Environmental Management Of Wastewater Treatment Plants | af5e2a3b4b6f1a8bf724061a67db674a

Natural Systems for Waste Management and TreatmentPhysico-Chemical Wastewater Treatment and Resource RecoveryWastewater TreatmentAdvanced Treatment Techniques for Industrial WastewaterEnvironmental Waste ManagementAdvanced Oxidation Processes (AOPs) in Water and Wastewater TreatmentWater Quality and Environmental Management in AsiaEmerging and Eco-Friendly Approaches for Waste ManagementInnovative Wastewater Treatment & Resource Recovery Technologies: Impacts on Energy, Economy and EnvironmentTechnical Report, Environmental Management, Water Quality and Wastewater Treatment ProgramWastewater MicrobiologyEnvironmental Management of Wastewater Treatment Plants - the Added Value of the Ecotoxicological ApproachWastewater TreatmentEnvironmental Management in PracticeSt Helens Wastewater Treatment Plant UpgradePharmaceuticals and Personal Care Products: Waste Management and Treatment TechnologyEast Arm Wastewater Treatment PlantManaging Wastewater in Coastal Urban AreasSOLID AND LIQUID WASTE MANAGEMENT WASTE TO WEALTHControl and Treatment of Landfill Leachate for Sanitary Waste DisposalCambridge Wastewater Treatment Plant ReplacementWaste ManagementOrganizational Environmental ManagementHandbook Of Environment And Waste Management - Volume 2: Land And Groundwater Pollution ControlEmerging Treatment Technologies for Waste ManagementWater and Environmental Management in Europe and North America : a Comparison of Methods and PracticesJournal of Indian Association for Environmental ManagementRanelagh Wastewater Treatment PlantBiology of Wastewater TreatmentHandbook of Environment and Waste ManagementSheffield Wastewater Treatment Plant UpgradeSick Water?Wastewater Treatment and Reuse – Present and Future Perspectives in Technological Developments and Management IssuesEnvironmental Management in the Pulp and Paper IndustryGreen Technologies for Sustainable Water ManagementAdvances in Water and Wastewater TreatmentEnvironmental ManagementHandbook of Water and Wastewater Treatment TechnologiesWaste Management in the Chemical and Petroleum IndustriesDeloraine Wastewater Treatment Plant Upgrade

Natural Systems for Waste Management and Treatment

Physico-Chemical Wastewater Treatment and Resource Recovery

Wastewater Treatment

Over the past few years, the occurrence of pharmaceutical residues in the environment has attracted great interest regarding the possible harmful effects of many of these pollutants to living organisms. One of the main sources of pharmaceuticals in the environment is the discharge of effluents from wastewater treatment plants (WWTPs), where their removal is often incomplete. Natural wastewater treatment systems such as constructed wetlands constitute a relevant option to conventional methods due to their efficiency, low establishment costs and reduced operation and management requirements. This book discusses processes involved with wastewater treatment as well as management strategies and their impact on the environment.

Advanced Treatment Techniques for Industrial Wastewater

The Handbook of Environment and Waste Management, Volume 1, Air and Water Pollution Control, is a comprehensive compilation of topics that are at the forefront of many technical advances and practices in air and water pollution control. These include air pollution control, water pollution control, water treatment, wastewater treatment, industrial waste treatment and small scale wastewater treatment. Internationally recognized authorities in the field of environment and waste management contribute chapters in their areas of expertise. This handbook is an essential source of reference for professionals and researchers in the areas of air, water, and waste management, and as a text for advanced undergraduate and graduate courses in these fields.

Environmental Waste Management

The book on Physico-Chemical Treatment of Wastewater and Resource Recovery provides an efficient and low-cost solution for remediation of wastewater. This book focuses on physico-chemical treatment via advanced oxidation process, adsorption, its management and recovery of valuable chemicals. It discusses treatment and recovery process for the range of pollutants including BTX, PCB, PCDDs, proteins, phenols, antibiotics, complex organic compounds and metals. The occurrence of persistent pollutants poses deleterious effects on human and environmental health. Simple solutions for recovery of valuable chemicals and water during physico-chemical treatment of wastewater are discussed extensively. This book provides necessary knowledge and experimental studies on emerging physico-chemical processes for reducing water pollution and resource recovery.

