Security of Industrial Water Supply and Management

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.

Features

- Industrial Water Safety and Security
- Water Integration for Recycling and Recovery
- Water Conservation

Fields of interest

Environmental Management; Waste Water Technology / Water Pollution Control / Water Management / Aquatic Pollution; Industrial and Production Engineering

Target groups

Graduate

Type of publication

Proceedings

Challenging Legitimacy at the Precipice of Energy Calamity

Human history has often been described as a progressive relinquishment from environmental constraints. Now, it seems, we have come full circle. The ecological irrationalities associated with industrial societies have a lengthy history, and our purpose in the proposed book is not to catalogue the litany of wrongs. Rather, this book is about political responses to global environmental crisis at a crucial turning point in history, by focusing on the political discourses surrounding the tar sands in Alberta, Canada.

Features

- Looks at how society navigates crucial historic moments
- Focuses on the Athabasca tar sands and the high viscosity tar that has been deposited over several millennia
- The potential for reflexive social change can best be evaluated through critical consideration of why current social structures are sustained

Contents


Fields of interest

Environment, general; Energy Policy, Economics and Management; Climate Change

Target groups

Professional/practitioner

Type of publication

Monograph
The Handbook of Environmental Chemistry

Volume 17

T. P. Knepper, University of Applied Sciences Fresenius, Idstein, Germany; F. T. Lange. DGWG Water Technology Center, Karlsruhe, Germany (Eds.)

Polyfluorinated Chemicals and Transformation Products

Due to their unparalleled effectiveness and efficiency, polyfluorinated chemicals (PFC) have become essential in numerous technical applications. However, many PFCs brought to market show limited biodegradability, and their environmental persistence combined with toxic and bioaccumulative potential have become a matter of concern in some instances. This volume highlights the synthesis of PFCs, focusing on substances with improved application and environmental properties, which are a challenge for synthetic chemists. Further, modern mass spectrometric techniques for the detection and identification of biotransformation products of PFCs are described. The sorption and leaching behavior of PFC in soil is also addressed in order to predict their fate in the environment. Several contributions discuss the monitoring of PFCs in European surface, ground and drinking waters, treatment options for PFC removal from drinking water, occurrence in food, and the human biomonitoring of PFCs.

Features
- A comprehensive review
- Written by experts
- An invaluable source of information for scientists, engineers, graduate students in the fields of environmental sciences, risk assessment and risk controlling, toxicology and ecology, decision-makers in government, industrial and regulatory bodies

Fields of interest
Environmental Chemistry; Analytical Chemistry; Fields of interest

Target groups
Research

Type of publication
Reviews

Environmental Modelling
Using MATLAB

The book has two aims: to introduce basic concepts of environmental modelling and to facilitate the application of the concepts using modern numerical tools such as MATLAB. It is targeted at all natural scientists dealing with the environment: process and chemical engineers, physicists, chemists, biologists, biochemists, hydrogeologists, geochemists and ecologists. MATLAB was chosen as the major computer tool for modeling, firstly because it is unique in its capabilities, and secondly because it is available in most academic institutions, in all universities and in the research departments of many companies. In the 2nd edition many chapters will include updated and extended material. In addition the MATLAB command index will be updated and a new chapter on numerical methods will be added. For the second edition of ‘Environmental Modelling’ the first edition was completely revised. Text and figures were adapted to the recent MATLAB® version. Several chapters were extended. Correspondingly the index of MATLAB commands was extended considerably, which makes the book even more suitable to be used as a reference work by novices. Finally an introduction into numerical methods was added as a new chapter.

Features
- Many chapters updated and extended
- Updated MATLAB command and index
- New chapter on numerical methods

Fields of interest
Math. Appl. in Environmental Science; Computer Applications in Earth Sciences; Appl. Mathematics/Computational Methods of Engineering

Target groups
Research

Type of publication
Monograph

Teaching Environmental Health to Children
An Interdisciplinary Approach

Every day we are exposed to toxins and toxicants that can impact our health. Yet we rarely teach elementary and secondary students about these exposures and how they can reduce their risk to them. In this book we highlight activities and curriculum developed at nine universities in the United States from a grant funded by the National Institute of Environmental Health Sciences. Our goal is to extend these lessons to a global audience and for classroom teachers of all subjects and age levels to include environmental health in their teaching.

Features
- Provides educators with key concepts in learning about environmental health
- Offers exemplary lessons regarding air and water pollution, heavy metals, and food
- Helps educators to adapt these pedagogical approaches to issues in their own communities

From the contents
1. Environmental Health as an Interdisciplinary Subject.
2. The Science of Environmental Public Health.

Fields of interest
Environmental Health; Education (general); Medicine/Public Health, general

Target groups
Research

Type of publication
Monograph
B. R. Johnston, Center for Political Ecology, Santa Cruz, CA, USA (Ed.)

