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It has often been said that generals prepare for the next war by re-fighting the last. The Deepwater Horizon (DWH) oil spill was unlike any previous – an underwater well blowout 1,500 meters deep. Much has been learned in the wake of DWH and these lessons should in turn be applied to both similar oil spill scenarios and those arising from “frontier” explorations by the marine oil industry. The next deep oil well blowout may be at 3,000 meters or even deeper. This volume summarizes regional (Gulf of Mexico) and global megatrends in marine oil exploration and production. Research in a number of key areas including the behavior of oil and gas under extreme pressure, impacts on biological resources of the deep sea, and the fate of oil and gas released in spills is synthesized. A number of deep oil spills are simulated with detailed computer models, and the likely effects of the spills and potential mitigation measures used to combat them are compared. Recommended changes in policies governing marine oil exploration and development are proposed, as well as additional research to close critical and emerging knowledge gaps. This volume synthesizes state-of-the-art research in deep oil spill behavior and response. It is thus relevant for government and industry oil spill responders, policy formulators and implementers, and academics and students desiring an in-depth and balanced overview of key issues and uncertainties surrounding the quest for deep oil and potential impacts on the environment.

Reaction Mechanisms in Environmental Organic Chemistry classifies and organizes the reactions of environmentally important organic compounds using concepts and data drawn from traditional mechanistic and physical organic chemistry. It will help readers understand these reactions and their importance for the environmental fates or organic compounds of many types. The book has a molecular and mechanistic emphasis, and it is organized by reaction type. Organic molecules and their fates are examined in an ecosystem context. Their reactions are discussed in terms that organic chemists would use. The book will benefit organic chemists, environmental engineers, water treatment professionals, hazardous waste specialists, and biologists. Although conceived as a comprehensive monograph, the book could also be used as a text or reference for environmental chemistry classes at the undergraduate or graduate level.

A hands-on guide for applying research methods to common problems, issues, projects, and questions that communication practitioners deal with on a regular basis, this text demonstrates the relevance of research in professional roles and communication careers. The second edition features updated material that covers major communication research methods including surveys, experiments, focus groups, observation research, while also providing key background information on ethics, validity, reliability, concept explication, statistical analysis, and other current topics. It continues to foster student engagement with research through its numerous features and practical activities, including: Research in Depth – examples of methods as applied in scholarly research Reflect and React – problems and issues that promote reflection and discussion Voices from Industry – Q&As with professionals working in communication industries End-of-unit activities – exercises that reinforce concepts and content The text is ideally suited to both undergraduate and graduate courses in mass communication research methods. Online resources, including sample syllabi, PowerPoint slides, and test banks are available on the companion website: www.routledge.com/cw/boyle.

Petroleum Production Engineering, Second Edition, updates both the new and veteran engineer on how to employ day-to-day production fundamentals to solve real-world challenges with modern technology. Enhanced to include equations and references with today’s more complex systems, such as working with horizontal wells, workovers, and an entire new section of chapters dedicated to flow assurance, this go-to reference remains the most all-inclusive source for answering all upstream and midstream production issues. Completely updated with five sections covering the entire production spectrum, including well productivity, equipment and facilities, well stimulation and workover, artificial lift methods, and flow assurance, this updated edition continues to deliver the most practical applied production techniques, answers, and methods for today’s production engineer and manager. In addition, updated Excel spreadsheets that cover the most critical production equations from the book are included for download. Updated to cover today’s critical production challenges, such as flow assurance, horizontal and multi-lateral wells, and workovers Guides users from theory to practical application with the help of over 50 online Excel spreadsheets that contain basic production equations, such as gas lift potential, multilateral gas well deliverability, and production forecasting Delivers an all-inclusive product with real-world answers for training or quick look up solutions for the entire petroleum production spectrum

