

[Books] Granular Activated Carbon Design Operation And Cost

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Granular Activated Carbon-Clark 1989-10-01 This new book presents design, cost, and performance information on the application of GAC in drinking water, including the use of GAC both in the U.S. and overseas. Various design concepts for the unit operations that make up the GAC process are presented in 11 comprehensive, complete chapters, including a special chapter that provides cost equations and comparative cost studies for full scale application of GAC.

U.S. Department of Transportation Federal Motor Carrier Safety Administration Register- 2009-10-09

Considerations Related to Granular Activated Carbon Adsorption Use and Design as a Unit Operation for Water Treatment-Robert Gray Wickline 1984

Process Design Manual for Carbon Adsorption-Swindell-Dressler Company 1971

Activated Carbon for Water and Wastewater Treatment-Ferhan Cecen 2011-09-19 This monograph provides comprehensive coverage of technologies which integrate adsorption and biological processes in water and wastewater treatment. The authors provide both an introduction to the topic as well as a detailed discussion of theoretical and practical considerations. After a review of the basics involved in the chemistry, biology and technology of integrated adsorption and biological removal, they discuss the setup of pilot- and full-scale treatment facilities, covering powdered as well as granular activated carbon. They elucidate the factors that influence the successful operation of integrated systems. Their discussion on integrated systems expands from the effects of environmental to the removal of various pollutants, to regeneration of activated carbon, and to the analysis of such systems in mathematical terms. The authors conclude with a look at future needs for research and development. A truly valuable resource for environmental engineers, environmental and water chemists, as well as professionals working in water and wastewater treatment.

Selected Water Resources Abstracts- 1990

Physicochemical Treatment Processes-Lawrence K. Wang 2005-03-11 The past 30 years have seen the emergence of a growing desire worldwide to take positive actions to restore and protect the environment from the degrading effects of all forms of pollution: air, noise, solid waste, and water. 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 exists, 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? The principal intention of the Handbook of Environmental Engineering series is to help readers formulate answers to the last two questions. 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, realization of the ever-increasing complexity and interrelated nature of current environmental problems makes it imperative that intelligent planning of pollution abatement systems be undertaken.

Biomass Now-Miodrag Darko Matovic 2013-04-30 This two-volume book on biomass is a reflection of the increase in biomass related research and applications, driven by overall higher interest in sustainable energy and food sources, by increased awareness of potentials and pitfalls of using biomass for energy, by the concerns for food supply and by multitude of potential biomass uses as a source material in organic chemistry, bringing in the concept of bio-refinery. It reflects the trend in broadening of biomass related research and an increased focus on second-generation bio-fuels. Its total of 40 chapters spans over diverse areas of biomass research, grouped into 9 themes.

Pure and Functionalized Carbon Based Nanomaterials-Pawel K. Zarzycki 2020-07-02 This book describes in a comprehensive manner latest studies conducted by various research groups worldwide focusing on carbon and related nanomaterials. Fourteen chapters of this book deal with a number of key research topics and applications of pure and functionalized carbon nanomaterials and their hybrid nanocomposites. Specifically, the authors have presented interdisciplinary investigations including: (i) carbon nanoparticles and layers synthesis, (ii) analytical aspects of carbon nanomaterials and their characterisation under different conditions as well as (iii) various applications of carbon nanoparticles. They have reported and summarised key applications of carbon particles or nanoobjects in pharmacy, biomedicine, agriculture and food industry, water treatment, physicochemical analysis, optoelectronics, electronic and magnetic materials for supercapacitors or radar adsorbing materials, tribology, chromatography, electrophoresis, bioanalysis, nanobiocatalysis, biofuels production as well as environmental remediation.

