Methods for Assessment of Soil Degradation - Rattan Lal - 2020-11-26

Chemical Methods for Assessing Bioavailable Metals in Sludges and Soils - 1985

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Soil Chemical Methods - Australasia - George E Rayment - 2010-10-25

Soil Chemical Methods - Australasia describes over 200 laboratory and field chemical tests relevant to Australia and beyond. The information and methodology provided across 20 chapters is comprehensive, systematic, uniquely coded, up-to-date and designed to promote chemical measurement quality. There is guidance on the choice and application of analytical methods from soil sampling through to the reporting of results. In many cases, optional analytical ‘finishes’ are provided, such as flow-injection analysis, electro-chemistry, multiple flame technologies, and alternatives to chemical testing offered by near-infrared and mid-infrared diffuse reflectance spectroscopy. The book supersedes and updates the soil chemical testing section of the 1992 Australian Laboratory Handbook of Soil and Water Chemical Methods by Rayment and Higgison, while retaining method codes and other strengths of that Handbook. Chapters cover soil sampling, sample preparation and moisture content; electrical conductivity and redox potential; soil pH; chloride; carbon; nitrogen; phosphorus; sulphur; gypsum; micronutrients; extractable iron, aluminium and silicon; saturation extracts; ion-exchange properties; lime requirements; total miscellaneous elements; miscellaneous extractable elements; alkaline earth carbonates and acid sulfate soils. In addition, there are informative Appendices, including information on the accuracy and precision of selected methods. This book targets practising analysts, laboratory managers, students, academics, researchers, consultants and advisors involved in the analysis, use and management of soils for fertility assessments, land use surveys, environmental studies and for natural resource management.

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Soil degradation has serious global impacts on agronomic, economic, and sociopolitical conditions, however, statistics regarding the degree of these impacts has been largely unreliable. This book aims to standardize the methodology for obtaining reliable and objective data on soil degradation. It will also identify and develop criteria for assessing the severity of soil degradation, providing a realistic scenario of the problem.

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Contaminated Soil '88 - K. Wolf - 2012-12-06

W.A. de Jong President of TNO Until some decades ago man supposed that the resilience of the environment was unlimited. He thought he could draw heavily on nature with impunity and that he could infinitely dump his waste into the environment. We have come to know better now: virtually everyone is well aware that one cannot just go on burdening the environment of man, animal and plant to such an extent. TNO, the Netherlands Organization for Applied Scientific Research, is among those research institutions that are working on economically feasible solutions for pollution problems resulting from human activities. Soil contamination and remediation feature as important topics in TNO's environmental research programme. In view of the international scope of the problem, TNO organized an international conference on this subject in Utrecht, the Netherlands, in November 1985, which met with a worldwide response from the scientific community as well as from governments and industry. The international interest taken in soil contamination is underlined by the fact that the Second International Conference on Contaminated Soil takes place in a country where remedial action is being given high political priority.

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Trace Element Speciation Analytical Methods and Problems - Graeme E. Batley - 1989-06-30

This book discusses in detail the application of physical separation procedures together with modern instrumental analysis techniques such as HPLC, gas chromatography, and anodic strip-pee voltammetry. Particular emphasis is given to environmental samples where the greatest concern for the effects of speciation on trace element transport, toxicity, and bioavailability has been expressed. Special analytical techniques are also devoted to methods of sam-pling and storage, and to the mathematical modeling of chemical speciation. Although designed for the practical analytical chemist, this publication is essential reading for researchers in or entering the field of chemical speciation.
researchers in the field of Environmental Sciences and Hydrogeochemistry the environment in general to specific investigations on site characterization (sampling strategy, analytical procedures and problems). Specific articles deal with health problems related to environment pollution, waste disposal, data base management, and provide illustrations of specific case histories of site characterization and remediation of brownfield sites. * Comprehensive analysis providing background information ranging from geochemistry in general to specific investigations * Provides practical insight through case study material * Informs and updates students and practitioners on hot topics, latest trends and developments

