



Treatment of Landfill Leachate and its use as Biogas

Treatment Of Landfill Leachate Landfill Leachate Treatment

Deborah R. Birchler



Treatment Of Landfill Leachate Landfill Leachate Treatment:

Landfill Leachate Treatment Techniques Salah Souabi, Abdelkader Anouzla, 2024 This book is a ready reckoner of recent information regarding the impact of leachate landfills leachate treatment and heavy metals on a single platform The amount of waste is constantly growing due to population growth and the evolution of socioeconomic activities Burying this waste produces leachate a contaminated effluent created during the decomposition of organic waste and containing harmful substances like heavy metals polyphenols volatile organic compounds and microorganisms These effluents emit unpleasant odors associated with ammonium ions These discharges significantly impact the environment As a result the master s and doctoral academics researchers and students will be able to comprehend the most recent developments in municipal solid waste landfill operations supporting their research This book inspires readers on how to deal with environmental pollution problems due to leachate contamination in freshwater and agricultural soils using a variety of technologies *Treatment of Landfill Leachate* Tonni Agustiono Kurniawan, 2011-11 **Control and Treatment of Landfill Leachate for Sanitary Waste Disposal** Aziz, Hamidi Abdul, Amr, Salem Abu, 2015-12-02 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 A Review of Landfill Leachate Abdelkader Anouzla, Salah Souabi, 2024-05-13 Solid waste landfilling and related environmental issues have become global concerns particularly in developing countries Accelerating population growth and changing lifestyles have exacerbated health and environmental challenges This book looks at the global ramifications of leachate characterization and environmental impacts highlighting the different issues related to landfilling such as leachate generation and its constituents When water enters a landfill it assimilates the dissolved components of the decomposing waste thus forming a leachate with considerable impacts on the environment The nature of the landfill and the waste received household waste alone or mixed with industrial waste determine whether the leachate produced is hazardous or not The decomposition of solid waste in landfills goes through several stages including an initial aerobic phase an anaerobic acid phase an initial methanogenic phase and a stable methanogenic phase Leachates can contain significant concentrations of heavy metals inorganic salts ammonia

halogenated hydrocarbons suspended matter organic pollutants in significant quantities Generally leachate discharges are rich in phenol highly toxic polluting ammonium Ecotoxicological assessment of this effluent is essential to determine the impact of its contaminants on the aquatic ecosystem If pollutants are not disposed of properly leachate from landfills can potentially enter soils and subsoils severely contaminating surface and groundwater bodies Therefore reducing pollutant levels through leachate treatment has garnered considerable attention in recent decades This publication is an invaluable resource providing up to date information on the impact and characterization of leachate landfills It is therefore time to accentuate the training of executives with all the skills to facilitate the waste management through the research efforts of academics in the field of solid wastelandfill operations

Constructed Wetlands for the Treatment of Landfill

Leachates George Mulamootil,Edward A. McBean, Frank Rovers,2018-12-19 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

Municipal Landfill Leachate Management Maryam Pazoki,Reza Ghasemzadeh,2020-08-18 This book is divided into seven chapters which address various leachate landfill management issues such as the quality quantity and management of municipal landfill leachate together with new methods There are many methods available for the treatment and management of municipal landfill leachate The waste management methods presented here can be applied in most third world countries due to the lack of waste separation and high organic content of waste The book provides descriptions and a hierarchy of waste management reviews the history of solid waste disposal and covers a range of topics including leachate and gas generation in landfills natural attenuation landfills landfill site selection leachate and stormwater management collection and treatment landfill gas management landfill cover requirements leachate collection types of natural treatment systems and

design procedure and considerations In closing it provides an overview of the current solid waste management status in Iran

Sanitary Landfill Leachate Syed R. Qasim, Walter Chiang, 1994-08-12 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

Sewage and Landfill Leachate Marco Ragazzi, 2016-06-22 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

Treatment of Landfill Leachate Using Rotatory Biological Contractor

Shabnam Hussain, Renu Dhupper, Aasif Mujtaba, 2012 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

