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Catalogue 2013–2014

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Atoms for Peace

The IAEA serves as the world's intergovernmental forum for scientific and technical cooperation in the nuclear field. It was set up as the world's "Atoms for Peace" organization in 1957 within the United Nations family. The IAEA works with its Member States and multiple partners worldwide to promote safe, secure and peaceful nuclear technologies.

The IAEA's mission is guided by the interests and needs of Member States, strategic plans and the vision embodied in the IAEA Statute. Three main pillars — or areas of work — underpin the IAEA's mission: Safety and Security; Science and Technology; and Safeguards and Verification.

IAEA Publications

The IAEA is one of the leading publishers in the field of nuclear science and technology, with titles on nuclear and radiological safety, emergency response, nuclear power, nuclear medicine, nuclear waste management, nuclear law and safeguards as well as relevant topics in food and agriculture, earth science, industry and the environment.

Key publications include the IAEA Safety Standards, which detail the principles of safety for protection against ionizing radiation, and IAEA Safety Reports, which describe good practices and give practical examples and detailed methods that can be used to meet safety requirements.

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INTERNATIONAL ATOMIC ENERGY AGENCY, PUBLICATIONS CATALOGUE 2013–2014, IAEA/PUB/CAT/2013–2014
Printed by the IAEA in Austria, August 2013

Publications Catalogue 2013–2014

full details of publications published 2012–2014, forthcoming publications and a stocklist of publications published 2010–2013

Introduction

This publications catalogue lists all sales publications of the IAEA published in 2012 and 2013 and those forthcoming in 2013–2014.

Most IAEA publications are issued in English; some are also available in Arabic, Chinese, French, Russian or Spanish. This is indicated at the bottom of the book entry.

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Prices of books are quoted in Euros. Prices do not include local taxes and are subject to change without notice. Shipping will be charged at cost. Publications are normally sent by surface mail. Delivery by air mail, courier service or by air freight is possible upon request.

Prepayment

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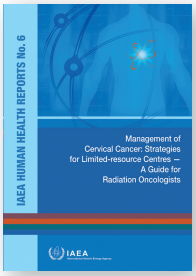
Radiotherapy

Development of Procedures for in Vivo Dosimetry in Radiotherapy

IAEA Human Health Reports No. 8

This publication, which draws on the experiences of an IAEA coordinated research project (CRP) and on input from experts in the field, provides a comprehensive overview of the development of procedures for in vivo dosimetry in radiotherapy. It elaborates on the technology behind in vivo dosimetry and describes an initial set of in vivo measurements. Emphasis is given to patient dose studies, both evaluating the clinical value of in vivo dosimetry and comparing different in vivo dosimetry systems in a clinical setting. The findings of the CRP, which are summarized in this publication, will serve as a useful resource for hospital physicists seeking to establish an in vivo dosimetry programme in a radiotherapy centre and will help them in the selection of appropriate in vivo dosimetry systems.

(Forthcoming 2013) • ISBN 978-92-0-141610-0 • STI/PUB/1606 • €34.00

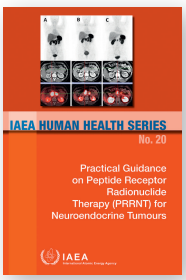


Management of Cervical Cancer: Strategies for Limited-resource Centres — A Guide for Radiation Oncologists

IAEA Human Health Reports No. 6

Clinical guidelines for the management of cervical cancer exist in the published literature. However, these guidelines have usually been developed in and for an affluent environment where all modern diagnosis and treatment modalities and tools are available to the practitioner. This publication is aimed at radiation oncologists working in centres with limited resources and treating a large number of patients with cervical cancer. The approach and techniques recommended are intended to be evidence based, simple, feasible and resource-sparing, to the extent that this is possible when dealing with a complex treatment modality such as radiotherapy.

(Forthcoming 2013) • ISBN 978-92-0-128810-3 • STI/PUB/1556 • €18.00



Practical Guidance on Peptide Receptor Radionuclide Therapy (PRRNT) in Neuroendocrine Tumours

IAEA Human Health Series No. 20

This publication provides comprehensive multidisciplinary guidance to promote standardized, effective and safe implementation of best practices for treating neuroendocrine and gastro-entero-pancreatic tumours through applying peptide receptor radionuclide therapy (PRRNT). Taking into account the latest international classifications of neuroendocrine tumours, both PRRNT as a sole treatment and as a treatment in combination with other options are considered. Comprehensive protocols for employing either ^{90}Y or ^{177}Lu tagged somatostatin receptor-targeting peptides and clinically tested protocols for renal protection are presented. The publication comprises a comprehensive compilation of medical evidence and experience. Furthermore, it contains clinical presentations, eligibility criteria and means of assessing the effectiveness of therapy utilizing molecular and morphological medical imaging techniques. The publication is a practical reference for specialists in clinical oncology and in nuclear medicine deploying and executing a comprehensive programme for treating patients with neuroendocrine tumours.

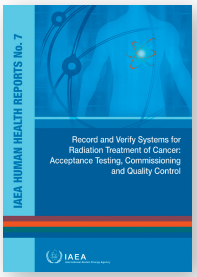
(123 pp., 5 figs; 2013) • ISBN 978-92-0-129210-0 • STI/PUB/1560 • €39.00

Radiotherapy in Palliative Cancer Care: Development and Implementation

IAEA Human Health Reports No. 2

Palliative care is increasingly recognized as an important component of quality care for cancer patients. Improving access to, and availability and quality of, comprehensive palliative care in cancer treatment is an important and ongoing global challenge. This publication focuses on radiotherapy as a major tool and gives summaries of current approaches in palliative radiotherapy and care. It describes the steps needed to enhance access to and quality of care, and to incorporate palliative radiotherapy and palliative care within an integrated multidisciplinary approach. It is hoped that this publication will be a resource for administrators, specialists and teachers working to improve the management of palliative care and radiotherapy for patients.

(53 pp., 2 figs; 2012) • ISBN 978-92-0-109009-6 • STI/PUB/1388 • €16.00



Record and Verify Systems for Radiation Treatment of Cancer: Acceptance Testing, Commissioning and Quality Control

IAEA Human Health Reports No. 7

This publication serves as a useful guide for medical physicists in radiation oncology, radiation oncologists and radiation therapists, ensuring accuracy, safety and quality in radiation therapy. Record and verify systems (RVSs) were developed to reduce the risk of treatment errors in radiation oncology. These have recently evolved into complete radiotherapy information management systems that interface with imaging systems, treatment planning computers, and treatment delivery systems. To function as intended, RVSs must be subject to a comprehensive

quality assurance (QA) programme. This publication provides practical guidelines for a comprehensive QA programme and its implementation. It describes the QA programme, including acceptance tests and the commissioning process that should be used in conjunction with the installation of a new RVS. It is also highlighted that some of the tests performed at installation must be repeated regularly as part of the periodic quality control checks.

(Forthcoming 2013) • ISBN 978-92-0-141710-7 • STI/PUB/1607 • €22.00

Medical Physics, Dosimetry and Diagnosis

Diagnostic Radiology Physics: A Handbook for Teachers and Students

This publication is aimed at students and teachers involved in programmes that train medical physicists for work in diagnostic radiology. It provides a comprehensive overview of the basic medical physics knowledge required for the practice of modern diagnostic radiology in the form of a syllabus. This makes it particularly useful for graduate students and residents in medical physics programmes. The material presented in the publication has been endorsed by the major international organizations and is the foundation for academic and clinical courses in both diagnostic radiology physics and in emerging areas such as imaging in radiotherapy.

(Forthcoming 2013) • ISBN 978-92-0-131010-1 • STI/PUB/1564 • €90.00

Dosimetry in Diagnostic Radiology for Paediatric Patients

IAEA Human Health Series No. 24

This publication draws on an IAEA coordinated research project and provides recommendations specific to measurement and interpretation of radiation dose to children as a result of undergoing diagnostic radiological examinations. It complements the work of Dosimetry in Diagnostic Radiology: A Code of Practice (Technical Report Series No. 457) and extends this work in methodologies for dosimetry in clinical environments to that required for non-adult patients. It includes dosimetry methodologies for general radiography, fluoroscopy and computer tomography for both phantom and patient measurements. Details are given on dose audit strategies that take into account the size of children and on how the results of such audits can be used to indicate or be related to diagnostic reference levels. The effects of radiation on non-adults are also reviewed, as are the factors involved in the management of paediatric dosage in the clinical setting.

(Forthcoming 2013) • ISBN 978-92-0-141910-1 • STI/PUB/1609 • €46.00

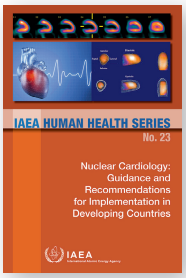
Justification of Medical Exposure in Diagnostic Imaging

Proceedings of an International Workshop held in Brussels, Belgium, 2–4 September 2009

Proceedings Series

This is the proceedings of an international workshop on justification of medical exposure in diagnostic imaging, jointly organized by the IAEA and the European Commission. The workshop brought together experts from many countries and organizations to discuss how to ensure more effective application of justification in diagnostic imaging. Major areas that need action were identified, such as the coordination of methods and evidence used as a basis for clinical imaging recommendations, engagement of all relevant organizations in the deployment of these recommendations, and involvement of manufacturers and referring healthcare providers. Furthermore, the important role of education and training was re-emphasized. In the conclusion, the workshop participants highlighted that regulatory authorities have a key role in ensuring effective justification, and that an effective partnership with the medical community must be maintained to do this.

(175 pp., 24 figs; 2012) • ISBN 978-92-0-121110-1 • STI/PUB/1532 • €40.00

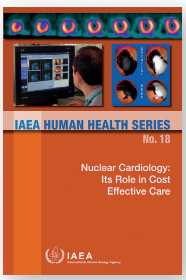


Nuclear Cardiology: Guidance and Recommendations for Implementation in Developing Countries

IAEA Human Health Series No. 23

This publication, which accompanies Nuclear Cardiology: Its Role in Cost Effective Care (IAEA Human Health Series No. 18), discusses non-invasive imaging modalities with an emphasis on myocardial perfusion imaging (MPI). MPI is one of the most complex nuclear techniques and by far the most widely used for non-invasive detection of coronary artery disease. The book covers all aspects of this modality, from clinical indications to reporting. Chapters describe clinical scenarios and provide examples of good strategies and recommendations of good practice. The aim of the publication is to help strengthen current nuclear cardiology practices, so that they meet accepted standards and that providers can deliver better quality services to the population. Target readers are nuclear medicine physicians, cardiologists and cardiac surgeons, but also all other clinical specialists involved in managing and treating cardiac diseases and particularly coronary artery diseases.

(108 pp., 27 figs; 2012) • ISBN 978-92-0-131710-0 • STI/PUB/1566 • €32.00



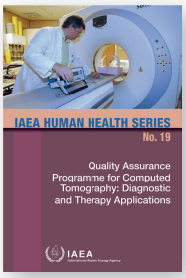
Nuclear Cardiology: Its Role in Cost Effective Care

IAEA Human Health Series No. 18

This publication presents a comprehensive overview of cardiovascular disease (CVD) as a public health problem in developing countries, the relative role of nuclear

cardiology methods within a scenario of unprecedented technological advances and the evidence behind recommendations. The potential role of non-invasive functional imaging in the diagnosis of obstructive coronary artery disease and more widely in defining the global burden of CVD is also discussed, as well as the need for training, education and quality assurance in nuclear cardiology practice.

(87 pp., 32 figs; 2012) • ISBN 978-92-0-117410-9 • STI/PUB/1516 • €30.00



Quality Assurance Programme for Computed Tomography: Diagnostic and Therapy Applications

IAEA Human Health Series No. 19

This publication presents a harmonized approach to quality assurance in the field of computed tomography applied to both diagnostics and therapy. It provides a careful analysis of the principles and specific instructions that can be used for a quality assurance programme for optimal performance and reduced patient dose in diagnostic radiology. In some cases, radiotherapy programmes are making a transition from 2-D to 3-D radiotherapy, a complex process which critically depends on accurate treatment planning. In this respect, the authors also provide detailed information about the elements needed for quality assurance testing, including those relating to accurate patient characterization as needed for radiotherapy treatment planning.

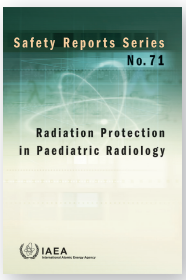
(171 pp., 43 figs; 2012) • ISBN 978-92-0-128910-0 • STI/PUB/1557 • €48.00

Quantitative Nuclear Medicine Imaging: Concepts, Requirements and Methods

IAEA Human Health Reports No. 9

This publication reviews the current state of the art of image quantification and provides a solid background of tools and methods to medical physicists and other related professionals who are faced with quantification of radionuclide distribution in clinical practice. It describes and analyses the physical effects that degrade image quality and affect the accuracy of quantification, and describes methods to compensate for them in planar, single-photon emission computed tomography (SPECT) and positron emission tomography (PET) images.

(Forthcoming 2013) • ISBN 978-92-0-141510-3 • STI/PUB/1605 • €33.00



Radiation Protection in Paediatric Radiology

Safety Reports Series No. 71

This publication provides guidance to radiologists, other clinicians and radiographers/technologists involved in diagnostic procedures using ionizing radiation with children and adolescents, and should also be of value to medical physicists and regulators. It focuses on the measures necessary to provide protection from the effects of radiation using the principles established in the IAEA's International Basic Safety Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources, and the priority accorded to the area. The emphasis throughout is on the special requirements of paediatrics.

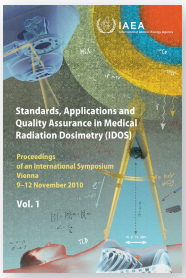
(111 pp., 2 figs; 2013) • ISBN 978-92-0-125710-9 • STI/PUB/1543 • €38.00

Roles and Responsibilities, and Education and Training Requirements for Clinically Qualified Medical Physicists

IAEA Human Health Series No. 25

There is a shortfall of well trained and clinically qualified medical physicists working in radiation medicine. The roles, responsibilities and clinical training requirements of medical physicists have not always been well defined or well understood by health care professionals, health authorities and regulatory agencies. To fill this gap, this publication provides recommendations for the academic education and clinical training of clinically qualified medical physicists, including recommendations for their accreditation certification and registration, along with continuous professional development. The goal is to establish criteria that support the harmonization of education and clinical training worldwide, as well as promote the recognition of medical physics as a profession.

(Forthcoming 2013) • ISBN 978-92-0-142010-7 • STI/PUB/1610 • €32.00



Standards, Applications and Quality Assurance in Medical Radiation Dosimetry (IDOS)

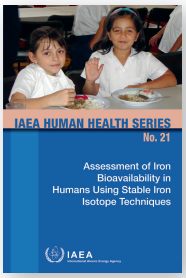
Proceedings of an International Symposium held in Vienna, Austria, 9–12 November 2010 (2 Volumes)

Proceedings Series

This publication presents the proceedings of an international symposium on standards, applications and quality assurance in medical radiation dosimetry. It includes a selection of peer reviewed papers that were presented at the symposium. The symposium provided a forum for physicists and scientists of medical institutions, research centres and standards laboratories to discuss advances in radiation dosimetry made during the past decade and to exchange scientific knowledge. The topical sessions included all specialties in radiation medicine (radiation oncology, nuclear medicine and diagnostic radiology) and radiation protection dosimetry, with a specific focus on those areas where the standardization of dosimetry has improved in recent years (brachytherapy, diagnostic radiology and nuclear medicine). One session was exclusively devoted to the challenging issues of dosimetry in small and non-standard radiotherapy beams. The publication summarizes the present status and outlines future trends in medical radiation dosimetry, and also identifies possible areas for improvement.

(925 pp.; 2012) • ISBN 978-92-0-116210-6 • STI/PUB/1514 • €120.00

Nutrition



Assessment of Iron Bioavailability in Humans Using Stable Iron Isotope Techniques

IAEA Human Health Series No. 21

This publication on the assessment of iron bioavailability was developed as part of the IAEA's continuing efforts to transfer knowledge and technology on the use of stable isotope techniques in nutrition. It provides information on the theoretical background and practical application of state of the art methodology to measure human iron absorption and dietary iron bioavailability using stable (non-radioactive) isotopes. These techniques can be used to guide fortification and food based strategies to combat iron deficiency, which remains unacceptably high among infants, children and women of childbearing age in developing countries.

(78 pp., 14 figs; 2012) • ISBN 978-92-0-126510-4 • STI/PUB/1544 • €26.00

Body Composition Assessment from Birth to Two Years of Age

IAEA Human Health Series No. 22

This publication was developed by an international group of experts as an integral part of the IAEA's efforts to contribute to the transfer of technology and capacity building in this field in order to assist Member States in their efforts to improve the nutrition and health of the most vulnerable population groups, infants and young children. The book provides practical information on the assessment of body composition from birth up to two years of age and is intended for nutritionists, paediatricians and other health professionals. The body composition assessment techniques included in this publication were selected as methodologies with the highest potential for standardization globally — based on considerations such as access to equipment, cost and the training needs of staff — and include stable isotope dilution for total body water assessment, as well as dual energy X ray absorptiometry and air displacement plethysmography. In addition, the importance of standardization of anthropometric measurements is highlighted in this book, as basic measurements of body weight and length are crucial for accurate body composition assessment.

(Forthcoming 2013) • ISBN 978-92-0-127710-7 • STI/PUB/1550 • €36.00

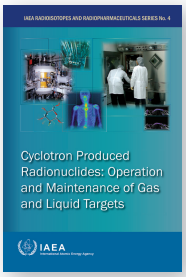
Nuclear Medicine (including Radiopharmaceuticals)

Cyclotron Produced Radionuclides: Guidance on Facility Design and Production of [^{18}F]Fluorodeoxyglucose (FDG)

IAEA Radioisotopes and Radiopharmaceuticals Series No. 3

This publication provides practical information for planning and operating a fluorodeoxyglucose (FDG) production facility, including design and implementation of the laboratories, facility layout, equipment, personnel and quality assessment of FDG. Also included is information useful for assessing the resource requirements, planning and aspects necessary for compliance with the applicable national regulatory requirements for manufacturing of radiopharmaceuticals.

(153 pp., 11 figs; 2012) • ISBN 978-92-0-117310-2 • STI/PUB/1515 • €55.00

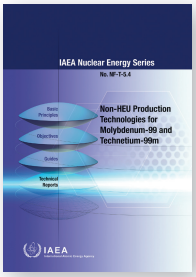


Cyclotron Produced Radionuclides: Operation and Maintenance of Gas and Liquid Targets

IAEA Radioisotopes and Radiopharmaceuticals Series No. 4

This publication, which draws on the results of an IAEA coordinated research project and on input from dedicated experts in the field, provides a comprehensive overview of the technologies involved in the manufacture and operation of liquid and gas targets for cyclotron based production of radioisotopes. It covers the technology behind targetry, techniques for preparation of targets, irradiation of targets under high beam currents, target processing, target recovery, etc. The publication will be useful to scientists and technologists interested in translating cyclotron based radioisotope production into practice, as well as to postgraduate students in the field.

(104 pp.; 2012) • ISBN 978-92-0-130710-1 • STI/PUB/1563 • €35.00

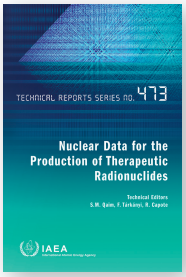


Non-HEU Production Technologies for Molybdenum-99 and Technetium-99m

IAEA Nuclear Energy Series No. NF-T-5.4

Technetium-99m (^{99m}Tc) is used in approximately 85% of diagnostic imaging procedures in nuclear medicine worldwide. Interruptions in the supply of molybdenum (^{99}Mo), which is used to produce ^{99m}Tc, prompted governments and international agencies to step up efforts to identify both short- and longterm solutions to supply shortages. These calls for action resulted in economic and technology studies on the ^{99}Mo supply chain. The present publication supports global efforts to eliminate the civilian use of highly enriched uranium in ^{99}Mo/^{99m}Tc production and proposes several alternative or supplementary technologies.

(60 pp., 20 figs; 2013) • ISBN 978-92-0-137710-4 • STI/PUB/1589 • €24.00



Nuclear Data for the Production of Therapeutic Radionuclides

Technical Reports Series No. 473

This publication reports the results of an IAEA coordinated research project on nuclear data for the production of therapeutic radionuclides. The aim was to provide standardized data for the production of radionuclides for therapeutic purposes, embracing current and possible future needs. Experimental data compilations, theoretical calculations and evaluations were carried out for each of the reactions. The recommendations for production of both established and emerging radionuclides are discussed, and the analysis carried out to produce the recommended data is also presented. The improved quality of the nuclear data will make reactor and accelerator production of therapeutic radionuclides much more efficient, and should also enhance their quality through improved purity of the product. The current publication comprises newly evaluated data for both reactor and accelerator production of therapeutic radionuclides, based on more than fifty different production reactions.

(382 pp., 88 figs; 2012) • ISBN 978-92-0-115010-3 • STI/DOC/010/473 • €75.00

Insect Pest Control

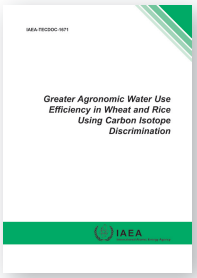
Quality Control for Expanded Tsetse Production, Sterilization and Field Application

IAEA TECDOC Series No. 1683

The use of the sterile insect technique for the control or eradication of tsetse flies is progressing towards the first large scale programmes on mainland Africa. To enable these programmes, the rearing of tsetse flies has to be much expanded, and with the expansion, issues of quality control become more important. This publication provides an analysis of several aspects of quality in tsetse fly production and expands or enhances many of the current quality control procedures.

(2012) • ISBN 978-92-0-130110-9 • IAEA-TECDOC-1683 • €18.00

Soil Fertility and Irrigation

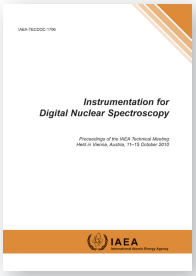


Greater Agronomic Water Use Efficiency in Wheat and Rice Using Carbon Isotope Discrimination

IAEA TECDOC Series No. 1671

Water scarcity, drought and salinity are among the most important environmental constraints challenging crop productivity in the arid and semi-arid regions of the world, especially rain-fed production systems. This publication presents the outcome of an IAEA coordinated research project aimed at increasing agronomic water use efficiency in wheat and rice production. The studies show that the carbon isotope discrimination (CID), which is the ratio of the variation of carbon-13 to carbon-12 in plant samples (leaf and grain), is a good selection tool for identifying high yielding genotypes of wheat under drought stress environments for both pre-anthesis and post-anthesis stages. The CID of flag leaf can also potentially be used to select rice genotypes for salinity tolerance and parental lines for breeding. The experience gained through these studies will be highly relevant to the needs of developing Member States in Africa, Asia and Latin America.