**Water, Cultural Diversity, and Global Environmental Change**

Emerging Trends, Sustainable Futures?

A product of the UNESCO-IHP project on Water and Cultural Diversity, this book represents an effort to examine the complex role water plays as a force in sustaining, maintaining, and threatening the viability of culturally diverse peoples. It is argued that water is a fundamental human need, a human right, and a core sustaining element in biodiversity and cultural diversity. The core concepts utilized in this book draw upon a larger trend in sustainability science, a recognition of the synergism and analytical potential in utilizing a coupled biological and social systems analysis, as the functioning viability of nature is both sustained and threatened by humans.

**Features**

- A UNESCO-IHP project exploring the linkages between water, cultural diversity and environmental change
- This book offers an array of ideas, concepts, and tools to understand and manage the sociocultural implications of the growing water crisis
- Includes discussions on how water resource, cultural diversity and biodiversity concerns can be met in a peaceful and sustainable fashion

**Contents**

1. Water and cultural diversity.
2. Culture and Water in Diverse Environments.
3. Water value, access, use, and control: sociocultural contexts of water scarcity.
4. Hydrodevelopment, Cultural Diversity and Sustainability.
5. The Ways Forward.

**Fields of interest**

Marine & Freshwater Sciences; Sustainable Development; Environment, general

**Target groups**

Research

**Type of publication**

Contributed volume

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M. S. Khan, A. Zaidi, Aligarh Muslim University, India; R. Goel, Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, India; J. Musarrat, King Saud University, Riyadh, Saudi Arabia (Eds.)

**Biomanagement of Metal-Contaminated Soils**

Heavy-metal contamination is one of the world’s major environmental problems, posing significant risks to agro-ecosystems. Conventional technologies employed for heavy-metal remediation have often been expensive and disruptive. This book provides comprehensive, state-of-the-art coverage of the natural, sustainable alternatives that use a wide range of biological materials in the removal/detoxification of heavy metals, consequently leading to the improvement of crops in these soils.

Novel, environmentally friendly and inexpensive solutions are presented based on a sound understanding of metal contamination and the roles of plants and microbes in the management of these toxic soils. Written by worldwide experts, the book provides not only the necessary scientific background but also addresses the challenging questions that require special attention in order to better understand metal toxicity in soils and its management through bioremediation.

**Features**

- More than 40 international experts offer guidance on bioremediation
- Provides cost-effective, sustainable alternatives
- Practitioners in developing countries will find this text of special interest

**From the contents**

From the contents:
- Heavy-Metal Pollution: Source, Impact and Remedies.
- Metal-Plant Interactions: Toxicity and Tolerance.
- Legume-Rhizobium Symbioses as a Tool for Bioremediation of Heavy Metal Polluted Soils.
- Importance of Arbuscular Mycorrhizal Fungi in Phytoremediation of Heavy Metal Contaminated Soils.

**Fields of interest**

Environmental Management; Applied Microbiology; Agriculture

**Target groups**

Graduate

**Type of publication**

Contributed volume

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J. E. Landmeyer, U.S. Geological Survey, Columbia, SC, USA

**Introduction to Phytoremediation of Contaminated Groundwater**

Historical Foundation, Hydrologic Control, and Contaminant Remediation

This book provides the reader with the comprehensive view necessary to understand and critically evaluate the design, implementation, and monitoring of phytoremediation at sites characterized by contaminated groundwater. Part I presents the historical foundation of the interaction between plants and groundwater, introduces fundamental groundwater concepts for plant physiologists, and introduces basic plant physiology for hydrogeologists. Part II presents information on how to assess, design, implement, and monitor phytoremediation projects for hydrologic control. Part III presents how plants take up and detoxify a wide range of organic xenobiotics in contaminated groundwater systems, and provides various approaches on how this can be assessed and monitored. Throughout, concepts are emphasized with numerous case studies, illustrations and pertinent literature citations.

**Features**

- Numerous case studies and high quality images illustrate the concepts
- Takes the reader from the historical perspective to state-of-the-science today
- Provides the fundamentals necessary to understand, undertake and critically evaluate phytoremediation at contaminated groundwater sites

**From the contents**

From the contents:
- PART I: Overview of Plants, Groundwater and Their Interaction: Historical Foundation of Plant and Groundwater Interactions.
- Integration of Plant and Groundwater Interactions: Fundamentals of Plant Anatomy and Physiology Related to Water Use.
- Fundamentals of Groundwater Hydrogeology.