Fe(VI) as a New Chemical Agent for Treatment of Landfill Leachate Christopher Gravesen, 2013 Treatment of Landfill Leachate at Army Facilities, 1983 Landfill Leachate Treatment Tonni Agustiono Kurniawan, 2012 This monograph presents one of the most serious environmental problems which have occurred worldwide in recent years partly attributed to the generation of landfill leachate from local landfills This wastewater poses serious environmental threats with respect to the pollutants introduced into the aquatic environment One tonne of solid waste disposed of in landfills produces about 0.2 m³ of landfill leachate that contains various toxic and or refractory pollutants Unless effectively treated leachate that seeps from a landfill can infiltrate surface water thus posing serious hazards to aquatic organisms and public health Considering the importance of this environmental problem this monograph reports major findings from a series of leachate treatment employed in this study and highlights the various important factors that need to be considered when selecting the most suitable treatment in order to protect the aquatic environment Due to the extensive literature survey of over 180 references 1963-2010 in the body of knowledge this monograph provides a source of inspiration for environmental scientists engineers policy and or decision makers and engineering students *Analysis of Landfill Leachate Treatment* Richard P. Watson, 1992 **Landfill Leachate** Gerardo Morrison, 2019-10-31 In Landfill Leachate Control Treatment and Environmental Impact the treatment of landfill leachate by ozonation process was investigated For this purpose the ozonation experiments were carried out at high pH on the effluent of pretreated with lime The chemical oxygen demand removal efficiencies of 43% and 55% were obtained for pre treated with lime and ozonation processes respectively Following this the authors review the application of AnSBBR for the treatment of landfill leachate focusing on the selection of the biomass type biomass acclimation strategy treatment under different biodegradability conditions kinetic studies growth of biomass and its behavior on the inert support Lastly the results obtained in the oxidation of a concentrate from reverse osmosis of a sanitary landfill leachate are discussed A combined treatment of

electrocoagulation followed by electro fenton was applied using iron consumable anodes and the influence of the applied current intensity process duration initial pH and stirring speed was assessed

Circular Economy in Municipal Solid Waste Landfilling: Biomining & Leachate Treatment Pankaj Pathak,Sankar Ganesh Palani,2022-08-12 This book will serve as a ready reckoner of contemporary information regarding municipal solid waste landfill biomining treatment of landfill leachate and heavy metals in a single platform The academicians researchers and students at master s and doctoral levels will be able to understand the current trends in municipal solid waste landfill operations which will help in augmenting their research Construction of new landfills requires huge monetary investments which can be avoided if old landfills were bio mined for resources and the space can be re used as new landfills Landfill leachate is a hazardous waste which needs proper treatment that could generate value added products such as clean energy and biofertilizers In this book each chapter would provide the background methodology and relevant calculations for sustaining landfill operations Also the case studies based on best practices in municipal solid waste landfilling are discussed in this book

Treatment of Landfill Leachate at Publicly Owned Treatment Works Stephen C. James,Walter W. Schuk,1986

Mature Municipal Landfill Leachate Treatment: Ion Exchange Practice Mohammed J. K. Bashir,Hamidi Abdul Aziz,Mohd Suffian Yusoff,2012-02 Mature leachate generated from an aged sanitary landfill is typically classified as non biodegradable Disposal of untreated landfill leachate can be a source of hazard to receiving waters Therefore treatment of landfill leachate is considered environmentally essential The application of ion exchange process in landfill leachate treatment was not well established in literature Optimized operational conditions and the interaction among process variables for this treatment process were unidentified leaving a substantial gap in landfill leachate treatment knowledge In the present work the treatment of mature landfill leachate using vrious ion exchange process ssuch as cationic resin anionic resin only cationic followed by anionic cationic anionic and anionic followed by cationic anionic cationic were established and documented for the first time

Chemical Quality of Landfill Leachate in Treatment Ponds and Migration of Leachate in the Surficial Aquifer, Pinellas County, Florida Mario Fernandez (Jr.),G. L. Barr,1984

Landfill leachate treatment by evaporation Deborah R. Birchler,1992

Appropriate Technique for Landfill Leachate Treatment Kashif Mahmud,2011-06 The composition of landfill leachate is complex due to the conditions within a landfill and treatment methods must be based on the actual characteristics of the leachate This book therefore investigates various operating conditions for minimizing required Fenton reagents and sludge disposal and maximizing chemical oxygen demand as well as colour removal from the leachate A number of combined treatment processes are also developed in order to maximize the removal of organic compounds through the most appropriate one Samples were collected from Matuail landfill site one of the major landfill sites of Dhaka City Corporation Conventional extended aeration process which is widely practiced for the present leachate treatment system of Matuail landfill site has not achieved the satisfactory level of organic content removal due to a great extent of non biodegradable

organic compounds contained in landfill leachate This research has suggested that not only biological aeration is enough to treat Matuail landfill leachate to the desired level but also further chemical treatment with Fenton reagent gives satisfactory results for treating the heavily polluted leachate

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