

Landfill Leachate Treatment Laboratory Studies Removal Of Refractory Pollutants From Landfill Leachate Using Advanced Oxidation Process And Activated Carbon Adsorption

This book presents new and significant research results on water resources which are sources of water that are useful or potentially useful to humans. They are important because they are needed for life to exist. Many uses of water include agricultural, industrial, household, recreational and environmental activities. Virtually all of these human uses require fresh water. Only 2.7 per cent of water on the Earth is fresh water, and over two thirds of this is frozen in glaciers and polar ice caps, leaving only 0.007 per cent available for human use. Fresh water is a renewable resource, yet the world's supply of clean, fresh water is steadily decreasing. Water demand already exceeds supply in many parts of the world, and as world population continues to rise at an unprecedented rate, many more areas are expected to experience this imbalance in the near future. The framework for allocating water resources to water users (where such a framework exists) is known as water rights.

Advances in Energy Equipment Science and Engineering contains selected papers from the 2015 International Conference on Energy Equipment Science and Engineering (ICEESE 2015, Guangzhou, China, 30–31 May 2015). The topics covered include:– Advanced design technology– Energy and chemical engineering– Energy and environmental engineering– Energy scien

The treatment of contaminated soil is a permanently relevant subject for ensuring the quality of the environment. A wide variety of soils contaminated with a broad range of harmful chemical compounds all around the the world, call for many different treatment strategies. Research activities focus on affordable methods offering the greatest possible effect, whilst limiting the potential side effects. This book sums up the research activities of Research Centre 188 which has cooperated with the Technical University of Hamburg–Harburg, the University of Hamburg and GKSS in Geesthacht over the last 12 years, thus greatly advancing our knowledge in this field.

Treatment and Disposal of Solid and Hazardous Wastes

Global Prospects

A Compilation of Descriptive Summaries of Intramural and Extramural Research, Development and Demonstration Tasks, July 1, 1972–June 30, 1973

Generation, Control and Treatment

The Scientific Management of Hazardous Wastes

Applications and Effluent Treatment

This book contains a collection of research works focused on the biodegradation of different types of pollutants, both in water and solids. The book is divided in three major sections: A) Biodegradation of organic pollutants in solids and wastewater, B) Biodegradation of complex pollutants, and C) Novel technologies in biodegradation and bioremediation.

In this book, first published in 1983, three independent scientists examine the results of research and development into the environmental aspects of hazardous wastes management. Within a legislative framework, the limits of our scientific knowledge are carefully defined and the ways in which this knowledge is extrapolated and applied are examined. Significant areas of uncertainty are identified and the authors have not been afraid to draw attention to the fallibility of certain interpretations. Landfill science, leachate characteristics, pollutant attenuation and toxicity measurement are reviewed. Alternative technologies such as chemical treatment and incineration are compared. Risk assessment, cost implications and public acceptance are examined. It provides an objective assessment of the scientific and practical issues involved and constitutes a valuable source book for all concerned with hazardous wastes management, planning and regulatory control, pollution prevention and environmental protection.

It is necessary to understand the extent of pollution in the environment in terms of the air, water, and soil in order for both humans and animals to live healthier lives. Poor waste treatment or pollution monitoring can lead to massive environmental issues, such as diminishing valuable resources, and cause a significant negative impact on society. Solutions, such as reuse of waste and sustainable waste management, must be explored to prevent these adverse effects. The Handbook of Research on Resource Management for Pollution and Waste Treatment is a collection of innovative research that examines waste and pollution treatment methods that can be adopted at local and international levels and examines appropriate resource management strategies for environmentally related issues. Featuring coverage on a wide range of topics such as soil washing, bioremediation, and runoff handling, this book is ideally designed for environmentalists, engineers, waste management professionals, natural resource regulators, environmental policymakers, scientists, academicians, researchers, and students seeking current research on viable resource management methods for the regeneration of their immediate environment.