Water Treatment Unit Processes-David W. Hendricks 2018-10-03 The unit process approach, common in the field of chemical engineering, was introduced about 1962 to the field of environmental engineering. An understanding of unit processes is the foundation for continued learning and for designing treatment systems. The time is ripe for a new textbook that delineates the role of unit process principles in environmental engineering. Suitable for a two-semester course, *Water Treatment Unit Processes: Physical and Chemical* provides the grounding in the underlying principles of each unit process that students need in order to link theory to practice. Bridging the gap between scientific principles and engineering practice, the book covers approaches that are common to all unit processes as well as principles that characterize each unit process. Integrating theory into algorithms for practice, Professor Hendricks emphasizes the fundamentals, using simple explanations and avoiding models that are too complex mathematically, allowing students to assimilate principles without getting sidelined by excess calculations. Applications of unit processes principles are illustrated by example problems in each chapter. Student problems are provided at the end of each chapter; the solutions manual can be downloaded from the CRC Press Web site. Excel spreadsheets are integrated into the text as tables designated by a "CD" prefix. Certain spreadsheets illustrate the idea of "scenarios" that emphasize the idea that design solutions depend upon assumptions and the interactions between design variables. The spreadsheets can be downloaded from the CRC web site. The book has been designed so that each unit process topic is self-contained, with sidebars and examples throughout the text. Each chapter has subheadings, so that students can scan the pages and identify important topics with little effort. Problems, references, and a glossary are found at the end of each chapter. Most chapters contain downloadable Excel spreadsheets integrated into the text and appendices with additional information. Appendices at the end of the book provide useful reference material on various topics that support the text. This design allows students at different levels to easily navigate through the book and professors to assign pertinent sections in the order they prefer. The book gives your students an understanding of the broader aspects of one of the core areas of the environmental engineering curriculum and knowledge important for the design of treatment systems.

Security of Industrial Water Supply and Management-Aysel T. Atimtay

2011-08-30 Over time, the increased use of fresh water for agriculture and industry together with contamination from discharges of pollutants, mean that ever more areas of the planet are becoming water-stressed. Because of the competing needs of communities and industry for fresh water, industry will be challenged to meet its growing demands for water, which is essential for producing the goods and services that would boost human welfare. Thus industry will need to learn how to cost-effectively purify and recycle its wastewater for reuse, ultimately approaching a net zero-discharge condition. The chapters in this book, written by international experts, treat the technical issues of such treatment and water management, and also provide guidance on technologies, either existing or in development, that can potentially achieve the goal of recycle-reuse. The book will serve as a useful reference for academics, government and industry professionals alike.

Activated Carbon-Zaid K. Chowdhury 2013 "Many books have been written about granular activated carbon. Some focus on the theory of performance and removal mechanisms while others focus on design features. This book focuses on solutions. It describes the challenges facing water providers to provide safe water that is acceptable to their customers, utility experiences using activated carbon, activated carbon applications, and design and procurement approaches. The appendices include detailed case studies and a life-cycle assessment demonstrating favorable sustainability considerations for activated carbon when compared to other treatment technologies. Never before has all of this information been together in one location. The what, why, and how of activated carbon are connected in this book and demonstrate why this treatment technology has maintained its status as an integral treatment technology in the quest for pure water over millennia"--

Drinking Water and Health, -Board on Toxicology and Environmental Health Hazards 1980-02-01

The Design and Operation of Hot-air Dryers for the Drying of Granular Activated Carbon-Petrus Johannes Van Staden 1987

Environmental Technologies and Trends-Ravi K. Jain 2012-12-06 This manuscript was made possible by the exceptional support provided by INSA (Institut National des Sciences Appliquees) Toulouse, the University of New Mexico and the University of Cincinnati College of Engineering. The authors, as listed in this book, took the time to prepare excellent manuscripts focusing on scientific and technical areas relevant to emerging environmental issues. These manuscripts were rigorously reviewed and refereed by scientists and engineers before inclusion in this book. An introductory chapter was prepared to summarize and integrate technical issues covered and the last chapter was written to present policy perspectives. The editors are most grateful to the contributors, sponsor organizations, and many colleagues who were kind enough to assist us in making this manuscript possible. Background information about the editors, principal authors and other contributors to this manuscript follows. Editors Professor Dr. Ravi K. Jain Associate Dean for Research and International Engineering College of Engineering University of Cincinnati Mail Location 0018 Cincinnati OH 45221-0018 U.S.A.

Environmental Separation of Heavy Metals-Arup K. SenGupta 2001-09-26 This new book explains advanced and emerging technologies for removing heavy metals from wastestreams and contaminated sites. Separation processes of this type are critical for meeting stringent regulations of priority pollutants, especially arsenic, mercury, and lead, which the text treats in depth. After explaining the chemistry of heavy metals a

Pesticide Removal by Combined Ozonation and Granular Activated Carbon Filtration-Ervin Orlandini 2018-12-19 This research aimed to identify and understand mechanisms that underlie the beneficial effect of ozonation on removal of pesticides and other micropollutants by Granular Activated Carbon (GAC) filtration. This allows optimization of the combination of these two processes, termed Biological Activated Carbon filtration. The study concluded that ozonation significantly improves removal of atrazine by GAC filtration not only due to the wellknown effect of oxidation of atrazine, but also due to the effect of partial oxidation of Background Organic Matter (BOM) present in water. Ozone-induced oxidation of BOM was found to improve adsorption of atrazine in GAC filters. Biodegradation of atrazine in these filters was not demonstrated. Higher GAC's adsorption capacity for atrazine and faster atrazine's mass transfer in filters with ozonated rather than non-ozonated influent were

explained as due to ozonated BOM. Both can be attributed to enhanced biodegradability and reduced adsorbability of partially oxidized BOM compounds, resulting in their increased biodegradation and decreased adsorption in GAC filters.

