Biological Treatment Of Landfill Leachate | 21f7a16534eb687a2d5f65c1abd937f7

Wastewater Treatment EngineeringAn aerobic Digestion ProcessTreatment of Landfill Leachate Using Rotatory Biological ContractorBiodegradation and Biotreatment of Polluted SystemsSanitary Landfilling: Process, Technology and Environmental ImpactMaterials in Environmental EngineeringBiological Treatment of Hazardous WasteLandfill Leachate Using An Anaerobic/aerobic ProcessChemical and Biological Treatment of Mature Landfill LeachateBiological Treatment of Landfill LeachateApplied Water Science, Volume 2An investigation into biological treatment systems for landfill leachateAdvanced Oxidation Processes (AOPs) in Water and Wastewater TreatmentMembrane Bioreactors for Wastewater TreatmentPractical Techniques for Groundwater & Soil RemediationPerspectives on Biological Treatment of Sanitary Landfill Leachate/Anaerobic Treatment of Landfill Leachate by an Upflow Two-Stage Biological FilterConstructed Wetlands for the Treatment of Landfill Leachate/Biological Treatment of Sanitary Landfill Leachate/Control and Treatment of Landfill Leachate/Sewage Disposal and Landfill Leachate Proceedings of the 44th Industrial Waste Conference May 1989, Purdue University/Treatment of Landfill Leachate at Army FacilitiesWaste Management: Concepts, Methodologies, Tools, and ApplicationsThe Role of Algae in the Biological Treatment of Sanitary Landfill Leachate/Landfilling of Waste: LeachatePollution Control Technology for Leachate from Municipal Solid WasteAdaptive Process of Biological Treatment Of Landfill LeachateUsing Sequencing Batch ReactorHandbook of Research on Resource Management for Pollution and Waste TreatmentBiological-chemical Treatment of Landfill LeachateProcess Design for Nitrifying Contaminated Landfill Leachate/Design and Construction of Treatment Systems for Municipal Waste DischargesWastewater Engineering: Advanced Wastewater Treatment SystemsEffective Industrial Marine Processes: Benefits and Opportunities/landfill leachate treatment - with particular reference to an aerobic biological treatment systemSanitary Landfill LeachateAssessment of Dynamic Membrane Filtration for Biological Treatment of Old Landfill LeachateExploration of Biological Treatment Systems for the Removal of Persistent Landfill Leachate Contaminants and NanoparticlesNew research-case histories and operating data on every conceivable facet of today’s big problem are detailed in the latest Purdue Book-with unparalleled appropriate, usable information and data for your current industrial waste problems from the May 1999 Conference on Biological Treatment of Landfill Leachate, which produced a variety of potentially hazardous inorganic and organic compounds. It can be treated by different physico-chemical and biological methods and their combinations. The composition and characteristics of landfill leachate are presented from the aspect of biotreatability. The treatment with activated sludge, mainly consisting of bacterial cultures under aerobic and anaerobic conditions in various reactor systems, is explained, including an extensive literature review. The potential of fungi and their extracellular enzymes for treatment of municipal landfill leachates is also presented, with a detailed review of the leachate landfill treatment studies. The future perspectives of biological treatment are also discussed. The integrity of groundwater sources is constantly threatened by contaminant plumes generated by accidental gasoline leakages and leachates escaping landfills. These plumes are of concern due to their proven toxicity to living organisms. Aromatic and chlorinated hydrocarbons, volatile fatty acids, phenols, and ammonia have been found in these leachates. In addition, benzene, toluene, and xylene (BTEX) are major components of gasoline. The lack of oxygen in groundwater makes anaerobic bioremediation desired for the treatment of groundwater contaminated with BTEX and chlorinated solvents. With the objective of finding microorganisms capable of BTX and cis-dichloroethylene (cis-DCE) degradation under anaerobic conditions for their use in permeable reactive barriers, different inocula were tested in batch experiments. Toluene was rapidly degraded by several inocula in the presence of alternative electron acceptors. Benzene and m-xylene were eliminated by few of the inocula tested after incubation periods ranging from 244 to 716 days. cis-DCE was highly recalcitrant as no degradation was observed over 440 days. Biological processes have been successfully applied for the treatment of landfill leachates as well. In an effort to provide an effective economical alternative, a sequential batch reactor system was evaluated in a synthetic media simulating the organic and carbon content of real leachates. The removal of the organic content reached 98% in an upflow anaerobic sludge blanket reactor, and resulted in the formation of methane. During the aerobic process, in an innovative down flow sponge reactor, ammonia was highly transformed to nitrate and nitrate. Complete nitrification was eventually achieved. The capacity of current wastewater treatment plants for removing nanoparticles has been questioned during the last years. Nanoparticles have been incorporated into numerous applications and their presence in wastewater seems to be inevitable. A laboratory-scale secondary treatment system was set in to study the behavior of cerium and aluminum oxide nanoparticles during wastewater treatment. The nanoparticles were highly removed, suggesting that secondary treatment is suitable for their removal. The elimination of these nanoparticles was influenced by the pH and organic content of the wastewater. Aluminum nanoparticles proved to be toxic; however the performance of the system for eliminating the organic content was recovered over time. 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 heather 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 waaste 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 managers, microbial ecologists, policy makers, and environmental engineers. Constructed wetlands are considered to be the best natural treatment system for landfill leachates. Most of the contaminants in landfill leachates are degraded in treated wastewater. 