2017 CFR Annual Print Title 30 Mineral Resources Parts 200 to 699IntraWEB, LLC and Claitor's Law PublishingOuter Continental Shelf Oil & Gas Leasing Program, 2012-2017Final Programmatic Environmental Impact Statement

Plant Design and Operations, Second Edition, explores design and operational considerations for oil and gas facilities, covering all stages of the plant cycle, with an emphasis on safety and risk. The oil and gas industry is constantly looking for cost optimization strategies, requiring plant-based personnel to expand their knowledge base outside their discipline or subject. Relevant reference materials are scattered throughout various official standards, while staff lack the immediate hands-on knowledge to safely facilitate the full operational life cycle of the plant. This second edition is a complete source of solutions for major process projects including offshore facilities, chemical plants, oil refineries, and pipelines. This single reference provides insight for safer operations and maintenance best practices. It has been updated with more focus on safety in design and operations, standards, and compliance, and more detailed information on equipment and system/component design. Explores design and operational considerations for oil and gas facilities, covering all stages of the plant cycle, with an emphasis on safety and risk Includes updated new chapters covering principles of design, security regulations, and human factors Includes more relevant equipment information covering storage tanks, valves, and control systems Remains the only source to provide hands-on solutions for process plants in the refining and chemical industries

Enhanced analytical capabilities and separation techniques, improved detection limits, and accessibility of instrumentation have led to massive strides in the use of isotopes to assess microbial processes in surface and subsurface sediments. Considering the rapid growth of research and commercial interest in stable isotope and radioisotope applications for contaminant hydrology and microbial ecology, an up-to-date overview of the field is long overdue. Environmental Isotopes in Biodegradation and Bioremediation comprehensively covers established and emerging isotope methods for environmental applications, focusing on biodegradation and bioremediation. This book is an invaluable tool for researchers, practitioners, and regulators who require an extensive understanding of the application of isotope methods to natural compounds and environmental contaminants. It addresses questions including: What amount of a compound comes from anthropogenic release? Do the chemicals involved undergo degradation in the environment? Do they persist and accumulate? This book is divided into four sections: Isotope Fundamentals covers important background and theoretical information needed to understand later chapters Isotopes and Microbial Processes discusses the application of isotopes to different environmental redox conditions that dictate the predominant microbial processes that will occur Isotopes in Field Applications describes the transformation of anthropogenic pollutants and the application of isotope tools to field sites Isotope Emerging Areas addresses the use of compounds labeled with stable isotopes, including stable isotope probing and the use of radiocarbon at natural abundance and novel stable isotopes This reference details how isotope tools can be used to gain insight into the origin and fate of natural compounds and contaminants in the environment. Integrating theoretical and practical knowledge, the authors examine the principles of isotope tools and then present an extensive overview of key

environmental processes that can be investigated with isotope methods. They also discuss analytical and data evaluation procedures, addressing established and emerging applications. To illustrate concepts and methodology, the authors use a wide range of case studies and recent field and laboratory research from various disciplines currently employing these methods. This book is a valuable tool for expanding the application of both stable isotopes and radioisotopes into untapped areas.

Plant Design and Operations provides practical guidance on the design, operation, and maintenance of process facilities. The book is based on years of hands-on experience gathered during the design and operation of a wide range of facilities in many different types of industry including chemicals, refining, offshore oil and gas, and pipelines. The book helps managers, engineers, operators, and maintenance specialists with advice and guidance that can be used right away in working situations. Each chapter provides information and guidance that can be used immediately. For example, the chapter on Energy Control Procedures describes seven levels of positive isolation — ranging from a closed block valve all the way to double block and bleed with line break. The Safety in Design chapter describes topics such as area classification, fire protection, stairways and platforms, fixed ladders, emergency showers, lighting, and alarms. Other areas covered in detail by the book include security, equipment, and transportation. A logical, practical guide to maintenance task organization is provided, from conducting a Job Hazards Analysis to the issue of a work permit, and to the shutdown and isolation of equipment. Common hazards are covered in detail, including flow problems, high pressure, corrosion, power failure, and many more. Provides information to managers, engineers, operators and maintenance personnel which is immediately applicable to their operations Supported by useful, real-world examples and experience from a wide range of facilities and industries Includes guidance on occupational health and safety, industrial hygiene and personal protective equipment