Science and Engineering

Sanitary Landfilling: Process, Technology and Environmental Impact

Proceedings of the Sixth Annual Research Symposium at Chicago, Illinois, March 17–20, 1980

Solid and Hazardous Waste Research Division, Fifth Annual Research Symposium

Microbiology of Landfill Sites

Annual Report

Completely revised and updated, Treatment Wetlands, Second Edition is still the most comprehensive resource available for the planning, design, and operation of wetland treatment systems. The book addresses the design, construction, and operation of wetlands for water pollution control. It presents the best current procedures for sizing these systems, and describing the intrinsic processes that combine to quantify performance. The Second Edition covers: New methods based on the latest research Wastewater characterization and regulatory framework analyses leading to detailed design and economics State-of-the-art procedures for analyzing hydraulics, hydrology, substrates and wetlands biogeochemistry Definition of performance expectations for traditional pollutants such as solids, oxygen demand, nutrients and pathogens, as well as for metals and a wide variety of individual organic and inorganic chemicals Discussion of methods of configuration, construction, and vegetation establishment and startup considerations Ancillary benefits of human use and wildlife habitat Specific examples of numerous applications Extensive reference base of current information The book provides a complete reference that includes: detailed information on wetland ecology, design for consistent performance, construction guidance and operational control through effective monitoring. Case histories of operational wetland treatment systems illustrate the variety of design approaches presented allowing you to tailor them to the needs of your wetlands treatment projects. The sheer amount of information found in Treatment Wetlands, Second Edition makes it the resource you will turn to again and again.

Interest in solid and hazardous waste management is relatively recent, i.e., in the last three decades, and is driven by regulations in most countries. It began with industrial hazardous waste followed by municipal solid waste, and subsequently by many other categories of waste. This book presents numerous examples and case studies of innovative tools, treatment methods and applications in this growing area of research and development. It describes in detail laboratory methods of measuring the biodegradation of specific organic fractions, like floral waste, and also discusses the treatment of yard and food waste by anaerobic digestion and landfill leachate using constructed wetlands. Case studies are provided that show how remote sensing (RS) and GIS were used to develop an integrated solid waste management plan for a city and to evaluate the environmental impacts of stone quarrying activities. The book also features chapters discussing the implications of natural radioactivity in beach placers and their impact on groundwater and other parts of the environment, as well as the twelve principles of green chemistry and their application in the reuse and recycling of solid waste. Moreover, it includes examples of waste to energy, like refuse derived fuel and biofuel generation and an evaluation of their potential, and covers topics such as life cycle assessment as a tool for developing integrated solid waste management systems and an overview of municipal solid waste management rules, illustrating the importance of technological inputs in the development of regulatory frameworks. Written by leading practitioners and scholars in the field, the book enables readers to understand and apply these principles and practices in their endeavours.

The use of trace elements to promote biogas production features prominently on the agenda for many biogas-producing companies. However, the application of the technique is often characterized by trial-and-error methodology due to the ambiguous and scarce basic knowledge on the impact of trace elements in anaerobic biotechnologies under different process conditions. This book describes and defines the broad landscape in the research area of trace elements in anaerobic biotechnologies, from the level of advanced chemistry and single microbial cells, through to engineering and bioreactor technology and to the fate of trace elements in the environment. The book results from the EU COST Action on 'The ecological roles of trace metals in anaerobic biotechnologies'. Trace elements in anaerobic biotechnologies is a critical, exceptionally complex and technical challenge. The challenging chemistry underpinning the availability of trace elements for biological uptake is very poorly understood, despite the importance of trace elements for successful anaerobic operations across the bioeconomy. This book discusses and places a common understanding of this challenge, with a strong focus on technological tools and solutions. The group of contributors brings together chemists with engineers, biologists, environmental scientists and mathematical modellers, as well as industry representatives, to show an up-to-date vision of the fate of trace elements on anaerobic biotechnologies.

