

# Landfill Leachate Treatment By White Rot Fungi Fungi Im Lization By White Rot Fungi

Environmental engineering has a leading role in the elimination of ecological threats, and can deal with a wide range of technical and technological problems due to its interdisciplinary character. It uses the knowledge of the basic sciences biology, chemistry, biochemistry and physics to neutralize pollution in all the elements of the environm

All industries produce waste products that unless treated or mitigated in some way will be harmful to the human or natural environment. These waste products will generally need to be identified according to the industrial process in question, neutralized or rendered less harmful and finally disposed of into the surrounding land, air or watercourses. It is therefore of vital importance to every environmental, pollution or plant manager or engineer that these processes be fully understood and implemented or the cost to either the company or the environment can be catastrophic. With increasing government regulation of pollution, as well as willingness to levy punitive fines for transgressions, and the ever-present financial imperative to carry out these activities in the most efficient and cost-effective manner it is the responsibility of the professionals in question to ensure that they have the most up-to-date information available at their disposal. This book provides not only that, but the only available methodology for identifying which waste types are produced from which industrial processes, and how they can be treated. This unique feature makes this book one that every environmental, industrial and plant manager, engineer and consultant will want to have on their bookshelf. Essential

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aspect of, and requirement for, all manufacturing industry The only up-to-date book on this subject area available Takes a practical applications standpoint, not a theoretical approach This book presents research studies on landfills which are sites 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 (where a producer of waste carries out their own waste disposal at the place of production) 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 research in a field which is demanding and beginning to receive society's attention.

Following on from the successful first edition of Waste Treatment & Disposal, this second edition has been completely updated, and provides comprehensive coverage of waste process engineering and disposal methodologies. Concentrating on the range of technologies available for household and commercial waste, it also presents readers with relevant legislative background material as boxed features. NEW to this edition: Increased coverage of re-use and recycling Updating of the usage of different waste treatment technologies Increased coverage of new and emerging technologies for waste treatment and disposal A broader global perspective with a focus on comparative international material on waste treatment uptake and waste

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management policies

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.

Rapid trend of industry and high technological progress are the main sources of the accumulation of hazardous wastes. Recently, nuclear applications have been rapidly developed, and several nuclear power plants have been started to work throughout the world. The potential impact of released hazardous contaminants into the environment has received growing attention due to its serious problems to the biological systems. The book Management of Hazardous Wastes contains eight chapters covering two main topics of hazardous waste management and microbial bioremediation. This book will be useful to many scientists, researchers, and students in the scope of development in waste management program including sources of hazardous waste, government

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policies on waste generation, and treatment with particular emphasis on bioremediation technology.

Life is often considered to be a journey. The lifecycle of waste can similarly to be a journey from the cradle (when an item becomes be considered is placed in the dustbin) to the grave (when value valueless and, usually, is restored by creating usable material or energy; or the waste is transformed into emissions to water or air, or into inert material placed in a landfill). of this book This preface provides a route map for the journey the reader will undertake. Who? Who are the intended readers of this book? Waste managers (whether in public service or private companies) will find a holistic approach for improving the environmental quality and the of managing waste. The book contains general principles economic cost based on cutting edge experience being developed across Europe. Detailed data and a computer model will enable operations managers to develop data-based improvements to their systems. oj waste will be better able to understand how their actions can Producers influence the operation of environmentally improved waste management systems. oj products and packages will be better able to understand how Designers their design criteria can improve the compatibility of their product or package with developing, environmentally improved waste management systems. Waste data specialists (whether in laboratories, consultancies or environ mental managers of waste facilities) will see how the scope, quantity and quality of their data can be improved to help their colleagues design more effective waste management systems.

The 52nd Purdue Industrial Waste Conference showcased 18 sessions on subjects such as biological aspects, physical-chemical aspects, oil and petroleum wastes, management and reuse strategies, international activities, and pollution prevention. This book compiles the work of nearly 200

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international experts, covering the latest practical techniques, advanced research, new methods, actual operating data, and important case studies.