Environmental Geochemistry: Site Characterization, Data Analysis and Case Histories - Benedetto DeVivo - 2008-07-21
This volume contains chapters spanning from the origins of geochemistry in the environment in general to specific investigations on site characterization (sampling strategy, analytical procedures and problems). Specific articles deal with health problems related to environment pollution, waste disposal, data base management, and provide illustrations of specific case histories of site characterization and remediation of brownfield sites. * Comprehensive analysis providing background information ranging from geochemistry in general to specific investigations * Provides practical insight through case study material * Informs and updates students and practitioners on hot topics, latest trends and developments

Natural Attenuation of Trace Element Availability in Soils - Rebecca Hamon - 2006-11-16
Understanding attenuation processes is important not only for predicting the behavior of contaminants in soil and formulating remediation strategies, but also for mitigating and enhancing the availability of micronutrients in soil for agricultural applications. Natural Attenuation of Trace Element Availability in Soils brings together pioneering re

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Arsenic in Soil and Groundwater Environment - Prosun Bhattacharya - 2007-06-29
This volume presents the recent developments in the field of arsenic in soil and groundwater. Arranged into nine sections, the text emphasizes the global occurrences of arsenic in the environment, particularly on its source, pathways, behavior, and effects it has on soils, plants, water, animals, and humans. It also covers the diverse issues of arsenic in the mining environment, arsenic emanating from hydrothermal springs, and the geochemical modeling of arsenic adsorption to oxide surfaces. Finally, the text includes different cost effective removal mechanisms of arsenic from drinking water using natural earth, solar oxidation, and arsenic oxidation by ferrate. Written in simple English, and few technical terms, the book is designed to create interest within the countries with occurrences of arsenic in drinking water with an update the current status of knowledge on the dynamics of natural arsenic from the aquifers through groundwater to food chain and efficient techniques for arsenic removal. As well as researchers, environmental scientists and chemists, toxicologists, medical scientists and even for general public seeking an in-depth view of arsenic which had been classed as a carcinogen. * bring awareness, among administrators, policy makers and company executives, on the problem and to improve the international cooperation

PHEs, Environment and Human Health - Claudio Bini - 2014-05-14
This book is dedicated to the occurrence and behaviour of PHEs in the different compartments of the environment, with special reference to soil. Current studies of PHEs in ecosystems have indicated that many industrial areas near urban agglomerates, abandoned or active mines, major road systems and ultimately also agricultural land act as sources and at the same time sinks, of PHEs and large amounts of metals are recycled or dispersed in the environment, posing severe concerns to human health. Thanks to the collaboration of numerous colleagues, the book outlines the state of art in PHEs research in several countries and is enforced with case studies and enriched with new data, not published elsewhere. The book will provide to Stakeholders (both Scientists Professionals and Public Administrators) and also to non-specialists a lot of data on the concentrations of metals in soils and the environment and the critical levels so far established, in the perspective to improve the environmental quality and the human safety.

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Selected Water Resources Abstracts - - 1991
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Metals Speciation in Soils - Debra A. Morrow - 1996
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Watershed 89 - D. Wheeler - 2016-06-06
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Plant Nutrition - Walter Horst - 2006-05-18
This volume is a compilation of extended abstracts of all papers presented at the 14th International Plant Nutrition Colloquium. Over 500 oral and poster presentations illustrate current knowledge and research emphasis in this subject, providing a comprehensive view of the state of plant nutrition research.

