

## *Aerobic Biological Treatment Of Landfill Leachate Wit Press*

***This title includes a number of Open Access chapters. This new book provides a multiperspective look at research into many elements of remediating environmental hazards connected to sewage and landfill leachate. Sewage and landfill leachate treatments include various processes that are used to manage and dispose of the liquid portions of solid waste. Untreated leachate and sewage are hazards to the environment if they enter the water system. The goal of treatment is to reduce the contaminating load to the point that leachate and sewage liquids may be safely released into groundwater, streams, lakes, and the ocean. Around the world, however, huge volumes of contaminated water from sewage and landfill leachate is still pumped directly into water systems, especially in the world's developing nations. Aside from the damage to marine environments and fisheries that this causes, it also jeopardizes the world's vulnerable water resources. This compendium volume explores effective sewage management, which is essential for nutrient recycling and for maintaining ecosystem integrity. It looks at a range of technologies that are available for the treatment of sewage and landfill leachate. The editor, himself a respected and experienced researcher in this field, includes chapters that cover biological treatments, reverse osmosis, and chemical-physical processes. This volume offers important research that will help us both assess our existing treatment facilities, as well as build better, more effective ones for the future.***

***The past 30 years have seen the emergence of a growing desire worldwide that positive actions be taken to restore and protect the environment from the degrading effects of all forms of pollution—air, water, soil, and noise. Because pollution is a direct or indirect consequence of waste, the seemingly idealistic demand for “zero discharge” can be construed as an unrealistic demand for zero waste. However, as long as waste continues to exist, we can only attempt to abate the subsequent pollution by converting it to a less noxious form. Three major questions usually arise when a particular type of pollution has been identified: (1) How serious is the pollution? (2) Is the technology to abate it available? and (3) Do the costs of abatement justify the degree of abatement achieved? This book is one of the volumes of the Handbook of Environmental Engineering series. The principal intention of this series is to help readers formulate answers to the last two questions above. The traditional approach of applying tried-and-true solutions to specific pollution problems has been a major contributing factor to the success of environmental engineering, and has accounted in large measure for the establishment of a “methodology of pollution control.” However, the realization of the ever-increasing complexity and interrelated nature of current environmental problems renders it imperative that intelligent planning of pollution abatement systems be undertaken. Landfilling of waste has increased dramatically over recent years and there have been many examples of landfills which are unacceptable on environmental and health grounds. This is one of a group of international reference books which address this problem, specifically in this case covering the strongly contaminated wastewater developed from landfills.***

***Advanced Biological Treatment Processes***

***Assessment and Remediation of Environmental Hazards***

***Wastewater Engineering: Advanced Wastewater Treatment Systems***

***Wastewater Characteristics, Treatment and Disposal***

***Wastewater Treatment Engineering***

This book provides useful information about bioremediation, phytoremediation, and mycoremediation of wastewater and some aspects of the chemical wastewater treatment including ion exchange, neutralization, adsorption, and disinfection. Additionally, this book elucidates and illustrates the wastewater treatment plants in terms of plant design, and plant location. Cutting-edge topics include wet air oxidation of aqueous wastes, biodegradation of nitroaromatic compounds, biological treatment of landfill leachate, bacterial strains for the bioremediation of olive mill wastewater, gelation of arabinoxylans from maize wastewater, and modeling wastewater evolution.

As the world's population continues to grow and economic conditions continue to improve, more solid and liquid waste is being generated by society. Improper disposal lead to harmful environmental impacts but can also negatively affect human health. To prevent further harm to the world's ecosystems, there is a dire need for sustainable management practices that will safeguard the environment for future generations. Waste Management: Concepts, Methodologies, Tools, and Applications is a vital reference that examines the management of different types of wastes and provides relevant theoretical frameworks about new waste management technologies for the control of a waste. Highlighting a range of topics such as contaminant removal, landfill treatment, and recycling, this multi-volume book is ideally designed for environmental engineers, waste management companies, landfill operators, legislators, environmentalists, policymakers, government officials, academicians, researchers, and students.