Solid Waste Landfilling

Pollution Control Technology for Leachate from Municipal Solid Waste

Handbook of Research on Resource Management for Pollution and Waste Treatment

Advances in Energy Science and Equipment Engineering

Treatment Wetlands, Second Edition

Landfill Bioreactor Design & Operation

Solid Waste Landfilling: Concepts, Processes, Technology provides information on technologies that promote stabilization and minimize environmental impacts in landfills. As the main challenges in waste management are the reduction and proper treatment of waste and the appropriate use of waste streams, the book satisfies the needs of a modern landfill, covering waste pre-treatment, in situ treatment, long-term behavior, closure, aftercare, environmental impact and sustainability. It is written for practitioners who need specific information on landfill construction and operation, but is also ideal for those concerned about the possible return of these sites to landscapes and their subsequent uses for future generations. Includes input by international contributors from a vast number of disciplines Provides worldwide approaches and technologies Showcases the interdisciplinary nature of the topic Focuses on sustainability, covering the lifecycle of landfills under the concept of minimizing environmental impact Presents knowledge of the legal framework and economic aspects of landfilling

A landfill is a site for the disposal of waste materials by burial. Historically, landfills have been the most common methods of organised waste disposal and remain so in many places around the world. Landfills may include internal waste disposal sites as well as sites used by many producers. Many landfills are also used for other waste management purposes, such as the temporary storage, consolidation and transfer, or processing of waste material (sorting, treatment, or recycling). A landfill also may refer to ground that has been filled in with soil and rocks instead of waste materials, so that it can be used for a specific purpose, such as for building houses. Unless they are stabilised, these areas may experience severe shaking or liquefaction of the ground in a large earthquake. This book presents new research in a field which is demanding and beginning to receive society's attention.

FROM THE PREFACE Sanitary landfills are the most widely utilized method of solid waste disposal around the world. With increased use and public awareness of this method of disposal, there is much concern with respect to the pollution potential of the landfill leachate. Depending on the composition and extent of decomposition of the refuse and hydrological factors, the leachate may become highly contaminated. As leachate migrates away from a landfill, it may cause serious pollution to the groundwater aquifer as well as adjacent surface waters. There is growing concern about surface and groundwater pollution from leachate.

Better understanding and prediction of leachate generation, containment, and treatment are needed. This book contains a literature review of various methodologies that have been developed for prediction, generation, characterization, containment, control, and treatment of leachate from sanitary landfills. The contents of this book are divided into nine chapters. Each chapter contains theory and definition of the important design parameters, literature review, example calculations, and references. Chapter 1 is devoted to basic facts of solid waste problems current status and future trends towards waste reduction and recycling. Chapter 2 provides a general overview of municipal solid waste generation, collection, transport, resource recovery and reuse, and disposal options. The current status of sanitary landfill design and operation, problems associated with the landfilling, and future trends are presented in Chapter 3. Methods of enhanced stabilization, recycling landfill space, methane recovery, and above grade landfilling, and closure and post closure care of completed landfills are also discussed in detail. Chapter 4 provides a general overview of Subtitle D regulations and its impact upon sanitary landfilling practices. Chapter 5 is devoted entirely to moisture routing and leachate generation mechanisms. Examples of calculation procedure for determining the leachate quantity produced at a landfill are presented. Chapter 6 is devoted to chemical characterization of leachate that changes over the life of the fill. Both theoretical and experimental results are provided to estimate the leachate quality. Chapter 7 provides leachate attenuation processes and mechanisms. Chapter 8 is devoted to leachate collection systems. Natural soil sealants, admixed materials and synthetic membranes, their effectiveness, and methods of installation and economics are fully discussed. Chapter 9 provides a detailed review of leachate treatment methodology. Kinetic coefficients and treatment plant design considerations are summarized for the sole purpose of assisting consultants to design leachate treatment facilities. Leachate treatment case histories and numerous process trains are presented for treating leachate from young landfill. The book also describes how the process train can be changed effectively as leachate quality changes with time.

