



Bioremediation Of Contaminated Soils Environmental Science Pollution

Sandip V. Rathod



Bioremediation Of Contaminated Soils Environmental Science Pollution:

Bioremediation of Contaminated Soils Donald L. Wise, 2000-06-09 This volume focuses on innovative bioremediation techniques and applications for the cleanup of contaminated media and sites It includes quantitative and design methods that elucidate the relationships among various operational parameters and waste chemistry that defines the cost effectiveness of bioremediation projects It also presents numerical models

Contaminated Soils, Sediments and Water: Edward J. Calabrese, Paul T. Kostecki, James Dragan, 2004-10-01 Volume 9 of the series presents 38 technical papers covering a wide range of environmental issues including Bioremediation Chemical Oxidation Heavy Metals MTBE Phytoremediation Radiation Regulatory and Legal issues Remediation Risk Based Cleanup and Site Assessment Contributing authors are drawn from across the spectrum of interest government agencies academic institutions the consulting community and industrial companies

Biomanagement of Metal-Contaminated Soils Mohammad Saghir Khan, Almas Zaidi, Reeta Goel, Javed Musarrat, 2011-08-30 Heavy metal contamination is one of the world's major environmental problems posing significant risks to agro ecosystems Conventional technologies employed for heavy metal remediation have often been expensive and disruptive This book provides comprehensive state of the art coverage of the natural sustainable alternatives that use a wide range of biological materials in the removal detoxification of heavy metals consequently leading to the improvement of crops in these soils Novel environmentally friendly and inexpensive solutions are presented based on a sound understanding of metal contamination and the roles of plants and microbes in the management of these toxic soils Written by worldwide experts the book provides not only the necessary scientific background but also addresses the challenging questions that require special attention in order to better understand metal toxicity in soils and its management through bioremediation

Remediation of Hazardous Waste Contaminated Soils Donald L. Wise, 2018-10-03 This unique single source reference offers a thorough treatment of the remediation of soils contaminated by hazardous wastes and the scientific and engineering issues that must be addressed in creating practical solutions for their reclamation

Eco-Restoration of Polluted Environment Sandip V. Rathod, 2024-08-14 The book Eco Restoration of the Polluted Environment A Biological Perspective explores recent advances in biological strategies for the remediation of polluted environments including soil water and air It covers bioremediation of heavy metals radioactive waste and waste gases which are believed to be bottleneck problems for researchers working in this field The book contains separate chapters on genetic engineering technology for enhancement of the bioremediation potential of bioresources and the role of biosurfactants enzymes and exo polysaccharides for bioremediation of polluted environments along with basic aspects of eco restoration by microorganisms It summarizes the significant developments of many years of research in bioremediation technology and discusses them critically by presenting selected examples while also considering future research directions in the area Features Deep insight into the modes of action of various bioremediation strategies as well as the status and progress of bioremediation technology for sustainable

developmental practices A research overview of bioremediation strategies using engineered biological resources for remediation of contaminants The book will also accelerate the application of suitable engineered microbes and plants for field applications A survey of interdisciplinary findings and insights on the impact of pollution on the ecosystem and human health climate and other global changes with individual solutions to the pollution issue Comprehensive information for relevant stakeholders such as global leaders agriculturists investors innovators farmers policymakers extension workers agro industrialists environmentalists and the education and health sectors as well as students and researchers in the field

The Utilization of Bioremediation to Reduce Soil Contamination: Problems and Solutions Václav Sasek, John A. Glaser, P. Baveye, 2012-12-06 Traditional reliance on chemical analysis to understand the direction and extent of treatment in a bioremediation process has been found to be inadequate Whereas the goal of bioremediation is toxicity reduction few direct reliable measures of this process are as yet available Another area of intense discussion is the assessment of market forces contributing to the acceptability of bioremediation Finally another important component is a series of lectures and lively exchanges devoted to practical applications of different bioremediation technologies The range of subjects covers a wide spectrum encompassing emerging technologies as well as actual full scale operations Examples discussed include landfarming biopiling composting phytoremediation and mycoremediation Each technology is explored for its utility and capability to provide desired treatment goals Advantages and limitations of each technology are discussed The concept of natural attenuation is also critically evaluated since in some cases where time to remediation is not a significant factor it may be an alternative to active bioremediation operations