Written to provide students who have limited backgrounds in the physical sciences and math with an accessible textbook on nuclear science, this edition continues to provide a clear and complete introduction to nuclear chemistry and physics, from basic concepts to nuclear power and medical applications. Incorporating suggestions from adopting profes

Handbook of Fire and Explosion Protection Engineering Principles for the Oil, Gas, Chemical, and Related Facilities, Fourth Edition, discusses high-level risk analysis and advanced technical considerations, such as process control, emergency shut-downs, and evaluation procedures. As more engineers and managers are adopting risk-based approaches to minimize risk, maximize profits, and keep operations running smoothly, this reference encompasses all the critical equipment and standards necessary for the process industries, including oil and gas. Updated with new information covering fire and explosion resistant systems, drainage systems, and human factors, this book delivers the equipment standards needed to protect today’s petrochemical assets and facilities. Provides tactics on how to revise and upgrade company policies to support safer designs and equipment Helps readers understand the latest in fire suppression and explosion risks for a process plant in a single source Updates on how to evaluate concerns, thus helping engineers and managers process operating requests and estimate practical cost benefit factors

While there is a tremendous literature on the topic of wine and health ranging back to the days of Hippocrates, it is considered that there is an unlimited variety of wine, allowing for the association of senses, nutrition, and hedonism. The history of vine and wine has lasted for at least 7000 years. Vitis represent adaptable plants, and thanks to the large variety of strains, wine is an alchemical mix with unique properties, a rich and original composition in terms of polyphenols, and well known antioxidants. This explains why wine and health are closely linked to nutrition.

This volume presents detailed protocols for novel strategies and approaches to improve functional understanding of protein N- and C-terminal biology. Protein Terminal Profiling: Methods and Protocols addresses topics such as protease specificity profiling, N-terminal acetylation, assays to probe protease activity in cellular systems, protein N- and C-termini on a proteome-wide scale, and biochemical approaches to explain and examine extracellular protease activities. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls.

Offshore Safety Management, Second Edition provides an experienced engineer's perspective on the new Safety and Environmental System (SEMS) regulations for offshore oil and gas drilling, how they compare to prior regulations, and how to implement the new standards seamlessly and efficiently. The second edition is greatly expanded, with increased coverage of technical areas such as engineering standards and drilling, and procedural areas such as safety cases and formal safety assessments. The new material both complements the SEMS coverage and increases the book's relevance to a global audience. Following the explosion, fire, and sinking of the Deepwater Horizon floating drilling rig in April 2010, the Bureau of Ocean Energy Management, Regulations, and Enforcement (BOEMRE) issued many new regulations. One of them was the Safety and Environmental System rule, which is based on the American Petroleum Institute's SEMP recommended practice, finalized in April 2013. Author Ian Sutton explains the SEMS rule, and describes what must be done to achieve compliance. Each of the twelve elements of the SEMS rule (such as Management of Change and Safe Work Practices) is described in the book, and guidance is provided on how to meet BOEMRE requirements. Detailed explanation of how to implement the new SEMS standard for offshore operations Ties the new regulations in with existing safety management approaches, helping managers leverage existing processes and paperwork With CEOs now signing off on compliance paperwork, this book provides expert insights so you can get SEMS compliance right the first time

Petroleum Well Construction Michael J. Economides Texas A & M University Larry T. Watters Halliburton Energy Services Shari Dunn-Norman University of Missouri-Rolla Since the 1980s, well construction procedures have advanced so significantly that the subject now requires a comprehensive reference book dealing with all types of petroleum drilling and well completions. With each chapter co-authored by recognized industry professionals, this extensive work fills the void that currently exists in the technical reference publications of this subject. All technical aspects of petroleum well construction are covered, including: * drilling trajectory and control * multilateral wells * borehole stability * gas

migration * perforating * inflow performance resulting in an essential reference tool for all petroleum, nuclear and environmental engineers and technicians.

