KAZI NAZRUL UNIVERSITY

Session :- 2021 - 2022

Raniganj Girls' College

Department of

Zoology (1st sem)

Name :- Hena Parween

Subject :- Environment Studies

Subject Code :- AEE101

University Roll no. :- 11321122012

Raniganj Girls' College

Course Name: Environment Studies

Course Code: AEE101

Topic of the project: Different aspects of Air, Soil, Water, Noise pollution

A Project Report

Submitted by Semester-I students (Academic Year 2021-22)

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CERTIFICATE

This is to certify that this project titled "Different aspects of Air, Soil, Water, Noise pollution" submitted by the students for the award of degree of B.A. Honours/ Program is a bonafide record of work carried out under my guidance and supervision.

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Place: Raniganj

Date: 18.03.2022

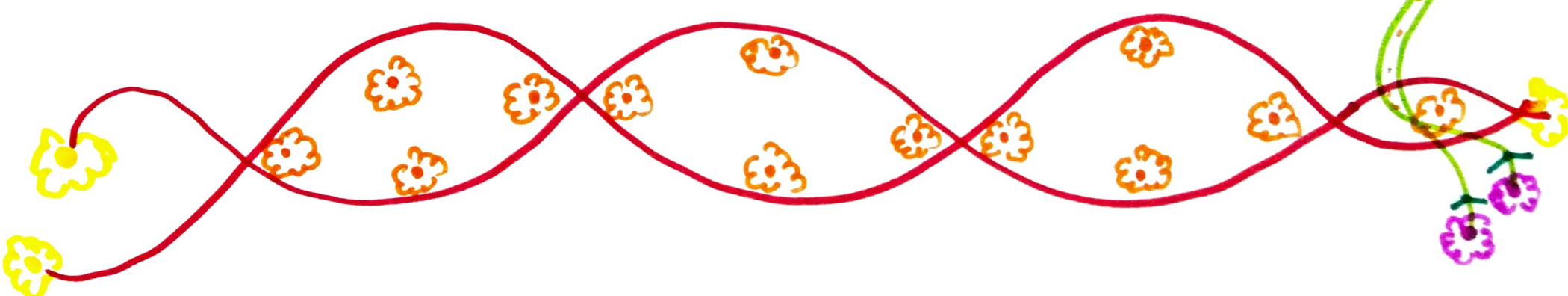
Jishin Subhra Ghosh

Assistant Professor, Department of Zoology

Signature of the supervisor with designation and department

Topic :~

Bioremediation



Introduction

Bioremediation is a biotechnical process which abates or clean up contamination. It is a type of waste management technique which involves the use of organisms to remove pollution made by humans or to utilize the pollutants from a polluted area.

