

# Soil Contamination by Plastics: Recycling of Plastic Waste and Soil Treatment of Landfills

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# Introduction

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Lack of awareness regarding the final disposal of plastic waste

Environmental challenge



Detrimental impact

# Introduction

## 11 SUSTAINABLE CITIES AND COMMUNITIES

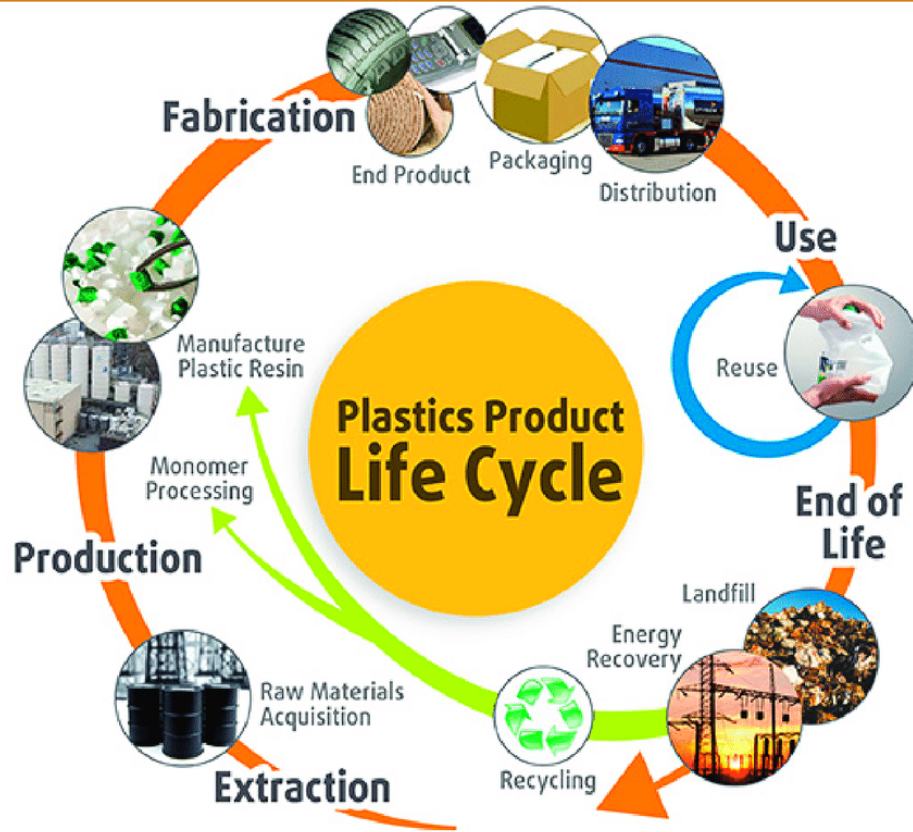


TARGET

11-6



# Introduction



The issue of soil contamination by plastics requires an urgent discussion of proposals that address the reduction of plastic-polluted landfills to achieve safe waste management.

# Introduction



The purpose is to discuss the impact of plastic waste in soil pollution and possible alternatives for the use and disposal of plastics

# Introduction

## Map of the Presentation

Identify the  
pollutant  
properties of  
plastics

Describe  
methods for  
plastic material  
recycling

Consider the  
need for waste  
recycling in  
landfills.

# Introduction



Contributing to the discussion of alternatives for plastic pollution reduction and to raise awareness about this urgent challenge.



# **Properties of soil contamination by plastics**

# Properties of soil contamination by plastics



“garbage dump poverty garbage water”, iStock

Plastic pollution is caused by humans

Plastics produce an unnatural disturbance due to their intrusion into a different environment

Polluting agents affect the dynamics of matter and environments

# Properties of soil contamination by plastics



## ENVIRONMENTAL STRESS



"Environmental damage rate and climate change urgency concept as a Green natural hábitat sinking into a pollution and toxic environment in an hourglass with 3D elements ", Lightsource

# Properties of soil contamination by plastics

## Types of plastic waste and their most notable effects

**MACRO  
PLASTICS**

**MICRO  
PLASTICS**

**NANO  
PLASTICS**

# Properties of soil contamination by plastics

## Types of plastic waste and their most notable effects

### MACRO PLASTICS



Their diameters are greater or equal than 5 mm.

They can be transported by wind and water, ending up in the soil.

They mainly affect the natural system insofar as they can modify the humidity and density of the earth.

# Properties of soil contamination by plastics

## Types of plastic waste and their most notable effects

This plastic waste is broken down by physical, chemical and biological processes.

**MICRO  
PLASTICS**

They have diameters less than 5 mm.

They affect soil water availability.

# Properties of soil contamination by plastics

## Types of plastic waste and their most notable effects

Its size is less than 1  $\mu\text{m}$  in diameter.

Their small size allows for penetration into tissues and accumulation in organs.

They are assimilated by soil bacteria, plants, fungi, and other living beings.