Advanced Oxidation Processes (AOPs) in Water and Wastewater Treatment

Environmental Management: Science and Engineering for Industry consists of 18 chapters, starting with a discussion of International Environmental Laws and crucial environmental management tools, including lifecycle, environmental impact, and environmental risk assessments. This is followed by a frank discussion of environmental control and abatement technologies for water, wastewater, soil, and air pollution. In addition, this book also tackles Hazardous Waste Management and the landfill technologies available for the disposal of hazardous wastes. As managing environmental projects is a complex task with vast amounts of data, an array of regulations, and alternative engineering control strategies designed to minimize pollution and maximize the effect of an environmental program, this book helps readers further understand and plan for this process. Contains the latest methods for Identifying, abating, or eliminating pollutants from air, water, and land Presents up-to-date coverage on environmental management tools, such as risk assessment, energy management and auditing, environmental accounting, and impact assessments Includes methods for collecting and synthesizing data derived from environmental assessments

Water Quality and Environmental Management in Asia

Emerging and Eco-Friendly Approaches for Waste Management

The Handbook of Environment and Waste Management, Volume 2, Land and Groundwater Pollution Control, is a comprehensive compilation of topics that are at the forefront of many of the technical advances and practices in solid waste management and groundwater pollution control. These include biosolids management, landfill for solid waste disposal, landfill liners, beneficial reuse of waste products, municipal solid waste recovery and recycling and groundwater remediation.Internationally recognized authorities in the

field of environment and waste management contribute chapters in their areas of expertise. This handbook is an essential source of reference for professionals and researchers in the areas of solid waste management and groundwater pollution control, and as a text for advanced undergraduate and graduate courses in these fields.

Innovative Wastewater Treatment & Resource Recovery Technologies: Impacts on Energy, Economy and Environment

Wastewater Treatment and Reuse – Present and Future Perspectives in Technological Developments and Management Issues, Volume 5 explores a wide breadth of emerging and state-of-the-art technologies, with chapters in this new release covering In which direction are worldwide regulations for direct reuse of reclaimed water moving?, A focus on the California experience on the reuse of reclaimed water – Current trends and future perspectives in the regulation, Water scarcity and climate change in the Mediterranean area: is reuse of reclaimed water a strategy to face these problems?, Environmental risks due to the reuse of treated sludge for agricultural purposes, and much more. Covers a wide breadth of emerging and state-of-the-art technologies Includes contributions from an international board of authors Provides a comprehensive set of reviews

Technical Report, Environmental Management, Water Quality and Wastewater Treatment Program

Wastewater Microbiology: A Handbook for Operators explains the microbiological processes at work in wastewater treatment. You will learn about the various types of microorganisms used in treating wastewater - bacteria, protozoa, metazoa, algae, and fungus - and their specialized function in the treatment process. You can use the handbook to effectively manage the bacterial process at your plant. Color photos and illustrations are included within the book for quick identification under the microscope.

Wastewater Microbiology

This comprehensive text provides the reader with both a detailed reference and a unified course on wastewater treatment. Aimed at scientists and engineers, it deals with the environmental and biological aspects of wastewater treatment and sludge disposal. The book starts by examining the nature of wastewaters and how they are oxidized in the natural environment. An introductory chapter deals with wastewater treatment systems and examines how natural principles have been harnessed by man to treat his own waste in specialist reactors. The role of organisms is considered by looking at kinetics, metabolism and the different types of micro-organisms involved. All the major biological process groups are examined in detail, in highly referenced chapters; they include fixed film reactors, activated sludge, stabilization ponds, anaerobic systems and vegetative processes. Sludge treatment and disposal is examined with particular reference to the environmental problems associated with the various disposal routes. A comprehensive chapter on public health looks at the important waterborne organisms associated with disease, as well as removal processes within treatment systems. Biotechnology has had an enormous impact on wastewater treatment at every level, and this is explored in terms of resource reuse, biological conversion processes and environmental protection. Finally, there is a short concluding chapter that looks at the sustainability of waste water treatment. The text is fully illustrated and supported by over 3000 references. Contents:How Nature Deals with WasteHow Man Deals with WasteThe Role of OrganismsFixed-Film ReactorsActivated SludgeNatural Treatment SystemsAnaerobic Unit ProcessesSludge Treatment and DisposalPublic HealthBiotechnology and Wastewater Treatment Readership: Graduate students in wastewater technology. Reviews:“Anyone interested in the biology of wastewater treatment will find this book useful.”Biotechnology