Comprehensive Biotechnology-2019-07-17 Comprehensive Biotechnology, Third Edition unifies, in a single source, a huge amount of information in this growing field. The book covers scientific fundamentals, along with engineering considerations and applications in industry, agriculture, medicine, the environment and socio-economics, including the related government regulatory overviews. This new edition builds on the solid basis provided by previous editions, incorporating all recent advances in the field since the second edition was published in 2011. Offers researchers a one-stop shop for information on the subject of biotechnology Provides in-depth treatment of relevant topics from recognized authorities, including the contributions of a Nobel laureate Presents the perspective of researchers in different fields, such as biochemistry, agriculture, engineering, biomedicine and environmental science

Granular Activated Carbon Treatment-Margaret M. Groeber 1991

Design—Operation Interactions at Large Treatment Plants-S. H. Jenkins 2013-10-22 Design-Operation Interactions at Large Treatment Plants deals with the different plans and designs to improve large treatment plants, the feasibility of these plans, the problems they might entail, and the solutions for current and prospective problems these treatment plants may face. The book shows the possible new directions that treatment plants may go to through assessment, planning, and new technology, as well as the design for the treatment plants and the many considerations to be kept in mind in designing of one. Also included is an instructional guide on the functions and importance of the different parts of the treatment plant, the specific problems and their solutions, and improvements that can be done to it. The text is recommended for engineers and planners working in treatment plants, those in charge of sanitation and urban development and improvement, government agencies who wish to evaluate and even propose plans of building a treatment plant, and environmentalists who wish to know more about the treatment plant.

Pesticide Risk in Groundwater-Marco Vighi 2019-08-08 Pesticide pollution of groundwater results from agricultural practices, the properties of the substance and its behavior in the soil environment, and the characteristics of aquifers and their vulnerability. Pesticide Risk in Groundwater provides an overview of the main issues concerning pesticide pollution of groundwater worldwide. The book is divided into five sections. Section I reviews experimental data of groundwater monitoring to indicate the extent of the problem on a global basis. Based on this evaluation, herbicides are examined in depth. Section II describes predictive approaches to estimate the distribution and fate of pesticides, and includes a chapter devoted to hydrogeological aspects affecting the vulnerability of aquifers. The third section evaluates pesticides in relation to their toxicology. It critically examines the criteria and procedures by the World Health Organization (WHO) and the U.S. Environmental Protection Agency (EPA) to define quality objectives, and compares the monitoring data on pesticides in groundwater with their quality objectives. Section IV evaluates various strategies to control and prevent groundwater pollution problems. Different water treatment options are described from a technical and economic point of view. The main preventative actions include the chemical approach, the agronomic approach, and the land use approach. The final section reviews the state of the art of drinking water regulations in the EEC, the United States, and other OECD countries. The author describes the economic implications of groundwater pollution and its control and exemplifies with a real case study.

Physical/chemical Treatment of Hazardous Waste Sites- 1990

Resources and References-Donna S. Kocurek 1995-12-31 This guide book provides references and resources for the complex field of hazardous waste and hazardous materials management. The book is divided into general topics such as air quality, industrial wastewater, pollution prevention, and risk assessment under hazardous waste management and chemical hazards, emergency planning, and hazard communication under hazardous materials management. Each individual section includes a list of annotated bibliographies of the most recent books by major publishers as well as established, standard references. Following the annotated titles, are additional references of books and documents by publishers, technical associations, and governmental agencies (primarily the U.S. Environmental

Protection Agency). In general, only references from 1986 onward are included since the technology and regulations affecting hazardous waste and materials are constantly evolving. Additional resources included in the book are video tapes for training and instruction, information services and databases, libraries, agency contacts, technical journals, and a list of publishers and ordering information. This book will be a useful reference to professionals in the environmental field who need an extensive, but concise source of technical information and contacts. The book will be a valuable addition to individual libraries and will fill a current reference void in university libraries, and technical libraries in industry and government. At present there are very few technical bibliographies in the field, and none has covered topics related to hazardous materials and hazardous waste as extensively as this book.