Twenty Years of Research and Development on Soil Pollution and Remediation in China Yongming Luo, Chen Tu, 2018-01-17 This book reviews the progresses and achievements made in the past 20 years of research on soil pollution and remediation in China and presents 50 review and research articles from all over China including Hong Kong and Taiwan The authors include scientists engineers entrepreneurs and managers from 26 universities 18 institutes 4 leading enterprises and 2 government environmental protection departments The contents cover fundamental research on soil pollution and remediation technical development project demonstration policy and governance The polluted soil site types include farmland industrial sites mining areas and oilfields with heavy metals cadmium arsenic copper chromium mercury lead zinc nickel etc organic pollutants PAHs PCBs organochlorine pesticides phthalate esters halogenated hydrocarbons etc and metal organic mixed pollutants The remediation techniques mainly include physical and chemical remediation thermal desorption soil vapor extraction in situ advanced chemical oxidation solidification and stabilization phytoremediation phytostabilization phytoextraction by hyperaccumulators phyto prevention by low accumulation plants bioremediation microbial adsorption and immobilization microbial degradation microbe enhanced phytoremediation and combined remediation merging multiple technologies The governance and policy section mainly explores laws and regulations criteria and standards financial guarantees and the industrial market for soil environment and

pollution prevention *Remediation Engineering of Contaminated Soils* Donald L. Wise, 2000-07-25 Offers thorough coverage of the remediation of soils contaminated by hazardous wastes including materials analytical techniques cleanup design and methodology characterization of geomedia monitoring of contaminants in the subsurface and waste containment Cites specific case studies in hydrocarbon remediation that offer a concise overview of possible technological approaches

Soil and Sediment Remediation Piet Lens, T. Grotenhuis, G. Malina, H. Tabak, 2005-09-30 Soil and Sediment Remediation discusses in detail a whole set of remediative technologies currently available to minimise their impact Technologies for the treatment of soils and sediments in situ landfarming bioscreens bioventing nutrient injection phytoremediation and ex situ landfarming bio heap treatment soil suspension reactor will be discussed The microbiological process technological and socio economical aspects of these technologies will be addressed Special attention will be given to novel biotechnological processes that utilise sulfur cycle conversions e g sulfur and heavy metal removal from soils Also the potential of phytoremediation will be highlighted In addition treatment schemes for the clean up of polluted megasites e g harbours and Manufactured Gaswork Plants MGP will be elaborated The aim of Soil and Sediment Remediation is to introduce the reader in the biogeochemical characteristics of soil and sediments new techniques to study soil sediment processes molecular probes microelectrodes NMR clean up technologies for soils polluted with organic PAH NAPL solvents or inorganic heavy metals pollutants preventative and remediative strategies and technologies available in environmental engineering novel process applications and bioreactor designs for bioremediation the impact of soil pollution on society and its economic importance **Bioremediation of Soils Contaminated with Aromatic Compounds** Hermann J. Heipieper, 2007-03-29

Environmental biotechnology which was in its infancy in the early 80 s has evolved thanks to the revolution brought about by molecular biology Multiple successes in the biological cleanup of civil and industrial wastewater and of hydrocarbon soil pollution demonstrate the vast power of clean technologies In addition the buildup of information on the activities of microorganisms as catalysts in all sorts of natural industrial and animal environments has flourished There is a continuing realization of the critical role of microbial processes in biological industrial and geological systems Since environmental biotechnology has matured it is ready to tackle bigger challenges the scaling up of many bioremediation systems still in progress the search for novel biocatalysts for industrial applications the continuing effort against common human life threatening processes such as antibiotic resistance the accumulation of hormone mimicking substances endocrine disrupters the deposition of air borne pesticides in the environment and the degradation of recalcitrant contaminants These endeavors will help prevent the contamination of food chains protect human life and allow for human activity and economic development that do not compromise environmental sustainability This volume includes the key lectures and participants contributions delivered at the NATO funded Advanced Research Workshop NATO ARW No 980838 Bioremediation of Soils Contaminated with Aromatic Compounds Effects of Rhizosphere Bioavailability Gene Regulation and Stress Adaptation

held in Tartu Estonia from the 1 to the 3 of July 2004 and attended by participants from 15 countries

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