Forthcoming

Introduction of Image Guided Radiotherapy into Clinical Practice

IAEA Human Health Reports No.16

This publication provides guidelines, and highlights the milestones to be achieved by radiotherapy departments in the safe and effective introduction of image guided radiotherapy. Recent advances in external beam radiotherapy include the technology to image the patient in the treatment position, in the treatment room at the time of treatment. Since this technology and associated image techniques, termed image guided radiotherapy, are perceived as the cutting-edge of development in the field of radiotherapy, this publication addresses the concerns of personnel in radiotherapy departments as to the preparatory conditions and resources involved in implementation. Information is also presented on the current status of the evidence supporting the use of image guided radiotherapy in terms of patient outcomes.

ISBN 978-92-0-103218-8 • STI/PUB/1827 **€31.00**

Medical Physics Staffing Needs in Diagnostic Imaging and Radionuclide Therapy: An Activity Based Approach

IAEA Human Health Reports No. 15

Over the last decades, the rapid technological development of diagnostic and interventional radiology and nuclear medicine has made them major tools of modern medicine. However, at the same time, the associated risks, the growing number of procedures and the increasing complexity of the procedures require competent professional staff to ensure safe and effective patient diagnosis, treatment and management.Clinically qualified medical physicists have been recognized as vital health professionals with important and clear responsibilities related to quality and safety of applications of ionizing radiation in medicine. This publication describes an algorithm developed to determine the recommended staffing levels for clinical medical physics services in medical imaging and radionuclide therapy, based on current best practice, as described in international guidelines.

(23 pp.; 2018) • ISBN 978-92-0-107817-9 **€20.00**
STI/PUB/1797

Radiotherapy in Cancer Care: Facing the Global Challenge

Cancer treatment is complex and calls for a diverse set of services. Radiotherapy is recognized as an essential tool in the cure and palliation of cancer. Currently, access to radiation treatment is limited in many countries and non-existent in some. This lack of radiotherapy resources exacerbates the burden of disease and underscores the continuing health care disparity among States. Closing this gap represents an essential measure in addressing this global health equity problem. This publication presents a comprehensive overview of the major topics and issues to be taken into consideration when planning a strategy to address this problem, in particular in low and middle income countries. With contributions from leaders in the field, it provides an introduction to the achievements and issues of radiation therapy as a cancer treatment modality around the world. Dedicated chapters focus on proton therapy, carbon ion radiotherapy, intraoperative radiotherapy, radiotherapy for children, HIV/AIDS related malignancies, and costing and quality management issues.

(544 pp., 68 figs; 2017) • ISBN 978-92-0-115013-4 **€62.00**
STI/PUB/1638

Dosimetry of Small Static Fields Used in External Beam Radiotherapy

An International Code of Practice for Reference and Relative Dose Determination

Technical Reports Series No. 483

This is the first international code of practice dedicated to the dosimetry of small static fields used in radiotherapy. It provides consistent reference dosimetry, traceable to metrological primary standards, and enables common procedures within a country to be followed. The publication presents an overview of the physics, followed by a general formalism for reference dosimetry in small fields. Guidelines for its practical implementation using suitable detectors and methods for the determination of field output factors are given for specific clinical machines that use small static fields. The development of this code of practice has been done through an international working group, established jointly with the American Association of Physicists in Medicine. Internationally harmonized guidelines in this field will ensure worldwide consistency in dose delivery to radiotherapy patients and will contribute to dose standardization in international clinical trial studies, comparing outcomes of various radiotherapy treatment modalities using small fields.

(211 pp., 31 figs; 2017) • ISBN 978-92-0-105916-1 **€52.00**
STI/DOC/010/483

Cyclotron Based Production of Technetium-99m

IAEA Radioisotopes and Radiopharmaceuticals Reports No. 2

This publication presents a comprehensive overview of the technologies involved in the production of cyclotron based 99mTc. These would include techniques relevant to preparation of targets, irradiation of targets under high beam currents, target processing, target recovery and quality control of the final product. The publication provides broad information, well supported with references, on improved production routes and improved separation and purification of cyclotron based 99mTc. These approaches achieve high specific activity and chemical purity of 99mTc suitable for labelling molecules of medical interest and also enable spare capacity to be available at medical cyclotron centres. The readership of this publication is scientists interested in translating this technology to practice, technologists already working with cyclotrons wanting to enhance the utility of the existingmachines and managers who are in the process of setting up facilities in their countries. Students working towards higher level degrees in related fields may also benefit from this publication.