Sludge Treatment and Disposal is the sixth volume in the series Biological Wastewater Treatment. The book covers in a clear and informative way the sludge character treatment (thickening, dewatering, stabilisation, pathogens removal) and disposal (land application for agricultural purposes, sanitary landfills, landfarming and other me Environmental and public health issues are also fully described. About the series: The series is based on a highly acclaimed set of best selling textbooks. This internation comprised by six textbooks giving a state-of-the-art presentation of the science and technology of biological wastewater treatment. Other titles in the series are: Vol Ponds; Volume 2: Basic Principles of Wastewater Treatment; Volume 3: Waste Stabilization Ponds; Volume 4: Anaerobic Reactors; Volume 5: Activated Sludge and Aerob Reactors

Biological Treatment of Hazardous Waste Landfill Leachate Using an Anaerobic/aerobic Process

Membrane Bioreactors for Wastewater Treatment

Landfilling of Waste

New Advances and Technologies

Biological Treatment of Industrial Wastewater

Municipal solid waste (MSW) disposal is an ever-increasing problem in many parts of the world, especially in developing countries. To date, landfilling is still the preferred option for the disposal and management of MSW due to its low-cost operation. While this solution is advantageous from a cost perspective, it introduces a high level of potential pollutants which can be detrimental to the local environment. Control and Treatment of Landfill Leachate for Sanitary Waste Disposal presents research-based insights and solutions for the proper management and treatment of landfill leachate. Highlighting relevant topics on emerging technologies and treatment innovations for minimizing 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.

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.

The book covers the subject of membrane bioreactors (MBR) for wastewater treatment, dealing with municipal as well as industrial wastewaters. The book details the 3 types of MBR available and discusses the science behind the technology, their design features, operation, applications, advantages, limitations, performance, current research activities and cost. As the demand for wastewater treatment, recycling and re-use technologies increases, it is envisaged that the membrane separation bioreactor will corner the market. Contents

Membrane Fundamentals Biological Fundamentals Biomass Separation Membrane Bioreactors Membrane Aeration and Extractive Bioreactors Commercial Membrane Bioreactor

Systems Membrane Bioreactor Applications Case Studies

Industrial Wastewater Treatment by Activated Sludge

The Aerobic Treatment of Landfill Leachate Using Rotating Biological Contactors

Adsorptive Biological Treatment Of Landfill Leachate

Generation, Control and Treatment

Waste Water Treatment Technologies - Volume II

*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 pr*

*Landfill leachate treatment - with particular reference to an aerobic biological treatment system* *Biological Treatment of Hazardous Waste Landfill Leachate Using an Anaerobic/aerobic Process* *Wastewater Treatment Engineering* *BoD – Books on Demand*

*Wastewater Characteristics, Treatment and Disposal is the first volume in the series Biological Wastewater Treatment, presenting an integrated view of water quality and wastewater treatment. The book covers the following topics: wastewater characteristics (flow and major constituents) impact of wastewater discharges to rivers and lakes overview of wastewater treatment systems complementary items in planning studies. This book, with its clear and practical approach, lays the foundations for the topics that are analysed in more detail in the other books of the series. About the series: The series is based on a highly acclaimed set of best selling textbooks. This international version is comprised by six textbooks giving a state-of-the-art presentation of the science and technology of biological wastewater treatment. Other titles in the series are: Volume 2: Basic Principles of Wastewater Treatment; Volume 3: Waste Stabilisation Ponds; Volume 4: Anaerobic Reactors; Volume 5: Activated Sludge and Aerobic Biofilm Reactors; Volume 6: Sludge Treatment and Disposal*

*Biological and Chemical Processes*

*Aerobic Granular Sludge*

*Post Treatments of Anaerobically Treated Effluents*

*Constructed Wetlands for the Treatment of Landfill Leachates*

*Design Criteria for Aerobic Treatment of Grease Waste by Filamentous Microorganisms in Activated Sludge*

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.