(2012) • ISBN 978-92-0-123910-5 • IAEA-TECDOC-1671 • €18.00



Instrumentation for Digital Nuclear Spectroscopy

IAEA TECDOC Series No. 1706

This publication presents the results of an IAEA technical meeting on instrumentation for digital spectroscopy. The meeting provided a forum for discussion of ongoing issues regarding implementation of digital signal processing (DSP) in nuclear spectroscopy. Representatives from industry, research institutes and utilities presented recent experiences with DSP. New opportunities in high resolution spectrometry and the advantages of their application in hand-held field instruments and in remote and unattended nuclear spectrometry systems were also discussed and reviewed.

(Forthcoming 2013) • ISBN 978-92-0-141310-9 • IAEA-TECDOC-1706 • €18.00

Measurement and Calculation of Radon Releases from NORM Residues

Technical Reports Series No. 474

This publication provides a comprehensive overview of the prediction, measurement and monitoring of radon releases from NORM residues, including uranium mining and milling residues. It presents factors controlling radon emanation and exhalation from residue materials, repository cover characteristics, methods for predicting radon exhalation flux (including models and the required input parameters and variables), measurement methods for radon concentration in soil gas and for radon exhalation from a surface, and radon monitoring programmes. The publication also includes a case study of radon exhalation from uranium tailings pile at Jaduguda, India, and annexes presenting mathematical development of radon diffusion equations.

(Forthcoming 2013) • ISBN 978-92-0-142610-9 • STI/DOC/010/474 • €34.00

Nuclear Analytics

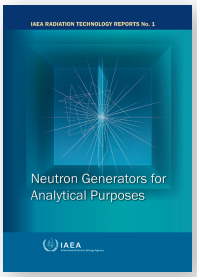
Role of Nuclear Based Techniques in Development and Characterization of Materials for Hydrogen Storage and Fuel Cells

IAEA TECDOC Series No. 1676

This publication is the proceedings of a technical meeting presents an overview of the state of the art in performance testing and micro-structural characterization of recent and candidate materials for fuel cells and hydrogen storage, with a special focus on the application of nuclear techniques. The main objectives of the meeting were to support new trends in research and development programmes, to identify a methodology for application of nuclear techniques, and to strengthen international cooperation between scientists, with a special emphasis on sharing best practice and on technology transfer.

(2012) • ISBN 978-92-0-125410-8 • IAEA-TECDOC-1676 • €18.00

Research Reactors and Particle Accelerators (Applications)



Neutron Generators for Analytical Purposes

IAEA Radiation Technology Reports No. 1

This publication addresses recent developments in neutron generator (NG) technology. It presents information on compact instruments with high neutron yield, to be used for neutron activation analysis and prompt gamma neutron activation analysis in combination with high count rate spectrometers. Traditional NGs have been shown to be effective for applications including borehole logging, homeland security, nuclear medicine and the on-line analysis of aluminium, coal and cement. Pulsed fast thermal neutron analysis, as well as tagged and timed neutron analysis, are additional techniques which can be applied using NG. Furthermore, NG can be used effectively for elemental analysis and is effective for analysis of hidden materials by neutron radiography. Useful guidelines for developing NG based research laboratories are also provided in this publication.

(145 pp., 74 figs; 2012) • ISBN 978-92-0-125110-7 • STI/PUB/1535 • €41.00

Research Reactors: Safe Management and Effective Utilization

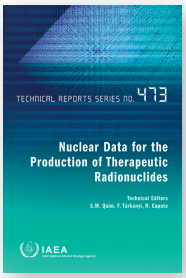
Proceedings of an International Conference held in Rabat, Morocco, 14–18 November 2011

Proceedings CD Series

This CD-ROM contains the proceedings of the fourth international conference on research reactors, convened to promote the exchange of information on research reactor issues and trends among users, operators, regulators, designers and suppliers. The conference included more than 120 oral and poster presentations pertaining to six technical areas of research reactors: utilization and applications; operation and maintenance; new research reactor projects; safety; spent fuel, waste and decommissioning; reactor designers and providers. The information provided on this CD-ROM will serve as a reference for today's international research reactor community in terms of its achievements, issues and challenges to date, as well as future trends and anticipated developments.

(2012) • ISBN 978-92-0-184610-5 • STI/PUB/1575 • €18.00

Nuclear Data

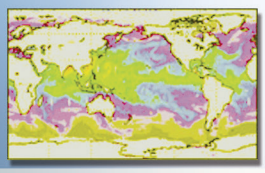


Nuclear Data for the Production of Therapeutic Radionuclides

Technical Reports Series No. 473

This publication reports the results of an IAEA coordinated research project on nuclear data for the production of therapeutic radionuclides. The aim was to provide standardized data for the production of radionuclides for therapeutic purposes, embracing current and possible future needs. Experimental data compilations, theoretical calculations and evaluations were carried out for each of the reactions. The recommendations for production of both established and emerging radionuclides are discussed, and the analysis carried out to produce the recommended data is also presented. The improved quality of the nuclear data will make reactor and accelerator production of therapeutic radionuclides much more efficient, and should also enhance their quality through improved purity of the product. The current publication includes newly evaluated data for both reactor and accelerator production of therapeutic radionuclides based on more than fifty different production reactions.

(382 pp., 88 figs; 2012) • ISBN 978-92-0-115010-3 • STI/DOC/010/473 • €75.00



Uranium Geology, Exploration and Mining

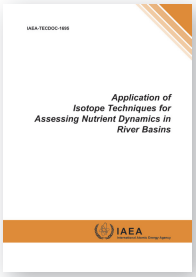
Advances in Airborne and Ground Geophysical Methods for Uranium Exploration

IAEA Nuclear Energy Series No. NF-T-1.5

Due to growing global energy demand, many countries have seen a rise in uranium exploration activities in the past few years, and newly designed geophysical instruments and their application in uranium exploration are contributing to an increased probability of successful discoveries. This publication highlights advances in airborne and ground geophysical techniques and methods for uranium exploration, succinctly describing modern geophysical methods and demonstrating their application with examples.

(58 pp.; 2013) • ISBN 978-92-0-129010-6 • STI/PUB/1558 • €26.00

Hydrology

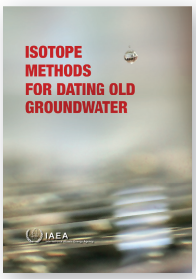


Application of Isotope Techniques for Assessing Nutrient Dynamics in River Basins

IAEA TECDOC Series No. 1695

This publication presents the application of isotope techniques as a powerful tool for evaluating nutrient dynamics in river systems. Nutrient assessment and management in river systems has been an important part of water resource management for the past few decades, but the provision of appropriate and effective nutrient assessment and management in water resource management still remains a challenge due to the diversity of sources, pathways and transformations of nutrients. The topics discussed in this book show that the application of isotope techniques could enable or highly facilitate the examination of sources, pathways, transformations, and fates of nutrients in river systems, contributing to integrated water resource management.

(Forthcoming 2013) • ISBN 978-92-0-138810-0 • IAEA-TECDOC-1695 • €18.00



Isotope Methods for Dating Old Groundwater

This guidebook provides theoretical and practical information on using a variety of isotope tracers for dating old groundwater, i.e. water stored in geological formations for periods ranging from about 1000 to one million years. Theoretical underpinnings of the methods and guidelines for their use in different hydrogeological environments are described. The guidebook also presents a number of case studies providing insight into how various isotopes have been used in aquifers around the world. The methods, findings and conclusions presented in this publication will enable students and practicing groundwater scientists to evaluate the use of isotope dating tools for specific issues related to the assessment and management of groundwater resources. In addition, the guidebook will be of use to the scientific community interested in issues related to radioactive waste disposal in geological repositories.

(357 pp.; 178 figs; 2013) • ISBN 978-92-0-137210-9 • STI/PUB/1587 • €70.00

Isotopes in Hydrology, Marine Ecosystems and Climate Change Studies

Proceedings of an International Symposium held in Monaco, 27 March–1 April 2011

Proceedings Series

This publication presents the proceedings of the latest IAEA symposium on isotopes in hydrology, marine ecosystems and climate change studies. At the symposium, five major topics were addressed through invited talks and oral presentations. These five sessions covered: the role of isotopes in understanding and modelling climate change, marine ecosystems and the water cycle; carbon dioxide sequestration and related aspects of the carbon cycle, such as ocean acidification; isotopes and radionuclides in the marine environment, groundwater assessments for large aquifers; analytical methods and instrumentation for the application of isotopes in environmental, climate and hydrological studies. Leading scientists in the field of climate change and hydrology, as well as representatives from climate change and environmental bodies and organizations, exchanged their views and experience.

(Forthcoming 2013) • ISBN 978-92-0-135610-9 • STI/PUB/1580 • €90.00

Monitoring Isotopes in Rivers: Creation of the Global Network of Isotopes in Rivers (GNIR)

IAEA TECDOC Series No. 1673

This publication presents and evaluates several isotope datasets compiled in a number of recently established river monitoring stations founded at the time of the creation of the Global Network of Isotopes in Rivers (GNIR). It also contains the preliminary results from 12 field sites now included in GNIR. These studies illustrate the different hydrological aspects of river basins that can be addressed by regular monitoring of environmental isotopes in rivers. The target readers for this publication are hydrologists, hydrogeologists and isotope experts dealing with catchment hydrology and management of water resources, as well as technical cooperation project counterparts in Member States.

(2012) • ISBN 978-92-0-126810-5 • IAEA-TECDOC-1673 • €18.00

Design, Development and Optimization of a Low-cost System for Digital Industrial Radiology

IAEA Radiation Technology Reports No. 2

Systems for digital industrial radiology are currently quite expensive and, therefore, often unaffordable for most of the institutes and non-destructive testing groups in developing Member States. This publication provides guidance on the development of such systems at a relatively lower cost. The aims are to facilitate the acquisition of state of the art digital technology, which has tremendous potential for enhancing the speed as well as the quality of radiographic inspection, in the long run ensuring the quality of industrial equipment and components.

(Forthcoming 2013) • ISBN 978-92-0-129310-7 • STI/PUB/1561 • €40.00

Development of Novel Adsorbents and Membranes by Radiation-induced Grafting for Selective Separation in Environmental and Industrial Applications

IAEA Radiation Technology Reports No. 3

This publication summarizes the results of a coordinated research project on the development of novel adsorbents and membranes by radiation-induced grafting for selective separation purposes. Radiation-induced grafting is a technique that uses readily available, low cost synthetic and natural polymers to prepare novel materials for use where the requirements for bulk properties and surface properties cannot be readily met using a single polymeric material. The objective of the coordinated research project was to use gamma rays, electron beams and swift heavy ions to graft various monomers onto natural and synthetic polymers for the development of novel adsorbents and membranes for environmental and industrial applications. The publication provides a summary of the project results and includes reports by the participants.

(278 pp., 285 figs; 2012) • ISBN 978-92-0-134010-8 • STI/PUB/1572 • €18.00

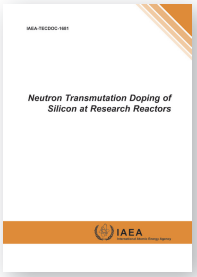
Radiation Processing

Guidelines for Development, Validation and Routine Control of Industrial Radiation Processes

IAEA Radiation Technology Series No. 4

Quality assurance is vital for the success of radiation technologies and requires the development of standardized procedures and the harmonization of process validation and control. The guidelines in this publication have been developed based on requests from Member States to provide guidance on fulfilling the requirements of the International Standard for Development, Validation and Routine Control for a Radiation Process, published by the International Organization for Standardization (ISO). While the ISO standard was developed for the sterilization of healthcare products, the present guidelines are generalized and are therefore relevant to any radiation process. This is possible since the principles involved in regulating a radiation process for achieving quality products are generally the same for any product or application. In several places, additional information has been included to provide insight into the radiation process that could help irradiator operators and their quality managers to provide better service to their customers.

(Forthcoming 2013) • ISBN 978-92-0-135710-6 • STI/PUB/1581 • €29.00



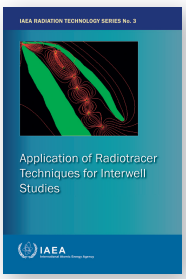
Neutron Transmutation Doping of Silicon at Research Reactors

IAEA TECDOC Series No. 1681

This publication details the processes and history of neutron transmutation doping of silicon, particularly its commercial pathway, followed by the requirements for a technologically modern and economically viable production scheme and the current trends in the global market for semiconductor products. It provides guidance on the technical requirements, involved processes and required quality standards for the transmission of sound practices as well as advice for research reactor managers and operators planning commercial scale production of silicon. Furthermore, a detailed and specific database of most of the world's research reactor facilities in this domain is included, featuring their irradiation capabilities, associated production capacities and processing.

(2012) • ISBN 978-92-0-130010-2 • IAEA-TECDOC-1681 • €18.00

Tracers



Application of Radiotracer Techniques for Interwell Studies

IAEA Radiation Technology Series No. 3

The main purpose of interwell tracer tests in oil and geothermal reservoirs is to monitor qualitatively and quantitatively the injected fluid connections between injection and production wells and to provide important data for better understanding of the reservoir geology in order to optimize the production strategy and thereby maximize the oil recovery or thermal energy production. Most of the information given by the radiotracer tests cannot be obtained by other means. Based on the key findings of an IAEA coordinated research project in this area, this publication describes the principles and the state of the art of radiotracer techniques for interwell investigations and provides practical guidance on the design and implementation

of tracer experiments as well as on the interpretation of the results.

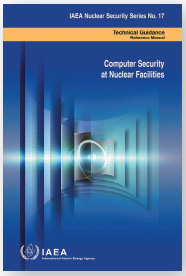
(231 pp., 122 figs; 2012) • ISBN 978-92-0-125610-2 • STI/PUB/1539 • €54.00

Radiotracer Generators for Industrial Applications

IAEA Radiation Technology Series No. 5

This publication, which draws on the outcome of an IAEA coordinated research project and on input from experts in the field, provides a unique source of information pertaining to the development of radiotracer generators and their use in troubleshooting and optimizing industrial processes. It describes the results of research undertaken in the characterization of ^{68}Ge/^{68}Ga, ^{137}Cs/^{137m}Ba, ^{99}Mo/^{99m}Tc and ^{113}Sn/^{113m}In radiotracer generators and their validation in industrial process investigations. Looking at trends in the industrialization process of developing countries, there is evidence that radiotracer techniques will continue to play an important role in industry for many years to come, and the findings of this research project will help Member States to make larger use of radiotracer technology for problem resolution in industry and environment.

(203 pp., 96 figs; 2013) • ISBN 978-92-0-135410-5 • STI/PUB/1579 • €34.00

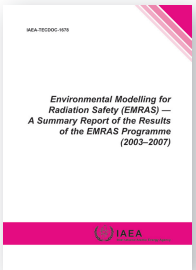


Computer Security at Nuclear Facilities

IAEA Nuclear Security Series No. 17

This publication provides guidance specific to nuclear facilities on implementing a computer security programme and evaluating existing programmes. The use of computer systems to cover an increasing range of functions at nuclear facilities introduces new vulnerabilities that could seriously endanger nuclear security if not addressed in a rigorous and balanced manner. Digital systems are increasingly being introduced in safety, safety related and security systems throughout facilities. Non-availability or malfunction of these systems can seriously impact nuclear safety and security, and potentially facilitate sabotage of the facility and/or theft of material. Computer security must, therefore, be a key component of overall facility security.

Arabic Edition (76 pp., 7 figs; 2013) • ISBN 978-92-0-642210-6 • STI/PUB/1527 • €33.00
Chinese Edition (62 pp., 7 figs; 2012) • ISBN 978-92-0-536110-9 • STI/PUB/1527 • €33.00
English Edition (69 pp., 7 figs; 2011) • ISBN 978-92-0-120110-2 • STI/PUB/1527 • €33.00
French Edition (75 pp., 7 figs; 2013) • ISBN 978-92-0-237010-4 • STI/PUB/1527 • €33.00
Russian Edition (80 pp., 7 figs; 2012) • ISBN 978-92-0-435510-9 • STI/PUB/1527 • €33.00
Spanish Edition (Forthcoming 2013)

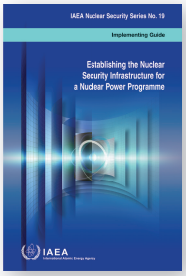


Environmental Modelling for Radiation Safety (EMRAS) — A Summary Report of the Results of the EMRAS Programme (2003–2007)

IAEA TECDOC Series No. 1678

This publication provides a detailed overview of the results and achievements of the IAEA's EMRAS (Environmental Modelling for Radiation Safety) programme, which ran from 2003 to 2007. The activities of the various working groups focused on the compilation of a handbook of parameter values for the prediction of radionuclide transfer in temperate environments, on the testing and comparison of models to assess the transfer of tritium and ^{14}C to biota and humans, on the validation of models for dose reconstruction due to ^{131}I after the Chernobyl accident, on modelling the transfer of radionuclides in aquatic systems, on remediation of rural and urban sites with radioactive residues, and on the impact of environmental radioactivity on non-human species. The book concludes with a summary of the outcomes of the EMRAS programme and is accompanied by a CD-ROM which provides details of the work and the results of the working groups.

(2012) • ISBN 978-92-0-129810-2 • IAEA-TECDOC-1678 • €18.00

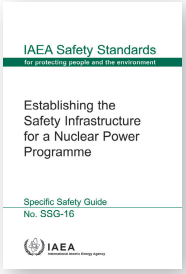


Establishing the Nuclear Security Infrastructure for a Nuclear Power Programme

IAEA Nuclear Security Series No. 19

This publication provides guidance on the actions that should be taken by a State to implement an effective nuclear security infrastructure for a nuclear power programme. The topics covered are: development of national policy and strategy, common nuclear security measures, infrastructure issues relating to nuclear and other radioactive material, associated facilities and cooperation with other States. The guidance provided is intended primarily for use by national policy makers, national legislators, competent authorities, institutions and individuals that are involved in the establishment, implementation, maintenance or sustainability of the nuclear security infrastructure for a nuclear power programme.

(73 pp., 1 fig.; 2013) • ISBN 978-92-0-138010-4 • STI/PUB/1591 • €29.00



Establishing the Safety Infrastructure for a Nuclear Power Programme

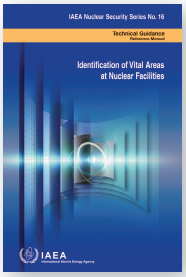
Specific Safety Guide

IAEA Safety Standards Series No. SSG-16

This Safety Guide provides guidance on the establishment of a national nuclear safety infrastructure as a key component of the overall preparations required for emerging nuclear power programmes. It provides recommendations, presented in the form of 200 sequential actions, on meeting the applicable IAEA safety requirements during the first three phases of the development of a nuclear power programme. It is intended for use by persons or organizations participating in the preparation and implementation of a nuclear power programme, including government officials and legislative bodies, regulatory bodies, operating organizations and external support entities.

Contents: 1. Introduction; 2. Implementing IAEA general safety requirements for the establishment of the safety infrastructure; 3. Implementing the IAEA specific safety requirements for the establishment of the safety infrastructure; Appendix: Overview of actions to be taken in each phase for the establishment of safety infrastructure.

(158 pp., 7 figs; 2011) • ISBN 978-92-0-115310-4 • STI/PUB/1507 • €40.00

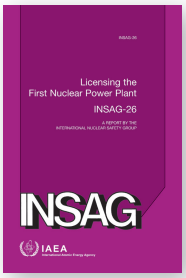


Identification of Vital Areas at Nuclear Facilities

IAEA Nuclear Security Series No. 16

This publication provides detailed guidance with regard to the identification of vital areas at nuclear facilities. It presents a structured approach to identifying those areas that contain equipment, systems and components to be protected against sabotage. The process for selection of a specific set of vital areas to be protected is based on consideration of the potential radiological consequences of sabotage, and on the design, operational and safety features of a nuclear facility. The method builds upon safety analysis to develop logic models for sabotage scenarios that could cause unacceptable radiological consequences. The sabotage actions represented in the logic models are linked to the areas from which they can be accomplished. The logic models are then analysed to determine areas that should be protected to prevent these unacceptable radiological consequences. The publication is part of a set of supporting publications in the IAEA Nuclear Security Series with the aim of assisting States in the design, implementation and evaluation of their physical protection systems for nuclear material and nuclear facilities.

(37 pp., 2 figs; 2012) • ISBN 978-92-0-114410-2 • STI/PUB/1505 • €22.00

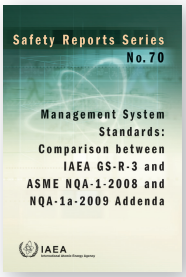


Licensing the First Nuclear Power Plant

INSAG Series No. 26

A robust national nuclear safety infrastructure is essential for the deployment of a country's first nuclear power plant. A major challenge in this process is the development of an effective legal and governmental framework for safety, including an independent regulatory body. This publication supplements existing guidance in the IAEA safety standards on the development of an effective safety infrastructure and provides further assistance to new entrant regulatory bodies on the key challenges they will face throughout the life cycle of the first nuclear power plant. The publication focuses on the phases of a nuclear power deployment programme from the granting of a licence for construction to granting the licence for commissioning and operation.

(49 pp., 1 fig.; 2012) • ISBN 978-92-0-134210-2 • STI/PUB/1573 • €25.00

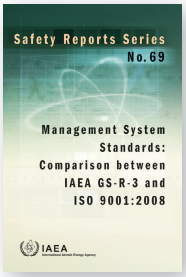


Management System Standards: Comparison between IAEA GS-R-3 and ASME NQA-1-2008 and NQA-1a-2009 Addenda

Safety Reports Series No. 70

This Safety Report compares the requirements of IAEA Safety Standards Series No. GS-R-3, The Management System for Facilities and Activities, and the American Society of Mechanical Engineers (ASME) Quality Assurance Requirements for Nuclear Facility Applications (ASME NQA-1-2008, NQA-1a-2009). It identifies the similarities and differences between them and provides information and guidance to assist an organization in meeting the requirements of both standards.

(61 pp.; 2012) • ISBN 978-92-0-120810-1 • STI/PUB/1530 • €29.00

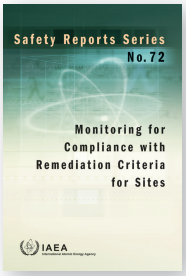


Management System Standards: Comparison between IAEA GS-R-3 and ISO 9001:2008

Safety Reports Series No. 69

This Safety Report compares the requirements of IAEA Safety Standards Series No. GS-R-3, The Management System for Facilities and Activities, and ISO 9001:2008, Quality Management Systems — Requirements, and identifies the main differences between the two standards. It provides information and guidance on adding safety specific management system requirements to the ISO 9001:2008 standard, to ensure that safety can be achieved. The publication is intended primarily for use by owners, operators and employees of nuclear facilities and installations, and by regulatory bodies, suppliers, and research and development organizations.