Bioremediation Field Experience

New Advances and Technologies

Department of Housing and Urban Development--Independent Agencies Appropriations for 1979

Water Pollution Research Journal of Canada

Active Research Tasks Report, National Environmental Research Center, Cincinnati, Ohio

Disposal of Hazardous Waste

Using biotechnology to help control landfill processes can mitigate costs, shorten the time needed to process solid waste, and ease the typical ecological damage to the land being used. This first-of-its-kind book provides regulators, designers, landfill owners, and operators with information that supports the utility of landfill bioreactors and provides design and operating criteria essential for the successful application of this technology. It pulls together laboratory, pilot, and full-scale experiences into one concise guide to designing and running municipal landfills as bioreactors. Landfill Bioreactor Design and Operation covers the history and background of landfill technology, research studies of actual bioreactor landfills, expected leachate and gas yields, specific design criteria, operation guidelines, and reuse of landfill sites to avoid having to establish new sites. For anyone looking for an alternative to large, wasteful landfill sites, this book provides a practical alternative to the problem.

Constructed wetlands are proving to be the best natural treatment system for landfill leachates. Most of the contaminants in landfill leachates are degraded in treatment wetlands. Potential for long-term sustainability and significant cost savings are attractive features of this eco-technology. Documentation of the experience in this use of constructed wetlands has been limited. Constructed Wetlands for the Treatment of Landfill Leachates is the first compilation of the results of research from North America and Europe. Originally presented at an international symposium, this collection of papers offers the most recent research findings from the leading researchers in this new and innovative natural treatment system. Specific issues addressed in the text include: leachate characteristics, and the potential for treatability by constructed wetlands wetland treatment, processes and transformation use of constructed wetlands in cold climatic conditions assessment of the tolerance of wetland plants to the toxicity of leachates role of plants in the treatments of leachates integrated wetland systems performance of different wetland treatment systems cost comparisons of wetland technology vs. traditional treatment technologies The potential for environmental contamination due to leachates from landfills is increasing, and there is an urgent need to find ways and means to treat leachates in a sustainable way Constructed Wetlands for the Treatment of Landfill Leachates will provide an invaluable source of information on the subject for scientists, engineers, practitioners, policy makers, and regulatory officials.

Bioremediation focuses on the application of practical, state-of-the-art technology used for full-scale site remediation over a wide range of environmental settings. The book includes an up-to-date overview of the environmental regulations critical to the success of biological treatment in the field as well as the market opportunities presented for implementing bioremediation based on those regulations. Crucial factors to consider prior to selecting bioremediation for site remediation are also discussed.

Proceedings of the International Conference on Energy Equipment Science and Engineering, (ICEESE 2015), May 30-31, 2015, Guangzhou, China

Report of Progress - MERL.

New Topics in Water Resources Research and Management

Solid and Hazardous Waste Management

Practical Techniques for Groundwater & Soil Remediation

Report summaries

Practical Techniques for Groundwater and Soil Remediation is a compilation of articles by the author that were printed in the National Ground Water Association (NGWA) magazine Groundwater Monitoring Review. The book provides valuable data, emphasizes the practical aspects of remediation, presents results from actual remediation programs, and helps readers prepare remediation strategies. The book also includes detailed technical data on treatment equipment performance and the costs associated with their design and operation. A unique feature of the book is that it also contains data from treatment systems that did not work. Practical Techniques for Groundwater and Soil Remediation is a "must have" source of invaluable data and tips that will be useful for all groundwater and soil remediation professionals.