Handbook of Industrial and Hazardous Wastes Treatment-Lawrence K. Wang 2004-06-29 Presenting effective, practicable strategies modeled from ultramodern technologies and framed by the critical insights of 78 field experts, this vastly expanded Second Edition offers 32 chapters of industry- and waste-specific analyses and treatment methods for industrial and hazardous waste materials-from explosive wastes to landfill leachate to wastes produced by the pharmaceutical and food industries. Key additional chapters cover means of monitoring waste on site, pollution prevention, and site remediation. Including a timely evaluation of the role of biotechnology in contemporary industrial waste management, the Handbook reveals sound approaches and sophisticated technologies for treating textile, rubber, and timber wastes dairy, meat, and seafood industry wastes bakery and soft drink wastes palm and olive oil wastes pesticide and livestock wastes pulp and paper wastes phosphate wastes detergent wastes photographic wastes refinery and metal plating wastes power industry wastes This state-of-the-art Second Edition is required reading for pollution control, environmental, chemical, civil, sanitary, and industrial engineers; environmental scientists; regulatory health officials; and upper-level undergraduate and graduate students in these disciplines.

Sustainable Food Processing-Brijesh K. Tiwari 2013-10-14 With global inequalities becoming more pronounced, ingredient costs climbing, and global warming a major political issue, food producers must now address environmental concerns, social responsibility and economic viability when designing their food processing techniques for the future. Sustainable food processing is all about finding new ways of meeting present needs without compromising future viability, given constantly changing economic and environmental conditions. This is not just a corporate social responsibility issue, but relates directly to efficiency, cost-saving and profitability, and so the food industry must increasingly embrace sustainable food processing in order to succeed. This book provides a comprehensive overview on both economic sustainability and environmental concerns relating to food processing. It promotes ways of increasing sustainability in all the major sectors of the food industry, and will establish itself as a standard reference book on sustainable food processing. It will be of great interest to academic and industrial professionals. Opening chapters cover the concept and principles of sustainable food processing, with reference to various food processing sectors (dairy, meat, seafood, grain, fruit and vegetables). Further chapters on brewing, cold chain, consumption and packaging provide a comprehensive guide to making these key processes more sustainable. Issues such as cleaning, sanitation, and carbon footprint are discussed, before dedicated chapters covering energy and water consumption in the food industry address economic sustainability. Environmental impact assessment and food processing, waste utilization, risk assessment, and regulatory and legislative issues are also addressed. Contributors include a combination of leading academic and industrial experts, to provide informed and industrially relevant perspectives on these topics.

Environmental Toxicology and Risk Assessment-Joseph W. Gorsuch 1993

Agricultural and Environmental Applications of Biochar-Mingxin Guo 2020-01-22 Agricultural and Environmental Applications of Biochar: Advances and Barriers: Over the past decade, biochar has been intensively studied by agricultural and environmental scientists and applied as a soil quality enhancer and environmental ameliorator in various trials worldwide. This book, with 21 chapters by 57 accomplished international researchers, reports on the recent advances of biochar research and the global status of biochar application. Scientific findings, uncertainties, and barriers to practice of biochar amendment for sustaining soil fertility, improving crop production, promoting animal performance, remediating water and land, and mitigating greenhouse gas emissions are synthesized. The book presents a whole picture of biochar in its production, characterization,

application, and development. Agricultural and Environmental Applications of Biochar: Advances and Barriers highlights the mechanisms and processes of biochar amendment for achieving stunning agricultural and environmental benefits. Composition and characteristics of biochar, its interactions with contaminants and soil constituents, and its transformation in the environment are illustrated to enlighten the achievements of biochar amendment in improving soil physical, chemical, and biological quality and animal health, reducing soil greenhouse gas emissions, and decontaminating stormwater and mine sites. Additional emphasis is given to the pyrogenic carbon in Terra Preta soils and Japanese Andosols, the pyrolysis technology for converting agricultural byproducts to biochar, and the existing economic and technical barriers to wide application of biochar in Australia, China, New Zealand, North America, and Europe. Readers will appreciate the comprehensive review on the up-to-date biochar research and application and gain critical guidance in best biochar generation and utilization.