The field of isotope effects has expanded exponentially in the last decade, and researchers are finding isotopes increasingly useful in their studies. Bringing literature on the subject up to date, Isotope Effects in Chemistry and Biology covers current principles, methods, and a broad range of applications of isotope effects in the physical, biolo

The book makes the case for process safety and provides a brief overviews of the upstream industry and of CCPS Risk Based Process Safety. The majority of the book focuses on the concepts of implementing process safety in wells, onshore, offshore, and projects. Topics include Overview of Upstream Operations; Overview of Risk Based Process Safety (RBPS); Application of RBPS in Drilling, Completions, Work-Overs & Interventions, Application of RBPS in Onshore Production, Application of RBPS in Offshore Production, Application of RBPS to Engineering Design, Installation, and Construction, Future Developments in the Field

Plant Design and Operations provides practical guidance to do with the design, operation and maintenance of process facilities. The book is based on years of hands-on experience gathered during the design and operation of a wide range of facilities in many different types of industry including chemicals, refining, offshore oil and gas, and pipelines. The material in the book will help managers, engineers, operators and maintenance specialists with advice and guidance that can be used right away in working situations. The contents of each chapter provide information and guidance that can be used immediately. For example, the chapter on Energy Control Procedures describes seven levels of positive isolation - ranging from a closed block valve all the way to double block and bleed with line break. The Safety in Design chapter describes topics such as area classification, fire protection, stairways and platforms, fixed ladders, emergency showers, lighting and alarms. Other areas covered in detail by the book include security, equipment and transportation. A logical, practical guide to maintenance task organization is provided, from conducting a Job Hazards Analysis to the issue of a work permit, and to the shutdown and isolation of equipment. Common hazards are covered in detail, including flow problems, high pressure, corrosion, power failure, and many more. . Provides information to managers, engineers, operators and maintenance personnel which is immediately applicable to their operations. . Supported by useful, real-world examples and experience from a wide range of facilities and industries. . Includes guidance on occupational health and safety, industrial hygiene and personal protective equipment.

Fire Pump Arrangements at Industrial Facilities, Third Edition delivers a practical reference from an author with a successful professional career in fire protection and loss prevention engineering in the oil and gas industry. While most regulatory standards are left to interpretation and try to cover multiple industries in one location, this book focuses on the equipment, standards and operations specific to the petroleum industry, covering quality controls, pump drivers and scheduled maintenance and audits so the equipment remains in safety compliance. Enhanced with new sections on human factors, case studies for modeling fire accidents and a look at recent events that have further shaped the safety and testing of fire pumps, the book provides the engineer and manager with a critical oil and gas resource for every aspect of firewater pumps. Remains the go-to reference for loss prevention specialists and fire engineering specific to the oil and gas industry Enhanced with new sections on quality audits and new case studies that evaluate operational issues and applications Fills in the practical hands-on information gap not covered in the regulatory standards