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Environmental Contamination - J.-P. Vernet - 1993-11-04
This book deals with various aspects of environmental contamination. One of the fields considered in this work is atmospheric pollution. This has become a major problem of our time, and could soon develop into a scandal through the overestimation of the impact of greenhouse gases such as ozone, NOx or SO2, which allows their use as political instruments. Another growing field of importance covers the fundamental questions posed by the problem of soils and their impact on the environment, with special reference to soil.
radiation is invariably accompanied by degraded qualities of both air and water. This book deals with various aspects of environmental contamination. One of the fields considered in this work is atmospheric pollution. This has become a major problem of our time, and could soon develop into a scandal through the overestimation of the impact of greenhouse gases such as ozone, NOx or SO2, which allows their use as political instruments. Another growing field of importance covers the fundamental questions posed by the problem of soils and their interaction with waste from human activities, e.g., stevedoring, mining wastes, sewage sludge, and soil behavior under defined conditions. How do these different elements react and how tolerant can our system be towards them? This publication, containing a selection of the most important work presented at the 5th International Conference on Environmental Contamination, reflects some aspects of the present state of research and our society's dominant preoccupations.

Sewage Sludge in Agriculture - Jayne T. MacLean - 1991

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Industrial Waste Disposal and Sewage Irrigation - K. V. Paiwali - 1993

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Fate and Transport of Heavy Metals in the Vadose Zone - I.K. Iskandar - 1999-04-23

The chapters of this book were originally presented at the Fourth International Conference on the Biogeochemistry of Trace Elements, in June 1997 at Berkeley, California. The results of that symposium are now available to assist both specialists and those concerned with broader environmental issues. The first four chapters of Fate and Transport of Heavy Metals in the Vadose Zone are devoted to sorption-desorption processes. Subjects include the kinetics of trace metal sorption-desorption, adsorption of nickel and their isotherms, cadmium reactions, and retention mechanisms of both linear and nonlinear types. The next three sections describe complexation and speciation processes. The authors consider the effect of humic and fulvic acids, the binding of copper with organic matter, and the rate of dissolved selenium. Chapters eight through eleven scrutinize the bioavailability and retention of heavy metals and their mobility in the vadose zone. Twelve details plant-available concentration levels for heavy metals in the vadose zone. The last section relates cases studies that are relevant to environmental affairs. Features

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Advances in Soil Science - 2012-12-06

The key to sustaining the soil resource base is to maintain, or enhance, soil quality. Soil quality cannot be seen or measured directly from the soil alone but is inferred from soil characteristics and soil behavior under defined conditions. In essence, the quality of soils is analogous to the health of humans, and just as there is no single characteristic that can be measured to quantify a person's health, there is no single measure of quality soil quality. However, there are certain characteristics, particularly when considered together, that are good indicators. Soil quality, just as human health, can be maintained or enhanced by good management practices; and seriously degraded-sometimes irreversibly-with poor practices. Soil quality is also important because it has direct and indirect effects on air quality and water quality. While the enhancement of soil quality does not always assure parallel improvements in the quality of air and, particularly, water resources, this is often the case. However, soil deg water resources. The consensus among many scientists is that the greatest challenge is not increasing production, but preventing serious deterioration of the soil and water resource base so that the production level can be sustained.

Advances in Soil Science -- 2012-12-06

The 'bioeconomy' is the idea of an economy based on the sustainable exploitation of biological resources. Within this concept, there is increasing emphasis on issues such as climate change, depletion of natural resources and growing world food needs. The bioeconomy builds on the recognition of advances in technology, particularly in the life sciences, but at the same time covers issues such as innovation management, ecosystem services, development and governance. This book explores the development of the bioeconomy across the world from an economic and policy perspective, as well as identifying potential future pathways and issues. It uses a broad definition, covering all sectors using biological resources except health, and, rather than focusing on individual sectors, it explores the breadth of interconnections that make the bioeconomy a new and challenging subject. Divided into two parts, the book initially outlines definitions, strategies, policy and economic information related to the world's bioeconomy. The second part describes current economic analysis and research efforts in qualifying and understanding the economics of the bioeconomy. This includes the contributions of technology, research and innovation; driving forces and demand-side economics; supply-side economies, and the role of markets and public policy in matching demand and supply. The political economy, regulation and transitions are considered, as well as the contribution of the bioeconomy to society, including growth, development and sustainability. Key features include: - An analysis of varied international approaches to the bioeconomy. - A joint consideration of biotechnology, agriculture, food energy and bio-materials. - An assessment of sustainability in the bioeconomy. - A comprehensive review of the issues from an economic and policy perspective. This book will be of interest to students and researchers in agricultural and natural resource economics, agricultural and environmental policy, as well as policy-makers, practitioners and economists.