**Fields of interest**

Terrestrial Pollution; Hydrogeology; Plant Sciences

**Target groups**

Graduate

**Type of publication**

Monograph
Environmental Change in Lesotho
An Analysis of the Causes and Consequences of Land-Use Change in the Lowland Region

Environmental Change in Lesotho identifies and analyzes the drivers of land-use change and the consequences of these changes on the livelihoods of rural land-users/managers. To accomplish this, a combination of tools from the social sciences and environmental fields were developed to identify causes and consequences of land-use change at selected levels, using a 'nested' approach. These methods were then applied to a case study of two villages in the Lowland region of Lesotho. This book is directed at environmental and social science experts, researchers, decision-makers, and development/aid workers interested in understanding the intricate human-environment relationship as it relates to land-use change in a changing biophysical, socio-economic, political and institutional context, coupled by HIV/AIDS, changing demographics, local perceptions and what is termed here 'dependency syndrome'.

Features
- This Lesotho case study discusses HIV/AIDS and 'dependency syndrome' in the context of human geography
- Contributes policy-relevant knowledge for decision-making on sustainable land use
- Challenges some commonly-held myths about land-use change

Contents

Fields of interest
Environmental Management; Human Geography; Geography (general)

Type of publication
Proceedings

Due August 2011


- € 199,95 | £180.00
- * (D) 213,95 | * (A) 219,94 | sFr 287,00

Also available as Softcover
- € 99,95 | £90.00
- * (D) 106,95 | * (A) 109,95 | sFr 143,50
ISBN 978-94-007-1772-9

Due September 2011


- € 99,95 | £90.00
- * (D) 106,95 | * (A) 109,95 | sFr 143,50
ISBN 978-94-007-1880-7

Also available as Softcover
- approx. * € 99,95 | £89.95
- approx. * (D) 96,25 | * (A) 98,95 | sFr 129,00

Radiobiology and Environmental Security

This volume – like the NATO Advanced Research Workshop on which it is based – addresses the fundamental science that contributes to our understanding of the potential risks from ecological terrorism, i.e. dirty bombs, atomic explosions, intentional release of radionuclides into water or air. Both effects on human health (DNA and systemic effects) and on ecosystems are detailed, with particular focus on environmentally relevant low-dose ranges. The state-of-the-art contributions to the book are authored by leading experts; they tackle the relevant questions from the perspectives of radiation genetics, radiobiology, radiocology, radiation epidemiology and risk assessment.

Features
- This volume concerns a topic of great current interest not yet covered in a textbook
- The contributors are all leaders in radiobiology, radiation genetics and radiocology
- The paradigm shifters in low-dose radiation effects are included
- Important insights from East and West are included

Fields of interest
Effects of Radiation/Radiation Protection; Biophysics and Biological Physics; Ecotoxicology

Target groups
Graduate

Type of publication
Monograph

Due September 2011


- approx. * € 169,95 | £153.00
- approx. * (D) 181,85 | * (A) 186,94 | sFr 244,00

Also available as Softcover
- approx. * € 89,95 | £81.00
- approx. * (D) 96,25 | * (A) 98,95 | sFr 129,00
A. Mudhoo, University of Mauritius, Reduit, Mauritius

Adsorption of Reactive Red 158 Dye by Chemically Treated Cocos Nucifera L. Shell Powder

Adsorption of Reactive Red 158 by Cocos Nucifera L.

The effective removal of dyes from aqueous waste is an important issue for many industrialized countries. The traditional treatment methods used to remove dyes from wastewater have certain disadvantages such as incomplete dye removal, high reagent and energy requirements, and the generation of toxic sludge or other waste products that require disposal. The search for alternative and innovative treatment techniques has focused attention on the use of biological materials for dye removal and recovery technologies. This brief summarizes the latest developments in this important field.

Features
- Reviews the use of biological materials for dye removal and recovery technologies
- Reports experiments for the adsorption kinetics and isotherms with pre-treated Cocos nucifera L.
- Verifies that all tested adsorption systems are well represented by Langmuir, Freundlich, Dubinin-Radushkevich and Temkin isotherm models

Contents

Fields of interest
Environmental Chemistry; Waste Management/Waste Technology; Bioorganic Chemistry

Target groups
Research

Type of publication
SpringerBriefs

Reviews of Environmental Contamination and Toxicology

Continuation of Residue Reviews

Series editors: M. F. Cavieres, G. Ware

Volume 214

D. M. Whitacre, Reviews of Environmental Contamination and Toxicology, Summerfield, NC, USA (Ed.)

Reviews of Environmental Contamination and Toxicology

Reviews of Environmental Contamination and Toxicology attempts to provide concise, critical reviews of timely advances, philosophy and significant areas of accomplished or needed endeavor in the total field of xenobiotics, in any segment of the environment, as well as toxicological implications.

Features
- Evaluates risks of acquired clinical vulnerability among subjects exposed to E-waste
- Overview of aerospace toxicology
- Effects of organic herbicides on phototrophic microbial communities in freshwater ecosystems

Contents

Fields of interest
Ecotoxicology; Environmental Management; Waste Management/Waste Technology

Target groups
Research

Type of publication
Contributed volume