(55 pp., 1 fig.; 2012) • ISBN 978-92-0-120710-4 • STI/PUB/1529 • €29.00

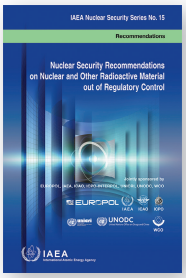


Monitoring for Compliance with Remediation Criteria for Sites

Safety Reports Series No. 72

This Safety Report provides detailed and practical advice to operators and regulators on the development and implementation of monitoring strategies in order to demonstrate compliance with radiological criteria for release of sites for unrestricted or restricted use. The publication complements the IAEA Safety Report on monitoring for compliance with exemption and clearance levels, which applies to clearance of bulk material from regulatory control.

(190 pp., 49 figs; 2012) • ISBN 978-92-0-127910-1 • STI/PUB/1551 • €40.00



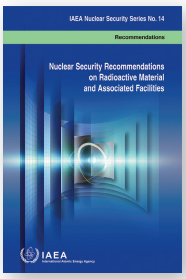
Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control

IAEA Nuclear Security Series No. 15

This publication presents recommendations for the nuclear security of nuclear and other radioactive material that is out of regulatory control. It is based on national experience and practices and guidance publications in the field of security as well as the nuclear security related international instruments. The recommendations include guidance for States with regard to the nuclear security of nuclear and other radioactive material that has been reported as being out of regulatory control as well as of material that is

lost, missing or stolen but has not been reported as such, or has been otherwise discovered. In addition, these recommendations adhere to the detection and assessment of alarms and alerts and to a graded response to criminal or unauthorized acts with nuclear security implications.

Arabic Edition (34 pp.; 2012) • ISBN 978-92-0-635210-6 • STI/PUB/1488 • €23.00
Chinese Edition (32 pp.; 2011) • ISBN 978-92-0-522910-2 • STI/PUB/1488 • €23.00
English Edition (33 pp.; 2011) • ISBN 978-92-0-112210-0 • STI/PUB/1488 • €23.00
French Edition (38 pp.; 2011) • ISBN 978-92-0-223710-0 • STI/PUB/1488 • €23.00
Russian Edition (44 pp.; 2011) • ISBN 978-92-0-423010-9 • STI/PUB/1488 • €23.00
Spanish Edition (51 pp.; 2012) • ISBN 978-92-0-324410-7 • STI/PUB/1488 • €23.00



Nuclear Security Recommendations on Radioactive Material and Associated Facilities

IAEA Nuclear Security Series No. 14

The purpose of this publication is to provide guidance to States and competent authorities on how to develop or enhance, implement and maintain a nuclear security regime for facilities dealing with radioactive material and associated activities. This is to be achieved through the establishment or improvement of their capabilities to implement a legislative and regulatory framework to address the security of radioactive material, associated facilities and associated activities in order to reduce the likelihood of malicious acts involving those materials. These recommendations reflect a broad consensus among States on the requirements which should be met for the security of radioactive material, associated facilities and activities.

Arabic Edition (30 pp.; 2011) • ISBN 978-92-0-624710-5 • STI/PUB/1487 • €22.00
Chinese Edition (25 pp.; 2012) • ISBN 978-92-0-524010-7 • STI/PUB/1487 • €22.00
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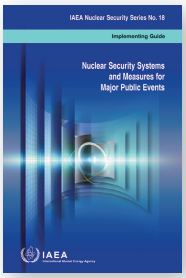


Nuclear Security Systems and Measures for Major Public Events

IAEA Nuclear Security Series No. 18

This publication provides an overview, based on practical experience and lessons learned, for establishing nuclear security systems and measures for major public events. It covers technical and administrative nuclear security measures for developing the necessary organizational structure, developing plans, strategies and concepts of operations, and making arrangements for implementing the developed plans, strategies and concepts.

(56 pp., 14 figs; 2012) • ISBN 978-92-0-127010-8 • STI/PUB/1546 • €30.00

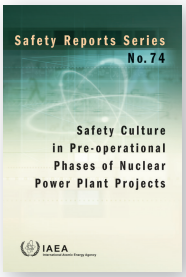
Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards

General Safety Requirements

IAEA Safety Standards Series No. GSR Part 3

This publication is the new edition of the International Basic Safety Standards. This edition is co-sponsored by seven other international organizations — European Commission (EC/Euratom), FAO, ILO, OECD/NEA, PAHO, UNEP and WHO. It replaces the interim edition that was published in November 2011. The previous edition of the International Basic Safety Standards was published in 1996. It has been extensively revised and updated to take account of the latest finding of the United Nations Scientific Committee on the Effects of Atomic Radiation, and the latest recommendations of the International Commission on Radiological Protection. The publication details the requirements for the protection of people and the environment from harmful effects of ionizing radiation and for the safety of radiation sources. All circumstances of radiation exposure are considered.

(Forthcoming 2013) • ISBN 978-92-0-135310-8 • STI/PUB/1578 • €62.00



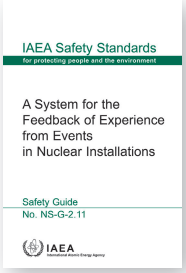
Safety Culture in Pre-operational Phases of Nuclear Power Plant Projects

Safety Reports Series No. 74

An abundance of information exists on safety culture related to the operational phases of nuclear power plants, however, pre-operational phases present unique challenges. This publication focuses on safety culture during pre-operational phases, which span the interval from before a decision is taken to launch a nuclear power programme to first fuel load. It provides safety culture insights and focuses on eight generic issues: safety culture understanding; multicultural aspects; leadership; competencies and resource competition; management systems; learning and feedback; cultural assessments; and communication. Each issue is discussed in terms of: specific challenges; desired state; approaches and methods; and examples and resources. This publication will be of interest to newcomers and experienced individuals faced with the opportunities and challenges inherent in safety culture programmes aimed at pre-operational activities.

(69 pp., 6 figs; 2012) • ISBN 978-92-0-128710-6 • STI/PUB/1555 • €31.00

Nuclear Power Plants



A System for the Feedback of Experience from Events in Nuclear Installations

Safety Guide

IAEA Safety Standards Series No. NS-G-2.11

This Safety Guide provides recommendations on all the main components of operating experience feedback systems, utilizing relevant information on events and abnormal conditions that have occurred at nuclear installations around the world. It focuses on the interaction between the different systems for using operating experience feedback and constitutes an update and an extension of Part I: A National System, of Systems for Reporting Unusual Events in Nuclear Power Plants (IAEA Safety Series No. 93).

Contents: 1. Introduction; 2. Main elements of a national system for the feedback of operational experience; 3. Screening of events; 4. Investigation and analysis of events; 5. Corrective actions; 6. Trending and review to recognize emergent problems; 7. Utilization, dissemination and exchange of information on operating experience; 8. Reviewing the effectiveness of the process for feedback of operational experience; 9. Quality assurance; 10. Reporting of safety related events; Appendix I: Reporting criteria and categories; Appendix II: Types of event report, timing, format and content; Appendix III: Investigation and analysis of events; Appendix IV: Approval and implementation of corrective actions; Annex I: Data management for the feedback of operating experience; Annex II: Example of elements of a national feedback system for operating experience.

English Edition (61 pp., 1 fig.; 2006) • ISBN 92-0-101406-6 • STI/PUB/1243 • €23.00
Russian Edition (67 pp., 1 fig.; 2009) • ISBN 978-92-0-401209-5 • STI/PUB/1243 • €23.00
Spanish Edition (67 pp., 1 fig.; 2012) • ISBN 978-92-0-332410-6 • STI/PUB/1243 • €23.00

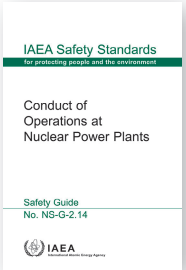
Commissioning for Nuclear Power Plants

Specific Safety Guide

IAEA Safety Standards Series No. SSG-28

This Safety Guide provides recommendations on the basis of international best practices, as currently followed in IAEA Member States, on how to meet the requirements for the commissioning for nuclear power plants. These requirements enable the commissioning of a nuclear power plant to proceed safely and to a high quality. The recommendations will also enable the necessary assurances to be provided that the plant has been constructed in accordance with the design intent and can be operated safely.

(Forthcoming 2013) • ISBN 978-92-0-140110-6 • STI/PUB/1595 • €30.00



Conduct of Operations at Nuclear Power Plants

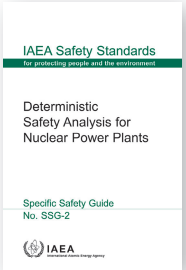
Safety Guide

IAEA Safety Standards Series No. NS-G-2.14

This Safety Guide identifies the main responsibilities and practices of nuclear power plant operations departments in relation to their responsibility for the safe functioning of the plant. The guide presents the factors to be considered in structuring the operations department of a nuclear power plant; setting high standards of performance; making safety related decisions in an effective manner; conducting control room and field activities in a thorough and professional manner; and maintaining a nuclear power plant within established operational limits and conditions.

Contents: 1. Introduction; 2. Management and organization of plant operations; 3. Shift complement and functions; 4. Shift routines and operating practices; 5. Control of equipment and plant status; 6. Operations equipment and operator aids; 7. Work control and authorization.

English Edition (55 pp.; 2008) • ISBN 978-92-0-105408-1 • STI/PUB/1339 • €19.00
Russian Edition (68 pp.; 2008) • ISBN 978-92-0-412508-5 • STI/PUB/1339 • €19.00
Spanish Edition (61 pp.; 2012) • ISBN 978-92-0-329710-3 • STI/PUB/1339 • €19.00



Deterministic Safety Analysis for Nuclear Power Plants

Specific Safety Guide

IAEA Safety Standards Series No. SSG-2

The objective of this Safety Guide is to provide harmonized guidance to designers, operators, regulators and providers of technical support on deterministic safety analysis for nuclear power plants. It provides information on the utilization of the results of such analysis for safety and reliability improvements. The Safety Guide addresses conservative, best estimate and uncertainty evaluation approaches to deterministic safety analysis and is applicable to current and future designs.

Contents: 1. Introduction; 2. Grouping of initiating events and associated transients relating to plant states; 3. Deterministic safety analysis and acceptance criteria; 4. Conservative deterministic safety analysis; 5. Best estimate plus uncertainty analysis; 6. Verification and validation of computer codes; 7. Relation of deterministic safety analysis to engineering aspects of safety and probabilistic safety analysis; 8. Application of deterministic safety analysis; 9. Source term evaluation for operational states and accident conditions.

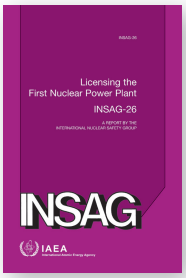
English Edition (62 pp., 2 figs; 2009) • ISBN 978-92-0-113309-0 • STI/PUB/1428 • €23.00
Spanish Edition (66 pp., 2 figs; 2012) • ISBN 978-92-0-333010-7 • STI/PUB/1428 • €23.00

Engineering Safety Aspects of the Protection of Nuclear Power Plants against Sabotage

IAEA Nuclear Security Series No. 4

This report provides guidelines for evaluating the engineering safety aspects of the protection of nuclear power plants against sabotage. The guidance, which is the result of extensive dialogue among safety and security specialists, takes into account the existing robustness of structures, systems and components and emphasizes those aspects of sabotage protection that work synergistically with the protection against extreme external occurrences of accidental origin, such as earthquakes, tornadoes and human induced events. The report introduces a defence in depth approach to sabotage protection, with layers comprising safety and security related systems and activities, and promotes self-assessment by the licensee in cooperation with the required interfaces with the competent authorities.

English Edition (58 pp., 1 fig.; 2007) • ISBN 92-0-109906-1 • STI/PUB/1271 • €30.00
Chinese Edition (56 pp., 1 fig.; 2011) • ISBN 978-92-0-523310-9 • STI/PUB/1271 • €30.00

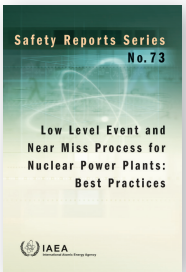


Licensing the First Nuclear Power Plant

INSAG Series No. 26

A robust national nuclear safety infrastructure is essential for the deployment of a country's first nuclear power plant. A major challenge in this process is the development of an effective legal and governmental framework for safety, including an independent regulatory body. This publication supplements existing guidance in the IAEA safety standards on the development of an effective safety infrastructure and provides further assistance to new entrant regulatory bodies on the key challenges they will face throughout the life cycle of the first nuclear power plant. The publication focuses on the phases of a nuclear power deployment programme from the granting of a licence for construction to granting the licence for commissioning and operation.

(49 pp., 1 fig.; 2012) • ISBN 978-92-0-134210-2 • STI/PUB/1573 • €25.00

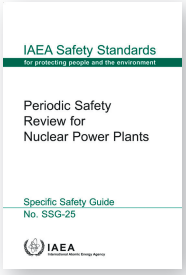


Low Level Event and Near Miss Process for Nuclear Power Plants: Best Practices

Safety Reports Series No. 73

This publication provides nuclear power plant operators and regulatory organizations with a best practice overview of the development, implementation and continuous improvement of low level events and near miss processes. Use of guidance and best practices, as described in this publication, will help the relevant organizations in recognizing emerging adverse trends by analysing lower level events and near misses. Correcting such adverse trends proactively may prevent occurrence of significant events, and thereby, enhance the safety and reliability of nuclear power plants.

(86 pp., 13 figs; 2012) • ISBN 978-92-0-126610-1 • STI/PUB/1545 • €30.00



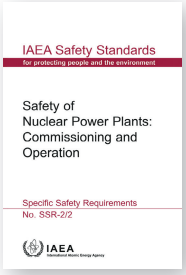
Periodic Safety Review for Nuclear Power Plants

Specific Safety Guide

IAEA Safety Standards Series No. SSG-25

This Safety Guide provides recommendations and guidance on conducting periodic safety review (PSR) of an existing nuclear power plant. PSR is a comprehensive safety review of all important aspects of safety, carried out at regular intervals, typically every ten years. In addition, PSR may be used in support of the decision making process for licence renewal or long term operation, or for restart of a nuclear power plant following a prolonged shutdown. The review process described in this Safety Guide is valid for nuclear power plants of any age and may have a wider applicability, for example to research reactors and radioactive waste management facilities, by means of a graded approach. Although PSR may not be an appropriate means for identifying safety issues in the decommissioning phase, the documentation resulting from PSR of an operating nuclear power plant will be an important input when planning decommissioning.

(106 pp.; 2013) • ISBN 978-92-0-137410-3 • STI/PUB/1588 • €37.00



Safety of Nuclear Power Plants: Commissioning and Operation

Specific Safety Requirements

IAEA Safety Standards Series No. SSR-2/2

This publication is a revision of IAEA Safety Standards Series No. NS-R-2, Safety of Nuclear Power Plants: Operation, and has been extended to cover the commissioning stage. It describes the requirements to be met to ensure the safe operation of nuclear power plants. Over recent years there have been developments in areas such as long term operation, plant ageing, periodic safety review, probabilistic safety analysis and risk informed decision making processes. It became necessary to revise the IAEA's safety requirements in these areas and to correct and/or improve the publication on the basis of feedback from its application by both the IAEA and its Member States. In addition, the requirements are governed by, and must apply, the safety objective and safety principles that are established in the Fundamental Safety Principles (IAEA Safety Standards Series No. SF-1).

Contents: 1. Introduction; 2. Safety objectives and principles; 3. The management and organizational structure of the operating organization; 4. Management of operational safety; 5. Operational safety programmes; 6. Plant commissioning;

7. Plant operations; 8. Maintenance, testing, surveillance and inspection; 9. Preparation for decommissioning.

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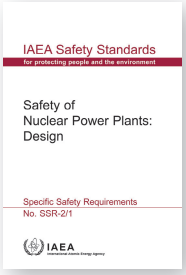
Chinese Edition (50 pp., 2 figs; 2011) • ISBN 978-92-0-521810-6 • STI/PUB/1513 • €31.00
English Edition (50 pp., 2 figs; 2011) • ISBN 978-92-0-115910-6 • STI/PUB/1513 • €31.00
French Edition (52 pp., 2 figs; 2012) • ISBN 978-92-0-221910-6 • STI/PUB/1513 • €31.00
Russian Edition (58 pp., 2 figs; 2011) • ISBN 978-92-0-421710-0 • STI/PUB/1513 • €31.00
Spanish Edition (52 pp., 2 figs; 2012) • ISBN 978-92-0-324910-2 • STI/PUB/1513 • €31.00



Safety of Nuclear Power Plants: Design

Specific Safety Requirements

IAEA Safety Standards Series No. SSR-2/1

This publication is a revision of IAEA Safety Standards Series No. NS-R-1, Safety of Nuclear Power Plants: Design. It establishes requirements applicable to the design of nuclear power plants and elaborates on the safety objective, safety principles and concepts that provide the basis for deriving the safety requirements that must be met for the design of a nuclear power plant. It will be useful for organizations involved in the design, manufacture, construction, modification, maintenance, operation and decommissioning of nuclear power plants, as well as for regulatory bodies.

Contents: 1. Introduction; 2. Applying the safety principles and concepts; 3. Management of safety in design; 4. Principal technical requirements; 5. General plant design; 6. Design of specific plant systems.

Arabic Edition (64 pp., 2 figs; 2012) • ISBN 978-92-0-630510-2 • STI/PUB/1534 • €32.00
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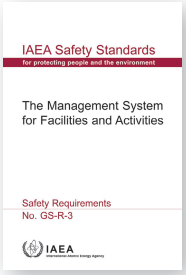
Russian Edition (80 pp., 2 figs; 2012) • ISBN 978-92-0-431210-2 • STI/PUB/1534 • €32.00
Spanish Edition (74 pp., 2 figs; 2011) • ISBN 978-92-0-331310-0 • STI/PUB/1534 • €32.00



The Management System for Facilities and Activities

Safety Requirements

IAEA Safety Standards Series No. GS-R-3

This publication establishes requirements for management systems that integrate safety, health, security, quality assurance and environmental objectives. A successful management system ensures that nuclear safety matters are not dealt with in isolation but are considered within the context of all of these objectives. The aim of this publication is to assist Member States in establishing and implementing effective management systems that integrate all aspects of managing nuclear facilities and activities in a coherent manner. It details the planned and systematic actions necessary to provide adequate confidence that all these requirements are satisfied.

Contents: 1. Introduction; 2. Management system; 3. Management responsibility; 4. Resource management; 5. Process implementation; 6. Measurement, assessment and improvement.

Arabic Edition (38 pp.; 2011) • ISBN 978-92-0-618510-0 • STI/PUB/1252 • €25.00
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English Edition (27 pp.; 2006) • ISBN 92-0-106506-X • STI/PUB/1252 • €25.00
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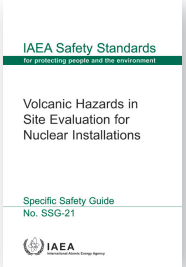
Russian Edition (29 pp.; 2008) • ISBN 978-92-0-406208-3 • STI/PUB/1252 • €25.00
Spanish Edition (29 pp.; 2012) • ISBN 978-92-0-318710-7 • STI/PUB/1252 • €25.00



Volcanic Hazards in Site Evaluation for Nuclear Installations

Specific Safety Guide

IAEA Safety Standards Series No. SSG-21

This publication provides comprehensive and updated guidance for site evaluation in relation to volcanic hazards. It includes recommendations on assessing the volcanic hazards at a nuclear installation site, in order to identify and characterize, in a comprehensive manner, all potentially hazardous phenomena that may be associated with future volcanic events. It describes how some of these volcanic phenomena may affect the acceptability of the selected site, resulting in exclusion of a site or determining the corresponding design basis parameters for the installation. This Safety Guide is applicable to both existing and new sites, and a graded approach is recommended to cater for all types of nuclear installation.

Contents: 1. Introduction; 2. Overview of volcanic hazard assessment; 3. General recommendations; 4. Necessary information and investigations (database); 5. Screening of volcanic hazards; 6. Site specific volcanic hazard assessment; 7. Nuclear installations other than nuclear power plants; 8. Monitoring and preparation for response; 9. Management system for volcanic hazard assessment; Annex I: Volcanic hazard scenarios; Annex II: Worldwide sources of information.

(106 pp., 2 figs; 2012) • ISBN 978-92-0-128110-4 • STI/PUB/1552 • €30.00

Research Reactors

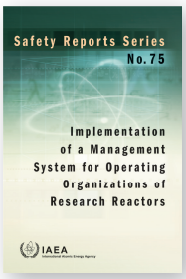
Advanced Water Cooled Reactor Case Studies in Support of Passive Safety Systems (AWCR)

IAEA TECDOC Series No. 1705

This publication is the final report of the INPRO collaborative project on advanced water cooled reactor (AWCR) case studies in support of passive safety systems. It compiles case study results on natural circulation and thermal stratification

phenomena in selected passive safety systems performed by the participating countries of Argentina, India and Republic of Korea. The publication presents case study results as well as major findings and conclusions drawn from these case studies. This publication will be a useful resource for researchers in the area of core physics and reactor thermohydraulics and for technical experts and engineers engaged in experimental investigation and theoretical simulation for developing passive safety systems.

(Forthcoming 2013) • ISBN 978-92-0-139810-9 • IAEA-TECDOC-1705 • €18.00



Implementation of a Management System for Operating Organizations of Research Reactors

Safety Reports Series No. 75

The requirements for management systems for research reactors are set out in the IAEA safety standards. To ensure that an integrated management system based on the IAEA safety standards is tailored for the size of the different organizations and commensurate to the risks of an activity, the safety requirements for management systems for facilities and activities (IAEA Safety Standards Series No. GS-R-3) includes a requirement to grade the application of the management system and the deployment of resources appropriately. This publication not only applies the relevant standards and presents the processes for larger operating organizations of research reactors to ensure safe operation and utilization, but it also provides a case study of a graded approach to the application of the management system requirements as implemented by a small research reactor. This report will be useful for research reactor operating organizations, particularly those intending to implement a process based integrated management system, and may also be of interest to other nuclear facilities and to regulatory bodies.

(161 pp., 63 figs; 2013) • ISBN 978-92-0-136010-6 • STI/PUB/1584 • €30.00

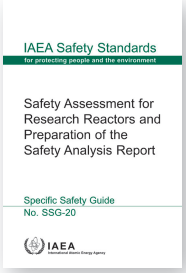
Research Reactors: Safe Management and Effective Utilization

Proceedings of an International Conference, held in Rabat, Morocco, 14–18 November 2011

Proceedings CD Series

This CD-ROM contains the proceedings of the fourth international conference on research reactors, convened to promote the exchange of information on research reactor issues and trends among users, operators, regulators, designers and suppliers. The conference included more than 120 oral and poster presentations pertaining to six technical areas of research reactors: utilization and applications; operation and maintenance; new research reactor projects; safety; spent fuel, waste and decommissioning; reactor designers and providers. The information provided on this CD-ROM will serve as a reference for today's international research reactor community in terms of its achievements, issues and challenges to date, as well as future trends and anticipated developments.