Recent field studies of a variety of mammalian species reveal a surprisingly high frequency of infanticide - the killing of unweaned or otherwise maternally dependent offspring. Similarly, studies of birds, fish, amphibians, and invertebrates demonstrate egg and larval mortality in these species, a phenomenon directly analogous to infanticide in mammals. In this collection, Hausfater and Hrdy draw together work on animal and human infanticide and place these studies in a broad evolutionary and comparative perspective.Infanticide presents the theoretical background and taxonomic distribution of infanticide, infanticide in nonhuman primates, infanticide in rodents, and infanticide in humans. It examines closely sex allocation and sex ratio theory, surveys the phylogeny of mammalian interbirth intervals, and reviews data on sources of egg and larval mortality in a variety of invertebrate and lower vertebrate species. Dealing with infanticide in nonhuman primates, two chapters critically examine data on infanticide in langurs and its broader theoretical implications. By reviewing sources of infant mortality in populations of small mammals and new laboratory analyses of the causes and consequences of infanticide, this work explores such issues as the ontogeny of infanticide, proximate cues of infants and females which elicit infanticidal behavior in males, the genetical basis of infanticide, and the hormonal determinants.Hausfater and Sarah Blaffer Hrdy, through their selection of materials for this book, evaluate the frequency, causes, and function of infanticide. Historical, ethnographic, and recent data on infanticide are surveyed. "Infanticide" summarizes current research on the evolutionary origins and proximate causation of infanticide in animals and man. As such it will be indispensable reading for anthropologists and behavioral biologists as well as ecologists, psychologists, demographers, and epidemiologists.

Managing Resource Abundance and Wealth: The Norwegian Experience describes the sundry and significant challenges, both economic and political, facing petroleum-producing countries. The volume outlines the pitfalls that policymakers encounter in the aftermath of a major resource discovery, and what they can do to protect their countries from the most adverse consequences. These lessons are derived from two very different sources: The broader-if still underdeveloped-social science literature that examines the 'Paradox of Plenty' in its disparate forms; and the experience of a country that has successfully managed its natural resources over several decades. As a small country on the margins of Europe, Norway has stood up to powerful international interests in one of the world's most powerful industries. Norway has exerted sovereign control over its natural environment, and exploited its resources in a way that has delivered significant wealth to its citizens. This volume explains how Norway has largely avoided the 'Paradox of Plenty'. It aims to demonstrate the variety of policy tools that are available to states rich in natural resources, and how these tools can be adjusted to changing (domestic and

international) contexts. It considers a number of questions, such as how countries need to administer and regulate the industry to consider the costs and benefits associated with various contract and licensing regimes, and fiscal arrangements; to maintain competitiveness and avoid becoming too dependent upon the sector; to maximize local content; and to protect the broader economy from the volatility of petroleum prices. The volume shows how the industry can be managed in a democratic, just, and ethical manner, and for the benefit of the general population.

Drug metabolism/pharmacokinetics and drug interaction studies have been extensively carried out in order to secure the druggability and safety of new chemical entities throughout the development of new drugs. Recently, drug metabolism and transport by phase II drug metabolizing enzymes and drug transporters, respectively, as well as phase I drug metabolizing enzymes, have been studied. A combination of biochemical advances in the function and regulation of drug metabolizing enzymes and automated analytical technologies are revolutionizing drug metabolism research. There are also potential drug–drug interactions with co-administered drugs due to inhibition and/or induction of drug metabolic enzymes and drug transporters. In addition, drug interaction studies have been actively performed to develop substrate cocktails that do not interfere with each other and a simultaneous analytical method of substrate drugs and their metabolites using a tandem mass spectrometer. This Special Issue has the aim of highlighting current progress in drug metabolism/pharmacokinetics, drug interactions, and bioanalysis.

This book details three main topics: the screening and characterization of hydrocarbons from air, soil and water; technologies in the biodegradation of hydrocarbons; and the bioconversion of hydrocarbons for biofuel/chemicals, as well as recent developments in the remediation of hydrocarbons and their environmental benefits. The first section focuses on screening methods, qualitative and quantitative analysis of hydrocarbons from soil, air and water environments, speciation of hydrocarbons, and natural bioremediation strategies in such environments. The second section examines technologies for removing hydrocarbon contaminants from various environments, especially advanced technologies for the removal of hydrocarbons and in-situ and ex-situ remediation strategies and problems, as well as concrete case studies. The last section, covering the bioconversion of hydrocarbons for biofuel/chemicals, highlights the biochemicals and bioproducts developed from hydrocarbons, with a particular focus on biochemical and chemical technologies used to produce biopolymers, biofuel precursors and commodity chemicals from hydrocarbons.