**NANO  
PLASTICS**

# **Methods to address soil contamination by plastics**



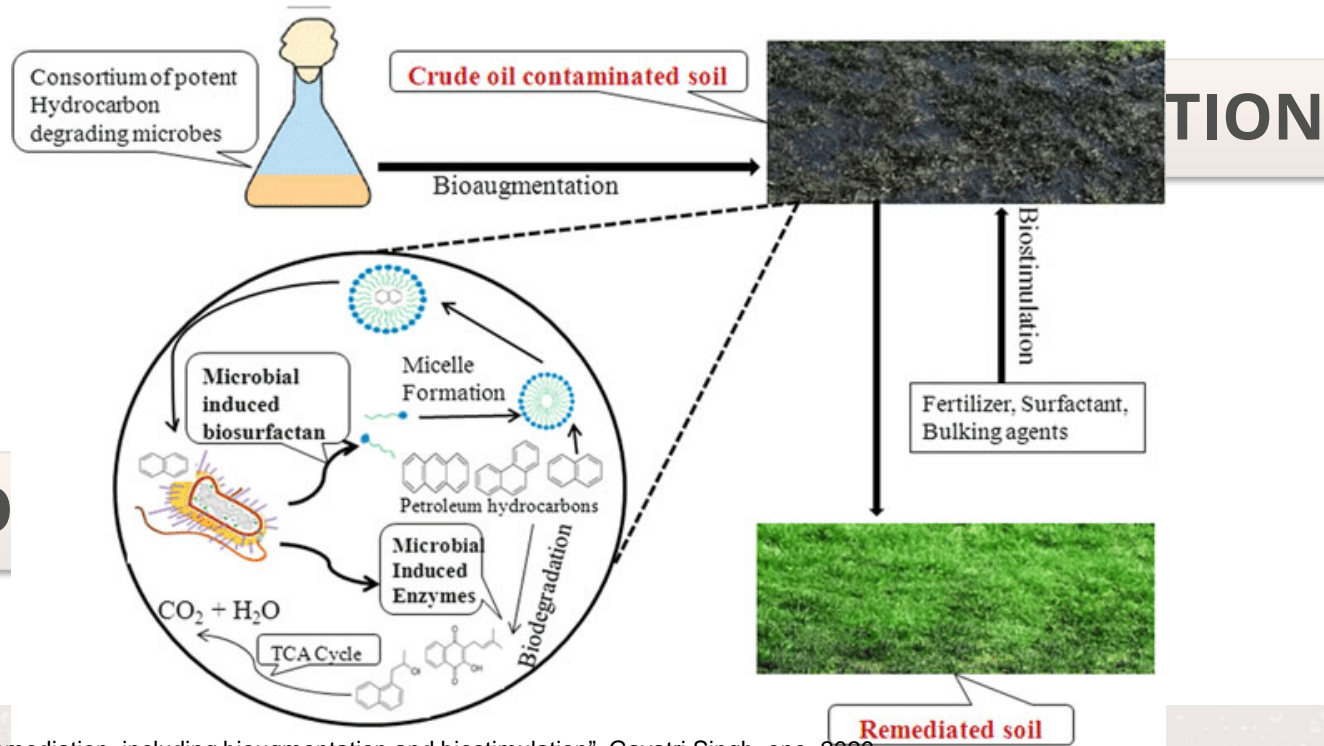
# Methods to address soil contamination by plastics