The Bioeconomy - Davide Viaggi - 2018-11-30

The 'bioeconomy' is the idea of an economy based on the sustainable exploitation of biological resources. Within this concept, there is increasing emphasis on issues such as climate change, depletion of natural resources and growing world food needs. The bioeconomy builds on the recognition of advances in technology, particularly in the life sciences, but at the same time covers issues such as innovation management, ecosystem services, development and governance. This book explores the development of the bioeconomy across the world from an economic and policy perspective, as well as identifying potential future pathways and issues. It uses a broad definition, covering all sectors using biological resources except health, and, rather than focusing on individual sectors, it explores the breadth of interconnections that make the bioeconomy a new and challenging subject. Divided into two parts, the book initially outlines definitions, strategies, policy and economic information related to the world's bioeconomy. The second part describes current economic analysis and research efforts in qualifying and understanding the economics of the bioeconomy. This includes the contributions of technology, research and innovation; driving forces and demand-side economics; supply-side economies, and the role of markets and public policy in matching demand and supply. The political economy, regulation and transitions are considered, as well as the contribution of the bioeconomy to society, including growth, development and sustainability. Key features include: - An
The book is divided into four sections as follows: Part 1 - Introduction: Discusses the growing role of renewables as resources and their applications, together with an introduction to the principles of sustainability assessment Part 2 - Assessment Methods: Presents a wide variety of sustainability assessment methods and tools that are currently used. This includes land, water, and material use analysis, energy and exergy use, carbon footprints, life cycle analysis, ecological footprints, life cycle costing, social sustainability analysis, Prosuite methodology, and Seebalance (the SocioEcoEfficiency Analysis developed by BASF). Part 3 - Case Studies: Provides context by demonstrating the application of these methods within the major industries benefiting from renewables. The case studies apply sustainability assessment methods to the production of renewable energy (wind energy, solar energy and biofuels), bio-based chemicals and bio-based materials. Part 4 - Conclusions

Freshwater and Estuarine Radioecology - G. Desmet - 1997-01-01
The Chernobyl accident drew attention to the difficulties of understanding the dynamics of radionuclide transport through the environment. Using older methods developed after the pseudo steady state pollution resulting after the weapons testing fallout. More recent approaches, which are reported in this book, have incorporated both the dynamic aspects highlighted by the pulse Chernobyl input and the importance of improvement in models that can be brought about by constraining parameters on the basis of a knowledge of the fundamental physics, chemistry, biology and ecology of the ecosystems involved. The papers within this volume include hydrodynamic models of suspended solids transport, ion exchange interpretation of radionuclide sorption: approaches applying a knowledge of transport kinetics to the uptake of radionuclides by biota; the effects of different ecological niches on the relative uptake of radionuclides by different species; kinetic models of radionuclide uptake through trophic chains and the success and failure of different countermeasures attempted after the Chernobyl accident.

Heavy Metals in Soils - B. J. Alloway - 1995
Heavy metals in soils continue to receive increasing attention due to the growing scientific and public awareness of environmental issues and the development of analytical techniques to measure their concentrations accurately. Building on the success and acclaim of the first edition, this book continues to provide an up-to-date, balanced and comprehensive review of the subject in two sections: the first providing an introduction to the metals chemistry, sources and methods used for their analysis; and the second containing chapters dealing with individual elements in detail.

