



Physicochemical parametric and water quality index (WQI) analysis of Gomti River, Lucknow using MDSSS

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This research work was carried out to analysis of different physicochemical parameters and water quality index of Gomti River to examine the quality of water before directly using for different activities like municipal consumption, recreation, and other purposes. The Gomti River water polluted with various sources like industrial waste, agriculture waste, and domestic waste who discarded waste directly into the river water and water quality deteriorating continuously. Hence, the influence of the eco-system as well as domestic activities due to water quality. Therefore, a modified double slope solar still (MDSSS) has been designed for the removal of this problem because it is cost-effective technology as compared to other conventional methods. After experimental work, analyzed various physicochemical parameters as well as WQI and found under the acceptable limit. Before solar distillation, these parameters showed that the quality of water not now in the safe limit, therefore needs to improve the quality of water but after solar distillation, all the parameters within the acceptable limit except turbidity, which was high even as NO_3^- , Cl^- and F^- are below the acceptable limit. The high level of pollutants disturbing the ecological system of rivers and affecting human health directly and indirectly.

Keywords: Physicochemical, desalination, yield, WQI, Gomti River, solar energy.

Introduction

Water is the most essential requirements of all living waterbody. The increasing the demand of fresh water and declining availability of conventional water supply sources are plays vital role on the development of other alternative water supply sources. The main sources of water for human activities are surface water bodies but it is affected environmental pollution as well as developmental activities. The basic needs of every living thing like fresh water, cloths, food, shelter and energy. The availability of water as per nation data as 97% in the ocean, 2% stored in ice in form, and 1% is clean water obtainable in earth for the requirement of the animals, plants, and human beings¹. The fresh water is most important natural resources for the life because it is directly linked to human welfare. We all are know, the amount of water present in human body is about 57% and so its affect the cell activities and create various disease like headache, fatigue, nervousness, weakness, irritability and even death also^{2,3}. It

means the quality of water can be influences by the biological, physical as well as chemical contaminants.

The River Gomti is a flood plain river, which originates from Fulhaar jheel, in Madho Tanda (which is nearby Mainkot around 30 km east of Pilibhit district in Uttar Pradesh). It flows between latitudes 25°-26.9'N and 28°-9.1'N, longitudes 80°E-83°-9.6'N. The total length of the Gomti River is about 940 km. The Gomti River is the main source of freshwater to supply for necessities in domestic, industry, and agriculture purpose. However, the supply of water from these sources is not always doable or enviable due to the presence of more salts contents and detrimental microorganisms. Water pollution manly increased by rapid urbanization, industrialization, fertilization in agriculture and man-made activities, etc.^{4,5}.

The water quality index can be estimated based on various water quality parameter changes with time and location. The WQI is indicating the multifarious water quality analysis