Advances “… is both well written and informative and it should appeal to anyone with an interest in wastewater treatment. It covers the ground in sufficient depth to stay useful throughout one's entire career, serving as an essential reference, allowing one to dive in and out at will as one's needs dictate … manages to fulfil what I believe to be its aim of bridging the gap between wastewater engineering and its underlying biology.”Journal of the Chartered Institution of Water and Environmental Management

Environmental Management of Wastewater Treatment Plants - the Added Value of the Ecotoxicological Approach

The treatment and disposal of wastewater is an issue which is currently being rigorously addressed in European Community Directive and UK regulations, bringing increasing financial and technical pressure to bear on companies in the water industry. This book presents studies of the ways in which water companies have been implementing the legislation and translating the costs of meeting Regulations into measurable environmental benefits. Individual schemes are reported, highlighting the technological advances being developed to meet legislative requirements.

Wastewater Treatment

The 28 chapters in this collection describe science-based principles and technological advances behind green technologies that can be effective solutions to pressing problems in sustainable water management.

Environmental Management in Practice

In recent years the topic of environmental management has become very common. In sustainable development conditions, central and local governments much more often notice the need of acting in ways that diminish negative impact on environment. Environmental management may take place on many different levels - starting from global level, e.g. climate changes, through national and regional level (environmental policy) and ending on micro level. This publication shows many examples of environmental management. The diversity of presented aspects within environmental management and approaching the subject from the perspective of various countries contributes greatly to the development of environmental management field of research.

St Helens Wastewater Treatment Plant Upgrade

A heavy backlog of gaseous, liquid, and solid pollution has resulted from a lack of development in pollution control. Because of this, a need for a collection of original research in water and wastewater treatment, industrial waste management, and soil and ground water pollution exists. Advanced Treatment Techniques for Industrial Wastewater is an innovative collection of research that covers the different aspects of environmental engineering in water and wastewater treatment processes as well as the different techniques and systems for pollution management. Highlighting a range of topics such as agriculture pollution, hazardous waste management, and sewage farming, this book is an important reference for environmental engineers, waste authorities, solid waste management companies, landfill operators, legislators, environmentalists, and academicians seeking research on waste management.

Pharmaceuticals and Personal Care Products: Waste Management and Treatment Technology

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.

East Arm Wastewater Treatment Plant

Given that a healthier future needs urgent global action for smart, sustained investment to improve wastewater management, this report tackles the current challenges faced in wastewater management. Part I of the report addresses the pressing challenges faced in the management of wastewater and how it may be influenced by population growth, urbanization, and climate change. Part II looks at possible solutions regarding these challenges and how current techniques can be modernized through innovation.

Managing Wastewater in Coastal Urban Areas

SOLID AND LIQUID WASTE MANAGEMENT WASTE TO WEALTH

Control and Treatment of Landfill Leachate for Sanitary Waste Disposal

Cambridge Wastewater Treatment Plant Replacement

Selected Proceedings of Asian Waterqual 2001, the IWA Asia-Pacific Regional Conference, held in Fukuoka, Japan, 12-15 September 2001. The world's growing population and its rising water consumption are greatly increasing the pressure on water resources; growing wastewater discharges and expanding use of chemicals are severely affecting the water environment. The new millennium confronts the water management profession and society in general with a set of challenges of unprecedented magnitude and complexity, and many of these worldwide problems are seen at their most acute in Asia. The 8th Asian Waterqual conference provided a major forum to address these issues; these selected proceedings contain 73 high-quality papers chosen after peer review. Subjects covered include: drinking water quality, treatment and distribution; wastewater treatment and reuse; environmental remediation, ecotoxicology in the aquatic environment; hazard assessment and control of microbiology; hazard assessment of micropollutants and endocrine disruptors; water quality monitoring and modeling; ecological modeling and simulation; and water resources management and protection. These papers tackle the challenges of water management, reporting scientific and technological innovations and the institutional and administrative strategies required. These proceedings will prove a major information resource for any scientist, engineer, practitioner or regulator with an interest in water quality and environmental management.