(2012) • ISBN 978-92-0-184610-5 • STI/PUB/1575 • €18.00



Safety Assessment for Research Reactors and Preparation of the Safety Analysis Report

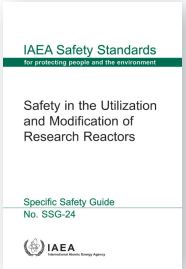
Specific Safety Guide

IAEA Safety Standards Series No. SSG-20

This publication is a revision of IAEA Safety Series No. 35-G1, and experience acquired from the use of that Safety Guide has been taken into account. The present publication provides guidance on performing safety assessments throughout the lifetime of a research reactor and on the regulatory review of this assessment within the framework of the licensing process. Guidance on preparation of the safety analysis report, including its format and contents, is also provided.

Contents: 1. Introduction; 2. Safety assessment in the licensing process; 3. Preparation of the safety analysis report; 4. Information to be submitted for the review and assessment process; Appendix: Content of a safety analysis report; Annex I: Approach to and methods of safety analysis; Annex II: Examples of input parameters and initial conditions; Annex III: Items to be considered in the description of the research reactor; Annex IV: Typical radiation sources and radiation fields in a research reactor.

(118 pp., 2 figs; 2012) • ISBN 978-92-0-115410-1 • STI/PUB/1508 • €35.00



Safety in the Utilization and Modification of Research Reactors

Specific Safety Guide

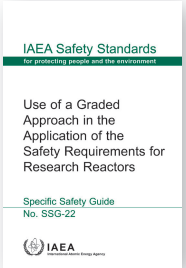
IAEA Safety Standards Series No. SSG-24

This Safety Guide is a revision of IAEA Safety Series No. 35-G2 on safety in the utilization and modification of research reactors. It provides recommendations on meeting the requirements for the categorization, safety assessment and approval of research reactor experiments and modification projects. Specific safety considerations in different phases of utilization and modification projects are covered, including the pre-implementation, implementation and post-implementation phases. Guidance is also provided on the operational safety of experiments, including in the handling, dismantling, post-irradiation examination and disposal of experimental devices. Examples of the application of the safety categorization process for experiments and modification projects and of the content of the safety analysis report for an experiment are also provided.

Contents: 1. Introduction; 2. Management system for the utilization and modification of a research reactor; 3. Categorization, safety assessment and approval of an experiment or modification; 4. Safety considerations for the design of an experiment or modification; 5. Pre-implementation

phase of a modification or utilization project; 6. Implementation phase of a modification or utilization project; 7. Post-implementation phase of a utilization or modification project; 8. Operational safety of experiments at a research reactor; 9. Safety considerations in the handling, dismantling, post-irradiation examination and disposal of experimental devices; 10. Safety aspects of out-of-reactor-core installations; Annex I: Example of a checklist for the categorization of an experiment or modification at a research reactor; Annex II: Example of the content of the safety analysis report for an experiment at a research reactor; Annex III: Examples of reasons for a modification at a research reactor.

(68 pp., 3 figs; 2012) • ISBN 978-92-0-129110-3 • STI/PUB/1559 • €28.00



Use of a Graded Approach in the Application of the Safety Requirements for Research Reactors

Specific Safety Guide

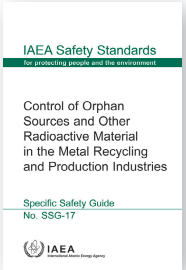
IAEA Safety Standards Series No. SSG-22

This publication provides recommendations on the appropriate manner to comply with the safety requirements for research reactors, IAEA Safety Standards Series No. NS-R-4, utilizing a graded approach. It is intended for use by operating organizations, regulatory bodies and other organizations involved in the design, construction and operation of research reactors.

Contents: 1. Introduction; 2. Basic elements of the approach to grading; 3. Regulatory supervision; 4. Management and verification of safety; 5. Site evaluation; 6. Design; 7. Operation; 8. Decommissioning; Annex: Example of steps in the graded approach for packaging of radioactive material.

(74 pp., 2 figs; 2012) • ISBN 978-92-0-127310-9 • STI/PUB/1547 • €29.00

Radiation Sources and Accelerators



Control of Orphan Sources and Other Radioactive Material in the Metal Recycling and Production Industries

Specific Safety Guide

IAEA Safety Standards Series No. SSG-17

Accidents involving orphan sources and other radioactive material in the metal recycling and production industries have resulted in serious radiological accidents as well as in harmful environmental, social and economic impacts. This Safety Guide provides recommendations, the implementation of which should prevent such accidents and provide confidence that scrap metal and recycled products are safe.

Contents: 1. Introduction; 2. Protection of people and the environment; 3. Responsibilities; 4. Monitoring for radioactive material; 5. Response to the discovery of radioactive material; 6. Remediation of contaminated areas; 7. Management of recovered radioactive material; Annex I: Review of events involving radioactive material in the metal recycling and production industries; Annex II: Categorization of radioactive sources; Annex III: Examples of national and international initiatives.

(82 pp., 3 figs; 2012) • ISBN 978-92-0-115510-8 • STI/PUB/1509 • €31.00

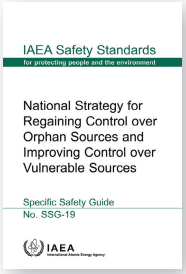
Criticality Safety in the Handling of Fissile Material

Specific Safety Guide

IAEA Safety Standards Series No. SSG-27

This Safety Guide provides guidance and recommendations on how to meet the relevant requirements for ensuring subcriticality when dealing with fissile material and for planning the response to criticality accidents. The guidance and recommendations are applicable to both regulatory bodies and operating organizations. The objectives of criticality safety are to prevent a self-sustained nuclear chain reaction and to minimize the consequences of this if it were to occur. The Safety Guide makes recommendations on how to ensure subcriticality in systems involving fissile materials during normal operation, anticipated operational occurrences, and, in the case of accident conditions, within design basis accidents, from initial design through commissioning, operation, and decommissioning and disposal.

(Forthcoming 2013) • ISBN 978-92-0-140010-9 • STI/PUB/1594 • €28.00



National Strategy for Regaining Control over Orphan Sources and Improving Control over Vulnerable Sources

Specific Safety Guide

IAEA Safety Standards Series No. SSG-19

This Safety Guide is intended to provide recommendations on the establishment of a national strategy for regaining control over orphan radioactive sources and for improving control over vulnerable radioactive sources. It provides guidance on how to assess the national situation, and develop and implement a national strategy to achieve these goals.

Contents: 1. Introduction; 2. Assessing the problem; 3. Development of the national strategy; 4. Implementation of the national strategy; Appendix I: Format and content of a national strategy document; Appendix II: Searching for sources; Annex I: Causes of loss of control over radioactive sources; Annex II: Common problems and possible solutions identified in IAEA missions to assist in developing national strategies.

Arabic Edition (92 pp., 4 figs; 2012) • ISBN 978-92-0-636210-5 • STI/PUB/1510 • €35.00
English Edition (100 pp., 4 figs; 2011) • ISBN 978-92-0-115610-5 • STI/PUB/1510 • €35.00

Transport of Radioactive Material

Addendum to the Schedules of Provisions of the IAEA Regulations for the Safe Transport of Radioactive Material (2009 Edition)

Safety Guide

IAEA Safety Standards Series No. TS-G-1.6 (Rev. 1)

This Safety Guide is issued in support of Regulations for the Safe Transport of Radioactive Material (IAEA Safety Standards Series No. TS-R-1, 2009 Edition). It lists the paragraph numbers of the Transport Regulations that are relevant for specified types of consignment, classified according to their UN numbers. It does not provide additional recommendations. The intended users are consignors and consignees, carriers, shippers, regulators, and end users involved in the transport of radioactive material. A person or organization intending to transport a particular type of consignment of radioactive material must meet requirements in all sections of the Transport Regulations. This Safety Guide aids users by providing a listing of the relevant requirements of the Transport Regulations for each type of radioactive material, package or shipment. Once a consignor has classified the radioactive material to be shipped, the appropriate UN number can be assigned and the paragraph numbers of the requirements that apply for the shipment can be found in the corresponding schedule.

(Forthcoming 2013) • ISBN 978-92-0-192510-7 • STI/PUB/1614 • €20.00

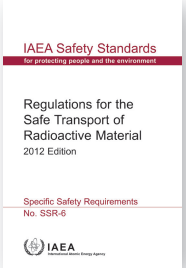
Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (2012 Edition)

Specific Safety Guide

IAEA Safety Standards Series No. SSG-26

This Safety Guide provides recommendations and guidance on achieving and demonstrating compliance with IAEA Safety Standards Series No. SSR-6, Regulations for the Safe Transport of Radioactive Material (2012 Edition), which establishes the requirements to be applied to the national and international transport of radioactive material. Transport is deemed to comprise all operations and conditions associated with and involved in the movement of radioactive material, including the design, fabrication and maintenance of packaging, and the preparation, consigning, handling, carriage, storage in transit and receipt at the final destination of packages. This publication supersedes IAEA Safety Standards Series No. TS-G-1.1 Rev. 1, which was issued in 2008.

(Forthcoming 2013) • ISBN 978-92-0-136910-9 • STI/PUB/1586 • €58.00



Regulations for the Safe Transport of Radioactive Material — 2012 Edition

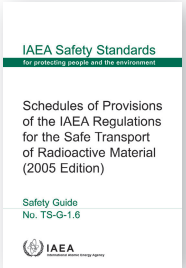
Specific Safety Requirements

IAEA Safety Standards Series No. SSR-6

This publication establishes the regulations that apply to the transport of radioactive material by all modes of transport on land, water or in the air, including transport that is incidental to the use of the radioactive material. The objective and scope of the regulations are described in detail as well as the range of their application. The publication provides requirements useful to governments, regulators, operators of nuclear facilities, carriers, users of radiation sources and cargo handling personnel.

Contents: 1. Introduction; 2. Definitions; 3. General provisions; 4. Activity limits and classification; 5. Requirements and controls for transport; 6. Requirements for radioactive materials and for packagings and packages; 7. Test procedures; 8. Approval and administrative requirements; Annex I: Summary of approval and prior notification requirements; Annex II: Conversion factors and prefixes; Annex III: Summary of consignments requiring exclusive use. (Formerly known as TS-R-1)

Arabic Edition (177 pp., 7 figs; 2013) • ISBN 978-92-0-638410-7 • STI/PUB/1570 • €44.00
Chinese Edition (164 pp., 7 figs; 2013) • ISBN 978-92-0-538110-7 • STI/PUB/1570 • €44.00
English Edition (168 pp., 7 figs; 2012) • ISBN 978-92-0-133310-0 • STI/PUB/1570 • €44.00
French Edition (174 pp., 7 figs; 2013) • ISBN 978-92-0-238910-6 0 • STI/PUB/1570 • €44.00
Russian Edition (Forthcoming 2013)
Spanish Edition (Forthcoming 2013)



Schedules of Provisions of the IAEA Regulations for the Safe Transport of Radioactive Material — 2005 Edition

Safety Guide

IAEA Safety Standards Series No. TS-G-1.6

Since 1961, IAEA Transport Regulations have been used worldwide by industry, competent authorities and international organizations. While the provisions of the Regulations are essentially clear and unambiguous, they are often also highly technical in nature and unavoidably complex. Therefore, there is a need for this publication, which supplements the Regulations by providing specific information on individual consignments, to help users to identify the applicable requirements. It assists users in complying with the safety standards prescribed in the IAEA Transport Regulations (IAEA Safety Standards Series No. SSR-6).

Contents: 1. Introduction; 2. Definitions and classification; Schedules.

English Edition (283 pp.; 2010) • ISBN 978-92-0-114809-4 • STI/PUB/1431 • €40.00
Spanish Edition (312 pp.; 2012) • ISBN 978-92-0-329610-6 • STI/PUB/1431 • €40.00

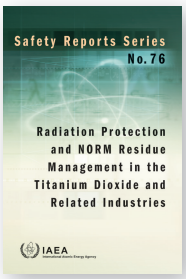
Radiation Protection

Radiation Protection and Management of NORM Residues in the Phosphate Industry

Safety Reports Series No. 78

This Safety Report is a compilation of detailed information on the processes and materials associated with the phosphate industry and on the radiological considerations that need to be taken into account by the regulatory body when determining the nature and extent of radiation protection measures. It has been developed as part of the IAEA's programme on the application of its safety standards in the field of radiation, transport and waste safety. The information provided will assist in the implementation of a graded approach to regulation, in terms of which the application of the requirements of the safety standards is commensurate with the characteristics of the practice or source and with the magnitude and likelihood of the exposures. The publication also provides information on expected radionuclide concentrations, exposure levels and the most appropriate regulatory approach in the phosphate industry, and covers the mining and beneficiation of phosphate ore, phosphoric acid production, phosphogypsum, and the manufacture and use of phosphatic fertilizers among others.

(288 pp., 90 figs; 2013) • ISBN 978-92-0-135810-3 • STI/PUB/1582 • €55.00

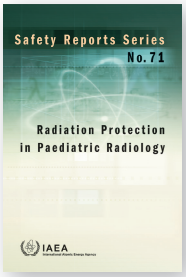


Radiation Protection and NORM Residue Management in the Titanium Dioxide and Related Industries

Safety Reports Series No. 76

This Safety Report is a compilation of detailed information on the processes and materials involved in the titanium dioxide and related industries and on the radiological considerations that need to be taken into account by the regulatory body when determining the nature and extent of radiation protection measures. It has been developed as part of the IAEA's programme on the application of its safety standards in the field of radiation, transport and waste safety. The information provided will assist in the implementation of a graded approach to regulation, in terms of which the application of the requirements of the safety standards is commensurate with the characteristics of the practice or source and with the magnitude and likelihood of the exposures. Although aimed primarily at the titanium dioxide industry, this publication is also relevant to industries involved in the mining and beneficiation of mineral sands for the extraction of heavy minerals such as zircon, monazite and ilmenite.

(105 pp., 12 figs; 2012) • ISBN 978-92-0-132110-7 • STI/PUB/1568 • €32.00

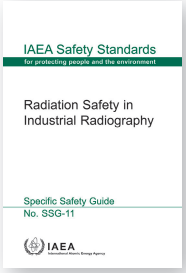


Radiation Protection in Paediatric Radiology

Safety Reports Series No. 71

This publication provides guidance to radiologists, other clinicians and radiographers/technologists involved in diagnostic procedures using ionizing radiation with children and adolescents, and should also be of value to medical physicists and regulators. It focuses on the measures necessary to provide protection from the effects of radiation using the principles established in the IAEA's International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (IAEA Safety Standards No. GSR Part 3 (Interim)), and the priority accorded to the area. The emphasis throughout is on the special requirements of paediatrics.

(111 pp., 2 figs; 2012) • ISBN 978-92-0-125710-9 • STI/PUB/1543 • €38.00



Radiation Safety in Industrial Radiography

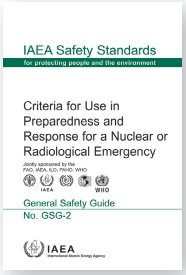
Specific Safety Guide

IAEA Safety Standards Series No. SSG-11

This Safety Guide provides recommendations for ensuring radiation safety in industrial radiography used in non-destructive testing. This includes industrial radiography work that utilizes X ray and gamma sources, both in shielded facilities that have effective engineering controls and outside shielded facilities using mobile sources.

Contents: 1. Introduction; 2. Duties and responsibilities; 3. Safety assessment; 4. Radiation protection programme; 5. Training and qualification; 6. Individual monitoring of workers; 7. Workplace monitoring; 8. Control of radioactive sources; 9. Safety of industrial radiography sources and exposure devices; 10. Radiography in shielded enclosures; 11. Site radiography; 12. Transport of radioactive sources; 13. Emergency preparedness and response; Appendix: IAEA categorization of radioactive sources; Annex I: Example safety assessment; Annex II: Overview of industrial radiography sources and equipment; Annex III: Examples of accidents in industrial radiography.

Arabic Edition (105 pp., 2 figs; 2012) • ISBN 978-92-0-633110-1 • STI/PUB/1466 • €33.00
English Edition (104 pp., 2 figs; 2011) • ISBN 978-92-0-107210-8 • STI/PUB/1466 • €33.00
French Edition (112 pp., 2 figs; 2013) • ISBN 978-92-0-236610-7 • STI/PUB/1466 • €33.00
Spanish Edition (Forthcoming 2013)



Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency

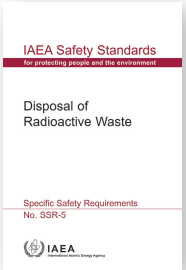
General Safety Guide

IAEA Safety Standards Series No. GSG-2

This Safety Guide presents a coherent set of generic criteria (expressed numerically in terms of radiation dose) that form a basis for developing the operational levels needed for decision making concerning protective and response actions. The set of generic criteria addresses the requirements established in IAEA Safety Standards Series No. GS-R-2 for emergency preparedness and response, including lessons learned from responses to past emergencies, and provides an internally consistent foundation for the application of radiation protection. The publication also proposes a basis for a plain language explanation of the criteria for the public and for public officials.

Contents: 1. Introduction; 2. Basic considerations; 3. Framework for emergency response criteria; 4. Guidance values for emergency workers; 5. Operational criteria; Appendix I: Dose concepts and dosimetric quantities; Appendix II: Examples of default oils for deposition, individual monitoring and contamination of food, milk and water; Appendix III: Development of EALs and example EALs for light water reactors; Appendix IV: Observables at the scene of a nuclear or radiological emergency.

Arabic Edition (108 pp.; 2012) • ISBN 978-92-0-629410-9 • STI/PUB/1467 • €41.00
English Edition (91 pp.; 2011) • ISBN 978-92-0-107410-2 • STI/PUB/1467 • €41.00
French Edition (102 pp.; 2012) • ISBN 978-92-0-224210-4 • STI/PUB/1467 • €41.00
Russian Edition (108 pp.; 2012) • ISBN 978-92-0-424810-4 • STI/PUB/1467 • €41.00



Disposal of Radioactive Waste

Specific Safety Requirements

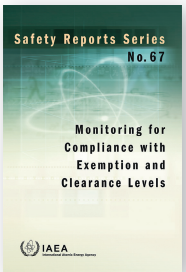
IAEA Safety Standards Series No. SSR-5

This publication establishes requirements applicable to all types of radioactive waste disposal facility. It is linked to the fundamental safety principles for each disposal option and establishes a set of strategic requirements that must be in place before facilities are developed. Consideration is also given to the safety of existing facilities developed prior to the establishment of present-day standards. The requirements will be complemented by Safety Guides that will provide guidance on good practice for meeting the requirements for different types of waste disposal facility.

Contents: 1. Introduction; 2. Protection of people and the environment; 3. Safety requirements for planning for the disposal of radioactive waste; 4. Requirements for the development, operation and closure of a disposal facility; 5. Assurance of safety; 6. Existing disposal facilities; Appendices.

Arabic Edition (70 pp., 2 figs; 2011) • ISBN 978-92-0-619110-1 • STI/PUB/1449 • €48.00
Chinese Edition (56 pp., 2 figs; 2011) • ISBN 978-92-0-519210-9 • STI/PUB/1449 • €48.00
English Edition (62 pp., 2 figs; 2011) • ISBN 978-92-0-103010-8 • STI/PUB/1449 • €48.00
French Edition (66 pp., 2 figs; 2011) • ISBN 978-92-0-220310-5 • STI/PUB/1449 • €48.00
Russian Edition (76 pp., 2 figs; 2011) • ISBN 978-92-0-420010-2 • STI/PUB/1449 • €48.00
Spanish Edition (70 pp., 2 figs; 2012) • ISBN 978-92-0-322010-1 • STI/PUB/1449 • €48.00

Radioactive Waste Management

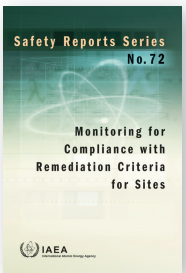


Monitoring for Compliance with Exemption and Clearance Levels

Safety Reports Series No. 67

Radioactive material is present in the environment and is also generated during the operation and subsequent decommissioning of facilities that have used or produced radioactive material. Particularly during decommissioning, a large amount of material may be generated that is below the activity limits requiring regulatory control. This Safety Report focuses on the development and practical implementation of strategies for demonstrating compliance with the established exemption and clearance levels. It provides valuable information for operators, regulatory bodies and other organizations that are involved in the monitoring of material for its release from regulatory control.

(186 pp., 17 figs; 2012) • ISBN 978-92-0-115810-9 • STI/PUB/1511 • €45.00

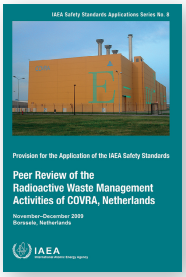


Monitoring for Compliance with Remediation Criteria for Sites

Safety Reports Series No. 72

This Safety Report provides detailed and practical advice to operators and regulators on the development and implementation of monitoring strategies in order to demonstrate compliance with radiological criteria for release of sites for unrestricted or restricted use. The publication complements the IAEA Safety Report on monitoring for compliance with exemption and clearance levels (Safety Reports Series No. 67), which applies to clearance of bulk material from regulatory control.

(190 pp., 49 figs; 2012) • ISBN 978-92-0-127910-1 • STI/PUB/1551 • €40.00



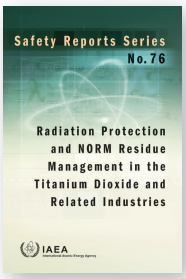
Peer Review of the Radioactive Waste Management Activities of COVRA, Netherlands

IAEA Safety Standards Application Series No. 8

This publication presents the outcome of a peer review of the overall waste management programme within the Netherlands, whose programme has been carefully formulated for the particular circumstances of a country with a limited nuclear power industry, albeit with prospects for some

expansion. The Netherlands has opted for long term storage of spent fuel, and COVRA (Central Organization of Radioactive Waste) is the recognized collecting service for this activity. The review was carried out following the requirements set out in IAEA Safety Standards Series No. GSR-Part 5 on the Predisposal Management of Radioactive Waste and should be of considerable interest to the many countries contemplating national waste management and spent fuel policies, implementing strategies and evaluation of their safety.

(59 pp., 11 figs; 2012) • ISBN 978-92-0-121210-8 • STI/PUB/1533 • €30.00



Radiation Protection and NORM Residue Management in the Titanium Dioxide and Related Industries

Safety Reports Series No. 76

This Safety Report is a compilation of detailed information on the processes and materials involved in the titanium dioxide and related industries and on the radiological considerations that need to be taken into account by the regulatory body when determining the nature and extent of radiation protection measures. It has been developed as part of the IAEA's programme on the application of its safety standards in the field of radiation, transport and waste safety. The information provided will assist in the implementation of a graded approach to regulation, in terms of which the application of the requirements of the safety standards is commensurate with the characteristics of the practice or source and with the magnitude and likelihood of the exposures. Although aimed primarily at the titanium dioxide industry, this publication is also relevant to industries involved in the mining and beneficiation of mineral sands for the extraction of heavy minerals such as zircon, monazite and ilmenite.