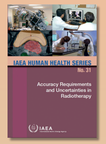
(59 pp., 48 figs; 2017) • ISBN 978-92-0-102916-4 **€33.00**
STI/PUB/1743

Atlas of Skeletal SPECT/CT Clinical Images

IAEA Human Health Series No. 34

The atlas focuses specifically on single photon emission computed tomography/ computed tomography (SPECT/CT) in musculoskeletal imaging, and thus illustrates the inherent advantages of the combination of the metabolic and anatomical components in a single procedure. In addition, the atlas provides information on the usefulness of several sets of specific indications. The publication, which serves more as a training tool than a textbook, will help to further integrate the SPECT and CT experience in clinical practice by presenting a series of typical cases with many different patterns of SPECT/CT seen in bone scintigraphy.

(237 pp., 301 figs; 2016) • ISBN 978-92-0-103416-8 **€75.00**
STI/PUB/1748

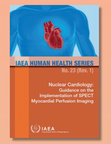


Accuracy Requirements and Uncertainties in Radiotherapy

IAEA Human Health Series No. 31

Accuracy requirements in radiation oncology have been defined in multiple publications; however, these have been based on differing radiation technologies. In the meantime, the uncertainties in radiation dosimetry reference standards have been reduced and more detailed patient outcome data are available. No comprehensive literature on accuracy and uncertainties in radiotherapy has been published so far. The IAEA has therefore developed a new international consensus document on accuracy requirements and uncertainties in radiotherapy, to promote safer and more effective patient treatments. This publication addresses accuracy and uncertainty issues related to the vast majority of radiotherapy departments including both external beam radiotherapy and brachytherapy. It covers clinical, radiobiological, dosimetric, technical and physical aspects.

(297 pp., 46 figs; 2016) • ISBN 978-92-0-100815-2 **€76.00**
STI/PUB/1679

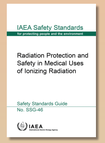


Nuclear Cardiology: Guidance on the Implementation of SPECT Myocardial Perfusion Imaging

IAEA Human Health Series No. 23 (Rev. 1)

Nuclear cardiology is one of the most widely used non-invasive techniques for the assessment of coronary artery disease and other cardiovascular conditions. It has proved to be a cost effective tool for the evaluation and management of cardiac patients and usually has a decisive role for diagnosis, prognosis and risk stratification. In particular, radionuclide myocardial perfusion imaging (MPI) is used extensively worldwide for the evaluation of known or suspected coronary artery disease, with an estimated 15–20 million procedures performed annually. This publication provides a detailed analysis of all the steps involved in the delivery of nuclear cardiology services, from referrals to reporting, and is intended to serve as guidance for the implementation, homogenization and enhancement of MPI practice in those Member States where the technique is under development.

(101 pp., 24 figs; 2016) • ISBN 978-92-0-107616-8 **€46.00**
STI/PUB/1753



Forthcoming

Radiation Protection and Safety in Medical Uses of Ionizing Radiation

IAEA Safety Standards Series No. SSG-46

This Safety Guide provides recommendations and guidance on fulfilling the requirements of IAEA Safety Standards Series No. GSR Part 3 for ensuring radiation protection and safety of radiation sources in medical uses of ionizing radiation with regard to patients, workers, carers and comforters, volunteers in biomedical research, and the public. It covers radiological procedures in diagnostic radiology (including dentistry), image guided interventional procedures, nuclear medicine, and radiotherapy. Recommendations and guidance are provided on applying a systematic approach to ensure that there is a balance between being able to utilize the benefits from medical uses of ionizing radiation and minimizing the risk of radiation effects to people

ISBN 978-92-0-101717-8 • STI/PUB/1775 **€54.00**

Radiation Safety for Consumer Products

IAEA Safety Standards Series No. SSG-36

In the IAEA safety standards, a 'consumer product' is defined as a device or manufactured item into which radionuclides have deliberately been incorporated or produced by activation, or which generates ionizing radiation, and which can be sold or made available to members of the public without special surveillance or regulatory control after sale. Many such products, including irradiated gemstones, are sold in commercial outlets and over the Internet. This Safety Guide outlines the regulatory approach to authorizing the manufacture and supply of such products to the public, including justification, safety assessment and application of the criteria for exemption. The guidance will also assist manufacturers, transport companies and suppliers to comply with regulatory requirements during the life cycle of consumer products, including recycling and disposal at the end of their useful life.