The world ' s fresh water supplies are dwindling rapidly—even wastewater is now considered an asset. By 2025, most of the world's population will be facing serious water stresses and shortages. Aquananotechnology: Global Prospects breaks new ground with its informative and innovative introduction of the application of nanotechnology to the remediation of contaminated water for drinking and industrial use. It provides a comprehensive overview, from a global perspective, of the latest research and developments in the use of nanotechnology for water purification and desalination methods. The book also covers approaches to remediation such as high surface area nanoscale media for adsorption of toxic species, UV treatment of pathogens, and regeneration of saturated media with applications in municipal water supplies, produced water from fracking, ballast water, and more. It also discusses membranes, desalination, sensing, engineered polymers, magnetic nanomaterials, electrospun nanofibers, photocatalysis, endocrine disruptors, and A113 clusters. It explores physics-based phenomena such as subcritical water and cavitation-induced sonoluminescence, and fog harvesting. With contributions from experts in developed and developing countries, including those with severe contamination, such as China, India, and Pakistan, the book ' s content spans a wide range of the subject areas that fall under the aquananotechnology banner, either squarely or tangentially. The book strongly emphasizes sorption media, with broad application to a myriad of contaminants—both geogenic and anthropogenic—keeping in mind that it is not enough for water to be potable, it must also be palatable.

Water and Wastewater Treatment Technologies theme is a component of Encyclopedia of Water Sciences, Engineering and Technology Resources in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias. The Theme on Water and Wastewater Treatment Technologies deals, in three volumes, and covers several topics, with several issues of great relevance to our world such as: Urban Wastewater Treatment; Characteristics of Effluent Organic Matter in Wastewater; Filtration Technologies in wastewater treatment; Air Stripping in Industrial Wastewater Treatment; Dissolved air flotation in industrial wastewater treatment; Membrane Technology for Organic Removal in Wastewater; Adsorption and Biological Filtration in Wastewater Treatment; Physico-chemical processes for Organic removal from wastewater effluent; Deep Bed Filtration: Modelling Theory And Practice ; Specific options in biological wastewater treatment for reclamation and reuse ; Biological Phosphorus Removal Processes For Wastewater Treatment ; Sequencing Batch Reactors: Principles, Design/Operation And Case Studies ; Wastewater stabilization ponds (WSP)for wastewater treatment; Treatment of industrial wastewater by membrane bioreactors; Stormwater treatment technologies; Sludge Treatment Technologies ; Wastewater Treatment Technology For Tanning Industry; Palm Oil And Palm Waste Potential In Indonesia ; Recirculating Aquaculture Systems – A Review ; Upflow anaerobic sludge blanket (UASB)reactor in wastewater treatment; Applied Technologies In Municipal Solid Waste Landfill Leachate Treatment; Water Mining: Planning and Implementation Issues for a successful project; Assessment methodologies for water reuse scheme and technology; Nanotechnology for Wastewater Treatment. These three volumes are aimed at the following five major target audiences: University and College students Educators, Professional practitioners, Research personnel and Policy analysts, Managers, and Decision makers and NGOs.

Constructed Wetlands for the Treatment of Landfill Leachates

Biofuels Technical Information Guide

Landfills, incineration Plants, and Transfer Stations

Treatment of Contaminated Soil

Waste Water Treatment Technologies - Volume II

Active Research Tasks Report

Treatment and Disposal of Solid and Hazardous WastesSpringer Nature

This book presents new application processes in the context of anaerobic digestion (AD), such as phosphorus recovery, microbial fuel cells (MFCs), and seaweed digestion. In addition, it introduces a new technique for the modeling and optimization of AD processes. Chapters 1 and 2 review AD as a technique for converting a range of organic wastes into biogas, while chapters 3 and 4 review AD for the production of digested liquor. Chapters 4 and 5 focus on new techniques for modeling and optimizing AD. Chapters 6 and 7 then describe the state of the art in AD effluent treatment. The book's final three chapters focus on more recent developments, including microbial fuel cells (MFCs) (Chapter 8), seaweed production (Chapter 9), and enzyme technologies (Chapter 10).