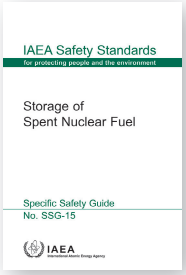
(105 pp., 12 figs; 2012) • ISBN 978-92-0-132110-7 • STI/PUB/1568 • €32.00

Safety Assessment for Decommissioning

Safety Reports Series No. 77

The international project on evaluation and demonstration of safety during decommissioning of facilities using radioactive material (DeSa), launched by the IAEA in 2004, helps to ensure that specific guidance on the safety assessment in the context of the decommissioning of nuclear facilities is provided. This publication presents the outcomes of the work carried out in fulfilling the action plan through the DeSa Project. The main features of the process have been summarized and overall recommendations on producing, reviewing and implementing the safety assessment have been made. They are supported by specific recommendations contained in Annexes I–III.

(Forthcoming 2013) • ISBN 978-92-0-141410-6 • STI/PUB/1604 • €44.00



Storage of Spent Nuclear Fuel

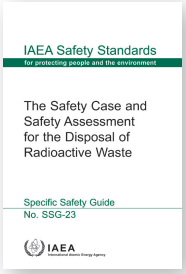
Specific Safety Guide

IAEA Safety Standards Series No. SSG-15

This Safety Guide provides recommendations and guidance on the storage of spent nuclear fuel. It covers all types of storage facilities and all types of spent fuel from nuclear power plants and research reactors. It takes into consideration the longer storage periods that have become necessary owing to delays in the development of disposal facilities and the decrease in reprocessing activities. It also considers developments associated with nuclear fuel, such as higher enrichment, mixed oxide fuels and higher burnup. The Safety Guide is not intended to cover the storage of spent fuel if this is part of the operation of a nuclear power plant or spent fuel reprocessing facility. Guidance is provided on all stages in the lifetime of a spent fuel storage facility, from planning through siting and design to operation and decommissioning, and in particular retrieval of spent fuel.

Contents: 1. Introduction; 2. Protection of human health and the environment; 3. Roles and responsibilities; 4. Management system; 5. Safety case and safety assessment; 6. General safety considerations for storage of spent fuel. Appendix I: Specific safety considerations for wet or dry storage of spent fuel; Appendix II: Conditions for specific types of fuel and additional considerations; Annex I: Short term and long term storage; Annex II: Operational and safety considerations for wet and dry spent fuel storage facilities; Annex III: Examples of sections in operating procedures for a spent fuel storage facility; Annex IV: Related publications in the IAEA Safety Standards Series; Annex V: Site conditions, processes and events for consideration in a safety assessment (external natural phenomena); Annex VI: Site conditions, processes and events for consideration in a safety assessment (external human induced phenomena); Annex VII: Postulated initiating events for consideration in a safety assessment (internal phenomena).

(110 pp.; 2012) • ISBN 978-92-0-115110-0 • STI/PUB/1503 • €40.00



The Safety Case and Safety Assessment for the Disposal of Radioactive Waste

Specific Safety Guide

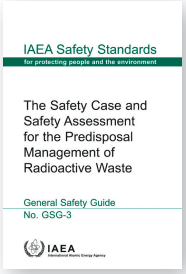
IAEA Safety Standards Series No. SSG-23

This Safety Guide provides guidance and recommendations on meeting the safety requirements in respect of the safety case and supporting safety assessment for the disposal of radioactive waste. The safety case and supporting safety assessment provide the basis for demonstration of safety and for licensing of radioactive waste disposal facilities, and assist and guide decisions on siting, design and operations. The safety case is also the main basis on which dialogue with interested parties is conducted and on which confidence in the safety of the disposal facility is developed. This Safety Guide is relevant for operating organizations preparing the safety case as well as for the regulatory body responsible for developing the regulations and

regulatory guidance that determine the basis and scope of the safety case.

Contents: 1. Introduction; 2. Demonstrating the safety of radioactive waste disposal; 3. Safety principles and safety requirements; 4. The safety case for disposal of radioactive waste; 5. Radiological impact assessment for the period after closure; 6. Specific issues; 7. Documentation and use of the safety case; 8. Regulatory review process.

(120 pp., 5 figs; 2012) • ISBN 978-92-0-128310-8 • STI/PUB/1553 • €39.00



The Safety Case and Safety Assessment for the Predisposal Management of Radioactive Waste

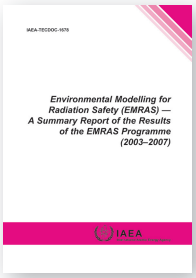
General Safety Guide

IAEA Safety Standards Series No. GSG-3

This Safety Guide provides recommendations and guidance for the development and regulatory review of the safety case and supporting safety assessment throughout the lifetime of a facility. The recommendations and guidance provided in this Safety Guide can be used irrespective of how the safety case and safety assessment processes are addressed within national regulatory frameworks. It summarizes the most important considerations in assessing and demonstrating the safety of facilities and activities and recommends the steps that should be followed in developing the safety case and performing the safety assessment.

(151 pp., 10 figs; 2013) • ISBN 978-92-0-134810-4 • STI/PUB/1576 • €37.00

Safety Analysis



Environmental Modelling for Radiation Safety (EMRAS) — A Summary Report of the Results of the EMRAS Programme (2003–2007)

IAEA TECDOC Series No. 1678

This publication provides a detailed overview of the results and achievements of the IAEA programme called EMRAS (Environmental Modelling for Radiation Safety), which ran from 2003 to 2007. The activities of the various working groups focused on the compilation of a handbook of parameter values for the prediction of radionuclide transfer in temperate environments, on the test and comparison of models to assess the transfer of tritium and ^{14}C to biota and humans, on the validation of models for dose reconstruction due to ^{131}I after the Chernobyl accident, on modelling the transfer of radionuclides in aquatic systems, on remediation of rural and urban sites with radioactive residues, and on the impact of environmental radioactivity on non-human species. The book concludes with a summary of the outcomes of the EMRAS programme and is accompanied by a CD-ROM which provides details of the work and the results of the working groups.

(2012) • ISBN 978-92-0-129810-2 • IAEA-TECDOC-1678 • €18.00

Legal and Governmental Aspects

Legal Framework for IAEA Safeguards

The legal framework for IAEA safeguards has evolved significantly since the Board of Governors first approved ad hoc safeguards arrangements in 1959. It is multifaceted, and consists of a number of elements, including: the Statute of the Agency; the undertakings of States in connection with supply arrangements and other treaties requiring verification; the basic safeguards documents; the safeguards instruments themselves, including safeguards agreements, protocols and subsidiary arrangements; and, finally, the decisions and practices of the Board of Governors. This publication provides a succinct, yet comprehensive, review of the current legal framework and its historical development. It introduces IAEA safeguards to the reader and describes the legal framework for their implementation.

(Forthcoming 2013) • ISBN 978-92-0-141810-4 • STI/PUB/1608 • €16.00

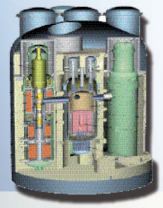
Use of External Experts by the Regulatory Body

General Safety Guide

IAEA Safety Standards Series No. GSG-4

This Safety Guide provides recommendations and guidance on meeting the requirements of IAEA Safety Standards Series No. GSR Part 1 on obtaining expert advice or services for the regulatory body. It informs the regulatory body on the process it should use to determine the need for external expert advice, and the processes and procedures for identifying a suitable support provider and making contractual arrangements for the work. It also provides recommendations and guidance on how the regulatory body should take the advice of external experts into account while still retaining responsibility in making its decisions.

(25 pp., 2 figs; 2013) • ISBN 978-92-0-135910-0 • STI/PUB/1583 • €25.00



Benchmark Analyses on the Natural Circulation Test Performed during the PHENIX End-of-life Experiments

IAEA TECDOC Series No. 1703

This publication is based on the experience of an IAEA coordinated research project on control rod withdrawal and sodium natural circulation tests performed during the Phenix end-of-life experiments. Presented in this publication are the benchmark analyses of the natural circulation test performed before the definite shutdown of the reactor. The experimental data gathered during these tests represent a unique resource to carry out validation analyses and code-to-code comparisons. The benchmark analyses allowed participants to investigate and verify several system and safety codes currently used in the analyses of liquid metal thermal hydraulics phenomena in sodium fast reactors.

(Forthcoming 2013) • ISBN 978-92-0-139610-5 • IAEA-TECDOC-1703 • €18.00

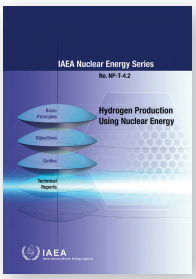
Assessing Dynamic Nuclear Energy Systems for Sustainability

Final Report of the INPRO Collaborative Project on Global Architecture of Innovative Nuclear Energy Systems Based on Thermal and Fast Reactors Including a Closed Nuclear Fuel Cycle (GAINS)

IAEA Nuclear Energy Series No. NP-T-1.14

As an integral part of the international project on innovative nuclear reactors and fuel cycles (INPRO), several collaborative projects were established by its members. The collaborative project on global architectures of innovative nuclear energy systems based on thermal and fast reactors including a closed fuel cycle was one of them. This publication presents the study, its results and the conclusions drawn. A major achievement of the project is the development of a unique heterogeneous world model considering specific nuclear energy strategies of various countries. This model simulates important realities of the global nuclear energy system thus enabling the assessment of resource, financial, and proliferation risks and identification of areas for beneficial multilateral cooperation. It shows that innovative nuclear technologies serve as a driving force for enhancing the sustainability features of nuclear energy supply, while a multilateral approach amplifies the positive effects of the technological innovations.

(Forthcoming 2013) • ISBN 978-92-0-140410-7 • STI/PUB/1598 • €40.00

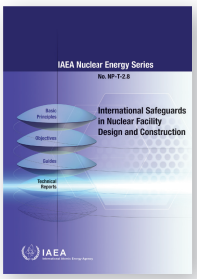


Hydrogen Production Using Nuclear Energy

IAEA Nuclear Energy Series No. NP-T-4.2

A future energy economy will be strongly dependent on the necessity of replacing oil and reducing greenhouse gas emissions for climate protection. Hydrogen has the potential to play an important role as a sustainable and environmentally acceptable source of energy in the 21st century. Yet, there are technical challenges in nuclear hydrogen processes, which need to be addressed through a comprehensive research and development effort. This publication presents the state of the art in the nuclear production of hydrogen and describes the areas of research to be undertaken for establishing a hydrogen economy regime. It includes highlights of international programme and research efforts on nuclear hydrogen production as well as information on hydrogen uses and infrastructure, and provides an introduction to the economic analysis of hydrogen production.

(Forthcoming 2013) • ISBN 978-92-0-135110-4 • STI/PUB/1577 • €42.00

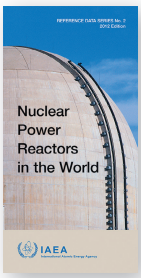


International Safeguards in Nuclear Facility Design and Construction

IAEA Nuclear Energy Series No. NP-T-2.8

This IAEA publication provides guidance on the inclusion of safeguards considerations in nuclear facility design and construction. This first volume introduces the basic principles of Safeguards by design and discusses the goals, costs and rewards, and places the information into the context of nuclear facility design and construction. Benefits and opportunities for all stakeholders are emphasized. The guidance is aimed at enhancing the understanding of nuclear facility vendors and designers regarding the safeguards obligations of both States and the IAEA, at improving the cooperation between all stakeholders in safeguards implementation, and at minimizing the cost of implementation for all stakeholders.

(22 pp.; 2013) • ISBN 978-92-0-140610-1 • STI/PUB/1600 • €19.00



Nuclear Power Reactors in the World

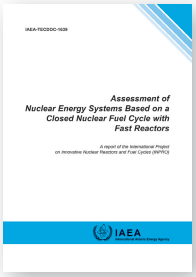
2012 Edition

Reference Data Series No. 2

This is the 32nd edition of Reference Data Series No. 2, which presents the most recent reactor data available to the IAEA. It contains summarized information as of the end of 2011 on power reactors that are in operation, under construction and shutdown, and performance data on reactors operating in IAEA Member States, as reported to the IAEA. The information is collected through designated national correspondents in the Member States and the data are used to maintain the IAEA's Power Reactor Information System.

(79 pp., 4 figs; 2012) • ISBN 978-92-0-132310-1 • IAEA-RDS-2/32 • €12.00

Nuclear Power Planning and Economics



Assessment of Nuclear Energy Systems Based on a Closed Nuclear Fuel Cycle with Fast Reactors

IAEA TECDOC Series No. 1639/ Rev1

This publication reports the results of an evaluation of nuclear energy systems based on a closed nuclear fuel cycle with fast reactors (CNFC-FR). The study was carried out by an international group of experts from Canada, China, France, India, Japan, the Republic of Korea, the Russian Federation and Ukraine, using an assessment methodology developed by the international project on innovative nuclear reactors and fuel cycles (INPRO). The INPRO methodology takes a holistic approach to assess innovative nuclear energy systems in seven areas: economics, infrastructure, safety, waste management, environment, proliferation resistance and physical protection. The study concluded that all INPRO requirements for a sustainable nuclear energy system are fulfilled by the assessed CNFC-FR, except in the area of economics, where ongoing R&D programmes will provide further insights to bridge knowledge gaps. The full text of the study results is available on the accompanying CD-ROM.

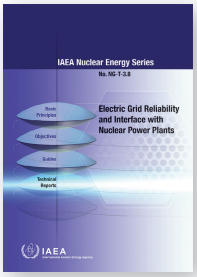
(2012) • ISBN 978-92-0-134710-7 • IAEA-TECDOC-1639/Rev1 • €18.00

Cost Estimation for Research Reactor Decommissioning

IAEA Nuclear Energy Series No. NW-T-2.4

The main aim of this publication is to disseminate experience in and guidance on cost estimates for research reactor decommissioning projects. It presents the principles and background for a costing methodology based on the International Structure for Decommissioning Costing (ISDC) of Nuclear Installations. The methodology presented implements actual experience in decommissioning costing and is in line with IAEA efforts promoting harmonization in this field. The IAEA has contributed to the development of software called CERREX (Cost Estimate for Research Reactors in Excel), a simpler version suitable for preliminary costing stages, which is included on the attached CD-ROM, together with a user manual. Several practical examples of software implementation and clarification of some details of available methodologies and models are also provided.

(Forthcoming 2013) • ISBN 978-92-0-140210-3 • STI/PUB/1596 • €22.00

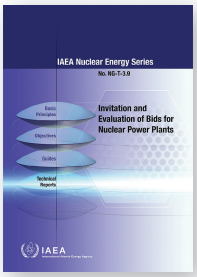


Electric Grid Reliability and Interface with Nuclear Power Plants

IAEA Nuclear Energy Series No. NG-T-3.8

This publication describes the characteristics of the electrical grid system that are required for the connection and successful operation of a nuclear power plant, as well as the characteristics of a nuclear power plant that are significant for the design and operation of the electrical grid system. It addresses the issues to be considered when a nuclear power plant is being planned and describes the information exchange necessary between the developer of a nuclear power plant and the organization responsible for the electrical grid. The particular issue of a large nuclear unit connected to a small system is also discussed. A new topic introduced in this publication is the need for cyber security of the grid system near the nuclear power plant. Several case studies of Member State experiences in developing new nuclear units and about grid events during operation are included.

(78 pp., 13 figs; 2012) • ISBN 978-92-0-126110-6 • STI/PUB/1542 • €32.00

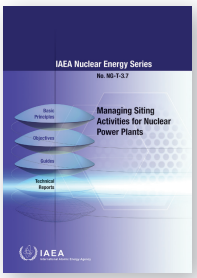


Invitation and Evaluation of Bids for Nuclear Power Plants

IAEA Nuclear Energy Series No. NG-T-3.9

This publication emphasizes the integrity and interdependence of various activities related to the bid invitation, technical and economic evaluation and contracting. It updates information included in existing IAEA publications in order to better reflect the developments in the nuclear and energy industry, and compiles a more compact and user friendly guidebook integrating the existing IAEA publications on the subject. It provides the information necessary to organize, guide and realize the activities related to the invitation, the technical and economic evaluation of bids, and contracting as an integrated process. Furthermore, this publication indicates how and to what degree the activities preceding the preparation of the bid invitation specification, the evaluation of bids and contracting can influence the process.

(78 pp., 8 figs; 2011) • ISBN 978-92-0-116710-1 • STI/PUB/1536 • €24.00



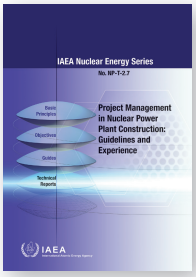
Managing Siting Activities for Nuclear Power Plants

IAEA Nuclear Energy Series No. NG-T-3.7

This publication has been developed to help Member States ensure that appropriate sites for a nuclear power plant are identified, assessed and licensed, in a well planned and efficient manner, taking into account all relevant factors and lessons learned from recent events. It is applicable to countries with existing nuclear facilities as well as those introducing nuclear power in their energy mix. This

IAEA Nuclear Energy Series publication provides guidance on the complex organizational, engineering, socioeconomic and environmental issues of siting. It complements the IAEA Safety Guides related to site selection and integrates existing IAEA documentation on the subject into a more compact and user friendly guidebook.

(59 pp., 8 figs; 2012) • ISBN 978-92-0-131610-3 • STI/PUB/1565 • €32.00

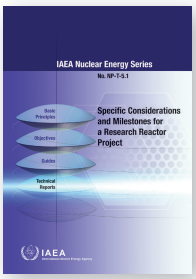


Project Management in Nuclear Power Plant Construction: Guidelines and Experience

IAEA Nuclear Energy Series No. NP-T-2.7

Project management is a leadership function primarily concerned with the organization, coordination and control of large undertakings, with the aim of achieving technical excellence by working to quality standards, optimizing the schedule and the supply chain, and minimizing costs. Competent project management can reduce costs through more efficient work sequences, higher productivity, shorter activity durations and the parallel reduction of accumulated interest during construction of nuclear power plants. Based on past proven practices in Member States, this publication provides guidance on project management from the preparatory phase to plant turnover to commissioning of nuclear power plants. The guidelines and experiences described will enable project managers to obtain better performance in nuclear power plant construction.

(124 pp., 37 figs; 2012) • ISBN 978-92-0-122210-7 • STI/PUB/1537 • €42.00



Specific Considerations and Milestones for a Research Reactor Project

IAEA Nuclear Energy Series No. NP-T-5.1

A research reactor is an extraordinary tool that can contribute to a country's scientific resources, improve health care, and help to increase industrial and agricultural productivity, if it is appropriately conceived, managed and supported. This requires a strong policy and technical infrastructure, and management of long term financial liabilities. This publication sets out the four phases of a research reactor project with their associated milestones, starting with a careful assessment of the need for the research reactor, the issues it raises and the measures to address them. The publication provides a framework for self-assessment of readiness for a research reactor project and the resource requirements that it will impose. The guidance provided in this publication will be helpful for decision makers from governments, operating organizations and regulatory bodies as well as project sponsors and planners.

(91 pp., 8 figs; 2012) • ISBN 978-92-0-127610-0 • STI/PUB/1549 • €33.00

Nuclear Power Operations

Advances in Nuclear Power Process Heat Applications

IAEA TECDOC Series No. 1682

This publication compiles the findings of research and development activities related to practical nuclear process heat applications. An overview of current progress on high temperature gas cooled reactors coupling schemes for different process heat applications, such as hydrogen production and desalination, is included. The associated safety aspects are also highlighted. The summary report documents the results and conclusions of an IAEA coordinated research project.

(2012) • ISBN 978-92-0-130210-6 • IAEA-TECDOC-1682 • €18.00

Operating Experience with Nuclear Power Stations in Member States in 2011

2012 Edition

Operating Experience

This CD-ROM contains the 43rd edition of the IAEA's series of annual reports on operating experience with nuclear power plants in Member States. It is a direct output from the IAEA's Power Reactor Information System (PRIS) and contains information on electricity production and overall performance of individual operational plants during 2011. In addition to annual information, the report contains a summary of historical performance during the lifetime of individual plants and figures illustrating worldwide performance of the nuclear industry. The CD-ROM contains also an overview of design characteristics and dashboards of all operating nuclear power plants worldwide.

CD Edition (2012) • ISBN 978-92-0-183610-6 • STI/PUB/1571 • €55.00

Reactor Technology

Advanced Surveillance, Diagnostic and Prognostic Techniques in Monitoring Structures, Systems, and Components in Nuclear Power Plants

IAEA Nuclear Energy Series No. NP-T-3.14

This publication reports on the work and findings of an IAEA coordinated research project. The technologies discussed in this project are intended to establish the state of the art in surveillance, diagnostic and prognostic (SDP) technologies for equipment and process health monitoring in nuclear facilities. The participants also identified technology gaps and research needs of the nuclear industry in the SDP area. The publication describes conventional SDP technologies as well as the latest tools, algorithms and techniques that have emerged over the past few years. These new tools have made it possible to identify problems earlier and with better resolution. The target audience of this publication is utility engineers, end users, researchers, managers and executives making decisions on implementation of the subject technologies in nuclear facilities,

or determining the future direction of research and development in this area.

(Forthcoming 2013) • ISBN 978-92-0-140510-4 • STI/PUB/1599 • €30.00

Advances in High Temperature Gas Cooled Reactor Fuel Technology

IAEA TECDOC Series No. 1674

This publication reports on the results of a coordinated research project on advances in high temperature gas cooled reactor (HTGR) fuel technology and describes the findings of research activities on coated particle developments. These comprise two specific benchmark exercises with the application of HTGR fuel performance and fission product release codes, which helped compare the quality and validity of the computer models against experimental data. The project participants also examined techniques for fuel characterization and advanced quality assessment/quality control. The key exercise included a round-robin experimental study on the measurements of fuel kernel and particle coating properties of recent Korean, South African and US coated particle productions, applying the respective qualification measures of each participating Member State. The summary report documents the results and conclusions achieved by the project and underlines the added value to contemporary knowledge on HTGR fuel.

(2012) • ISBN 978-92-0-186810-7 • IAEA-TECDOC-CD-1674 • €18.00

Challenges Related to the Use of Liquid Metal and Molten Salt Coolants in Advanced Reactors

IAEA TECDOC Series No. 1696

This publication documents the results of experimental investigations and computational fluid dynamics studies on thermal hydraulics, specifically models and correlations on pressure drop and heat transfer involving to liquid metal and molten salt coolants under different operating conditions, including the feedback on neutronics effects. It presents new or verifies existing data on thermo-physical properties of liquid metal and molten salt coolants, and describes tools for on-line monitoring and control of coolant chemistry. Methods to improve the corrosion resistance between heavy liquid metal coolant and components, structure material and instrumentation are also examined.