Describes the potential environmental impacts of the Proposed Final 2012-2017 Outer Continental Shelf (OCS) Oil and Gas Leasing Program (PFP), which establishes a schedule that is used as a basis for considering where and when oil and gas leasing might be appropriate over a 5-year period.

At the time of original publication psychobiology was one of the most rapidly developing areas of psychology. Its growth owed much to recent advances both in techniques for studying the physiological bases of behaviour and in major conceptual advances in the way people thought about the brain. First published in 1989, this textbook introduction to the field looks at the state of psychobiology in the light of these advances. The issues covered include: the factors that have shaped the current state of the field; the value of animal subjects in the study of psychological processes; the problems of studying the brain, including the theoretical assumptions underlying the most widely used methods; the current status of influential theories, like Stellar's 2-center theory of motivation and Papez's theory of emotion; the relationship between psychological theory and physiological data, such as recent accounts of the visual system; the problems presented by 'emergent properties' like consciousness.

Discusses the role of endophytes in food security, forestry and health. It outlines their general biology, spanning theory to practice.

This book outlines the effects that technology-induced change will have on sport within the next five to ten years, and provides food for thought concerning what lies further ahead. Presented as a collection of essays, the authors are leading academics from renowned institutions such as Massachusetts Institute of Technology, Queensland University of Technology, and the University of Cambridge, and practitioners with extensive technological expertise. In their essays, the authors examine the impacts of emerging technologies like artificial intelligence, the Internet of Things, and robotics on sports and assess how they will change sport itself, consumer behavior, and existing business models. The book will help athletes, entrepreneurs, and innovators working in the sports industry to spot trendsetting technologies, gain deeper insights into how they will affect their activities, and identify the most effective responses to stay ahead of the competition both on and off the pitch.

Heterocycles feature widely in natural products, agrochemicals, pharmaceuticals and dyes, and their synthesis is of great interest to synthetic chemists in both academia and industry. The contributions of recent applications of new methodologies in C–H activation, photoredox chemistry, cross-coupling strategies, borrowing hydrogen catalysis, multicomponent and solvent-free reactions, regio- and stereoselective syntheses, as well as other new, attractive approaches for the construction of heterocyclic scaffolds are of great interest. This Special Issue is dedicated to featuring the latest research that is ongoing in the field of heterocyclic synthesis. It is expected that most submissions will focus on five- and six-membered oxygen and nitrogen-containing heterocycles, but structures incorporating other rings/heteroatoms will also be considered. Original research (communications, full papers and reviews) that discusses innovative methodologies for assembling heterocycles with potential application in materials, catalysis and medicine are therefore welcome.

This book addresses various aspects of in vitro digestibility: • Application of meta-analyses and machine learning methods to predict methane production; • Methane production of sainfoin and alfalfa; • In vitro evaluation of different dietary methane mitigation strategies; • Rumen methanogenesis, rumen fermentation, and microbial community response; • The role of condensed tannins in the in vitro rumen fermentation kinetics; • Fermentation pattern of several carbohydrate sources; • Additive, synergistic, or antagonistic effects of plant extracts; • In vitro rumen degradation and fermentation characteristics of silage and hay; • In vitro digestibility, in situ degradability, and rumen fermentation of camelina co-products; • Ruminal fermentation parameters and microbial matters to odd- and branched-chain fatty acids; • Comparison of fecal versus rumen inocula for the estimation of NDF digestibility; • Rumen inoculum collected from cows at

slaughter or from a continuous fermenter; • Seaweeds as ingredients of ruminant diets; • Rumen in vitro fermentation and in situ degradation kinetics of forage Brassica crops; • In vitro digestibility and rumen degradability of vetch varieties; • Intestinal digestibility in vitro of Vicia sativa varieties; • Ruminal in vitro protein degradation and apparent digestibility of Pisum sativum; • In vitro digestibility studies using equine fecal inoculum; • Effects of gas production recording system and pig fecal inoculum volume on kinetics; • In vitro methods of assessing protein quality for poultry; and • In vitro techniques using the DaisyII incubator.

