A highly practical reference for health physicists and other professionals, addressing practical problems in radiation protection, this new edition has been completely revised, updated and supplemented by such new sections as log-normal distribution and digital radiography, as well as new chapters on internal radiation dose and the environmental transport of radionuclides. Designed for readers with limited as well as basic science backgrounds, the handbook presents clear, thorough and up-to-date explanations of the basic physics necessary. It provides an overview of the major discoveries in radiation physics, plus extensive discussion of radioactivity, including sources and materials, as well as calculational methods for radiation exposure, comprehensive appendices and more than 400 figures. The text draws substantially on current resource data available, which is cross-referenced to standard compendiums, providing decay schemes and emission energies for approximately 100 of the most common radionuclides encountered by practitioners. Excerpts from the Chart of the Nuclides, activation cross sections, fission yields, fission-product chains, photon attenuation coefficients, and nuclear masses are also provided. Throughout, the author emphasizes applied concepts and carefully illustrates all topics using real-world examples as well as exercises. A much-needed working resource for health physicists and other radiation protection professionals.

This title contains both invited and contributed papers on a wide range of subjects in the broad field of radiation protection. With contributions from all over the world, these proceedings reflect the international nature of the meeting. Containing recent research and data in all areas of importance in the field, this book will be invaluable to radiation protection officers, medical physicists, health and safety officers and laboratory superintendents.

This publication is aimed at students and teachers involved in teaching programmes in field of medical radiation physics, and it covers the basic medical physics knowledge required in the form of a syllabus for modern radiation oncology. The information will be useful to those preparing for professional certification exams in radiation oncology, medical physics, dosimetry or radiotherapy technology.

This volume is a review of the trends in the field of radiation chemistry research. It covers a broad spectrum of topics, ranging from the historical perspective,
instrumentation of accelerators in the nanosecond to femtosecond region, through the use of radiation chemical methods in the study of antioxidants and nanomaterials, radiation-induced DNA damage by ionizing radiation involving both direct and indirect effects, to ultrafast events in free electron transfer, radiation-induced processes at solid-liquid interfaces and the recent work on infrared spectroscopy and radiation chemistry. The book is unique in that it covers a wide spectrum of topics that will be of great interest to beginners as well as experts. Recent data on ultrafast phenomena from the recently established world-class laser-driven accelerators facilities in the US, France and Japan are reviewed.

716 references selected from Nuclear science abstracts, 1948-1976. Includes foreign and domestic research, reports, books, proceedings, journal articles, and patents. Classified arrangement. Entry gives bibliographical information, subject descriptors, and NSA location. Corporate, author, subject, and report indexes.

Two dozen papers discuss general issues, diagnostic radiology, nuclear medicine, radiation oncology and biology, interventional procedures, and policy issues. The Taylor Lecture, Back to Background, is by Naomi H. Harley. Other specific topics include a critical reappraisal of the linear-nonthreshold dose-response model, new developments in computed tomography, therapy with monoclonal antibodies, high-dose rate brachytherapy in coronary artery restenosis, and irradiating human subject in research. No index is included. Annotation copyrighted by Book News, Inc., Portland, OR

This international conference addresses some of the current issues being debated in relation to radioactive waste management, including: control of radioactive discharges to the environment; long term storage of radioactive waste; geological disposal of radioactive waste; management of disused radioactive sources. In addition, issues such as waste from past activities and events, public attitudes to radioactive waste, the involvement of stakeholders in decision making and the international regime for the safety of radioactive waste management are also addressed. A CD-ROM of contributed papers is attached to the inside back cover of this book.

