regression analysis such as linear regression or non-linear regression are used to predict the value of parameter of water quality which is based in BOD, TSS and ammoniacal nitrogen (AN) and perform curve fitting for water quality in Malaysia by using least square regression. the regression analysis was run in the excel by using collected data form Environmental Quality Report 2014 to identify the best model that represent the pattern of the water quality. Linear and non-linear regression were performed by using Analysis Toolpak in the excel add-ins. Results shows that the BOD in water is increasing across the year. By using the regression equation, it was forecasted that the number of river which is polluted by BOD is about 879 at the year of 2020. BOD level can be reduced if water pollution treatment plant was applied to residents, businesses and industries.

CHAPTER 1

INTRODUCTION

1.1 Research Background

Water pollution is the problem faced by major global which needs ongoing evaluation and revision of water source policy at all levels. Water pollution is the leading worldwide problem which causing death and disease. Water pollution is basically regarded as the effect of industrial development. The development of industry introducing many type of industrial activities that causing the water quality at industrial area become progressively worse. (Soni Chaubey and Mohan Kumar Patil, 2015) The most notable factor that increasing the water pollution are also the increasing of population and urbanisation. Many type of treatment method are used to increase the water quality. Water should not contain from various detoxification such as organic and inorganic pollutants, pesticide and heavy metal. Parameter of water quality which is dissolved oxygen (DO), pH, temperature, biological oxygen demand (BOD), chemical oxygen demand (COD), total nitrate, total phosphorus, ammonia, cyanide, mercury, total suspended solids (TSS) and total coliform are used the evaluate water quality index. However , in Malaysia only six parameter are used to evaluate the water quality index which is DO, pH, BOD, COD, TSS and ammonical nitrogen (AN). (S. Suratman et al,. 2013)

Studies have shown most of industries are discharging their waste into the rivers. This promotes to hazardous conditions, especially in urban area where the population is high, the demand for water is very high, and the development of industries is at a faster rate. Some of the organic and inorganic compounds, when present in water are toxic, carcinogenic and mutagenic, and cause several ailments in humans. Pollution in general and water pollution in particular has attracted the attention of scientific workers the world over (Megha Agarwal et al,. 2013). Among the inorganic contaminants of the river water, heavy metals are getting importance for their non-degradable nature and often accumulate through tropic level causing a deleterious biological effect. Mitigation option to improve