

Mathematical Model for the Concentration of Pollution and River Water Quality Modelling

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Abstract— This paper mainly focuses on the recent advances in the mathematical models that provide the ability to predict the contaminant concentration levels of river water. The study represents an attempt for the researchers to study the problem of pollution, and we think that these mathematical analyses would provide better planning for water quality control. The model consists of a pair of coupled reaction Advection-diffusion equations for the pollutant and dissolved oxygen concentrations. Numerical solutions are obtained and some important inferences are drawn through simulation study. The Advection-Diffusion equation is characterized by the reaction term whenever it depends on concentration of the contaminants and in this case the original single Advection-diffusion equation will evolve to be a system of equations. It is no ticked that the higher are diffusion and reaeration coefficients, the faster is the river purity.

Keywords: Mathematical model, Advection-diffusion equation, water pollution, water quality.

1. INTRODUCTION

Water is one of the main elements of the environment which determine the existence of life on the Earth, affect the climate and limit the development of civilization. Water resources management requires constant monitoring in terms of its qualitative-quantitative values. Proper assessment of the degree of water pollution is the basis for conservation and rational utilization of water resources. Water quality in lakes and dams is undergoing continuous degradation caused by natural processes resulting from eutrophication and due to anthropogenic reasons. One of the tools that

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EPA Reports Bibliography United States. Environmental Protection Agency, United States. Environmental Protection Agency. Library Systems Branch, 1973 Pollution Abstracts ,1986 Indexes material from conference proceedings and hard to find documents in addition to journal articles Over 1 000 journals are indexed and literature published from 1981 to the present is covered Topics in pollution and its management are extensively covered from the standpoints of atmosphere emissions mathematical models effects on people and animals and environmental action Major areas of coverage include air pollution marine pollution freshwater pollution sewage and wastewater treatment waste management land pollution toxicology and health noise and radiation *Selected Water Resources Abstracts* ,1991 *Urban Water Planning* ,1977
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