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.

This book provides useful information about bioremediation, phytoremediation, and mycoremediation of wastewater and some aspects of the chemical wastewater 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, plant 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

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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 methods can not only 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 waste 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, landfill operators, legislators, environmentalists, policymakers, government officials, academicians, researchers, and students.

Most industrial and hazardous waste management resources cover the major industries and provide conventional in-plant pollution control strategies. Until now however, no book or series of books has provided coverage that includes the latest developments in innovative and alternative environmental technology, design criteria, managerial decision met

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reader of this book will undertake. Who? Who are the intended readers of this book? Waste managers (whether in public service or private companies) will find a holistic approach for improving the environmental quality and the economic cost of managing waste. The book contains general principles based on cutting edge experience being developed across Europe. Detailed data and a computer model will enable operations managers to develop data-based improvements to their systems. Producers of waste will be better able to understand how their actions can influence the operation of environmentally improved waste management systems. Designers of products and packages will be better able to understand how their design criteria can improve the compatibility of their product or package with developing, environmentally improved waste management systems. Waste data specialists (whether in laboratories, consultancies or environmental managers of waste facilities) will see how the scope, quantity and quality of their data can be improved to help their colleagues design more effective waste management systems.

The landfill leachate has high concentration of COD, ammonia and other recalcitrant composition compounds. The amount of each which is mainly largely dependent on the age of the landfill. The conventional leachate treatments can be classified as chemical-physical treatments and biological treatments. Using fungi to treat leachate is an emerging research topic. Fungi, with their excellent recalcitrant compound degradability, have been used to treat industrial wastewater that contains toxic or recalcitrant compound. Due to the complex composition and toxicity of landfill leachate, fungi have showed shown better removal efficiency in terms of COD, toxicity and colour removal than the conventional leachate treatment. White rot fungi species and yeast are so far the two species that have been studied in treating landfill

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leachate. Future research should be extended to the other fungi species as well as and also on the impact of ammonia in landfill leachate on the fungi treatment process.

Known and used throughout the world, the Purdue Industrial Waste Conference Proceedings books are the most highly regarded in the waste treatment field. New research, case histories, and operating data cover every conceivable facet of today's big problems in environmental control, treatment, regulation, and compliance. This volume representing the proceedings from the 49th conference provides unparalleled information and data for your current waste problems.

The production of wastewater from various human and industrial activities has a harsh impact on the environment. Without adequate treatment, the disposal of this wastewater poses a threat to the quality of water globally. Technologies for the Treatment and Recovery of Nutrients from Industrial Wastewater investigates emergent research and best practices within the field of wastewater management. Highlighting novel technological tools in wastewater treatment, effective nutrient removal technologies, and innovative solutions to quality water preservation practices, this book is a critical reference source for professionals, scientists, academics, and students.

White rot fungi produces various isoforms of extracellular enzymes including laccase, manganese peroxidase and lignin peroxidase that can degrade the pollutants and, thus, can be used to treat wastewater, including landfill leachate. In this research, the treatment of leachate by using white rot fungi, namely *Trametes versicolor* BCC 8725 and *Flavodon flavus* BCC 17421 was studied. Four types of leachate were collected in different time period and different source from Nonthaburi solid waste disposal site, Thailand. Leachate differs in terms of color, BOD, COD. The fungi were immobilized on polyurethane foam (PUF). Glucose, corn

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starch and cassava were used as a co-substrate and were varied at different concentration. Batch experiments were done to determine the optimum pH, cosubstrate and effect of contact time. Continuous experiments were carried out using vertical flow baffled reactor to observe the effect of organic loading, reuse of fungi in various cycles and its possibility to use in large scale leachate treatment. The effect of biomass growth was observed by immobilizing fungi on PUF for different time periods (for 4 and 15 days initially in Potato Dextrose Broth (PDB)).

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 book covers the most recent scientific and technological developments (state-of-the-art) in the field of chemical oxidation processes applicable for the efficient treatment of biologically-difficult-to-degrade, toxic and/or recalcitrant effluents originating from different manufacturing processes.