Waste Management

Organizational Environmental Management

Protection of the environment is becoming an ever-increasing area of concern, and this set of papers has been put together to provide the first book to combine a comparison of methods and practices used for the protection of water and the environment in Europe and North America. Main topics covered are legislation and practice, drinking water quality, water supply, management of rivers and coastal waters, wastewater treatment, sludge treatment, and landfill. Contributions from distinguished experts give an international perspective on the topics, and the information on procedures is up-to-date, providing an excellent source of reference for standards used in these areas. Readership: Consulting engineers, scientists and planners in the water industry. Academics involved in public health engineering, water supply and planning. Manufacturers of plant and equipment for use in these fields.

Handbook Of Environment And Waste Management - Volume 2: Land And Groundwater Pollution Control

Rapid industrialization has resulted in the generation of huge quantities of hazardous waste, both solid and liquid. Despite regulatory guidelines and pollution control measures, industrial waste is being dumped on land and discharged into water bodies without adequate treatment. This gross misconduct creates serious environmental and public health

Emerging Treatment Technologies for Waste Management

Water and Environmental Management in Europe and North America : a Comparison of Methods and Practices

MANAGE WASTE AT LOWER COST WITH EMERGING NATURAL SYSTEMS Biologically-based waste management systems are emerging as a more reliable, less costly alternative to conventional energy-intensive mechanical process. If you're involved in planning, designing, building, upgrading or operating waste management facilities, Natural Systems for Waste Management and Treatment, Second Edition, by Sherwood C. Reed, Ronald W. Crites, and E. Joe Middlebrooks, can help you quickly evaluate and adopt one or more of these innovative technologies. Complete with performance data plus easy-to-follow design procedures (with example), it gives you a thorough working backgroud in: Wastewater stabilization ponds; Aquatic treatment systems; Feasibility assessment; Land treatment systems; Wetland systems; Site selection; Planning; Sludge management and treatment; On-site wastewater management; Much more.

Journal of Indian Association for Environmental Management

This book explores the current status of industrial pollution, its source, characteristics, and management through various advanced treatment technologies. The book covers the recycle, reuse and recovery of waste for the production of value added products. The book is divided into two sections, the first one is covering the industrial wastewater pollution and its treatment through various advanced technologies and second section covers the source and characteristics of solid waste and its management for environmental safety. It discusses new methods and technologies to combat the waste related pollution and

focuses on use of recycled products. This book is of value to upcoming students, researchers, scientists, industry persons and professionals in the field of environmental science and engineering, microbiology, biotechnology, toxicology, further it is useful for global and local authorities and policy makers responsible for the management of liquid and solid wastes.

Ranelagh Wastewater Treatment Plant

Close to one-half of all Americans live in coastal counties. The resulting flood of wastewater, stormwater, and pollutants discharged into coastal waters is a major concern. This book offers a well-delineated approach to integrated coastal management beginning with wastewater and stormwater control. The committee presents an overview of current management practices and problems. The core of the volume is a detailed model for integrated coastal management, offering basic principles and methods, a direction for moving from general concerns to day-to-day activities, specific steps from goal setting through monitoring performance, and a base of scientific and technical information. Success stories from the Chesapeake and Santa Monica bays are included. The volume discusses potential barriers to integrated coastal management and how they may be overcome and suggests steps for introducing this concept into current programs and legislation. This practical volume will be important to anyone concerned about management of coastal waters: policymakers, resource and municipal managers, environmental professionals, concerned community groups, and researchers, as well as faculty and students in environmental studies.