(Forthcoming 2013) • ISBN 978-92-0-139910-6 • IAEA-TECDOC-1696 • €18.00

Comparison of Heavy Water Reactor Thermalhydraulic Code Predictions with Small Break LOCA Experimental Data

IAEA TECDOC Series No. 1688

This publication reports on the second international collaborative intercomparison and validation of computer codes for heavy water reactor (HWR) thermalhydraulic safety analyses. The participants aimed to improve the understanding of important phenomena expected to occur in small break loss of coolant accident transients of HWRs; to evaluate code capabilities to predict these important phenomena, their practicality and efficiency, by simulating integrated experiments; and to suggest necessary code improvements or new experiments to reduce uncertainties. The summary report provides a comparison of the results obtained from six participating countries, utilizing four different computer codes. Lessons learned were summarized, and general conclusions and recommendations were made.

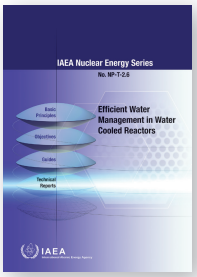
(2012) • ISBN 978-92-0-133710-8 • IAEA-TECDOC-1688 • €18.00

Design Features and Operating Experiences of Experimental Fast Reactors

IAEA Nuclear Energy Series No. NP-T-1.9

Growing energy needs and concern for the environment drive the demand for large scale and low impact energy sources. Therefore, national and international research on fast reactor technology is increasing. As a part of the IAEA efforts for knowledge preservation and data retrieval, this publication compiles and documents significant aspects of fast reactor engineering development and experience. Its focus is on research and developing activities, experience with experimental facilities and properties, and criteria for comparison and choice of liquid metal coolants. The introductory part includes the history, the state of the art and an overview of fast reactor cooling, heat transport and heat conversion systems development. This is followed by basic information on liquid metal coolants and design features. The publication concludes with a summary which identifies the progress achieved and issues to be resolved in sodium and heavy metal coolant technology.

(Forthcoming 2013) • ISBN 978-92-0-136410-4 • STI/PUB/1585 • €23.00

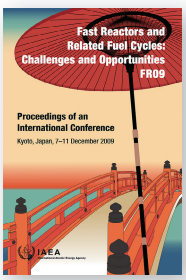


Efficient Water Management in Water Cooled Reactors

IAEA Nuclear Energy Series No. NP-T-2.6

In an effort to illustrate the sustainability of nuclear power, this publication discusses current practices for water requirements in nuclear power plants, possible future trends in design of water cooled reactors and the technologies employed. It analyses best practices and strategies for lower water withdrawal rates and presents the trade-off between production of electricity and water use and consumption, explaining types of cooling systems to be selected. The book thus aims at enhancing the understanding of the issues related to water use, consumption and management in a larger picture.

(116 pp., 76 figs; 2012) • ISBN 978-92-0-132610-2 • STI/PUB/1569 • €34.00



Fast Reactors and Related Fuel Cycles: Challenges and Opportunities (FR09)

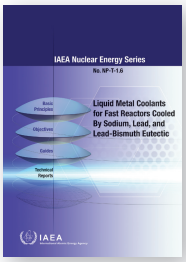
Proceedings of an International Conference held in Kyoto, Japan, 7–11 December 2009

Proceedings Series

This is the proceedings of an international conference on fast reactors and related fuel cycles convened to exchange experience and innovative ideas in order to achieve

progress in this field. Fast reactor programmes are currently on an accelerated growth path in many countries of the world, and the last international fast reactor conference was held almost twenty years ago. The scope of discussion included key scientific and technological areas, such as fuels and materials development, safety, advanced simulation, component and system design, and coolant technology, in which innovation is pursued to ensure that the next generations of fast reactor fuel cycles will achieve their potential. The accompanying CD-ROM contains the contributed papers and posters, summaries of 150 oral presentations and the young generation event.

(393 pp., 85 figs; 2012) • ISBN 978-92-0-102410-7 • STI/PUB/1444 • €98.00



Liquid Metal Coolants for Fast Reactors (Reactors Cooled by Sodium, Lead and Lead-bismuth Eutectic)

IAEA Nuclear Energy Series No. NP-T-1.6

The choice of the coolant is one of the main technical issues concerning fast reactor design, since it determines design approach as well as safety, technical and economic characteristics of the system. This publication provides a comprehensive summary of the status of the liquid metal coolant technology development for fast reactors with regard to basic data and main technological challenges. It starts with remarks on the history of nuclear power development, provides a complete survey of physical and chemical properties of liquid metals, and discusses the coolant quality control and thermal-hydraulics studies for both sodium and lead alloys systems. Other chapters elaborate on radioactivity of coolants and describe past experiences as well as current projects. Finally, the design objectives, and main research and technology development challenges of innovative fast reactors having sodium, lead-bismuth eutectic, and lead as coolant, currently under investigation in the Russian Federation, as well as the status of the respective research and development activities, are summarized.

(82 pp., 25 figs; 2012) • ISBN 978-92-0-131810-7 • STI/PUB/1567 • €25.00

Modelling of Transport of Radioactive Substances in the Primary Circuit of Water Cooled Reactors

IAEA TECDOC Series No. 1672

The formation, release and deposition of corrosion products within the primary circuit of a nuclear power plant can lead to fuel damage, power distortions during operation and radiation fields that affect plant maintenance. This publication provides information on the modelling of corrosion product behaviour in the primary circuit. It reports on the research activities and results from an IAEA coordinated research project in this field and includes details of current best practice. These data are important elements for the current understanding of the formation and transport mechanisms of corrosion products involved in both light water reactors and pressurized water reactors, and the methods used to describe them.

(2012) • ISBN 978-92-0-126010-9 • IAEA-TECDOC-1672 • €18.00

Natural Circulation Phenomena and Modelling for Advanced Water Cooled Reactors

IAEA TECDOC Series No. 1677

Based on an IAEA coordinated research project focused on the use of passive safety systems and natural circulation to help meet the safety and economic goals of advanced nuclear power plants, this publication includes: the identification and definition of the thermo-hydraulic phenomena that affect the reliability of passive safety systems; characterization of each phenomenon; integral tests to examine the passive systems and natural circulation; and a methodology for examining passive system reliability.

(2012) • ISBN 978-92-0-127410-6 • IAEA-TECDOC-1677 • €18.00

Nuclear Reactor Technology Assessment for Near Term Deployment

IAEA Nuclear Energy Series No. NP-T-1.10

Given the increasing interest in the near term deployment of new nuclear power plants, IAEA Member States have requested guidance on the process of evaluating and selecting available technology options. Reactor technology assessment enables the evaluation, selection, and deployment of the best technology to meet the objectives of a nuclear power programme. This publication demonstrates how reactor technology assessment is performed and how the process and results of this work enable decision making in nuclear power planning. The approach also provides decision makers with the documentation necessary to support their conclusions.

(Forthcoming 2013) • ISBN 978-92-0-140310-0 • STI/PUB/1597 • €30.00

Performance Assessment of Passive Gaseous Provisions (PGAP)

IAEA TECDOC Series No. 1698

The international project on innovative nuclear reactors and fuel cycle (INPRO) initiated a collaborative project to contribute to an international consensus on the definition of the reliability of passive systems that involves natural circulation, and a methodology to assess this reliability. Different reliability methodologies available in Member States were used to assess the performance and reliability of passive decay heat removal system of the French gas cooled fast reactor (GFR) design for various transients. This publication is the final report of this project and summarizes the results of the participants' work concerning the evaluation of the performance and reliability of the passive decay heat removal system of the GFR design. The report also presents a unified definition of the reliability of thermal hydraulic passive system, and the possibility of unifying the features of the methodologies in order to develop a generic methodology.

(2013) • ISBN 978-92-0-139010-3 • IAEA-TECDOC-1698 • €18.00

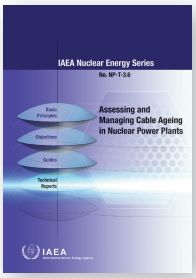
Status of Fast Reactor Research and Technology Development

IAEA TECDOC Series No. 1691

Based on a recommendation from the Technical Working Group on Fast Reactors, this publication is a regular update of previous publications on fast reactor technology. The publication provides comprehensive and detailed information on the technology of fast neutron reactors. The focus is on practical issues that are useful to engineers, scientists, managers, university students and professors. The main issues discussed are experience in design, construction, operation and decommissioning, various areas of research and development, engineering, safety and national strategies, and public acceptance of fast reactors. The summary includes national strategies, international initiatives on innovative (i.e. Generation IV) systems and an assessment of public acceptance of fast reactors.

(2013) • ISBN 978-92-0-130610-4 • IAEA-TECDOC-1691 • €35.00

Quality Assurance



Assessing and Managing Cable Ageing in Nuclear Power Plants

IAEA Nuclear Energy Series No. NP-T-3.6

Cable ageing and the need for condition monitoring are the most important aspects of plant life extension when it comes to instrumentation and control systems. Cables, especially their insulation and jacket material, are vulnerable to ageing degradation during normal operation, and means must be established to ensure that cable ageing does not lead to unsafe operation. This publication addresses all relevant issues related to cable ageing and contains introductory level materials that present a summary of key issues in cable ageing in nuclear power plants. In particular, it provides guidelines for cable qualification and cable ageing management in nuclear facilities, reflecting the technical advances of the past 15 years.

(96 pp., 42 figs; 2012) • ISBN 978-92-0-128510-2 • STI/PUB/1554 • €30.00

Evaluation of High Temperature Gas Cooled Reactor Performance: Benchmark Analysis Related to the PBMR-400, PBMM, GT-MHR, HTR-10 and the ASTRA Critical Facility

IAEA TECDOC Series No. 1694

This publication presents the findings of an IAEA coordinated research project (CRP) focusing on validation of the safety and operational aspects of high temperature gas cooled reactors (HTGRs) under projected and actual operating conditions. Specifically, it documents the results of a benchmark analysis of the ASTRA critical facility at the Kurchatov Institute in the Russian Federation, with respect to the development of pebble-bed high temperature modular reactor (PBMR-400). It also presents results of benchmark analyses performed for the HTR-10 experimental reactor in China, and the pebble-bed micro model test facility in South Africa. Such benchmarks include core height prediction for criticality, control rod worth and related differential reactivity and interference coefficients, and investigation of critical parameters for differing heights of the pebble-bed high temperature modular reactor. Code-to-code comparison as well as comparison with actual experimental data make the information obtained from this CRP valuable for verification and validation of HTGR design and analysis codes for future developers of HTGR power plants. General results and conclusions as delineated by the participating Member States are described in the summary.

(Forthcoming 2013) • ISBN 978-92-0-137610-7 • IAEA-TECDOC-1694 • €32.00

Qualification and Training of Personnel

Human Resource Development for Introducing and Expanding Nuclear Power Programmes

Summary of an International Conference held in Abu Dhabi, United Arab Emirates, 14–18 March 2010

Proceedings Series

This publication is the proceedings of an international conference on human resource development for introducing and expanding nuclear power programmes. Experts from many Member States discussed the current state of human resource development in the nuclear field and addressed concerns about possible shortages of qualified people. The conference identified several issues for consideration by national governments, international organizations, industry and stakeholders and highlighted the importance of sharing knowledge and expertise. One of the main goals of the conference was to provide participants with practical tools that can be used at the organizational, national and international levels to develop and maintain the human resources needed to support the safe and sustainable introduction and expansion of nuclear power programmes. These proceedings include a summary, the opening and closing speeches and invited papers. The publication also includes a CD-ROM which contains the contributed papers and presentations.

(54 pp., 2 figs; 2012) • ISBN 978-92-0-134410-6 • STI/PUB/1574 • €40.00

Knowledge Management for Nuclear Research and Development Organizations

IAEA TECDOC Series No. 1675

This publication elaborates on the role of nuclear knowledge management in a research and development (R&D) context, and on the importance of facilitating innovation and future development of nuclear technologies for nuclear power, its associated fuel cycles, and nuclear applications in medicine, industry and agriculture. It highlights aspects such as transferring and preserving knowledge, exchanging information, establishing and supporting cooperative networks, and training the next generation of nuclear experts. It concludes with basic concepts, trends and key drivers for nuclear knowledge

management for R&D project managers and other workers from nuclear R&D organizations.

(2012) • ISBN 978-92-0-125510-5 • IAEA-TECDOC-1675 • €18.00

Managing Organizational Change in Nuclear Organizations

IAEA Nuclear Energy Series No. NG-T-1.1

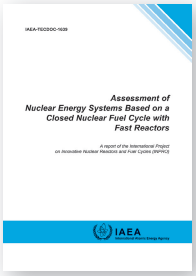
It is widely recognized that engineering changes, if not properly considered and controlled, can have potentially major safety implications; however, organizational changes can also have potentially major safety implications. This publication is intended to assist the management of nuclear organizations in identifying, planning and implementing organizational change. The driving force for the change may be internal or external. Based on the assumption that any change made within a facility applying nuclear technology has the potential to impact safety and effectiveness. The publication provides a description of the basic principles for managing and implementing the organizational change effectively while remaining focused on safe and reliable operation. The guidance contained in the publication is relevant to all organizational changes within nuclear organizations.

(Forthcoming 2013) • ISBN 978-92-0-140910-2 • STI/PUB/1603 • €36.00

Risk Management of Knowledge Loss in Nuclear Industry Organizations

Maintaining nuclear competencies in the nuclear industry and in nuclear regulatory bodies will be one of the most critical challenges in the near future. As nuclear experts around the world retire, they are taking with them a substantial amount of knowledge and corporate memory. The loss of such employees, who hold knowledge critical to both operations and safety, poses a clear internal threat to the safe and reliable operation of nuclear facilities. This publication is intended for senior and middle level managers of nuclear industry operating organizations and provides practical information on knowledge loss risk management. The information provided in this publication is based on actual experiences of Member State operating organizations and is intended to increase awareness of the need to develop a strategic approach and action plans to address the potential loss of critical knowledge and skills; to provide processes and, in conducting risk assessments, to determine the potential for loss of critical knowledge caused by the loss of experienced workers; and to enable nuclear organizations to utilize this knowledge to improve the skill and competence of new and existing workers.

English Edition (31 pp., 1 fig.; 2006) • ISBN 92-0-105406-8 • STI/PUB/1248 • €18.00
Russian Edition (36 pp., 1 fig.; 2012) • ISBN 978-92-0-432210-1• STI/PUB/1248 • €18.00

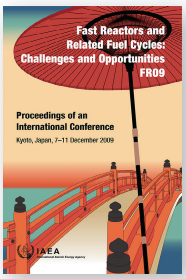


Assessment of Nuclear Energy Systems Based on a Closed Nuclear Fuel Cycle with Fast Reactors

IAEA TECDOC Series No. 1639/Rev1

This publication reports the results of an evaluation of nuclear energy systems based on a closed nuclear fuel cycle with fast reactors (CNFC-FR). The study was carried out by an international group of experts from Canada, China, France, India, Japan, the Republic of Korea, the Russian Federation and Ukraine, using an assessment methodology developed by the international project on innovative nuclear reactors and fuel cycles (INPRO). The INPRO methodology takes a holistic approach to assess innovative nuclear energy systems in seven areas: economics, infrastructure, safety, waste management, environment, proliferation resistance and physical protection. The study concluded that all INPRO requirements for a sustainable nuclear energy system are fulfilled by the assessed CNFC-FR, except in the area of economics, where ongoing R&D programmes will provide further insights to bridge knowledge gaps. The full text of the study results is available on the accompanying CD.

(2012) • ISBN 978-92-0-134710-7 • IAEA-TECDOC-1639/Rev1 • €18.00



Fast Reactors and Related Fuel Cycles: Challenges and Opportunities (FR09)

Proceedings of an International Conference held in Kyoto, Japan, 7–11 December 2009

Proceedings Series

This is the proceedings of an international conference on fast reactors and related fuel cycles convened to exchange experience and innovative ideas in order to achieve progress in this field. Fast reactor programmes are currently on an accelerated growth path in many countries of the world, and the last international fast reactor conference was held almost twenty years ago. The scope of discussion included key scientific and technological areas, such as fuels and materials development, safety, advanced simulation, component and system design, and coolant technology, in which innovation is pursued to ensure that the next generations of fast reactor fuel cycles will achieve their potential. The accompanying CD-ROM contains the contributed papers and posters, summaries of 150 oral presentations and the young generation event.

(393 pp., 85 figs; 2012) • ISBN 978-92-0-102410-7 • STI/PUB/1444 • €98.00

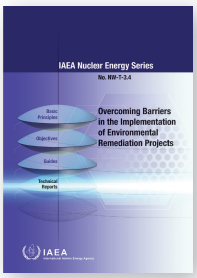
Hot Cell Post-irradiation Examination and Poolside Inspection of Nuclear Fuel

Proceedings of the IAEA–HOTLAB Technical Meeting held in Smolenice, Slovakia, 23–27 May 2011

IAEA TECDOC CD Series No. 1693

The growing operational demands in nuclear fuel, such as longer fuel cycles, higher burnups and use of transient regimes, call for more robust fuel designs and more radiation resistant materials. Implementation of new materials and fuel designs that are able to meet these more challenging conditions requires adequate operational feedback and practical verification of models for prediction of fuel behaviour. This publication presents the proceedings of a technical meeting jointly held by the IAEA and the HOTLAB association of hot laboratories with the aim of providing an overview of the current status, problems and perspectives of post-irradiation examination. Such a cooperative approach allowed a large representation of organizations from 22 countries and comprehensive coverage of major experimental techniques and methods. In total, 34 oral papers and 7 posters were presented. The publication consists of the presentations, session summaries and conclusions of the meeting.

(Forthcoming 2013) • ISBN 978-92-0-191210-7 • IAEA-TECDOC-CD-1693 • €18.00



Overcoming Barriers in the Implementation of Environmental Remediation Projects

IAEA Nuclear Energy Series No. NW-T-3.4

Environmental remediation has been in existence for decades, and a tremendous body of practical and scientific knowledge has been developed in many areas. Responding to the needs of Member States, the IAEA has initiated an environmental remediation project to address radioactive contamination found in soils and waters. This publication discusses the drivers on environmental remediation as well as the major obstacles confronted by any remediation operation and how to overcome those obstacles. It includes a number of potential strategies that may provide effective remediation outcomes and that have been deemed to be cost effective by Member States. Implementers of an environmental remediation programme as well as regulators will benefit from the information and guidance provided in this publication.

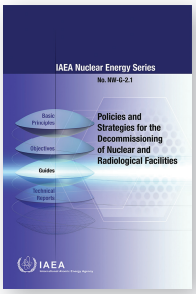
(Forthcoming 2013) • ISBN 978-92-0-140810-5 • STI/PUB/1602 • €24.00

Planning, Management and Organizational Aspects in Decommissioning of Nuclear Facilities

IAEA TECDOC Series No. 1702

This publication reflects the results of an IAEA coordinated research project on non-technical aspects of decommissioning. Operating experience and lessons learned during full-scale applications, as well as national programmes and plans, are among the most significant achievements. The results help to improve understanding of specific characteristics of the decommissioning process that are important in the planning and implementation of decommissioning. The information provided will be particularly useful to Member States that are currently planning or implementing decommissioning of their nuclear facilities.

(Forthcoming 2013) • ISBN 978-92-0-139510-8 • IAEA-TECDOC-1702 • €18.00

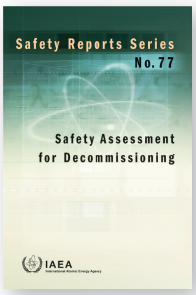


Policies and Strategies for the Decommissioning of Nuclear and Radiological Facilities

IAEA Nuclear Energy Series No. NW-G-2.1

This publication presents the main elements of policies and strategies for decommissioning activities of nuclear and radiological facilities. It is intended to help in facilitating proper and systematic planning, and safe, timely and cost effective implementation of all decommissioning activities. The policy establishes the principles for decommissioning, and the strategy contains the approaches for implementation of the policy. The publication will be a useful guide for strategic planners, waste managers, operators of facilities under decommissioning, regulators and other stakeholders.

(30 pp.; 2012) • ISBN 978-92-0-116910-5 • STI/PUB/1525 • €24.00



Safety Assessment for Decommissioning

Safety Reports Series No. 77

The international project on evaluation and demonstration of safety during decommissioning of facilities using radioactive material (DeSa), launched by the IAEA in 2004, helps to ensure that specific guidance on the safety assessment in the context of the decommissioning of nuclear facilities is provided. This publication presents the outcomes of the work carried out in fulfilling the action plan through the DeSa Project. The main features of the process have been summarized and overall recommendations on producing, reviewing and implementing the safety assessment have been made. They are supported by specific recommendations contained in Annexes I–III.

(Forthcoming 2013) • ISBN 978-92-0-141410-6 • STI/PUB/1604 • €44.00

Water Chemistry and Clad Corrosion/Deposition Including Fuel Failures

Proceedings of a Technical Meeting held in Kiev, Ukraine, 22–24 November 2010

IAEA TECDOC CD Series No. 1692

This publication presents the proceedings of a technical meeting on water chemistry and cladding corrosion/deposition including fuel failures, which was held in Kiev, Ukraine, in 2010. The outcome of the meeting is a summary report which provides state of the art information on the corrosion of reactor material, including fuel cladding, the causes of corrosion product deposition and the means in use to minimize the deleterious effects of these processes. The meeting was attended by 22 participants from 15 countries; papers were presented in three technical sessions, covering operational experience, corrosion and oxidation, and cladding deposition and its consequences.

(2013) • ISBN 978-92-0-187510-5 • IAEA-TECDOC-CD-1692 • €18.00

Fuel Fabrication and Performance

Advances in High Temperature Gas Cooled Reactor Fuel Technology

IAEA TECDOC Series No. 1674

This publication reports on the results of a coordinated research project on advances in high temperature gas cooled reactor (HTGR) fuel technology and describes the findings of research activities on coated particle developments. These comprise two specific benchmark exercises with the application of HTGR fuel performance and fission product release codes, which helps compare the quality and validity of the computer models against experimental data. The project participants also examined techniques for fuel characterization and advanced quality assessment/quality control. The key exercise included a round-robin experimental study on the measurements of fuel kernel and particle coating properties of recent Korean, South African and US coated particle productions applying the respective qualification measures of each participating Member State. The summary report documents the results and conclusions achieved by the project and underlines the added value to contemporary knowledge on HTGR fuel.