Bioethanol and Natural Resources: Substrates, Chemistry and Engineered Systems provides a comprehensive review of feedstocks, physiochemical and biological pretreatments, molecular substrates, cellulolytic and ligninolytic enzymes, and advanced technologies for producing bioethanol. Although this book provides a review of first-generation bioethanol feedstocks, chemistry, and processes, there is an emphasis on second-generation "cellulosic" ethanol production. With rapid advances in biofuels technologies and the continued global dependency on unsustainable extraction of fossil fuels, this text is timely. Although it is intended to be used as a supplemental text for advanced undergraduate or graduate level courses, the book is accessible to a non-academic audience. This book provides a unique opportunity to understand bioethanol production from the basic concepts and processes to the most cutting-edge technologies under development.

This book is a concise informative elucidation of all aspects of reproduction and development in annelids covering from arenicola to tubifex. Annelids flourish between 4,900 m depth to 2,000 m altitude; some of them occur in unusual habitats like hydrothermal vents and subterranean aquatic system (stigobionts). A few have no gut and acquire adequate nutrients through osmotrophism and/or engaging symbiotic microbes. In the absence of exoskeleton to escape predation, the 17,000 speciose annelids have explored bewildering modes of reproduction; not surprisingly, 42–47% of them are brooders. With 13,000 species, polychaetes are gonochores but some 207 species of them are hermaphrodites. Clitellates are all hermaphrodites; of them, 76 species are parthenogens, of which 56 are earthworms. Regenerative potency of annelids ranges from an organ to an entire worm from a single ‘seminal’ segment. The head, tail and both together can be regenerated 21, 42 and 20 times, respectively. However, the potency is limited to ~1% of polychaetes and Heterogamatic sex determination is reported to occur only in six polychaete species, although karyotype is known for 83 annelid species. In temperate polychaetes, a dozen neuroendocrines, arising mostly from the ‘brain’ regulates reproductive cycle. A complete chapter devoted to vermiculture, (i) recognizes the fast-growing candidate species, (ii) distinguishes 'layers' from 'brooders', (iii) indicates that the harvest of oligochaetes may reduce the input of nitrogenous fertilizer in the ricefield, and (iv) explores the scope for increasing wealth from waste.

This research investigated new approaches to control anaerobic methane oxidation coupled to sulfate reduction (AOM-SR) and enrich anaerobic methanotrophs (ANME) and sulfate reducing bacteria (SRB) with the purpose of designing a suitable bioreactor for AOM-SR at ambient pressure and temperature. The current knowledge about AOM and the microorganisms involved in AOM are discussed. The effect of different substrates and pressures was investigated on the ANME and SRB community adapted to the shallow marine Lake Grevelingen, the Netherlands. Further, microorganisms from the Alpha Mound (Spain) deep sediment were enriched with methane gas as substrate in biotrickling filters (BTF) at ambient conditions for 147-230 days of operation. The effect of alternative sulfur compounds (sulfate, thiosulfate and elemental sulfur) were studied and the microbial community was characterized. The highest AOM and sulfate reduction rates were obtained in the BTF fed with thiosulfate as the electron acceptor (~0.4 mmol l-1 day-1), but the highest number of ANME was visualized in the sulfate fed BTF (ANME-2 43% of the total visualized archaea). A BTF was proposed as a suitable bioreactor for the enrichment of ANME and SRB at ambient pressure and temperature which could be potentially used for future biotechnological applications.

The latest edition of the bestselling Groundwater Chemicals Desk Reference has been thoroughly updated and expanded. In addition to information concerning the environmental fate and transport in various media, organic priority pollutants and chemicals commonly found in the workplace and the environment, it includes toxicity information for mammals and aquatic species in a clear, consistent format.