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

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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.

The first edition described the concept of Integrated Waste Management (IWM), and the use of Life Cycle Inventory (LCI) to provide a way to assess the environmental and economic performance of solid waste systems. Actual examples of IWM systems and published accounts of LCI models for solid waste are now appearing in the literature. To draw out the lessons learned from these experiences a significant part of this 2nd edition focuses on case studies - both of IWM

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systems, and of where LCI has been used to assess such systems. The 2nd edition also includes updated chapters on waste generation, waste collection, central sorting, biological treatment, thermal treatment, landfill and materials recycling. This 2nd edition also provides a more user-friendly model (IWM-2) for waste managers. To make it more widely accessible, this edition provides the new tool in Windows format, with greatly improved input and output features, and the ability to compare different scenarios. A detailed user's guide is provided, to take the reader through the use of the IWM-2 model, step by step. IWM-2 is designed to be an "entry level" LCI model for solid waste - user-friendly and appropriate to users starting to apply life cycle thinking to waste systems - while more expert users will also find many of the advanced features of the IWM-2 model helpful. IWM-2 is delivered on CD inside the book.

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or the public sector, the Environmental Engineers' Handbook, Second Edition is a single source of current information. It covers in depth the interrelated factors and principles that affect our environment and how we have dealt with them in the past, are dealing with them today, and how we will deal with them in the future. This stellar reference addresses the ongoing global transition in cleaning up the remains of abandoned technology, the prevention of pollution created by existing technology, and the design of future zero emission technology. Béla G. Lipták speaks on Post-Oil Energy Technology on the AT&T Tech Channel.

Issues in Earth Sciences, Geology, and Geophysics: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Earth Sciences, Geology, and Geophysics. The editors have built Issues in Earth Sciences, Geology, and Geophysics: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Earth Sciences, Geology, and Geophysics in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Earth Sciences, Geology, and Geophysics: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority,

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confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

As the global nature of pollution becomes increasingly obvious, successful hazardous waste treatment programs must take a total environmental control approach that encompasses all areas of pollution control. With its focus on new developments in innovative and alternative environmental technology, design criteria, effluent standards, managerial dec

The report highlights various types of SBRs, design considerations and procedures, equipment required, and experiences gained from practical applications. This report will help both designers and operators of SBRs understand how to use this technology successfully. The focus is on the application of fill-and-draw, variable volume, periodically operated, unsteady-state principles to activated sludge systems. Research findings are presented, from both the laboratory and pilot and full scale SBRs. Also included is a description of trends for technological developments and a discussion of open questions regarding research, development, application, and operation. Contents Introduction Fundamentals of Periodic Processes General Overview of SBR Applications Design of Activated Sludge SBR Plants Equipment and Instrumentation Practical Experiences Evaluation of SBR Facilities in Australia Evaluation of SBR Facilities in the USA and Canada

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Evaluation of SBR Facilities in Germany Evaluation of SBR Facilities in France Evaluation of SBR facilities in Japan Scientific and Technical Report No. 10

This CRCnetBASE version of the best-selling Environmental Engineers' Handbook contains all of the revised, expanded, and updated information of the second edition and more. The fully searchable CD-ROM offers virtually instant access to all of the interrelated factors and principles affecting our environment as well as how the government and the industry must deal with it. It addresses the ongoing global transition in cleaning up the remains of abandoned technology, the prevention of pollution created by existing technology. The Environmental Engineers' Handbook on CD-ROM provides daily problem solving tools and information on state-of-the-art technologies for the future. The technology and specific equipment used in environmental control and clean-up is included for those professionals in need of detailed technical information. Because analytical results are an essential part of any environmental study, analytical methods used in environmental analysis are presented as well. Data is clearly presented in tables and schematic diagrams that illustrate the technology and techniques used in different areas. Béla G. Lipták speaks on Post-Oil Energy Technology on the AT&T Tech Channel.

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