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 wetland treatment systems. The handbook details the wetland systems most advantageous for treating leachate and highlights the key parameters required for constructing and implementing successful constructed wetland systems. The handbook is an excellent publication for environmental engineers, scientists, students, and researchers seeking to find solutions to the environmental hazards of waste disposal. This innovative publication contributes to filling in many of the gaps that exist in the current literature available on leachate treatment. Waste authorities, solid waste management companies, landfill operators, legislators, environmentalists, graduate students, and researchers will find this publication beneficial to their professional and academic interests in the area of waste treatment and management. 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. This contains selected and peer-reviewed papers from the 4th Annual International Conference on Material Science and Environmental Engineering (MSEE), December 16-18 2016, in Chengdu, China. Interactions of building materials, biomaterials, energy materials and nanomaterials with surrounding environment are discussed. With abundant case studies, it is of interests to researchers, engineers, and environmental engineers. This book covers the subjects of MBE, MEMS, micro-devices, MEMS, micromachines, nanotechnology, nanoscience, and nanotechnology in environmental engineering. This book is suitable for scientists, engineers, students, and researchers interested in environmental engineering and environmental science. Impact on Materials in Environmental Engineering is a scientific book that contains the latest research and developments in environmental engineering. This book explores the latest advancements and challenges in the field of environmental engineering, focusing on the application of materials in the treatment of environmental pollutants, including organic and inorganic compounds. The book is divided into four main sections: Materials for Environmental Engineering, Materials for Water and Wastewater Treatment, Materials for Air Pollution Control, and Materials for Soil and Solid Waste Management. Each section covers various aspects of environmental engineering, highlighting the role of materials in addressing environmental challenges. From the perspective of materials science, the book discusses the design, synthesis, and properties of materials used in environmental engineering, emphasizing their role in improving the performance and efficiency of environmental treatment systems. The book is intended for researchers, practitioners, and students in the fields of environmental engineering, materials science, and related disciplines. The book aims to provide a comprehensive overview of the current trends and future directions in the application of materials in environmental engineering, highlighting the importance of interdisciplinary approaches in addressing complex environmental issues.
economic activities if not treated properly. There is no doubt that the rapid progress in improving the water quality and management has been motivated by the latest developments in green chemistry. Over the past decades, sources of water pollutants and the conventional methods used for the treatment of industrial wastewater have been explored. Water quality and its adequate availability have been a matter of concern worldwide particularly in developing countries. According to a World Health Organization (WHO) report, more than 80% of diseases are owing to the consumption of contaminated water. Heavy metals are highly toxic that are a potential threat for water, soil, and air, their consumption in higher concentrations provided hazardous outcomes. The water quality is usually measured keeping in mind chemical, physical, and biological, and radiological standards. The discharge of the effluent by industries contains heavy metals, hazardous chemicals, and a high amount of organic and inorganic impurities those can contaminate the water environment, and hence, our primary responsibility to maintain the water quality in our respective counties. This book provides understanding, occurrence, identification, toxicity effects and control of water pollutants in aquatic environment using green chemistry protocols. It focuses on water remediation properties and processes including industry-scale water remediation technologies. This book covers recent literature on remediation technologies in preventing water contamination and its treatment. Chapters in this book discuss remediation of emerging pollutants using nanomaterials, polymers, advanced oxidation processes, membranes, and microbial bioremediation, etc. It also includes discussion of other techniques. It is a unique reference guide for graduate students, faculties, researchers and industrialists working in the area of water science, environmental science, analytical chemistry, and chemical engineering. FROM THE PREFACE Sanitary landfills are the most widely utilized method of solid waste disposal around the world. Among many other uses and public awareness of this method, there is much concern with respect to the pollution potential of the landfill leachate. Depending on the composition and extent of the release 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 about the continuous discharge of the leachate pollution from landfills that have been operational for many years, its 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 ground 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 control in the generation mechanism of methane. Most of the wastewater treatment is based on the biological treatment processes, including ion exchange, neutralization, adsorption, and disinfection. Additionally, this book elucidates and illustrates the wastewater treatment plants in terms of plant sizing, plant layout, design, and plant location. Cutting-edge topics include wet air oxidation of aqueous wastes, biodegradation of nitroaromatic compounds, biological treatment of sanitary landfill leachate, bacterial strains for the bioremediation of olive mill wastewater, gelation of arabinofuranosyls from maize wastewater, and modeling wastewater evolution. Pollution Control Technology for Leachate from Municipal Solid Waste explores the physical, chemical and biological factors that produce leachate and biological factors that control and leachate treatment engineering systems. For this book the introduction includes 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 provided along with treatment engineering process design and the 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 Includes physical and chemical treatment processes for leachate, 