

Chapter 7

Wastewater Pollution From the Industries

Tabassum Ara

National Institute of Technology Srinagar, India

Rafia Bashir

National Institute of Technology Srinagar, India

Hamida Chisti

National Institute of Technology Srinagar, India

Tauseef Ahmad Rangreez

National Institute of Technology Srinagar, India

ABSTRACT

Water is one of the most precious natural resources of the earth, without which the living beings cannot survive. Water is important for the sustenance of human civilization. Man uses water for many purposes like drinking, cleaning, washing, bathing, heating, rearing cattle, and farming. Mankind, for the bettering of themselves and society, advanced towards industries and industrial products. But this progress towards industrialization not only utilizes huge amounts of fresh water, but returns water to the environment with pollutants, which changes its natural quality. Thus, mankind is heading towards misery, instead of comfort. Effective measures need to be taken to prevent, minimize, and control water pollution before it becomes too late.

INTRODUCTION

Earth is estimated to have 1400 million cubic kilometers of water. Water covers about 70% of the earth's surface and it exists naturally in the earth in all the three physical states of matter. Out of the earth's percentage of water covering the surface, 97.3% is salt water in the oceans, and seas and only 2.7% is fresh water. Of the 2.7% of fresh water that is available a major portion of it (75%) is frozen in the Polar Regions. Groundwater constitutes 23% of the remaining 25% of fresh water and surface water forms the rest 2% only. The water resources are not uniformly distributed over the world. Water is one of the

DOI: 10.4018/978-1-5225-5754-8.ch007

most precious natural resources of the earth, without which the living beings cannot survive. Water is important for the sustenance of human civilization. The protoplasm of most living cells contains about 80% of water. Most of the metabolic activities of human body involve water. Man uses water for many purposes like drinking, cleaning washing, bathing, heating, rearing cattle and growing crops in the farms, air conditioning and industries etc. Every activity of man involves some use of water. The used water returns to the environment with pollutants, which changes its natural quality in the environment. Of great concern is that water is also used for disposal of pollutants. Water is considered polluted if there is any undesirable change in its physical, chemical or biological characteristics that may harmfully affect human life or industrial process that deteriorate natural resources (Khan and Ullah, 1991). Olaniran (1995) defined water pollution to be the presence of excessive amounts of a hazard (pollutants) in water in such a way that it is no long suitable for drinking, bathing, cooking or other uses. Pollution is thus the introduction of a contamination into the environment

There are natural and man-made causes of water pollution. In case of natural causes many kinds of natural salts mix with rain water and finally fall in the water bodies. The biodegraded portions of plants and animals mix with water and pollute it. Polluted water is generated through industrial and commercial waste, agricultural practices, human activities in everyday life and even models of transportation and the cause is man. Such water is very harmful for both human and aquatic lives. Billions of people in the world do not have safe drinking water and millions of deaths occur due to waterborne diseases (Onsdorff, 1996). Mostly the industrial wastes are disposed of untreated into waters in developing countries and contaminate existing water supplies (United Nations, 2009). The UN also estimates that the amount of wastewater produced annually is six times more water than exists in all the rivers of the world (UN WWAP, 2003).

It is thus important that depletion of water should neither take place through contamination nor careless use otherwise it can result in serious consequences. The three main types of pollution are land pollution, air pollution and water pollution.

Water pollution arises from various activities, among which are sewage leakages, pollution of ground water through drilling activities, oil spillage, industrial waste dumped into our waters, floods which carries waste deposits into our waters, eroded sediments building lavatories and visionaries over running water or even the sea, toxic waste disposal at sea, mineral processing plant as in coal production, herbicides and fertilizers, failing septic system, house hold chemicals, animal wastes, radioisotopes, heavy metal, combustion, deforestation, mining littering, animal wastes. Humans are generally responsible for water pollution as they carry on activities for better self which ultimately leads to water pollution. Water pollution could be categorised under the various activities that man engages in, that lead to pollution. The growth of human population, industrial and agricultural practices is the major causes of pollution. This chapter describes the pollution of water from the waste effluents of the industries.

BACKGROUND

Although increase in industrialization leads to development, advancement in addition to the upgrading the standard of living but the biosphere becomes highly contaminated. Thus pollution of the biosphere with toxic substances has increased greatly with the evolution of the industries (Tiwari et al., 2008). Rapid industrialization causes severe degradation in pedosphere, hydrosphere and atmosphere.

14 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/wastewater-pollution-from-the-industries/208482

Related Content

Modelling and Optimization of End Milling Process Using TLBO and TOPSIS Algorithm: Modelling and Optimization of End Milling Process

Atul Tiwari and Mohan Kumar Pradhan (2017). *Handbook of Research on Manufacturing Process Modeling and Optimization Strategies* (pp. 54-81).

www.irma-international.org/chapter/modelling-and-optimization-of-end-milling-process-using-tlbo-and-topsis-algorithm/179423

IoT-Enabled Smart Homes: Architecture, Challenges, and Issues

Indu Malik, Arpit Bhardwaj, Harshit Bhardwaj and Aditi Sakalle (2023). *Revolutionizing Industrial Automation Through the Convergence of Artificial Intelligence and the Internet of Things* (pp. 160-176).

www.irma-international.org/chapter/iot-enabled-smart-homes/313101

An Algorithm to Supply Chain Configuration Based on Ant System

Luis A. Moncayo-Martínez (2016). *Handbook of Research on Managerial Strategies for Achieving Optimal Performance in Industrial Processes* (pp. 24-35).

www.irma-international.org/chapter/an-algorithm-to-supply-chain-configuration-based-on-ant-system/151774

Methodology for Storage Location Allocation Based on the Planning of Material Requirements

Patricia Melchor-Pereda, Diana Sánchez-Partida, José-Luis Martínez-Flores and Patricia Cano-Olivos (2020). *Handbook of Research on Developments and Trends in Industrial and Materials Engineering* (pp. 50-77).

www.irma-international.org/chapter/methodology-for-storage-location-allocation-based-on-the-planning-of-material-requirements/247010

An Ergonomic Compatibility Perspective on the Selection of Advanced Manufacturing Technology: A Case Study for CNC Vertical Machining Centers

Aidé Aracely Maldonado-Macías, Jorge Luis García-Alcaraz, Juan Luis Hernández-Arellano and Guillermo Cortes-Robles (2016). *Handbook of Research on Managerial Strategies for Achieving Optimal Performance in Industrial Processes* (pp. 137-165).

www.irma-international.org/chapter/an-ergonomic-compatibility-perspective-on-the-selection-of-advanced-manufacturing-technology/151781