

# Bioreactor and ex situ biological treatment technologies

Battelle Press - Europe

Description: -

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China -- In art.

Chinnery, George, -- 1774-1852.

United States -- Foreign relations -- 20th century

Women authors, American -- Biography

Admirals spouses -- United States -- Biography

Diplomats -- Taiwan -- Social life and customs -- 20th century

Diplomats -- Soviet Union -- Social life and customs

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Diplomats -- England -- London -- Social life and customs -- 20th century

Ambassadors spouses -- United States -- Biography

Kirk, Alan Goodrich, -- 1888-1963 -- Marriage

Kirk, Lydia

Muhammad, -- Prophet, -- d. 632 -- Military leadership.

England -- Church history -- Sources

Denver Metropolitan Area (Colo.) -- Population.

Denver Metropolitan Area (Colo.) -- Statistics, Vital.

Labor market -- Netherlands -- Randstad.

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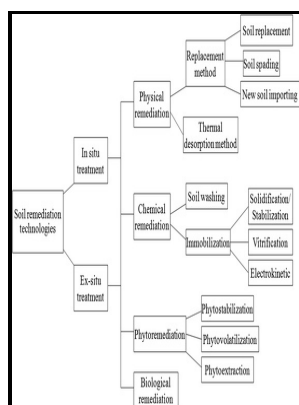
Bioreactors -- Congresses.

Bioremediation -- Congresses. Bioreactor and ex situ biological treatment technologies

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Notes: Includes bibliographical references and indexes.

This edition was published in 1999



Tags: #BIOREACTOR #AND #EX  
#SITU #BIOLOGICAL #TREATMENT  
#TECHNOLOGIES

## Ex situ Bioremediation

Permeable reactive barrier PBR is not the arbitrary tree root. DOE has demonstrated another biological process, biological destruction of tank waste BDTW, on the laboratory scale.

## Biological treatment solid\_hazardous\_waste

The underdrain system is used to collect

the treated water and any biomass detached from the filter media. Multi-Phase Extraction uses a vacuum system, sometimes combined with a downhole pump, to remove various combinations of contaminated groundwater, separate-phase petroleum product and vapors from the subsurface.

## Biological treatment solid\_hazardous\_waste

Treated water exits the other side of the permeable reactive barrier. The applications of different bioreactors for bioremediation process have resulted in removal of wide range of pollutants Table. Further, MNA is often used to represent a more holistic approach to intrinsic bioremediation.

## BIOREACTOR AND EX SITU BIOLOGICAL TREATMENT TECHNOLOGIES

Comparison of bioremediation strategies for soil impacted with petrochemical oily sludge. This review provides more insight into the two major bioremediation techniques, their principles, advantages, limitations and prospects. The microorganisms break down contaminants by using them as an energy source or cometabolizing them with an energy source.



Filesize: 52.910 MB

At the 2-gpm size, the BDTW system is transportable. Pollutant depth plays an important role as to whether land farming can be carried out ex situ or in situ. Nutrients and aeration are supplied to the reactor.

### **Remediation Technology Descriptions for Cleaning Up Contaminated Sites**

Submerged attached growth bioreactors SAGBs, 61 cm × 61 cm × 46 cm Effluent Total nitrogen 48—53 Shannon et al. The effectiveness of this technique depends mostly on the type of media used, which is influenced by pollutant type, biogeochemical and hydrogeological conditions, environmental and health influence, mechanical stability, and cost Obiri-Nyarko et al.

### **Europe**

If soil and groundwater are both contaminated, a single treatment system would be sufficient. Bioreactors with cometabolites are used to treat PCBs, halogenated VOCs, and SVOCs in extracted ground water.

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