(2013) • ISBN 978-92-0-186810-7 • IAEA-TECDOC-CD-1674 • €18.00

BN-600 MOX Core Benchmark Analysis: Results from Phases 4 and 6 of a Coordinated Research Project on Updated Codes and Methods to Reduce the Calculation Uncertainties of the LMFR Reactivity Effects

IAEA TECDOC Series No. 1700

This publication presents the main results and achievements of an undertaking (part of a wider IAEA coordinated research project) devoted to the benchmark analyses of two mixed-oxide (MOX) fuelled BN-600 core designs. The studies conducted contributed to the progress in development, verification and validation of new codes and data libraries for fast reactor analyses; promoted deeper understanding of the influence of reactivity coefficients and their uncertainties on the results

of experience and transient analyses in the initial phase of transients, such as unprotected loss of flow (ULOF); and facilitated exchange of opinions between specialists.

(Forthcoming 2013) • ISBN 978-92-0-139210-7 • IAEA-TECDOC-1700 • €18.00

Design, Manufacturing and Irradiation Behaviour of Fast Reactor Fuel

IAEA TECDOC Series No. 1689

This publication presents the proceedings of a technical meeting organized in order to share knowledge and practical experience on the improvement and innovation of fuels for fast reactors. The objective of the meeting was to provide an overview of the status of the design, manufacture and irradiation behaviour of fast reactor fuel. Scientists and engineers from different fields discussed critical issues, with the aim of supporting efforts relating to the design and manufacture of nuclear fuels for the existing and next generation of fast reactors, as well as the optimization of future irradiation experiments.

(Forthcoming 2013) • ISBN 978-92-0-186510-6 • IAEA-TECDOC-CD-1689 • €18.00

Experiences and Trends of Manufacturing Technology of Advanced Nuclear Fuels

IAEA TECDOC Series No. 1686

This publication is a compilation of updated information on experience and trends in manufacturing technology of nuclear fuels for power reactors, and research reactors and highlights emerging trends. Although the fuel cladding and other structural components of fuel element and fuel assembly are integral parts of the fuel, this publication does not cover the manufacturing of these non-fissile and non-fertile components. It focuses on fabrication processes for matured fuels such as UO^2 and mixed oxide (MOX) for water cooled power reactors and sodium cooled fast reactors (SFRs), emerging SFR fuel such as mixed carbide and nitride, U-Pu-Zr with and without minor actinides (MA) and thoria based fuels for power reactors; and aluminium matrix dispersion type fuels and monolithic fuels for research reactors. The publication is divided into six chapters, describing in detail the features of the fuels and concludes with a summary identifying the gaps in information and the areas of future research and development.

(2012) • ISBN 978-92-0-132710-9 • IAEA-TECDOC-1686 • €18.00

Fuel Behaviour and Modelling under Severe Transient and Loss of Coolant Accident (LOCA) Conditions

IAEA TECDOC Series No. 1709

This publication is the proceedings of a technical meeting on fuel behaviour and modelling under severe transient and loss of coolant accidents (LOCA) conditions, hosted by the Japan Atomic Energy Agency. It was attended by 83 nuclear fuel specialists representing fuel vendors, nuclear utilities, research and development institutions and regulatory bodies from 19 Member States. The papers submitted to the meeting were organized into seven sessions, covering the areas of analytical and experimental reactivity initiated accidents (RIA) and LOCA studies and international programmes, power ramp and severe accident analysis. The proceedings highlight the key findings and recommendations based on the summaries of the session chairpersons.

(Forthcoming 2013) • ISBN 978-92-0-192410-0 • IAEA-TECDOC-CD-1709- • €18.00

Fuel Modelling at Extended Burnup (FUMEX-II)

IAEA TECDOC Series No. 1687

The modelling of nuclear fuel performance is critical to the safe and economic operation of nuclear power plants. It is necessaryt to be able to properly understand and predict the behaviour of fuel in both normal and transient conditions. As fuel is taken to higher burnups, it is important to ensure that the tools used to model the behaviour remain appropriate as fuel designs and materials change. This publication presents the results of a code comparison exercise against a wide range of experimental and idealized data designed to test the limits of code capabilities and to allow data for verification and validation at high burnup. It provides an overview of the codes, their limitations and the main challenges in understanding the behaviour of high burnup fuel and how these are met.

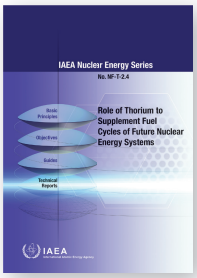
(2012) • ISBN 978-92-0-133810-5 • IAEA-TECDOC-1687 • €18.00

Improvement of Computer Codes Used for Fuel Behaviour Simulation (FUMEX -III)

IAEA TECDOC Series No. 1697

The modelling of the performance of nuclear fuel is crucial to the operation of nuclear power plants and comprises a key component of the demonstration of nuclear safety. As the demands on fuel performance increase, fuel modelling codes need to develop and cover a wider range of operational and transient conditions. This publication compares the predictions of current fuel modelling codes with data representing a wide range of fuel operational conditions. The results demonstrate both excellent performance and areas for further development of the codes to support advanced fuel operations.

(2013) • ISBN 978-92-0-138610-6 • IAEA-TECDOC-1697 • €18.00



Role of Thorium to Supplement Fuel Cycles of Future Nuclear Energy Systems

IAEA Nuclear Energy Series No. NF-T-2.4

The investigation of the thorium fuel cycle is a collaborative INPRO (International Project on Innovative Nuclear Reactors and Fuel Cycles) activity within the main area of global vision of sustainable nuclear energy for the 21st century. The current publication reports on the sustainability of nuclear power by re-examining the potential of thorium based fuel cycles to support future large scale deployment of nuclear energy systems by increasing the availability of nuclear material. Special attention is paid to the thorium fuel cycle from the point of view of economics and proliferation resistance.

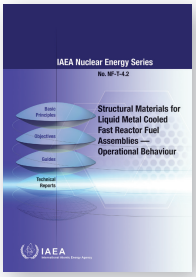
(157 pp., 103 figs; 2012) • ISBN 978-92-0-125910-3 • STI/PUB/1540 • €36.00

Spent Fuel Performance Assessment and Research: Final Report of a Coordinated Research Project (SPAR-II)

IAEA TECDOC Series No. 1680

Spent fuel storage has become an important component of spent fuel management options. As storage durations increase, spent fuel performance is a critical issue. This publication presents the results of an IAEA coordinated research project on this topic and contains useful information on the integrity and degradation of spent fuel during storage. The experience and insights provided by the participating countries will help Member States to identify challenges in implementing long term storage and to understand the current status of spent fuel performance research related to long term storage.

(2012) • ISBN 978-92-0-130810-8 • IAEA-TECDOC-1680 • €18.00



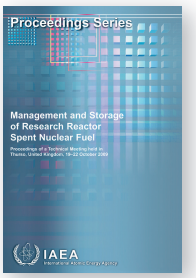
Structural Materials for Liquid Metal Cooled Fast Reactor Fuel Assemblies — Operational Behaviour

IAEA Nuclear Energy Series No. NF-T-4.3

This publication summarizes the findings of several IAEA meetings on fast reactor materials and provides a review of historically available and new information on the properties, fabrication technologies and irradiation behaviour of stainless steel structural materials for liquid metal cooled fast reactor (LMFR) fuel assemblies. It identifies different varieties of austenitic, ferritic–martensitic, oxide dispersion strengthened (ODS) steels and nickel based alloys used or planned to be used as fuel cladding and structural components of fast reactor fuel assemblies; describes manufacturing processes of LMFR fuel cladding tubes and in-core components; and provides an overview of the operational behaviour of these materials in fast reactors. Particular attention is given to ODS steels as the promising path towards achieving higher fuel burnup in fast reactors.

(87 pp., 70 figs; 2012) • ISBN 978-92-0-127510-3 • STI/PUB/1548 • €31.00

Spent Fuel Management



Management and Storage of Research Reactor Spent Nuclear Fuel

Proceedings of a Technical Meeting held in Thurso, United Kingdom, 19–22 October 2009

Proceedings Series

The intermediate storage of research reactor spent nuclear fuel is a real challenge for operators, as this period in some cases can extend for over 50 years until a final decision is made. This publication presents the proceedings of a technical meeting to discuss good practices for the management and storage of research reactor spent fuel. The information provided on these issues will be of interest to managers of research reactors and research reactor spent nuclear fuel facilities.

(262 pp., 50 figs; 2013) • ISBN 978-92-0-138210-8 • STI/PUB/1592 • €49.00

Waste Management

Management of NORM Residues

IAEA TECDOC Series No. 1712

Naturally occurring radioactive material (NORM) may lead to exposures at some stage of its processing and in the use or reuse of products, residues or wastes. Several IAEA publications address NORM issues with a special focus on some of the more relevant industrial operations. This publication addresses the management aspects of NORM residues, including their disposal as waste, in a wide range of industrial activities involving minerals and raw materials. It also addresses NORM residues at so-called legacy sites, that is, sites contaminated by past activities that were not regulated to present standards. The main intention of this publication is to provide guidance to Member States on good practice in the management of NORM residues, bearing in mind that there is no single approach that applies to all situations.

(Forthcoming 2013) • ISBN 978-92-0-142710-6 • IAEA-TECDOC-1712 • €18.00

Mobile Processing Systems for Radioactive Waste Management

IAEA Nuclear Energy Series No. NW-T-1.8

In recent years, mobile systems have increasingly been deployed for the processing of different types of radioactive waste. Such systems offer flexibility in selection and application of the optimum technology for a specific waste stream by bringing the process to the point where the waste is generated, with the additional benefit that there can be equipment sharing among multiple generating sites. This publication provides the basic information on utilization of mobile systems for waste processing and introduces a methodology for the assessment required to determine the viability of mobile systems for specific applications. In addition, it informs the reader on the accurate assessment of mobile systems that employ one or more technologies. The target audience is professionals involved in the planning, selection, design, deployment and regulation of radioactive waste processing facilities.

(Forthcoming 2013) • ISBN 978-92-0-141010-8 • STI/PUB/1621 • €30.00

Options for Management of Spent Fuel and Radioactive Waste for Countries Developing New Nuclear Power Programmes

IAEA Nuclear Energy Series No. NW-T-1.24

Countries embarking upon a nuclear power programme need to understand the importance of establishing an adequate radioactive waste and spent nuclear fuel management infrastructure. To assist in overcoming any challenges this might represent, this publication provides an overview of management practices in use in mature nuclear power programmes. Primarily

addressing decision makers, it provides them with the level of strategic and technical information needed to understand overarching management issues of the various waste streams and spent fuel generated in nuclear power production. In addition, it examines the political, legal, societal, economic and technical challenges associated with each of the strategic options considered.

(Forthcoming 2013) • ISBN 978-92-0-140710-8 • STI/PUB/1601 • €23.00

Radiation Protection and Management of NORM Residues in the Phosphate Industry

Safety Reports Series No. 78

This Safety Report is a compilation of detailed information on the processes and materials associated with the phosphate industry and on the radiological considerations that need to be taken into account by the regulatory body when determining the nature and extent of radiation protection measures. It has been developed as part of the IAEA's programme on the application of its safety standards in the field of radiation, transport and waste safety. The information provided will assist in the implementation of a graded approach to regulation, in terms of which the application of the requirements of the safety standards is commensurate with the characteristics of the practice or source and with the magnitude and likelihood of the exposures. The publication also provides information on expected radionuclide concentrations, exposure levels and the most appropriate regulatory approach in the phosphate industry, and covers the mining and beneficiation of phosphate ore, phosphoric acid production, phosphogypsum, and the manufacture and use of phosphatic fertilizers among others.

(288 pp., 90 figs; 2013) • ISBN 978-92-0-135810-3 • STI/PUB/1582 • €55.00

Remediation of Land Affected by Radioactive Residues

Proceedings Series

This publication presents the proceedings of an international conference on remediation of radioactive contaminated sites with a particular focus on the countries of central Asia. The conference provided a forum for all parties involved in remediation of such sites to gather and exchange ideas, review progress and new developments, compare technologies and methods, and thus disseminate information and experience. The key topical issues identified and discussed by the participants included regulatory and safety regimes, innovative and mature technologies, life cycle planning, technical experience exchange, stakeholder issues, and international cooperation and support. A series of case studies are presented to provide an overview of environmental remediation activities in different parts of the world. The publication summarizes the present status and outlines future trends in environmental remediation technologies and methods, and identifies possible areas for improvement.

(Forthcoming 2013) • ISBN 978-92-0-142310-8 • STI/PUB/1612 • €75.00

Review of Sealed Source Designs and Manufacturing Techniques Affecting Disused Source Management

IAEA TECDOC Series No. 1690

Sealed radioactive sources are widely used in industry, medicine and research, and are often small and mobile. The nuclear community has taken special care of all aspects affecting the management of sealed sources, including disused sources and their individual designs. This publication collects information on the most typical design features and manufacturing techniques of sealed radioactive sources and examines how they affect the management of disused radioactive sources. The approaches and methods described will also be useful for source designers and manufacturers in helping them to consider waste management points of view when they improve their products.

(2012) • ISBN 978-92-0-134310-9 • IAEA-TECDOC-1690 • €18.00

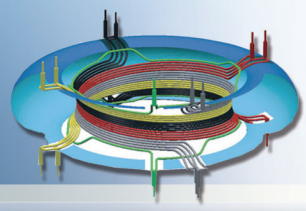
The Behaviour of Cementitious Materials in Long Term Storage and Disposal of Radioactive Waste — Results of a Coordinated Research Project

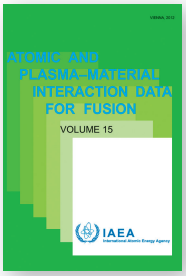
IAEA TECDOC Series No. 1701

This publication presents the outcome of an IAEA coordinated research project that investigated the behaviour and performance of cementitious materials used for an overall waste conditioning system. The publication is intended to assist the reader in comparing cementitious systems and technologies and in reaching an informed decision based on safety, technological maturity, economics, and other local needs. It highlights the active interchange of experiences among leading research groups, which enabled them to access valuable information on the underlying science and technology of cementitious materials used in radioactive waste management. The publication can be used as a screening tool to identify cementitious systems and technologies to meet specific waste management objectives in terms of the conditioning of waste generated, the technical complexity of waste streams, the environmental impact considerations and the desired end product.

(Forthcoming 2013) • ISBN 978-92-0-139310-4 • IAEA-TECDOC-1701 • €18.00

PlasmaPhysicsand NuclearFusion





Atomic and Plasma–Material Interaction Data for Fusion Vol. 15

Atomic and Plasma–Material Interaction Data for Fusion

Current designs for nuclear fusion reactors call for the use of the hydrogen isotopes deuterium and tritium as the fuel for energy producing fusion reactions. The use of tritium must be carefully controlled due to its cost and radioactivity, and there will be strict limits on the tritium inventory in fusion experiments or in a reactor. These concerns led the IAEA to organize a coordinated research project (CRP) on tritium inventory in fusion reactors, which brought together specialists in fusion materials and plasma–material interaction for exchange of information and coordination of research activities on interaction of tritium with plasma-facing materials. This volume of Atomic and Plasma–Material Interaction Data for Fusion is a result of that CRP. The key topics are tritium retention in fusion wall materials, measurements of tritium inventory and means to remove trapped tritium.

(90 pp., 101 figs; 2012) • ISBN 978-92-0-131410-9 • STI/PUB/023/APID/15 • €40.00

Atomic and Plasma–Material Interaction Data for Fusion Vol. 16

Atomic and Plasma–Material Interaction Data for Fusion

This publication, arising from a Coordinated Research Project on Atomic and Molecular Data for Plasma Modelling, provides information on new data relevant to the edge region of plasmas in nuclear fusion energy devices. In this region, molecules and molecular ions are formed and react with electrons and with each other. Fusion plasma modelling requires cross-sections and rate coefficients for such processes. This volume describes new data and data compilations for atomic and molecular processes that occur in edge plasma and provides data in forms that can be used in plasma modelling codes.

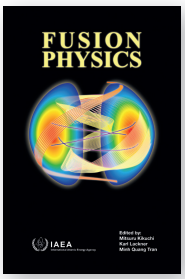
(Forthcoming 2013) • ISBN 978-92-0-131510-6 • STI/PUB/023/APID/16 • €40.00

Dense Magnetized Plasmas

IAEA TECDOC Series No. 1699

This publication presents results achieved within an IAEA coordinated research project on dense magnetized plasmas (DMPs) with respect to the needs of plasma research in developed and developing IAEA Member States, performed under comprehensive international collaboration. Of specific interest is the improvement of experimental set-ups for DMPs, including new ideas on drivers, chambers and targets, interface issues and plasma–wall interactions. Better understanding of discharge physics and control, improved theory and numerical modelling using various codes are reported. Important issues are diagnostics development, materials testing and development, and post-irradiation materials diagnostics and analysis. This publication illustrates the speed of progress in DMP applications facilitated by the sharing of knowledge, staffing and costs, and the promotion of technology transfer among Member States and issues relating to knowledge preservation. It also reports the main conclusions and recommendations from the experts' meeting and will serve as a useful resource for fusion scientists, fusion engineers, plasma physicists and material science physicists.

(2013) • ISBN 978-92-0-139110-0 • IAEA-TECDOC-1699 • €18.00



Fusion Physics

This publication is a comprehensive reference for graduate students and an invaluable guide for more experienced researchers. It provides an introduction to nuclear fusion and its status and prospects, and features specialized chapters written by leaders in the field, presenting the main research and development concepts in fusion physics. It starts with an introduction to the case for the development of fusion as an energy source. Magnetic and inertial confinement are addressed. Dedicated chapters focus on the physics of confinement, the equilibrium and stability of tokamaks, diagnostics, heating and current drive by neutral beam and radiofrequency waves, and plasma–wall interactions. While the tokamak is a leading concept for the realization of fusion, other concepts (helical confinement and, in a broader sense, other magnetic and inertial configurations) are also addressed in the book. At over 1100 pages, this publication provides an unparalleled resource for fusion physicists and engineers.

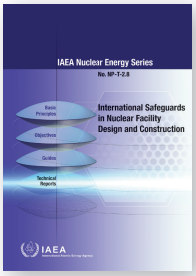
(1129 pp.; 2012) • ISBN 978-92-0-130410-0 • STI/PUB/1562 • €90.00

Pathways to Energy from Inertial Fusion: An Integrated Approach

IAEA TECDOC Series No. 1704

Nuclear energy from inertial fusion is clean, safe and abundant, and therefore has the potential to develop into a viable option in any given energy portfolio. This publication presents the results and achievements of an IAEA coordinated research project on this topic. The project brought together experts from 16 institutions in 14 Member States to address issues relevant to advancing inertial fusion energy research and development towards practical applications. Key issues discussed include beam–plasma matter interactions, drivers options and technology as well as target fabrication technology, and inertial fusion power plant and integration.

(2013) • ISBN 978-92-0-139710-2 • IAEA-TECDOC-1704 • €18.00

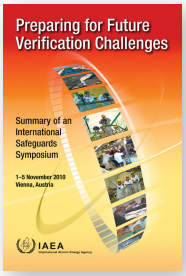


International Safeguards in Nuclear Facility Design and Construction

IAEA Nuclear Energy Series No. NP-T-2.8

This IAEA publication provides guidance on the inclusion of safeguards considerations in nuclear facility design and construction. This first volume introduces the basic principles of Safeguards by design and discusses the goals, costs and rewards, and places the information into the context of nuclear facility design and construction. Benefits and opportunities for all stakeholders are emphasized. The guidance is aimed at enhancing the understanding of nuclear facility vendors and designers regarding the safeguards obligations of both States and the IAEA, at improving the cooperation between all stakeholders in safeguards implementation, and at minimizing the cost of implementation for all stakeholders.

(22 pp.; 2013) • ISBN 978-92-0-140610-1 • STI/PUB/1600 • €19.00



Preparing for Future Verification Challenges

Proceedings of an International Safeguards Symposium held in Vienna, 1–5 November 2010

Proceedings Series

IAEA safeguards symposia are important forums for substantive and detailed interaction between the Secretariat of the IAEA, its Member States and the international community on safeguards and verification issues. The 11th Symposium on International Safeguards, Preparing for Future Verification Challenges, was held in Vienna, Austria, from 1 to 5 November 2010. The aim of the symposium was to help the IAEA to prepare for future verification challenges by engaging in dialogue and information exchange with Member States, technical experts, the nuclear industry and members of the broader safeguards and nuclear non-proliferation community. This publication provides a summary of the symposium plenaries, technical sessions, panels and forums.

(66 pp.; 2013) • ISBN 978-92-0-142110-4 • STI/PUB/1611 • €82.00

Exemption from Regulatory Control of Goods Containing Small Amounts of Radioactive Material

IAEA TECDOC Series No. 1679

This publication examines some of the issues that need to be considered in relation to authorization and exemption from regulatory control, focusing in particular on consumer products and other goods containing small amounts of radioactive material. All aspects of their life cycle following manufacture, including transport, storage, supply use and disposal, are considered. The publication aims to generate discussion on how the concepts of authorization and exemption should be applied with a view to developing an internationally accepted, harmonized approach.

(2012) • ISBN 978-92-0-129910-9 • IAEA-TECDOC-1679 • €18.00

The 1988 Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention — Explanatory Text

IAEA International Law Series No. 5

This publication complements IAEA International Law Series No. 3 and reproduces the explanatory text on the 1988 Joint Protocol Relating to the Application of the Vienna Convention on Civil Liability for Nuclear Damage and the Paris Convention on Third Party Liability in the Field of Nuclear Energy. Finalized by the International Expert Group on Nuclear Liability (INLEX), this text constitutes a comprehensive study and authoritative interpretation of that instrument.

(37 pp.; 2013) • ISBN 978-92-0-139410-1 • STI/PUB/1593 • €38.00

Guidelines for Remediation Strategies to Reduce the Radiological Consequences of Environmental Contamination

Technical Reports Series No. 475

This publication addresses the remediation of non-urban terrestrial and freshwater ecosystems including agricultural, forest and aquatic environments contaminated with radionuclides by radiation accidents, radiological incidents and other past activities. Associated social, ethical and economic considerations are also presented. The book describes modern decision aiding technologies and environmental decision support systems for remediation planning and optimization. Several case studies, demonstrating remediation success (radiation and radiological accidents, nuclear test sites, etc.) are presented and evaluated. The publication considers only remediation strategies and management options that are relevant for existing exposure situations. Management options (countermeasures) for pre-deposition and early phases after emergencies are the subject of other IAEA publications.

(167 pp., 12 figs; 2013) • ISBN 978-92-0-134110-5 • STI/DOC/010/475 • €46.00

Isotopes in Hydrology, Marine Ecosystems and Climate Change Studies

Proceedings of the International Symposium held in Monaco, 27 March–1 April 2011

Proceedings Series

This publication presents the proceedings of the latest IAEA symposium on isotopes in hydrology, marine ecosystems and climate change studies. At the symposium, five major topics were addressed through invited talks and oral presentations. These five sessions covered: the role of isotopes in understanding and modelling climate change, marine ecosystems and the water cycle; carbon dioxide sequestration and related aspects of the carbon cycle, such as ocean acidification; isotopes and radionuclides in the marine environment; groundwater assessments for large aquifers; analytical methods and instrumentation for the application of isotopes in environmental, climate and hydrological studies. Leading scientists in the field of climate change and hydrology, as well as representatives from climate change and environmental bodies and organizations, exchanged their views and experience.