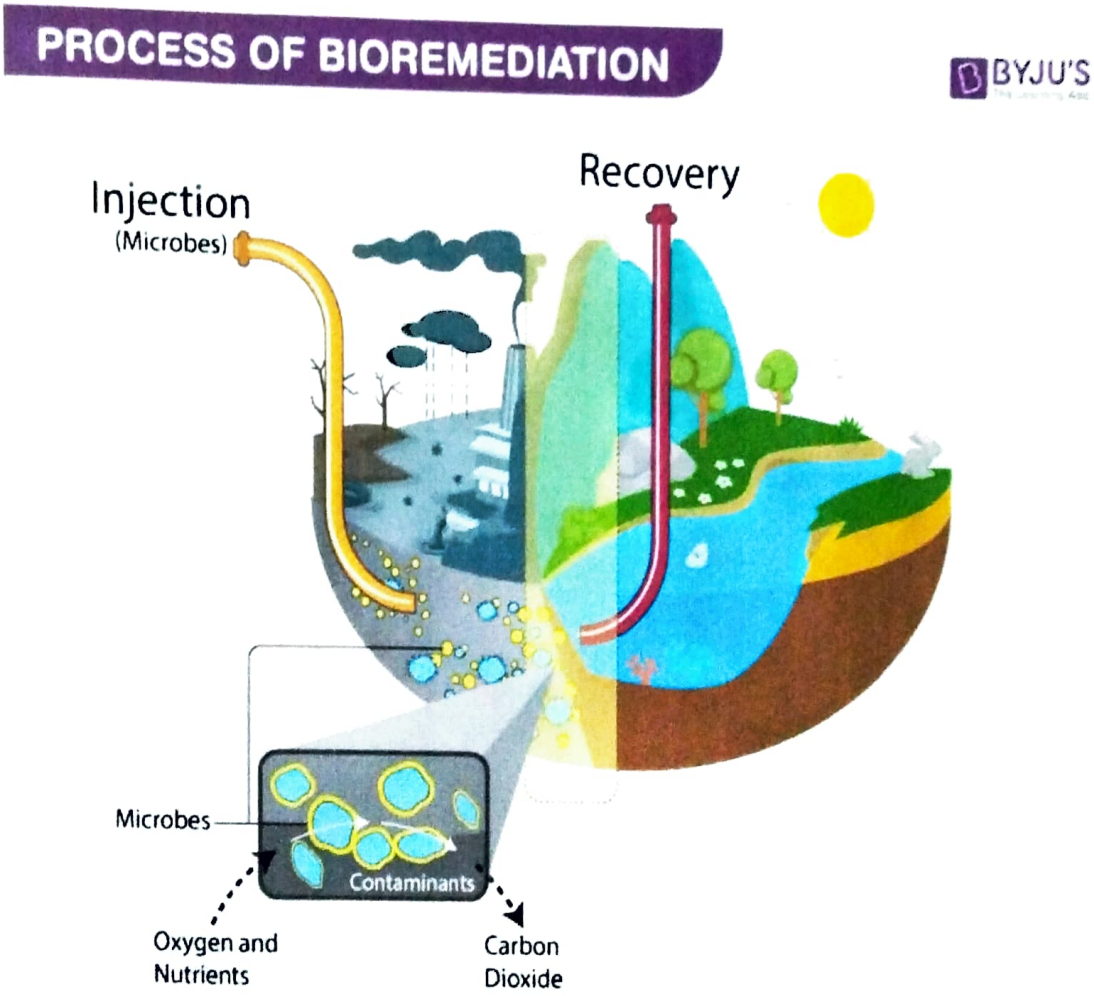
Bioremediation is a branch that employs the use of living organisms, like microbes and bacteria, in the removal of contaminants, pollutants, and toxins from soil, water, and other environments.

Bioremediation is used to clean up oil spills or contaminated ground water.

How Bioremediation Works

The general term for the bioremediation process is the addition of microorganisms with the contamination to create carbon dioxide.

Contaminants —Microorganisms→ Carbon dioxide



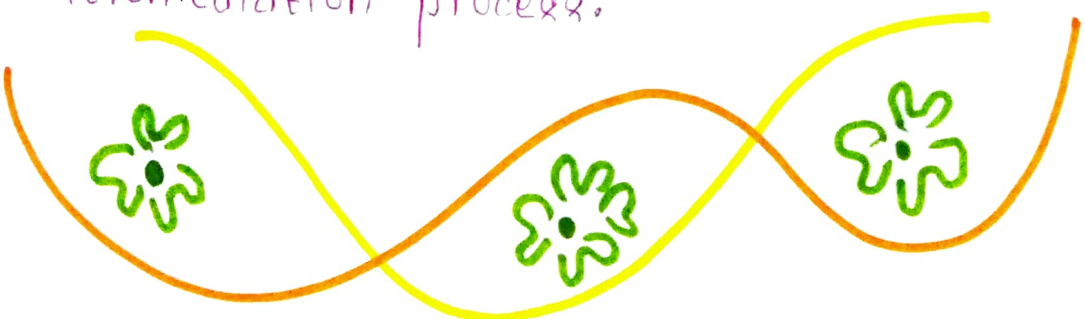
Bioremediation is different as it uses no toxic chemicals.

Microorganisms like bacteria and fungi are the main role players when it comes to executing the process of Bioremediation. Bacteria are the most crucial microbes in this process as they break down the waste into nutrients and organic matter.

Bioremediation relies on stimulating the growth of certain microbes that utilize contaminants like oil, solvents, and pesticides for sources of food and energy. These microbes convert contaminants into small amounts of water, as well as harmless gases like carbon dioxide.