Biology of Wastewater Treatment

Unravels fundamental engineering for the treatment, recovery, and disposal of solid waste, sludge and wastewater in the petroleum, chemical, and unconventional oil and gas processing industries This new edition unravels essential requirements for the process design and engineering of the equipment and facilities pertaining to waste management for gas refineries, chemical plants, oil terminals, and petrochemical plants. Updated throughout, Waste Management in the Chemical and Petroleum Industries, Second Edition offers chapters on wastewater treatment; physical unit operations; chemical treatment; biological treatment; and wastewater treatment in unconventional oil and gas industries. It also covers wastewater sewer systems; sewage treatment; and solid waste treatment and disposal. New topics include: water pollution terminals the design procedure for effluent water pollution control spill prevention and control groundwater pollution control wastewater pollution control in crude oil terminals Information on the source of polymeric plants examination of water and wastewater radioactivity soil pollution pipeline leak consequence evaluation Waste Management in the Chemical and Petroleum Industries, Second Edition is an ideal text for researchers and advanced students in chemical, petroleum, and environmental fields, as well as for those in civil engineering.

Handbook of Environment and Waste Management

Annotation "Advances in Water and Wastewater Treatment provides state-of-the-art information on the application of innovative technologies for water and wastewater treatment with an emphasis on the scientific principles for pollutant or pathogen removal. Described in detail are the practice and principles of wastewater treatment on topics such as: global warming, sustainable development, nutrient removal, bioplastics production, biosolid digestion and composting, pathogen reduction, metal leaching, secondary clarifiers, surface and subsurface constructed wetland, and wastewater reclamation. Environmental engineers and scientists involved in the practice of environmental engineering will benefit from the basic principles to innovation technologies

application."--BOOK JACKET. Title Summary field provided by Blackwell North America, Inc. All Rights Reserved.

Sheffield Wastewater Treatment Plant Upgrade

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.

Sick Water?

Environmental Management of Wastewater Treatment Plants - the Added Value of the Ecotoxicological Approach.

Wastewater Treatment and Reuse – Present and Future Perspectives in Technological Developments and Management Issues

This technical report examines the environmental issues facing the pulp & paper industry & shows how these issues can be addressed. It discusses the production process, the origins of pollution & other impacts on the industry. It also recommends procedures for reducing these impacts.

Environmental Management in the Pulp and Paper Industry

"This book 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"--

Green Technologies for Sustainable Water Management

Pharmaceuticals and Personal Care Products Waste Management and Treatment Technology: Emerging Contaminants and Micro Pollutants provides the tools and techniques for identifying these contaminates and applying the most effective technology for their remediation, recovery and treatment. The consumption of pharmaceuticals and personal care products (PPCPs) has grown significantly over the last 35 years, thus increasing their potential risk to the environment. As PPCPs are very difficult to detect and remove using conventional wastewater treatment methods, this book provides solutions to a growing problem. Includes sampling, analytical and characterization methods and technology for detecting PPCPs in the environment Provides advanced treatment and disposal technologies for the removal of PPCPs from wastewater, surface water, landfills and septic systems Examines the pathways of PPCPs into the environment

Advances in Water and Wastewater Treatment

This Handbook is an authoritative reference for process and plant engineers, water treatment plant operators and environmental consultants. Practical information is provided for application to the treatment of drinking water and to industrial and municipal wastewater. The author presents material for those concerned with meeting government regulations, reducing or avoiding fines for violations, and making cost-effective decisions while producing a high quality of water via physical, chemical, and thermal techniques. Included in the texts are sidebar discussions, questions for thinking and discussing, recommended resources for the reader, and a comprehensive glossary. Two companion books by Cheremisinoff are available: Handbook of Air Pollution Control Technologies, and Handbook of Solid Waste Management and Waste Minimization Technologies. * Covers the treatment of drinking water as well as industrial and municipal wastewater * Cost-efficiency considerations are incorporated in the discussion of methodologies * Provides practical and broad-based information in one comprehensive source