Aerobic Granular Sludge has recently received growing attention by researchers and technology developers, worldwide. Laboratory studies and preliminary field tests led to the conclusion that granular activated sludge can be readily established and profitably used in activated sludge plants, provided 'correct' process conditions are chosen. But what makes process conditions 'correct'? And what makes granules different from activated sludge flocs? Answers to these question are offered in Aerobic Granular Sludge. Major topics covered in this book include: Reasons and mechanism of aerobic granule formation Structure of the microbial population of aerobic granules Role, composition and physical properties of EPS Diffuse limitation and microbial activity within granules Physio-chemical characteristics Operation and application of granule reactors Scale-up aspects of granular sludge reactors, and case studies Aerobic Granular Sludge provides up-to-date information about a rapidly emerging new technology of biological treatment.

Biological Treatment of Industrial Wastewater presents a comprehensive overview of the latest advances and trends in the use of bioreactors for treating industrial wastewater.

Strategies of Sustainable Solid Waste Management

Concepts, Methodologies, Tools, and Applications

Volume 9

Aerobic Biotreatability Studies on Sanitary Landfill Leachate Wastewater Treatment

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 xylenes (BTX) are major components of gasoline. The lack of oxygen in groundwater makes anaerobic bioremediation desired for the treatment of groundwater contaminated with BTX 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 and economical alternative, an anaerobic-aerobic system was evaluated using a synthetic media simulating the organic and ammonia 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 nitrite 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 elimination. The removal 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.

Landfill Technology covers the selection, design, operation, and final reinstatement of landfill sites. This book is composed of seven chapters that also discuss the theory and practice of landfill technology. After briefly dealing with the composition of municipal and industrial wastes, this book goes on examining the hydrological aspect and site selection planning of a landfill site, including the economic and environmental impact assessments. These topics are followed by a chapter focusing on the several components of site preparation works, such as plant and machinery, methods of landfill operation, and waste disposal. Another chapter describes the involved microbiological processes, biodegradation, gas migration, and leachate production in landfill. Other chapters are devoted to the control and treatment of leachate pollution. These treatment options include aerobic and anaerobic, biological nitrification, ammonia desorption, and leachate recycling. The concluding chapter considers a wide range of afteruse and engineering problems occurring in landfill rehabilitation.

Landfilling, one of the prevailing worldwide waste management strategies, is presented together with its benefits and environmental risks. Aside from biogas, another non-avoidable product of landfilling is landfill leachate, which usually contains 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 landfill leachate treatment studies. The future perspectives of biological treatment are also discussed.

Treatment of Landfill Leachate Using Rotatory Biological Contractor

Solid Waste Landfilling

Landfill leachate treatment - with particular reference to an aerobic biological treatment system

Formation, Characteristics, Treatment and Disposal of Leachate from Municipal Solid Waste Landfills

Sludge Reduction Technologies in Wastewater Treatment Plants

*new sets of advanced standards for wastewater treatment --*

*The anaerobic process is considered to be a sustainable technology for organic waste treatment mainly due to its lower energy consumption and production of residual solids coupled with the prospect of energy recovery from the biogas generated. However, the anaerobic process cannot be seen as providing the 'complete' solution as its treated effluents would typically not meet the desired discharge limits in terms of residual carbon, nutrients and pathogens. This has given impetus to subsequent post treatment in order to meet the environmental legislations and protect the receiving water bodies and environment. This book discusses anaerobic treatment from the perspective of organic wastes and wastewaters (municipal and industrial) followed by various post-treatment options for anaerobic effluent polishing and resource recovery. Coverage will also be from the perspective of future trends and thoughts on anaerobic technologies being able to support meeting the increasingly stringent disposal standards. The resource recovery angle is particularly interesting as this can arguably help achieve the circular economy. It is intended the information can be used to identify appropriate solutions for anaerobic effluent treatment and possible alternative approaches to the commonly applied post-treatment techniques. The succeeding discussion is intended to lead on to identification of opportunities for further research and development. This book can be used as a standard reference book and textbook in universities for Master and Doctoral students. The academic community relevant to the subject, namely faculty, researchers, scientists, and practicing engineers, will find the book both informative and as a useful source of successful case studies.*