Este libro es la respuesta a la necesidad creciente de encontrar una obra en español sobre un tema tan nuevo y tan integrado en el sector de Procesos como el de los Sistemas Instrumentados de Seguridad. Explica claramente y recorre paso a paso todos los aspectos del ciclo de vida de seguridad, basándonos en losestándares europeos IEC-61508 e IEC-61511 y la normativa americana ISA-84.00.01. El texto muestra la normativa aplicable, la que es de obligado cumplimiento y la que no, estudio de las Capas de Protección (IPL), diseño conceptual, los documentos que se originan en cada etapa del proyecto, qué información proporcionan, cómo se utiliza esa información, Los métodos de análisis de Riesgos ylos métodos de asignación de SIL. Se analiza la Instrumentación de Campo y lalógica con respecto a la Seguridad Funcional, los tipos de instrumentos, su instalación, su mantenimiento, así como a especificación de Seguridad (SRS), eldetalle de cada Función Instrumentada de Seguridad (SIF), cómo se verifica una SIF, qué aspectos hay que considerar en su verificación, las distintas arquitecturas y su influencia en los resultados de Probabilidad de Fallo en Demanda(PFD), Disponibilidad (A) y Fiabilidad (R)

Geologic Disposal of High-Level Radioactive Waste examines the fundamental knowledge and conditions to be considered and applied by planners and other professionals when establishing national repository concepts, and constructing repositories for the long-term isolation of highly radioactive waste from surrounding crystalline rock. It emphasizes the important roles of structural geology, hydrogeology, hydrochemistry, and construction techniques. It specifically examines the disposal of steel canisters with spent reactor fuel in mined repositories (MR) at medium-depth, and in very deep boreholes (VDH). While disposal in mined repositories has been widely tested, the option of placing high-level radioactive waste in deep boreholes has been considered in the US, UK, and elsewhere in Europe, but has not yet been tested on a broad scale. This book examines the possibility of safe disposal for very long periods, proposing that the high salt content and density of groundwater at large depths are such that potentially contaminated water would not rise high enough to affect the more shallow biosphere. Features: Presents the best practices for disposal of spent fuel from nuclear reactors. Assesses waste isolation

capacities in short- and long-term perspectives, and the associated risks. Describes site selection principles and the economics of construction of different types of repositories. Includes an appendix which provides the latest international recommendations and guidelines concerning the disposal of highly radioactive waste.

Gas-Liquid And Liquid-Liquid Separators is practical guide designed to help engineers and operators develop a ?feel? for selection, specification, operating parameters, and trouble-shooting separators; form an understanding of the uncertainties and assumptions inherent in operating the equipment. The goal is to help familiarize operators with the knowledge and tools required to understand design flaws and solve everyday operational problems for types of separators. Gas-Liquid And Liquid-Liquid Separators is divided into six parts: Part one and two covers fundamentals such as: physical properties, phase behaviour and calculations. Part three through five is dedicated to topics such as: separator construction, factors affecting separation, vessel operation, and separator operation considerations. Part six is devoted to the ASME codes governing wall thickness determination of vessel weight fabrication, inspection, alteration and repair of separators 500 illustrations Easy to understand calculations methods Guide for protecting downstream equipment Helps reduce the loss of expensive intermediate ends Helps increase product purity

Aquatic Toxicology examines research findings on the chronic effects of pollutants on aquatic species. Understanding these chronic effects is vital to determining the impact of small concentrations of pollutants on aquatic life in rivers, estuaries, lakes, and coastal waters. Featuring research from renowned experts in the field, this book evaluates modern techniques in the fields of molecular biology and biochemistry. It is indispensable to aquatic toxicologists, aquatic biochemists, fisheries scientists, industrial chemists, and researchers at federal, state, and university levels.