A comprehensive review of non-ionizing radiation and its public health and environmental risks, for researchers, policy makers, and laymen This book explains the characteristics of all forms of electromagnetic non-ionizing radiation (NIR) and analyzes the relationship between exposure and its biological effects, as well as the known dose-response relationships associated with each. Taking a uniquely holistic approach to the concept of health that builds upon the WHO definition to include not only absence of disease, but the physical, mental and social well-being of individuals and the population, it reviews established and potential risks and protections, along with regulatory issues associated with each. The risks to public health of NIR, whether in the form of UV light, radio waves from wireless devices, or electric and magnetic fields associated with electrical power systems, is currently a cause of great concern among members of the public and lawmakers. But in order to separate established science from speculation and make informed decisions about how to mitigate the risks of NIR and allocate precious resources, policymakers, manufacturers, and individuals need a comprehensive source of up-to-date information based on the current scientific evidence. Written by a team of experts in their fields, this book is that source. Among other things, it: Summarizes scientific findings on the safety of different forms of NIR and the rationale behind current standards Describes devices for monitoring NIR along with the established and potential hazards of each form Explores proper protections against UV light and lasers, RF radiation, ELF fields and other forms of NIR Discusses how to avoid injuries through occupational training or public awareness programs, and how to perform medical assessments in cases of suspected NIR injuries Considers how to decide whether or not to spend money on certain mitigation measures, based on cost-benefit analyses Offering expert reviews and analyses of the latest scientific findings and public policy issues concerning the risks to public health and the environment of NIR, Non-ionizing Radiation Protection is an indispensable source of information for manufacturers, government regulators, and regulatory agencies, as well as researchers, concerned laypersons, and students.

Assessing and improving nuclear material performance is a crucial subject for the sustainability of the nuclear energy and radioactive isotope supplies. This book aims to present research efforts used to identify nuclear materials performances in different areas. The contributions of esteemed international experts have covered important research aspects in fission and fusion technologies and naturally occurring radioactive materials management. The authors introduced current and anticipated trends toward better performances and mitigating challenges for commercial application of innovative technologies, biological remediation of mine effluents, nuclear fuel
performance in power and research fission reactors, gamma ray spectrometer calibration, and recent advances in understanding the performance of tungsten composite in fusion reactor environment.

Cardiovascular and Neurovascular Imaging: Physics and Technology explains the underlying physical and technical principles behind a range of cardiovascular and neurovascular imaging modalities, including radiography, nuclear medicine, ultrasound, and magnetic resonance imaging (MRI). Examining this interdisciplinary branch of medical imaging from a

Functional finishes for textiles reviews the most important fabric finishes in the textile industry. It discusses finishes designed to improve the comfort and other properties of fabrics, as well as finishes which protect the fabric or the wearer. Each chapter reviews the role of a finish, the mechanisms and chemistry behind the finish, types of finish and their methods of application, application to particular textiles, testing and future trends. Describes finishes to improve comfort, performance, and protection of fabric or the wearer Examines the mechanisms and chemistry behind different types of finishes and their methods of application, testing and future trends Considers environmental issues concerning functional finishes

This Safety Report provides practical information on the application of the principle of the optimization of radiation protection in the workplace by emphasizing the importance of integrating radiation protection into the work management system.

The growing use of medical diagnostic procedures is correlated with tremendous and undeniable benefits in the care of most patients. However, it is accompanied by growing concerns about the risks associated with diagnostic computed tomography and other procedures that utilize ionizing radiation. A number of initiatives in radiation safety in medicine have taken place in the United States and internationally, each serving different purposes. Their ultimate goals are to provide higher quality medical management of the patient and to ensure that reasonable steps are taken to keep the exposures as low as possible without compromising diagnostic efficacy. Tracking Radiation Exposure from Medical Diagnostic Procedures: Workshop Reports provides a summary of the presentations and discussions that took place during the December 8-9, 2011, workshop titled “Tracking Radiation Exposure from Medical Diagnostic Procedures.” This workshop was organized by the Nuclear and Radiation Studies Board of the National Academy of Sciences and sponsored by the Centers for Disease Control and Prevention, the U.S. Food and Drug Administration, and the U.S. Department of Health and Human Services. This workshop report was authored by a six-member committee of experts appointed by the National Academy of Sciences. This committee brought together public health regulators, physicians, manufacturers, researchers, and patients to explore “why,” “what,” and “how” to track exposure from medical diagnostic procedures and possible next steps.

Organizers of the 11th IRPA International Congress have wished to take advantage of this occasion to Launch a new series of books dedicated to review the current important problems of concern in radioprotection. The four editors have combined their efforts to assemble within this book contributions from the worldwide and most famous specialists in their respective fields. Their signatures lead to the insurance of a first class information. All aspects of radioprotection are treated, through synthetic articles accessible to all. Very didactic, this book will be useful to radioprotection professionals willing to take the stake of all aspects within their profession, but also to engineers, physicists, physicians, researchers, and non-specialist people who will find here a thorough synthesis of all aspects of radiological protection.

