

Modelling of Surface Water Quality Parameters from Damodar River at Slag Disposal Site: A Case Study

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ABSTRACT

The work aims at assessing the Water Quality Index (WQI) of surface water of river Damodar, Dharampur, West Bengal, India, by monitoring six sampling locations within the positioning at Damodar river namely (viz., Control Pond (CP), River Upstream (RU), Effluent Discharge Site (EDS), River Downstream (RD), Sewage Fed Pond 1(SP1) and Sewage Fed Pond 2 (SP2)) for a period of 1 year. For calculating the WQI, 14 parameters, namely, pH, dissolved oxygen, total dissolved solids, total suspended solids, biological oxygen demand, chemical oxygen demand, hardness, alkalinity, chloride, nitrite, nitrate, iron, copper, and coliform were considered. The WQI value ranges from 30.11 to 177.11 (summer season), 24.30 to 392.61 (rainy season) and 25.38 to 261.74 (during winter season) falls under the excellent, good, poor, very poor to unsuitable to be used category. The present study revealed that the water of river Damodar at Dharampur, West Bengal, India is polluted (due to surface run-off, bathing activities, agriculture run-off, effluents from upstream from surrounding industrial and garden area, the immersion of idols of God and Goddess during festival season), and is unsuitable for human consumption, and also for the survival of life forms unless treated properly.

Key words: Physicochemical Parameters, Water Quality Index, Damodar river, Dharampur, West Bengal

Mathematics Subject Classification: 62H25

Journal of Economic Literature (JEL) Classification : I18, Q25, Q53, Q57

1. INTRODUCTION

Water is necessary for all living plants and animals to maintain their life. Surface water quality is influenced by complex anthropogenic activities and natural processes (Jarvie et al. 1998; Ravichandran