Pollution Control Technology for Leachate from Municipal Solid Waste explores the physical, chemical and biological factors that produce leachate and technological solutions for its control. The book introduces the integrated and pre-treatment leachate treatment processes that are necessary to deal with the variations of pollutants in leachate. Real world case-studies are included. The book also discusses the design and construction of municipal solid waste incinerator power plants. This book will be of particular interest to Civil, Chemical and Environmental Engineers, but will also be ideal for Environmental Scientists. Provides quantity and quality prediction models, along with properties of effluent concentrated leachate liquid including ammonia nitrogen removal using struvite precipitation, crystal variation and microstructure of the struvite, etc. Covers leachate treatment engineering processes for design and construction of treatment plants

Sanitary Landfill Leachate

National Environmental Research Center, Cincinnati, Ohio; A Compilation of Descriptive Summaries of Intramural and Extramural Research, Development and Demonstration Tasks, July 1, 1972 - June 30, 1973

Fundamentals, Analysis, Applications

Biodegradation and Bioremediation of Polluted Systems

Anaerobic Digestion Processes

Municipal Solid Waste, Introduction, March 26, 27, 28, 1979, Orlando, Florida

Sanitary Landfilling: Process, Technology, and Environmental Impact is a collection of essays that discusses the role of landfilling in solid waste management. The book presents the approach in the principles of landfilling and the basic biochemical processes in landfills. The text describes the landfill hydrology and leachate production. It discusses the design and construction of liner systems and the surface capping with natural liner materials. The section that follows describes the soil and refuse stability in sanitary landfills. The book will provide valuable insights for engineers, environmentalists, students, and researchers in the field of solid waste management.

*By combining integrated solid waste management with the traditional coverage of landfills, this new edition offers the first comprehensive guide to managing the entire solid waste cycle, from collection, to recycling, to eventual disposal. * Includes new material on source reduction, recycling, composting, contamination soil remediation, incineration, and medical waste management. * Presents up-to-date chapters on bioreactor landfills, wetland mitigation, and landfill remediation. * Offers comprehensive coverage of the role of geotechnical engineering in a wide variety of environmental issues.*

This book was originally published in 1990 and was the first text to consider the definitive fundamental science of landfill biotechnology. Since then, major research initiatives, particularly in the U.K. and South Africa, have resulted in considerable advancement in our knowledge of landfill microbiology. The Second Edition details this progress. Text considers the latest findings in landfill leachate treatment, co-disposal and fundamental microbiology. It brings together the expertise of the immediate complementary, but often disparate disciplines of soil science, environmental engineering, applied mathematics, and land reclamation and focuses on the common goal of the scientific design and management of landfill sites. The book also includes effective laboratory models and selected approaches.

Stabilization/solidification of CERCLA and RCRA Wastes

Design of Landfills and Integrated Solid Waste Management

Landfill Research Focus

Physical Tests, Chemical Testing Procedures, Technology Screening, and Field Activities

Trace Elements in Anaerobic Biotechnologies

Selected Water Resources Abstracts

Solid and Hazardous Waste Management: Science and Engineering presents the latest on the rapid increase in volume and types of solid and hazardous wastes that have resulted from economic growth, urbanization, and industrialization and how they have challenged national and local governments to ensure effective and sustainable management of these waste products. The book offers universal coverage of the technologies used for the management and disposal of waste products, such as plastic waste, bio-medical wastes, hazardous wastes, and e-wastes. Covers both traditional and new technologies for identifying and categorizing the source and nature of the waste Provides methods for the safe disposal of municipal solid wastes, plastic waste, bio-medical wastes, hazardous wastes, and e-wastes Presents technologies that can be used for transportation and processing (including resource recovery) of the waste Discusses reclamation, reuse, and recovery of energy from MSW

Description of Risk Reduction Engineering Laboratory Test and Evaluation Facilities

Hearings Before a Subcommittee of the Committee on Appropriations, House of Representatives, Ninety-fifth Congress, Second Session

Residual Waste Management Research and Planning Projects, September 1975

Aquananotechnology

A Product of the Solar Technical Information Program