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Environment and Sustainability

Volume III



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CONTENT

Sr. No.	Book Chapter and Author(s)	Page No.
1.	IMPACT OF ARTIFICIAL INTELLIGENCE ON ENVIRONMENTAL SUSTAINABILITY Pawanjeet Kaur and Amardeep Shahi	1 – 6
2.	IMPORTANCE OF ARTIFICIAL INTELLIGENCE IN EVERYDAY LIFE M. Kiruthiga Devi, Unnamalai K and B. Deepa	7 – 14
3.	EFFECT OF PHYSICOCHEMICAL PARAMETERS OF WATER ON DIVERSITY AND DISTRIBUTION OF PHYTOPLANKTON Pinki Saini, Shikha Ahalavat and Yugam Dhingra	15 – 21
4.	BIOMONITORING OF HEAVY METAL POLLUTION Gajanan M. Deshmukh	22 – 25
5.	ENVIRONMENT AND SUSTAINABILITY Ravindra B. Tembhurne	26 – 28
6.	A REVIEW ON ORGANIC MANURE USING EARTHWORMS AS WASTE MANAGEMENT Sindhu M. and Annapoorani C. A	29 – 37
7.	A REVIEW ON NESTING BEHAVIOUR OF WETLAND ASSOCIATED AVIFAUNA Devendra Singh Porte, Lokesh Kumar Tinde, Vikas Chandra and Amita Paikra	38 – 53
8.	FORAGING BEHAVIOUR OF WETLAND BIRDS: A REVIEW Devendra Singh Porte, Lokesh Kumar Tinde, Vikas Chandra and Amita Paikra	54 – 77
9.	THREE PILLARS OF SUSTAINABILITY: SOCIAL, ECONOMIC AND ENVIRONMENTAL Damini R. Motwani and Rahul L. Meshram	78 – 85
10.	METHODS OF ENZYME IMMOBILIZATION AND ITS APPLICATIONS WITH SPECIAL REFERENCE TO CATALASE S. C. Warangkar and K. D. Kulkarni	86 – 103

11.	ROLE OF RESEARCH AND DEVELOPMENT IN CHEMISTRY FOR SUSTAINABLE DEVELOPMENT	104 – 115
	Pawan P. Kalbende	
12.	ENVIRONMENTAL IMPACT OF COAL MINING ON WATER REGIME	116 – 122
	Ved Prakash Singh, Sumeet Kishore and Mritunjay Kumar	
13.	STUBBLE BURNING IS A CHALLENGE FOR NORTH INDIA: AN INTRODUCTIVE OVERVIEW	123 – 131
	Mamta Shukla and Nikhil Agnihotri	
14.	A REVIEW ON PLANKTON DIVERSITY WITH EMPHASIS ON PHYSICO CHEMICAL PARAMETERS	132 – 137
	Ajit K. Gedam and Vasant K. Dongare	

ENVIRONMENTAL IMPACT OF COAL MINING ON WATER REGIME

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INTRODUCTION:

In his poem *The Rime of the Ancient Mariner* (1772-1834), poet Samuel Taylor Coleridge (1772-1834) coined this phrase (1798).

"Water, water, everywhere, but not a drop to drink" is a common misquote.

The above quote not talking of philosophical sense but has a great meaning in literal term. About 71 percent of the Earth's surface is water-covered, and the oceans hold about 96.5 percent of all Earth's water.

To break it down, the seas hold 96.5 percent of all the Earth's water as salt water, while freshwater lakes and frozen water locked up in glaciers and the polar ice caps account for the remaining 3.5 percent. Almost all of that fresh water condenses into ice, accounting for 69 percent of it. If all that ice could be melted and the Earth's surface were perfectly smooth, sea levels would rise to a height of 2.7 kilometres.

Aside from the water that exists as ice, there is also a massive amount of water beneath the Earth's surface. If you gathered all of the Earth's fresh water into a single mass (as shown in the image above), the volume would be approximately 1,386 million cubic kilometres (km³).

Meanwhile, the volume of water that exists as groundwater, rivers, lakes, and streams is mildly more than 10.6 million km³, or slightly well over 0.7 percent. When interpreted in this light, the limited and precious nature of freshwater becomes abundantly clear.

Water can also be found in the air as water vapor, rivers and lakes, icecaps and glaciers, soil moisture and aquifers. Water doesn't stay stationary for long.

Two of our planet's long-standing mysteries are the origin of water on its surface and the fact that it has more water than any other rocky planet in the Solar System.

It was once thought that our planet formed dry 4.6 billion years ago, with high-energy impacts creating a molten surface on the infant Earth. According to this theory, water was brought to the world's oceans by icy comets, trans-Neptunian objects, or water-rich meteoroids (protoplanets) colliding with the Earth in the outer reaches of the main asteroid belt.

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A WAY TO SUSTAINABLE MINERAL DEVELOPMENT: COALBED METHANE

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Introduction:

Today, natural resource development is all about sustainable development. The major concern of the industry is now to use mineral sources in such a way that our future generation does not get deficient of the same. More than any other economic activity, mining has a tendency to have a detrimental impact on both society and the environment. The emphasis on sustainable development has increased recently due to the increased awareness of environmental issues, especially with regard to activities that harm the environment. Seeing to the negatively impact communities and the environment many such steps are taken for a sustainable ways in this sector. One such activity is mining.

A contrast is also presented by mining. It is one of man's earliest activities, and over time, the volume and variety of uses for minerals have grown to meet a variety of economical demands. As a result, for sustainable economic growth that would reduce poverty and improve quality of life, modern civilization, especially in growing economies like India, is critically dependent on the mining sector. Since contemporary civilization and culture are so reliant on minerals and mineral production, a complete prohibition on mineral extraction is not feasible. Closure of this sector in the coming future too is not possible as in the coming years the energy demand is to increase exponentially and this chapter we would be discussing about a sustainable development and mineral production in the case of COAL which is considered to be the most devastating form of mineral extraction where coal itself is a carbonized material whose extraction involves a tonne of activities that is harmful for the environment.

Self-awareness and good governance are the first steps in any process leading to sustainability. In contrast, the method we will discuss in this chapter is the conversion of a liability into an asset. As previously said, it is impossible to harvest coal without harming the environment, but if a substitute source of green energy could be extracted alongside coal, the situation might be balanced.