(109 pp., 3 figs; 2016) • ISBN 978-92-0-102515-9 **€52.00**
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Justification of Practices, Including Non-Medical Human Imaging

IAEA Safety Standards Series No. GSG-5

This Safety Guide was developed to assist governments and regulatory bodies with the assessment of particularly challenging proposals for the use of radiation; in particular, in human imaging for purposes other than medical diagnosis, medical treatment or biomedical research, such as for security screening at airports. It complements the guidance provided in the IAEA Safety Guide on the Regulatory Control of Radiation Sources. It provides guidance to governments and regulatory bodies on the elements that should be considered and the process that should be applied in determining whether the introduction of a particular type of practice is justified. It is intended to assist in the decision making process when confronted with a need or a request to authorize a novel type of practice or a need to review the justification of types of practice that are already established. The publication also provides some guidance to those wishing to demonstrate to the government or regulatory body that a particular type of practice is justified.

English Edition (57 pp., 2 figs; 2014) €32.00
ISBN 978-92-0-102414-5 • STI/PUB/1650

Spanish Edition (65 pp., 2 figs; 2018) €32.00
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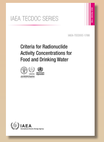

Criteria for Radionuclide Activity Concentrations for Food and Drinking Water

IAEA TECDOC Series No. 1788

This publication considers the various international standards to be applied at the national level for the assessment of levels of radionuclides in food and in drinking water in different circumstances for the purposes of control, other than in a nuclear or radiological emergency. It collates and provides an overview of the different criteria used in assessing and controlling the radionuclide content of food and drinking water.The approach used to derive reference levels of radionuclide activity concentration in food and in drinking water as criteria for use in particular circumstances is also considered.This publication is intended for the use by regulatory bodies, policy makers and interested parties with responsibilities in relation to the management of various situations where radionuclides are, or could be, present in food and in drinking water, other than in the case of a nuclear or radiological emergency.

(60 pp., 4 figs; 2016) • ISBN 978-92-0-103816-6 €18.00
IAEA-TECDOC-1788

Application of the Risk Matrix Method to Radiotherapy

IAEA TECDOC Series No. 1685

This publication describes a project to introduce a tool for self-evaluation by radiotherapy services that allows the analysis of errors or failures that might give rise to accidents. The results of applying this tool to a generic radiotherapy service are also presented. These results are used as a basis for a set of recommendations to strengthen quality and safety programmes in radiotherapy departments. Both operational experience (lessons learned from accidental exposure) and the results of probability safety assessment studies have been taken into account in applying the tool and formulating these recommendations.

English Edition (74 pp., 13 figs; 2016) €18.00
ISBN 978-92-0-107216-0 • IAEA-TECDOC-1685

Spanish Edition (96 pp., 13 figs; 2012) €18.00
ISBN 978-92-0-332510-3 IAEA-TECDOC-1685

Commissioning of Radiotherapy Treatment Planning Systems: Testing for Typical External Beam Treatment Techniques

IAEA TECDOC Series No. 1583

This publication is intended as a guide for the clinical commissioning of radiotherapy treatment planning systems (RTPSs) and provides a simple protocol for these tasks. The procedures for clinical commissioning tests cover typical treatment techniques used in radiotherapy hospitals and are based on the use of a specific phantom. The purpose of this testing is twofold. Firstly, the tests will provide an educational opportunity for the user to become familiar with the operation of the RTPS. Secondly, the tests will demonstrate to the user that the logistic chain starting from computed tomography (CT) scanning, anatomic modelling, treatment planning and monitor unit/ time (MU) calculation is operable for typical treatment techniques and leads to the desired results with sufficient accuracy.

English CD Edition (2011) €18.00
ISBN 978-92-0-400616-2 • IAEA-TECDOC-1583

English Edition (67pp., 26 figs; 2008) €15.00
ISBN 978-92-0-100508-3 • IAEA-TECDOC-1583

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