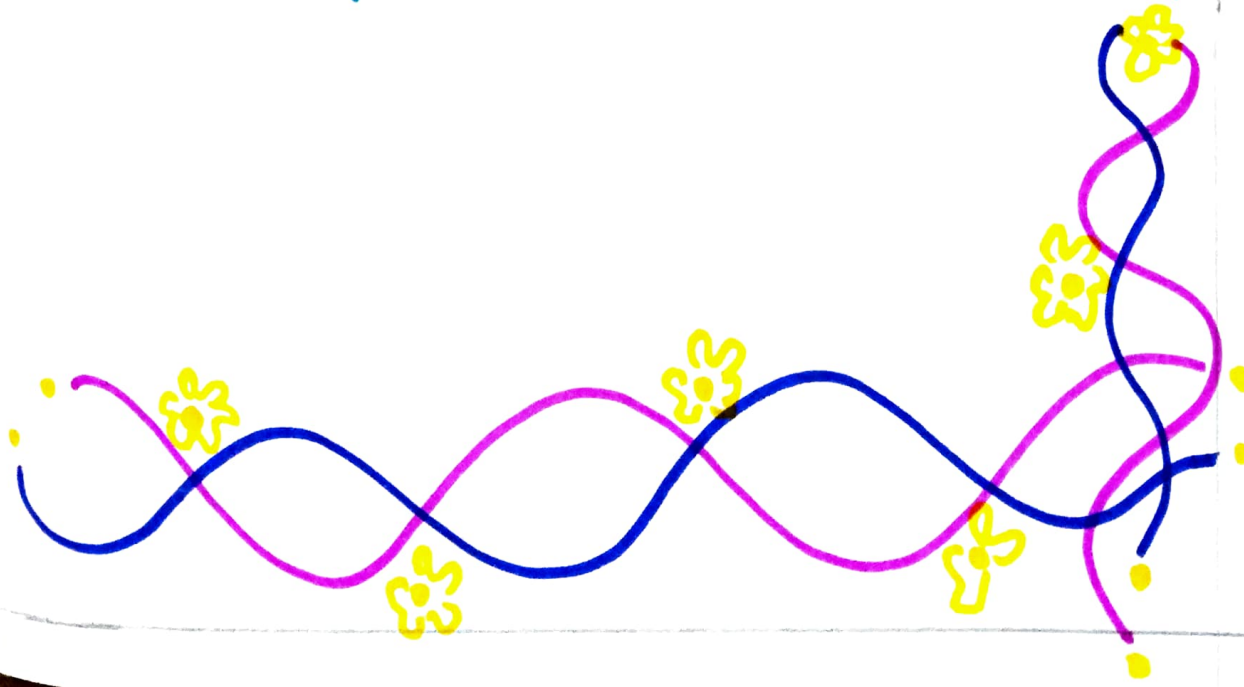
Bioremediation requires a combination of the right temperature, nutrients, and foods. The absence of these elements may prolong the cleanup of contaminants. Conditions that are unfavorable for bioremediation may be improved by adding "amendments" to the environment, such as molasses, vegetable oil or simple air.

These amendments optimize conditions for microbes to flourish, thereby accelerating the completion of the bioremediation process.



There are four types of Contamination that occur in Water :~

i. Agricultural Contamination
ii. Municipal Contamination
iii. Industrial Contamination
iv. Oil-Spill Contamination



Agricultural Contamination.

First example of water contamination is agricultural contamination it causes a probable when in excess of chemicals accumulation in soil and spreads around.

like, Excessive nitrates ⟶ Causes Eutrophication.

Agricultural contamination refers to biotic and abiotic byproducts of farming practices that result in degradation of the environment and surrounding ecosystems, or cause injury to human and their economic interests.

Municipal Contamination

Municipal contamination can be resolved by bioremediation, main contamination type is 'e-coli' contamination.

The pollution of household waste water is mainly due to the flushing of toilets, kitchen and cleaning water polluted with bacteria, viruses, washing and cleaning agents including dirt and reats of food. The presence of contaminants in water can lead to adverse health effects, including reproductive problems and neurological disorders.

Industrial Contamination

Industrial contamination is a big environmental problem, this results from chemical dumping in oceans and from smoke production, plants and animals are affected by the toxins. Industries discharge chemical Wastes comprising substances called effluents in river, lake, etc. Factories sometimes turn Waterways into open sewers by dumping oil, toxic chemicals and other harmful liquids called effluents into them.

Oil-Spill Contamination

Oil-spill contamination is a result of leaking of oil, the oil spreads across the ocean this mostly affects marine life and poisons it.

Oil-spill contamination refers to the negative pollution effects that oil spills have on the environments and living organisms, including humans, due to the environmental discharge of various organic compounds that make up crude oil and oil distillate products, the majority of which include various individual hydrocarbons.

Advantage's of Bioremediation

- It reduces the amount of equipment, labor and energy used to cleanup contaminents.

i. It pose no threat to people at a cleanup site.

ii. It is the recommended method for removing oil stains.

iv. Biologically-based remediation detoxifies hazardous substances instead of merely transferring contaminents from one environmental medium to another.