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As a result of developments in biotechnology, bioengineering, and related sciences, processing of bio-materials and bioproducts has become an area of strategic importance. Written in a textbook style, this book attempts to bring together both the theory and practice of thermal processing of bio-materials. After giving the basic information on material properties, the authors describe the principles of various thermal processes such as flash pyrolysis, membrane concentration, evaporation, drying, and sterilization. New methods of drying based on the authors’ research experiences are
of the hyaluronic acid innature, in particular in the human body. The including degradation of thermo and xerobio-products. Given the strong effect of temperature on micro-organisms, a separate chapter is dedicated to thermobacteriology.

Thermal Processing of Bio-Materials - Tadeusz Kudra - 2014-04-21 As a result of developments in biotechnology, bioengineering, and related sciences, processing of bio-materials and bio-products has become an area of strategic importance. Written in a textbook style, this book attempts to bring together both the theory and practice of thermal processing of bio-materials. After giving the basic information on material properties, the authors describe the principal techniques such as freezing, chilling, membrane concentration, evaporation, drying, and sterilization. New methods of drying based on the authors' research experiences are presented to a great extent. Much attention is paid to quality interactions, including degradation of thermo and xerobio-products. Given the strong effect of temperature on micro-organisms, a separate chapter is dedicated to thermobacteriology.


The Chemistry of Bio-based Polymers - Johannes Karl Fink - 2020-01-22 The recent explosion of interdisciplinary research has fragmented the knowledge base surrounding renewable polymers. The Chemistry of Bio-based Polymers 2nd edition brings together, in one volume, the research and work of Professor Johannes Fink, focusing on biopolymers that can be synthesized from renewable polymers. After introducing general aspects of the field, the book's subsequent chapters examine the chemistry and biodegradable polymeric types sorted by their chemical compounds, including the synthesis of low molecular compounds. Various categories of biopolymers are detailed including vinyl-based polymers, acid and lactone polymers, ester and amide polymers, carbohydrate-related polymers and others. Procedures for the preparation of biopolymers and biodegradable nanocomposites are arranged by chemical methods and in vitro biological methods, with discussion of the issue of "plastics from bacteria." The factors influencing the degradation and biodegradation of polymers used in food packaging, exposed to various environments, are detailed at length. The book covers the medical applications of bio-based polymers, concentrating on controlled drug delivery, temporary prostheses, and scaffolds for tissue engineering. Professor Fink also addresses renewable resources for fabricating biofuels and argues for localized biorefineries, as biomass feedstocks are more efficiently handled locally.

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Hyaluronic Acid - V. N. Khabarov - 2014-12-22 Hyaluronic acid is an essential part of connective, epithelialand neural tissues, and contributes to cell proliferation andamidation. It is used as a stimulating agent for collagen synthesisand is a common ingredient in skin-care products, a multi-billiondollar industry, as it is believed to be a key factor in fightingthe aging process. Hyaluronic Acid: Production, Properties, Application in Biology and Medicine consists of six chapters discussing the various issues of hyaluronic acid research. Chapter 1, historical and medical applications of this polysaccharide have been extensively studied and this bookprovides a wealth of scientific data demonstrating the criticalrole of hyaluronic acid and its promise as a multifacetedbiomacromolecule. Approaching hyaluronic acid from multiple angles, this booklinkson relationships between its biological functions, structure andphysical-chemical properties. It will be an invaluable resource to researchers, both industrial and academic, involved in all aspects of hyaluronan-based technologies.

Metal Specification Theory Analysis Application - James R. Kramer - 1988-09 Here is an up-to-date presentation of metal speciation in soils, sediments, and water by specialists in analytical chemistry, environmental engineering, oceanography, nutrition, and soil chemistry, fate and effects-measurements and modeling—are the major themes in this book, with overviews and examples of the significance of metal speciation to solving environmental problems, and recommendations for additional research areas. This new reference discusses separation methods, extraction techniques; bioavailability as related to humans, plants, and aquatic organisms; applications showing importance of speciation in groundwater; industrial waste treatment systems, rivers and lakes, solid-solution interface; fate of organic pollutants; nature of surfaces; binding of metals to oxides and sediments (dissolved and particulate matter); interpretations of reactions in multi-ligand systems.
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