New at the Energy Library-Energy Library 1991

Selected Water Resources Abstracts- 1990

Fundamentals of Water Treatment Unit Processes-David Hendricks 2016-04-19 Carefully designed to balance coverage of theoretical and practical principles, Fundamentals of Water Treatment Unit Processes delineates the principles that support practice, using the unit processes approach as the organizing concept. The author covers principles common to any kind of water treatment, for example, drinking water, municipal wastewater, industrial water treatment, industrial waste water treatment, and hazardous wastes. Since technologies change but principles remain constant, the book identifies strands of theory rather than discusses the latest technologies, giving students a clear understanding of basic principles they can take forward in their studies. Reviewing the historical development of the field and highlighting key concepts for each unit process, each chapter follows a general format that consists of process description, history, theory, practice, problems, references, and a glossary. This organizational style facilitates finding sections of immediate interest without having to page through an excessive amount of material. Pedagogical Features End-of-chapter glossaries provide a ready reference and add terms pertinent to topic but beyond the scope of the chapter Sidebars sprinkled throughout the chapters present the lore and history of a topic, enlarging students' perspective Example problems emphasize tradeoffs and scenarios rather than single answers and involve spreadsheets Reference material includes several appendices and a quick-reference spreadsheet Solutions manual includes spreadsheets for problems Supporting material is available for download Understanding how the field arrived at its present state of the art places the technology in a more logical context and gives students a strong foundation in basic principles. This book does more than build technical proficiency, it adds insight and understanding to the broader aspects of water treatment unit processes.

Assessment of GAC Adsorption for Radon Removal-David A. Cornwell 1999

Activated Carbon Applications in the Food and Pharmaceutical Industries-Glenn M. Roy 1994-12-20 Activated carbon has proven itself as a superior adsorbent for hundreds of food, beverage, agricultural, and pharmaceutical processing applications. This book provides a comprehensive, scientific survey of activated carbon applications based on existing literature. A valuable resource for all technical personnel involved in the processes discussed.

Handbook of Sugar Refining-Chung Chi Chou 2000-08-14 This book provides a reference work on the design and operation of cane sugar manufacturing facilities. It covers cane sugar decolorization, filtration, evaporation and crystallization, centrifugation, drying, and packaging,

Process Design Manual for Carbon Adsorption-Cornell, Howland, Hayes, and Merryfield 1973

Water Treatment Plant Design-American Water Works Association Staff 2005 The industry standard reference for water treatment plant design and modernization has been updated to include hot topics such as security and design, vulnerability assessments, and planning against vandalism and sabotage, as well as the latest information on codes, regulations, and water

quality standards. * Latest code updates and new water quality standards *
Design operation and analysis of treatment facilities

Treatment of Petroleum Refinery, Petrochemical, and Combined Industrial-municipal Wastewaters with Activated Carbon-John E. Matthews 1978

Theory and Practice of Water and Wastewater Treatment-Ronald L. Droste 2018-07-31 Provides an excellent balance between theory and applications in the ever-evolving field of water and wastewater treatment. Completely updated and expanded, this is the most current and comprehensive textbook available for the areas of water and wastewater treatment, covering the broad spectrum of technologies used in practice today—ranging from commonly used standards to the latest state of the art innovations. The book begins with the fundamentals—applied water chemistry and applied microbiology—and then goes on to cover physical, chemical, and biological unit processes. Both theory and design concepts are developed systematically, combined in a unified way, and are fully supported by comprehensive, illustrative examples. *Theory and Practice of Water and Wastewater Treatment, 2nd Edition*: Addresses physical/chemical treatment, as well as biological treatment, of water and wastewater. Includes a discussion of new technologies, such as membrane processes for water and wastewater treatment, fixed-film biotreatment, and advanced oxidation. Provides detailed coverage of the fundamentals: basic applied water chemistry and applied microbiology. Fully updates chapters on analysis and constituents in water; microbiology; and disinfection. Develops theory and design concepts methodically and combines them in a cohesive manner. Includes a new chapter on life cycle analysis (LCA). *Theory and Practice of Water and Wastewater Treatment, 2nd Edition* is an important

text for undergraduate and graduate level courses in water and/or wastewater treatment in Civil, Environmental, and Chemical Engineering.

Activated Carbon Adsorption For Wastewater Treatment-Jerry. R. Perrich 2018-01-18 This volume is a guide to the state of the art of activated carbon adsorption technology as applied to wastewater treatment. This book surveys this body of knowledge and is a detailed description of current technology.

Design and Operation of Activated Sludge Processes Using Respirometry-Alan Rozich 1992-02-03 This book provides a thorough overview of respirometry and its scientific and engineering basis. The book describes the fundamentals of biological waste treatment, development of predictive models for system design and operation, and how respirometry fits in with these operations. It also presents case studies, which give you concrete examples of the application of respirometry. This book will help activated sludge process control designers, operators, and managers of biological wastewater treatment facilities learn how to improve methods for the analysis of biological wastewater systems, enhance design and treatability projects, optimize and troubleshoot plant operations, and accurately predict the impact of new loads or streams on biological wastewater facilities.

EPA 600/2- 1972