*The world is currently experiencing increased environmental contamination with solid waste, which is one of the greatest environmental threats today. Although solid waste is harmful, proper management and profitable recycling can make it beneficial to the environment. In this regard, estimation of the true quantities of solid wastes generated annually in developed and developing countries is important for evaluating suitable strategies for economic and sustainable procedures of waste management. This book presents an interesting review of the economics of solid waste management in various developing and developed countries. It examines several economic applications of solid waste, such as innovative methods to generate bioelectricity from organic waste using microbial fuel cells and using solid waste as an alternative fuel in cement kilns.*

Landfill aeration

Leachate

Sludge Treatment and Disposal

Sanitary Landfill Leachate

*Innovative and Integrated Technologies for the Treatment of Industrial Wastewater*

Early biological treatment studies with the raw leachate did not yield high COD and nitrogen removals. In order to improve biological treatability, the landfill leachate was subjected to pretreatment by chemical coagulation-flocculation 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 added biological treatment. Three oxidizing agents (H<sub>2</sub>O<sub>2</sub>, Fenton's reagent, NaOCl) were used in different concentrations for chemical oxidation.

The focus of this investigation was the determination of design and operational criteria for the aerobic biological treatment of grease waste. The aerobic biological treatment is intended promote filamentous organisms, which are capable of degrading oil and grease. Significant amounts of grease waste are generated by different industries. These wastes are recovered in grease traps, oil/water separators and flotation systems. Current practice consists of the

recollection of the waste and disposal in a landfill or by incineration. The collected waste has to be disposed of either placing it in a landfill or by incineration. Additionally a change in landfill legislation is anticipated that will make it necessary to treat grease-trap waste. Therefore it is necessary to develop alternative methods for treating these grease-trap wastes.

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 unfortunate commingling of wastewater discharges with freshwater supplies 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 treatments methods including topics such as 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 contributing authors.

Sewage and Landfill Leachate

Perspectives on Biological Treatment of Sanitary Landfill Leachate

A Review and Performance Assessment of Aerobic Biological Leachate Treatment at the Bryn Pica Landfill Site

Concepts, Processes, Technology

Waste Management: Concepts, Methodologies, Tools, and Applications

**Industrial Wastewater Treatment by Activated Sludg**

***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.***

***Sludge Reduction Technologies in Wastewater Treatment Plants is a review of the sludge reduction techniques integrated in wastewater treatment plants with detailed chapters on the most promising and most widespread techniques. The aim of the book is to update the international community on the current status of knowledge and techniques in the field of sludge reduction. It will provide a comprehensive understanding of the following issues in sludge reduction: \* principles of sludge reduction techniques; \* process configurations; \* potential performance; \* advantages and drawbacks; \* economics and energy consumption. This book will be essential reading for managers and technical staff of wastewater treatment plants as well as graduate students and post-graduate specialists.***

***Exploration of Biological Treatment Systems for the Removal of Persistent Landfill Leachate Contaminants and Nanoparticles***

***Landfill Technology***

***Advance Wastewater Treatment Technique***

***Biodegradation and Bioremediation of Polluted Systems***

Concern for environmental protection has increased from a global viewpoint due to the exponential population and civilization growth; accompanied by the rapid generation of municipal and industrial solid waste which creates the most instringent paradox around the world. Sanitary landfills are considered as most indispensable solid waste management strategy for sustainable disposal but such implementation is handicapped by the inherent drawback of landfill leachates .The leachate being extremely toxic in nature are threat for the surrounding soil, groundwater and surface water. Aerobic treatment in the form of attached growth biomass systems is considered effective in removal of organic matter from the leachate. The biological oxidation and biosynthesis of organic matter present in leachate is done by the microorganisms used in the treatment process. The process is effective as compared to the other conventional anaerobic treatment of leachate as along with the organic matter harmful ammonical nitrogen can also be conventionally removed .Among all the technologies available for leachate treatment RBC(Rotatory Biological Contractor ) is the most cost effective and efficient.

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 provided to illustrate these treatment processes, along with leachate 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

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

Control and Treatment of Landfill Leachate for Sanitary Waste Disposal

The Anaerobic Biological Treatment of Leachate

Pollution Control Technology for Leachate from Municipal Solid Waste