Does radiation medicine need more regulation or simply better-coordinated regulation? This book addresses this and other questions of critical importance to public health and safety. The issues involved are high on the nation’s agenda: the impact of radiation on public safety, the balance between federal and state authority, and the cost-benefit ratio of regulation. Although incidents of misadministration are rare, a case in Pennsylvania resulting in the death of a patient and the inadvertent exposure of
others to a high dose of radiation drew attention to issues concerning the regulation of ionizing radiation in medicine and the need to examine current regulatory practices. Written at the request from the Nuclear Regulatory Commission (NRC), Radiation in Medicine reviews the regulation of ionizing radiation in medicine, focusing on the NRC's Medical Use Program, which governs the use of reactor-generated byproduct materials. The committee recommends immediate action on enforcement and provides longer term proposals for reform of the regulatory system. The volume covers Sources of radiation and their use in medicine. Levels of risk to patients, workers, and the public. Current roles of the Nuclear Regulatory Commission, other federal agencies, and states. Criticisms from the regulated community. The committee explores alternative regulatory structures for radiation medicine and explains the rationale for the option it recommends in this volume. Based on extensive research, input from the regulated community, and the collaborative efforts of experts from a range of disciplines, Radiation in Medicine will be an important resource for federal and state policymakers and regulators, health professionals involved in radiation treatment, developers and producers of radiation equipment, insurance providers, and concerned laypersons.

Changes in radiation safety estimates are leading to far-reaching proposals for the control and management of occupationally exposed workers. This book examines the implications of recent developments in standards and their application for management.

Safe and Secure Transport and Storage of Radioactive Materials reviews best practice and emerging techniques in this area. The transport of radioactive materials is an essential operation in the nuclear industry, without which the generation of nuclear power would not be possible. Radioactive materials also often need to be stored pending use, treatment, or disposal. Given the nature of radioactive materials, it is paramount that transport and storage methods are both safe and secure. A vital guide for managers and general managers in the nuclear power and transport industries, this book covers topics including package design, safety, security, mechanical performance, radiation protection and shielding, thermal performance, uranium ore, fresh fuel, uranium hexafluoride, MOX, plutonium, and more. Uniquely comprehensive and systematic coverage of the packaging, transport, and storage of radioactive materials. Section devoted to spent nuclear fuels. Expert team of authors and editors.

Materials Under Extreme Conditions: Recent Trends and Future Prospects analyzes the chemical transformation and decomposition of materials exposed to extreme conditions, such as high temperature, high pressure, hostile chemical environments, high radiation fields, high vacuum, high magnetic and electric fields, wear and abrasion related to chemical bonding, special crystallographic features, and microstructures. The materials covered in this work encompass oxides, non-oxides, alloys and intermetallics, glasses, and carbon-based materials. The book is written for researchers in academia and industry, and technologists in chemical engineering, materials chemistry, chemistry, and condensed matter physics. Describes and analyzes the chemical transformation and decomposition of a wide range of materials exposed to extreme conditions. Brings together information currently scattered across the Internet or incoherently dispersed amongst journals and proceedings. Presents chapters on phenomena, materials synthesis, and processing, characterization and properties, and applications. Written by established researchers in the field.

English-language papers presented at biomedical meetings during the previous 5 years. Includes only non-journal publications not indexed by major services and received by Washington University School of Medicine Library. Arranged under 3 sections, i.e., Key word index, Author index, and Register of conferences (contains full bibliographical information).

Enhance your understanding of radiation physics and radiation protection! Corresponding to the chapters in Radiation Protection in Medical Radiography, 7th Edition, by Mary Alice Statkiewicz Sherer, this workbook provides a clear, comprehensive review of all the material included in the text. Practical exercises help you apply your knowledge to the practice setting. It is well written and easy to comprehend*. Reviewed by: Kirsten Farrell, University of Portsmouth Date: Nov 2014 A comprehensive
review includes coverage of all the material included in the text, including x-radiation interaction, radiation quantities, cell biology, radiation biology, radiation effects, dose limits, patient and personnel protection, and radiation monitoring. Chapter highlights call out the most important information with an introductory paragraph and a bulleted summary. A variety of question formats includes multiple choice, matching, short answer, fill-in-the-blank, true-false, labeling, and crossword puzzles. Calculation exercises offer practice in applying the formulas and equations introduced in the text. Answers are provided in the back of the book so you can easily check your work.

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