**BIOREMEDIATION**

**PYROLYSIS**

# Methods to address soil contamination by plastics

It is a technique of biotechnology

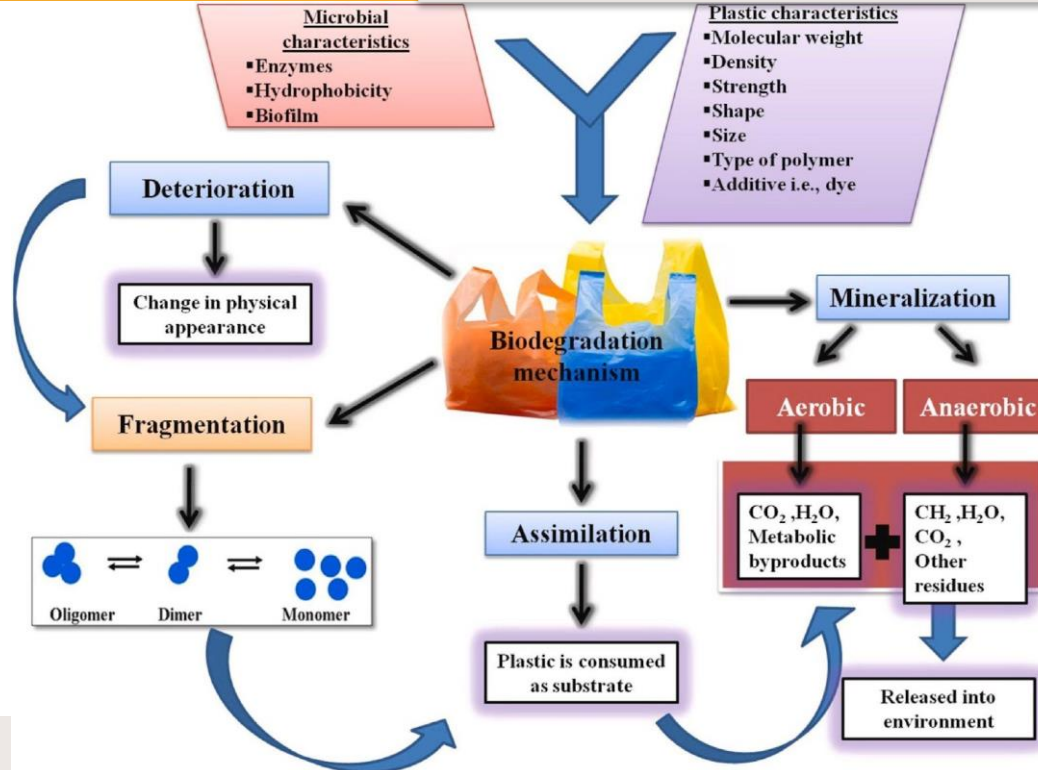


PYRO

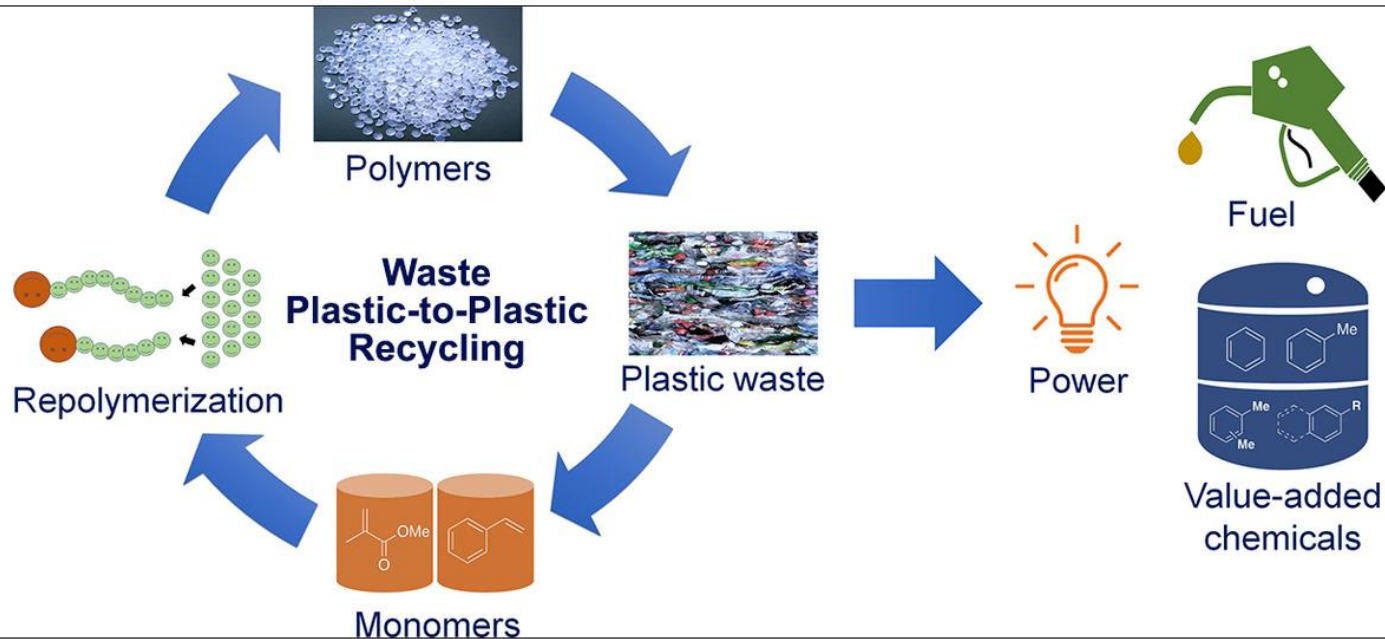
# Methods to address soil contamination by plastics

It is a technique of biotechnology

## BIOREMEDIATION



# Methods to address soil contamination by plastics



P

it is a chemical and thermal process

# Methods to address soil contamination by plastics



## PYROLYSIS

it is a chemical and thermal process

"Energy recovery from pyrolysis of plastic waste: Study on non-recycled plastics (PNR) data as a real measure of plastic waste", Shaferina Dayana Anuar Sharuddin, Faisal Abnissa, Wan Mohd Ashri Wan Daud, Mohamed Kheirredine Aroua, sep. 2017

# **Advantages and disadvantages of the solutions**

# Advantages and disadvantages of the solutions

Examining the advantages and disadvantages will allow an understanding of their:



**Feasibility**



**Environmental  
impact**



**Effectiveness**

# Advantages and disadvantages of the solutions

## BIOREMEDIATION



**Sustainability**



# Advantages and disadvantages of the solutions

## PYROLYSIS



Coal

# Conclusion

# Conclusion

Reduce pollution and safeguard the environment.



Develop a multidisciplinary and global approach

Analyze the economic performance, costs, and financial implications



Develop effective treatment technologies



Assess durability

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**THANK YOU!**

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