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. As the global population grows and many developing countries modernize, the importance of water supply and wastewater treatment becomes a much greater factor in the welfare of nations. Clearly, in today's world the competition for water resources coupled with the consequences of wastewater discharges creates additional pressure on treatment systems. Recently, researchers focus on wastewater treatment by difference methods with minimal cost and maximum efficiency. This volume of the Wastewater Engineering: Advanced Wastewater Treatment Systems is a selection of topics related to physical-chemical and biological processes with an emphasis on their industrial applications. It gives an overview of various aspects in wastewater treatment methods including such biological, bioremediation, electrochemical, membrane and physical-chemical applications. Experts in the area of environmental sciences from diverse institutions worldwide have contributed to this book, which should prove to be useful to students, teachers, and researchers in the disciplines of wastewater engineering, chemical engineering, environmental engineering, and biotechnology. We gratefully acknowledge the cooperation and support of all the contributors and hope that this book will provide a useful reference document for improved sustainability of management practices that will safeguard the environment for future generations. Waste Management: Concepts, Methodologies, Tools, and Applications is a vital reference source that examines the management of different types of wastes and provides relevant theoretical frameworks about new waste management technologies for the control of air, water, and soil pollution. Highlighting a range of topics such as contaminant removal, landfill treatment, and recycling, this multi-volume book is ideally designed for environmental engineers, waste authorities, solid waste management companies, wastewater operators, legislators, environmentalists, policymakers, government officials, academics, researchers, and students. The aim of the Technical Advisory Committee, in putting the book together, was to enable the reader to gain a deeper understanding of the theoretical and effective at an industrial scale. As Professor Strathmann reveals, the market for process equipment built around membranes is now worth about $5x10^13 annually, and it seemed important to review this technology, and to point the direction of future technical advances. All but the most critical reader should find some items of interest. The Committee would admit to not fulfilling all of their aims, although those delegates who attended the meeting in Edinburgh judged it a success. In the event it provided representative examples of processes from the food and beverage industry, from water treatment, and from the chemical industry, of which the removal of alcohol from fermented beverages, shipboard desalination and solvent recovery or stream are three. The major uses of charged membranes and sterile processes are not covered, nor is the largest market, $1x10^13 annually, for artificial kidney dialysis. However, it is interesting to see artificial kidney dialysis included in the book under conditions where it has a long-term beneficial impact on the lives of those to whose performance and enhancement they are critical. The advantages inherent in anaerobic submerged filter system coupled with the amenability of this process in its application to leachate stabilization suggests that it is worthy of consideration as a basis for full scale leachate treatment facilities. The AnaSBB is well suited to handling the large organic loads that often characterize leachates, particularly leachates that are discharged from young landfills. More than 96% COD and BOD can be removed from a high-strength acidic leachate water, according to the present study, if the organic loading is controlled in excess of 7.5 lb COD/1000 cu ft/day or 56.4. Metal removal efficiency is high when the influent concentrations of Fe(III) and Zn(II) are less than 153.5 mg/l and 10.4 mg/l, respectively. In addition to the efficient treatment of the COD, BOD, and TOC the anaerobic submerged filter system removes NH4-N with the sludge return. In order to improve biodegradability, the landfill leachate was subjected to pretreatment by chemical coagulation-floculation followed by air stripping of ammonia. The pretreated leachate was subjected to aerobic biological treatment in an aeration tank by fed-batch operation. In order to improve the extent of COD and ammonium nitrogen removals, pretreated leachate was subjected to adsorbent supplemented biological treatment in an aeration tank operated in fed-batch mode by using powdered zeolite (PZ) and powdered activated carbon (PAC) as adsorbents. Chemical oxidation was used to further reduce COD content of landfill leachate after PAC adsorbed biological oxidation. Three oxidizing agents (H2O2, Fenton's reagent, NaOCl) were used in different concentrations for chemical oxidation treatment. Three oxidizing agents (H2O2, Fenton's reagent, NaOCl) were used in different concentrations for chemical oxidation treatment. Three oxidizing agents (H2O2, Fenton's reagent, NaOCl) were used in different concentrations for chemical oxidation treatment.
students, and researchers in the field of solid waste management. Population growth and industrial development have increased the amount of wastewater generated by urban areas, and one of the major problems facing industrialized nations is the contamination of the environment by hazardous chemicals. Therefore, to meet the standards, suitable treatment alternatives should be established. Advanced Oxidation Processes (AOPs) in Water and Wastewater Treatment is a pivotal reference source that provides vital research on the current, green, and advanced technologies for wastewater treatment. While highlighting topics such as groundwater treatment, environmental legislation, and oxidation processes, this publication explores the contamination of environments by hazardous chemicals as well as the methods of decontamination and the reduction of negative effects on the environment. This book is a vital reference source for environmental engineers, waste authorities, solid waste management companies, landfill operators, legislators, environmentalists, and academicians seeking current research on achieving sustainable management for wastewater treatment. 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.