Environmental Management

Rapid industrialization is a serious concern in the context of a healthy environment. With the growth in the number of industries, the waste generated is also growing exponentially. The various chemical processes operating in the manufacturing industry generate a large number of by-products, which are largely harmful and toxic pollutants and are generally discharged into the natural water bodies. Once the pollutants enter the environment, they are taken up by different life forms, and because of bio-magnification, they affect the entire food chain and have severe adverse effects on all life forms, including on human health. Although, various physico-chemical and biological approaches are available for the removal of toxic pollutants, unfortunately these are often ineffective and traditional clean up practices are inefficient. Biological approaches utilizing microorganisms (bacterial/fungi/algae), green plants or their enzymes to degrade or detoxify environmental pollutants such as endocrine disruptors, toxic metals, pesticides, dyes, petroleum hydrocarbons and phenolic compounds, offer eco- friendly approaches. Such eco-friendly approaches are often more effective than traditional practices, and are safe for both industry workers as well as environment. This book provides a comprehensive overview of various toxic environmental pollutants from a variety natural and anthropogenic sources, their toxicological effects on the environment, humans, animals and plants as well as their biodegradation and bioremediation using emerging and eco-friendly approaches (e.g. Anammox technology, advanced oxidation processes, membrane bioreactors, membrane processes, GMOs), microbial degradation (e.g. bacteria, fungi, algae), phytoremediation, biotechnology and nanobiotechnology. Offering fundamental and advanced information on environmental problems, challenges and bioremediation approaches used for the remediation of contaminated sites, it is a valuable resource for students, scientists and researchers engaged in microbiology, biotechnology and environmental sciences.

Handbook of Water and Wastewater Treatment Technologies

Waste Management in the Chemical and Petroleum Industries

Economic development of any nation is possible only if the environmental protection laws are followed seriously. Wastes, if not treated effectively, may harm public health leading to the deterioration of ecosystem and ultimately to the growth and economy of the nation. The coverage of both solid waste as well as liquid waste management in a single volume makes this book unique. It discusses various economical methods to manage wastes

providing a practical approach to the book. It gives the knowledge of important techniques for converting wastes into the products useful for the mankind and also informs readers about the Indian legal framework relating to the solid and liquid waste management. The technologies explained in the book are field-tested and have been practically implemented either in India or the United States. Hence, these techniques are highly viable for communities and industries to improve their waste management practices. Blending theory and practices of waste management, the authors provide extensive case studies from their on-job experiences to exemplify how solid and liquid wastes can be managed successfully. The chapter on 'municipal waste management' exclusively covers the technologies applied to convert construction and demolition wastes and organic wastes into useful products. With the increase in electronic wastes, a chapter on 'electronic waste management' has found place in the book. Besides, the text covers management of plastic wastes, biomedical wastes, radioactive wastes, hazardous wastes, and also operations and maintenance of the treatment facilities. The chapter on 'liquid waste management' is focused on municipal wastewater and common effluent treatment plant for industrial wastewater. The review questions at the end of each chapter help students to assess their knowledge and develop self-efficacy in the subject. Whereas, the appendices provide performance evaluation of solid waste management systems and sewage treatment plants, numerical problems for practice, and glossary of important terms. The book primarily caters to the needs of undergraduate and postgraduate courses on Environmental Science and Engineering; Energy and Environmental Engineering; Environmental Engineering and Management; Municipal Solid Waste Management. Besides, it provides practical information to environmental professionals and to the students of Industrial Management, Civil Engineering and Biotechnology.

Deloraine Wastewater Treatment Plant Upgrade

This book introduces the 3R concept applied to wastewater treatment and resource recovery under a double perspective. Firstly, it deals with innovative technologies leading to: Reducing energy requirements, space and impacts; Reusing water and sludge of sufficient quality; and Recovering resources such as energy, nutrients, metals and chemicals, including biopolymers. Besides targeting effective C,N&P removal, other issues such as organic micropollutants, gases and odours emissions are considered. Most of the technologies analysed have been tested at pilot- or at full-scale. Tools and methods for their Economic, Environmental, Legal and Social impact assessment are described. The 3R concept is also applied to Innovative Processes design, considering different levels of innovation: Retrofitting, where novel units are included in more conventional processes; Re-Thinking, which implies a substantial flowsheet modification; and Re-Imagining, with completely new conceptions. Tools are presented for Modelling, Optimising and Selecting the most suitable plant layout for each particular scenario from a holistic technical, economic and environmental point of view.