(Forthcoming 2013) • ISBN 978-92-0-135610-9 • STI/PUB/1580 • €90.00

Overcoming Barriers in the Implementation of Environmental Remediation Projects

IAEA Nuclear Energy Series No. NW-T-3.4

Environmental remediation has been in existence for decades, and a tremendous body of practical and scientific knowledge has been developed in many areas. Responding to the needs of Member States, the IAEA has initiated an environmental remediation project to address radioactive contamination found in soils and waters. This publication discusses the drivers on environmental remediation as well as the major obstacles confronted by any remediation operation and how to overcome those obstacles. It includes a number of potential strategies that may provide effective remediation outcomes and that have been deemed to be cost effective by Member States. Implementers of an environmental remediation programme as well as regulators will benefit from the information and guidance provided in this publication.

(Forthcoming 2013) • ISBN 978-92-0-140810-5 • STI/PUB/1602 • €24.00

Remediation of Land Affected by Radioactive Residues

Proceedings Series

This publication presents the proceedings of an international conference on remediation of radioactive contaminated sites with a particular focus on the countries of central Asia. The conference provided a forum for all parties involved in remediation of such sites to gather and exchange ideas, review progress and new developments, compare technologies and methods, and thus disseminate information and experience. The key topical issues identified and discussed by the participants included regulatory and safety regimes, innovative and mature technologies, life cycle planning, technical experience exchange, stakeholder issues, and international cooperation and support. A series of case studies are presented to provide an overview of environmental remediation activities in different parts of the world. The publication summarizes the present status and outlines future trends in environmental remediation technologies and methods, and identifies possible areas for improvement.

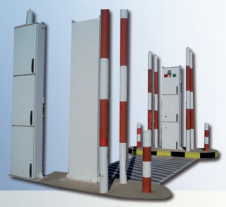
(Forthcoming 2013) • ISBN 978-92-0-142310-8 • STI/PUB/1612 • €75.00

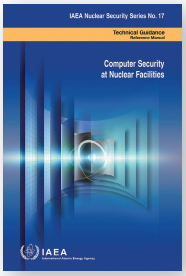
Sources and Measurements of Radon and Radon Progeny Applied to Climate and Air Quality Studies

Proceedings Series

The naturally occurring radionuclide radon (^{222}Rn), together with its radioactive progeny, has been widely used to study atmospheric processes and to test and validate comprehensive global chemical transport models. Being a noble gas, radon is not removed from the atmosphere by dry or wet deposition processes, nor does it become attached to aerosols, and so it is a good tracer for air mass movements. This publication summarizes the findings of a technical meeting jointly sponsored by the IAEA and the World Meteorological Organization, at which experts in the fields of radon exhalation from the ground, radon measurements in air, and atmospheric transport modelling came together to discuss the latest developments. A major focus of the meeting was on moving towards agreed approaches to estimating radon exhalation flux densities, and on improving quality assurance of measurements both of radon exhalation flux densities and of concentrations of radon and radon progeny in the atmosphere.

(162 pp., 88 figs; 2012) • ISBN 978-92-0-123610-4 • STI/PUB/1541 • €38.00





Computer Security at Nuclear Facilities

IAEA Nuclear Security Series No. 17

This publication provides guidance specific to nuclear facilities on implementing a computer security programme and evaluating existing programmes. The use of computer systems to cover an increasing range of functions at nuclear facilities introduces new vulnerabilities that could seriously endanger nuclear security if not addressed in a rigorous and balanced manner. Digital systems are increasingly being introduced in safety, safety related and security systems throughout facilities. Non-availability or malfunction of these systems can seriously impact nuclear safety and security, and potentially facilitate sabotage of the facility and/or theft of material. Computer security must, therefore, be a key component of overall facility security.

Arabic Edition (76 pp., 7 figs; 2013) • ISBN 978-92-0-642210-6 • STI/PUB/1527 • €33.00
Chinese Edition (62 pp., 7 figs; 2012) • ISBN 978-92-0-536110-9 • STI/PUB/1527 • €33.00
English Edition (69 pp., 7 figs; 2011) • ISBN 978-92-0-120110-2 • STI/PUB/1527 • €33.00
French Edition (75 pp., 7 figs; 2013) • ISBN 978-92-0-237010-4 • STI/PUB/1527 • €33.00
Russian Edition (80 pp., 7 figs; 2012) • ISBN 978-92-0-435510-9 • STI/PUB/1527 • €33.00
Spanish Edition (Forthcoming 2013)

Development, Use and Maintenance of the Design Basis Threat

IAEA Nuclear Security Series No. 10

This publication provides guidance on how to develop, use and maintain a design basis threat (DBT). It is intended for decision makers from organizations with roles and responsibilities for the development, use and maintenance of the DBT. This implementing guide describes a DBT; identifies and recommends the roles and responsibilities of organizations that should be involved in the development, use and maintenance of a DBT; describes how to conduct a national threat assessment as a precursor to a DBT; explains how a DBT can be developed; explains how a DBT is incorporated into a State's nuclear security regime; and explains the conditions for review of the DBT, and how the review and update are conducted.

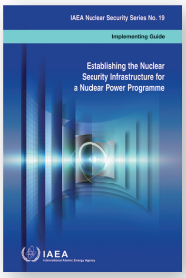
Arabic Edition (39 pp., 3 figs; 2012) • ISBN 978-92-0-634910-6 • STI/PUB/1386 • €18.00
Chinese Edition (28 pp., 3 figs; 2011) • ISBN 978-92-0-523510-3 • STI/PUB/1386 • €18.00
English Edition (30 pp., 3 figs; 2009) • ISBN 978-92-0-102509-8 • STI/PUB/1386 • €18.00
French Edition (34 pp., 3 figs; 2012) • ISBN 978-92-0-232810-5 • STI/PUB/1386 • €18.00

Educational Programme in Nuclear Security

IAEA Nuclear Security Series No. 12

Higher education plays an essential role in nuclear security capacity building. It ensures the availability of experts able to provide the necessary competencies for effective national nuclear security oversight of nuclear and other radioactive material and to establish and maintain an appropriate nuclear regime in a State. This guide presents both the theoretical knowledge and the practical skills necessary to meet the requirements described in the international framework for nuclear security. Emphasis is placed on the implementation of these requirements and recommendations in States. On the basis of this guide, a university should be able to develop its own academic programme tailored to suit State specific educational needs in the area of nuclear security and to meet national requirements.

Chinese Edition (170 pp., 1 fig.; 2011) • ISBN 978-92-0-523110-5 • STI/PUB/1439 • €42.00
English Edition (168 pp., 1 fig.; 2010) • ISBN 978-92-0-101710-9 • STI/PUB/1439 • €42.00

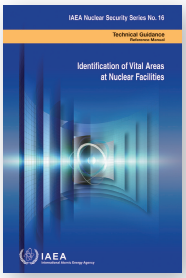


Establishing the Nuclear Security Infrastructure for a Nuclear Power Programme

IAEA Nuclear Security Series No. 19

This publication provides guidance on the actions to be taken by a State in implementing an effective nuclear security infrastructure for a nuclear power programme. The topics covered are: development of national policy and strategy; common nuclear security measures; infrastructure issues relating to nuclear and other radioactive material; associated facilities; and cooperation with other States. The guidance provided is intended primarily for use by national policy makers, national legislators, competent authorities, institutions and individuals involved in the establishment, implementation, maintenance or sustainability of the nuclear security infrastructure for a nuclear power programme.

(73 pp., 1 fig.; 2013) • ISBN 978-92-0-138010-4 • STI/PUB/1591 • €29.00



Identification of Vital Areas at Nuclear Facilities

IAEA Nuclear Security Series No. 16

This publication provides detailed guidance with regard to the identification of vital areas at nuclear facilities. It presents a structured approach to identifying those areas that contain equipment, systems and components to be protected against sabotage. The process for selection of a specific set of vital areas to be protected is based on consideration of the potential radiological consequences of sabotage, and on the

design, operational and safety features of a nuclear facility. The method builds upon safety analysis to develop logic models for sabotage scenarios that could cause unacceptable radiological consequences. The sabotage actions represented in the logic models are linked to the areas from which they can be accomplished. The logic models are then analysed to determine areas that should be protected to prevent these unacceptable radiological consequences. The publication is part of a set of supporting publications in the IAEA Nuclear Security Series with the aim of assisting States in the design, implementation and evaluation of their physical protection systems for nuclear material and nuclear facilities.

(37 pp., 2 figs; 2013) • ISBN 978-92-0-114410-2 • STI/PUB/1505 • €22.00

INPRO Collaborative Project: Proliferation Resistance: Acquisition/Diversion Pathway Analysis (PRADA)

IAEA TECDOC Series No. 1684

This publication contributes to strengthening the proliferation resistance assessment area of the INPRO methodology. The basic principle for this area requires that multiple intrinsic features and extrinsic measures of proliferation resistance be implemented throughout the full life cycle of an innovative nuclear energy system to help ensure that the system will continue to be an unattractive means of acquiring fissile material for a nuclear weapons programme. A typical intrinsic feature is the dilution of plutonium with fission products as found in irradiated material, and a typical extrinsic measure is the placing of nuclear material under international safeguards.

(2012) • ISBN 978-92-0-130310-3 • IAEA-TECDOC-1684 • €18.00

Monitoring for Radioactive Material in International Mail Transported by Public Postal Operators

IAEA Nuclear Security Series No. 3

The illegal transport of conventional explosives and biological material has been observed in public mail and could lead to serious health hazards. In response to Member State requests to establish guidance on detecting the movement of radioactive material in international mail, the IAEA and the Universal Postal Union (UPU) undertook a joint effort to prepare this publication. It considers how radioactive materials in international mail might be detected, how best to monitor for these materials in mail facilities and how to respond appropriately. This publication provides a concise but comprehensive description of the various techniques and equipment used to detect and control radioactive material during mail processing.

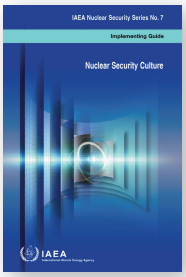
Chinese Edition (38 pp., 4 figs; 2012) • ISBN 978-92-0-523210-2 • STI/PUB/1242 • €23.00
English Edition (39 pp., 4 figs; 2006) • ISBN 92-0-100406-0 • STI/PUB/1242 • €23.00

Nuclear Forensics Support

IAEA Nuclear Security Series No. 2

Nuclear scientists have recognized that much can be learned from the analysis of reported cases of illicit trafficking of nuclear and other radioactive material, specifically, what the material has been used for, where it was obtained from (stock, scrap or waste) and whether the amount seized was only a sample of a much more significant quantity. These and many other questions can be answered through detailed technical characterization of seized material samples. The combination of scientific methods used for this purpose is normally referred to as nuclear forensics, which has become an indispensable tool for use in law enforcement investigations of nuclear trafficking. This publication is unique in bringing together for the first time a concise but comprehensive description of the various tools and procedures of nuclear forensic investigations that have been described independently in the scientific literature. It also incorporates the experience accumulated over the past decade by law enforcement agencies and nuclear forensics laboratories confronted with cases of illicit events involving nuclear or other radioactive materials.

Chinese Edition (67 pp., 4 figs; 2012) • ISBN 978-92-0-526910-8 • STI/PUB/1241 • €26.00
English Edition (67 pp., 4 figs; 2006) • ISBN 92-0-100306-4 • STI/PUB/1241 • €26.00

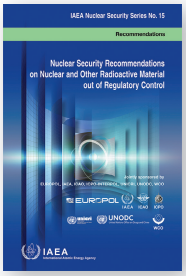


Nuclear Security Culture

IAEA Nuclear Security Series No. 7

This publication defines the basic concepts and elements of nuclear security culture, with the aim of providing Member States with international consensus guidance on planning and implementing a programme to improve nuclear security culture. Particular emphasis is placed on areas such as regulation, government institutions and general public awareness. The report provides an overview of the necessary attributes of an effective nuclear security culture and emphasizes that its success is ultimately dependent on individuals: policy makers, regulators, managers, individual employees and, to a certain extent, members of the general public. Practical methods to assess and improve the effectiveness of security culture are also included.

Arabic Edition (43 pp., 2 figs; 2012) • ISBN 978-92-0-623810-3 • STI/PUB/1347 • €30.00
Chinese Edition (36 pp., 2 figs; 2012) • ISBN 978-92-0-526410-3 • STI/PUB/1347 • €30.00
English Edition (37 pp., 2 figs; 2008) • ISBN 978-92-0-107808-7 • STI/PUB/1347 • €30.00
French Edition (41 pp., 2 figs; 2009) • ISBN 978-92-0-206509-3 • STI/PUB/1347 • €30.00



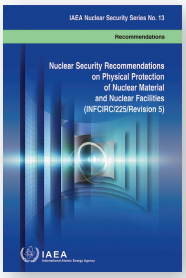
Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control

IAEA Nuclear Security Series No. 15

This publication presents recommendations for the nuclear security of nuclear and other

radioactive material that is out of regulatory control. It is based on national experience and practices and guidance publications in the field of security as well as the nuclear security related international instruments. The recommendations include guidance for States with regard to the nuclear security of nuclear and other radioactive material that has been reported as being out of regulatory control as well as of material that is lost, missing or stolen but has not been reported as such, or has been otherwise discovered. In addition, these recommendations adhere to the detection and assessment of alarms and alerts and to a graded response to criminal or unauthorized acts with nuclear security implications.

Arabic Edition (34 pp.; 2012) • ISBN 978-92-0-635210-6 • STI/PUB/1488 • €23.00
Chinese Edition (32 pp.; 2011) • ISBN 978-92-0-522910-2 • STI/PUB/1488 • €23.00
English Edition (33 pp.; 2011) • ISBN 978-92-0-112210-0 • STI/PUB/1488 • €23.00
French Edition (38 pp.; 2011) • ISBN 978-92-0-223710-0 • STI/PUB/1488 • €23.00
Russian Edition (44 pp.; 2011) • ISBN 978-92-0-423010-9 • STI/PUB/1488 • €23.00
Spanish Edition (51 pp.; 2012) • ISBN 978-92-0-324410-7 • STI/PUB/1488 • €23.00

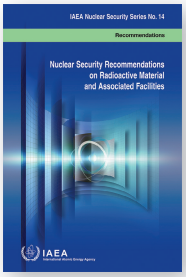


Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)

IAEA Nuclear Security Series No. 13

This publication, Revision 5 of Nuclear Security Recommendation on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225), is intended to provide guidance to States and their competent authorities on how to develop or enhance, implement and maintain a physical protection regime for nuclear material and nuclear facilities, through the establishment or improvement of their capabilities to implement legislative and regulatory programmes. The recommendations presented in this publication reflect a broad consensus among IAEA Member States on the requirements which should be met for the physical protection of nuclear materials and nuclear facilities.

Arabic Edition (60 pp.; 2011) • ISBN 978-92-0-624510-1 • STI/PUB/1481 • €28.00
Chinese Edition (49 pp.; 2012) • ISBN 978-92-0-526210-9 • STI/PUB/1481 • €28.00
English Edition (57 pp.; 2011) • ISBN 978-92-0-111110-4 • STI/PUB/1481 • €28.00
French Edition (63 pp.; 2011) • ISBN 978-92-0-222110-9 • STI/PUB/1481 • €28.00
Russian Edition (69 pp.; 2012) • ISBN 978-92-0-424110-5 • STI/PUB/1481 • €28.00
Spanish Edition (61 pp.; 2012) • ISBN 978-92-0-324610-1 • STI/PUB/1481 • €28.00

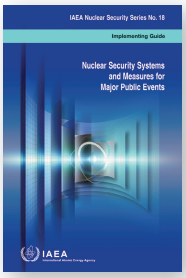


Nuclear Security Recommendations on Radioactive Material and Associated Facilities

IAEA Nuclear Security Series No. 14

The purpose of this publication is to provide guidance to States and competent authorities on how to develop or enhance, implement and maintain a nuclear security regime for facilities dealing with radioactive material and associated activities. This is to be achieved through the establishment or improvement of their capabilities to implement a legislative and regulatory framework to address the security of radioactive material, associated facilities and associated activities in order to reduce the likelihood of malicious acts involving those materials. These recommendations reflect a broad consensus among States on the requirements which should be met for the security of radioactive material, associated facilities and activities.

Arabic Edition (30 pp.; 2011) • ISBN 978-92-0-624710-5 • STI/PUB/1487 • €22.00
Chinese Edition (25 pp.; 2012) • ISBN 978-92-0-524010-7 • STI/PUB/1487 • €22.00
English Edition (27 pp.; 2011) • ISBN 978-92-0-112110-3 • STI/PUB/1487 • €22.00
French Edition (29 pp.; 2011) • ISBN 978-92-0-222410-0 • STI/PUB/1487 • €22.00
Russian Edition (35 pp.; 2011) • ISBN 978-92-0-422310-1 • STI/PUB/1487 • €22.00
Spanish Edition (47 pp.; 2012) • ISBN 978-92-0-325010-8 • STI/PUB/1487 • €22.00

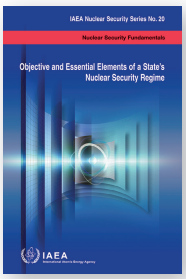


Nuclear Security Systems and Measures for Major Public Events

IAEA Nuclear Security Series No. 18

This publication provides an overview, based on practical experience and lessons learned, for establishing nuclear security systems and measures for major public events. It covers technical and administrative nuclear security measures for developing the necessary organizational structure, developing plans, strategies and concepts of operations, and making arrangements for implementing the developed plans, strategies and concepts.

(56 pp., 14 figs; 2012) • ISBN 978-92-0-127010-8 • STI/PUB/1546 • €30.00



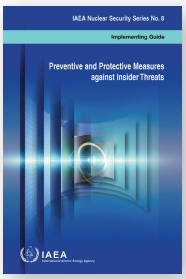
Objective and Essential Elements of a State's Nuclear Security Regime

IAEA Nuclear Security Series No. 20

This IAEA Nuclear Security Series publication provides nuclear security fundamentals, recommendations, and supporting guidance for Member States to assist them in implementing new nuclear security regimes, or in reviewing

and if necessary strengthening existing ones. The IAEA Nuclear Security Series also serves as guidance for Member States with respect to their activities in relation to binding and non-binding international instruments. The Nuclear Security Fundamentals are the primary publication in the IAEA Nuclear Security Series, and set out the objective of an effective national nuclear security regime and essential elements of such a regime. They are aimed at national policy makers, legislative bodies, competent authorities, institutions, and individuals involved in the establishment, implementation, maintenance or sustainability of a State's nuclear security regime.

(15 pp.; 2013) • ISBN 978-92-0-137810-1 • STI/PUB/1590 • €20.00



Preventive and Protective Measures against Insider Threats

IAEA Nuclear Security Series No. 8

This Implementing Guide presents a comprehensive methodology for the development of preventive and protective measures against insider threats to nuclear facilities and nuclear material transport operations of all types. Institutional insiders who are privy to the inner workings of security systems present a unique challenge to the establishment of effective control systems for nuclear material. They generally possess access rights which, together with their authority and knowledge of facilities, grant them far greater opportunity than any outsider to bypass dedicated physical protection elements or other provisions such as safety systems and operating procedures. Furthermore, insiders, as trusted persons, are capable of methods of defeat that are not available to outsiders. This publication provides guidance on and measures for reducing these and other risks posed by insiders.

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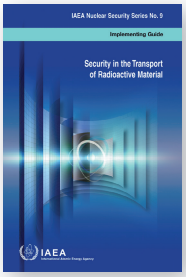

Security in the Transport of Radioactive Material

IAEA Nuclear Security Series No. 9

This publication addresses the vulnerability of radioactive material during transport. Given the international concern over acts of nuclear terrorism, it is imperative to have a well defined plan for the security of sensitive materials during their transport. This publication provides guidance on implementing, maintaining or enhancing a State's nuclear security regime to protect radioactive material in transport against theft, sabotage or other malicious acts. It will be of use to regulators and to operating personnel engaged in the transport of such material.

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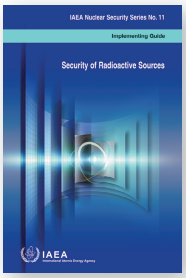

Security of Radioactive Sources

IAEA Nuclear Security Series No. 11

There are concerns that terrorist or criminal groups could gain access to high activity radioactive sources and use these sources maliciously. The IAEA is working with Member States to increase control, accounting and security of radioactive sources to prevent their malicious use and the associated potential consequences. Based on extensive input from technical and legal experts, this implementation guide sets forth guidance on the security of sources and will serve as a useful tool for legislators and regulators, physical protection specialists, and facility and transport operators, as well as for law enforcement officers.

Arabic Edition (80 pp.; 2011) • ISBN 978-92-0-621610-1 • STI/PUB/1387 • €25.00
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Please note that this index does not detail all available safety standards. Only titles published in 2012 and 2013 and those forthcoming in 2013 and 2014 are shown. For a full list, please visit the safety standards web site: www-ns.iaea.org/standards or the IAEA books website: www.iaea.org/books or email sales.publications@iaea.org.

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IAEA TECDOC Series No. 1685	Aplicación del Método de Análisis de Matriz de Riesgo a la Radioterapia	S	978-92-0-332510-3	IAEA-TECDOC-1685	2013	18.00
Safety Reports Series No. 65	Application of Configuration Management in Nuclear Power Plants	E	978-92-0-106710-4	STI/PUB/1461	2010	42.00
IAEA Radiation Technology Series No. 3	Application of Radiotracer Techniques for Interwell Studies	E	978-92-0-125610-2	STI/PUB/1539	2012	54.00
IAEA Human Health Series No. 9	Appropriate Use of FDG-PET for the Management of Cancer Patients	E	978-92-0-101610-2	STI/PUB/1438	2010	39.00
IAEA Safety Standards Series No. GS-G-2.1	Arrangements for Preparedness for a Nuclear or Radiological Emergency Safety Guide	S	978-92-0-307310-3	STI/PUB/1265	2010	31.00
IAEA Nuclear Energy Series No. NP-T-3.6	Assessing and Managing Cable Ageing in Nuclear Power Plants	E	978-92-0-128510-2	STI/PUB/1554	2012	30.00

Series & No.	Title	Language	ISBN	IAEA Reference	Published	PriceEuro
IAEA TECDOC Series No. 1668	Assessment and Management of Ageing of Major Nuclear Power Plant Components Important to Safety: Steam Generators 2011 Update	E	978-92-0-121410-2	IAEA-TECDOC-1668	2011	18.00
IAEA Human Health Series No. 21	Assessment of Iron Bioavailability in Humans Using Stable Iron Isotope Techniques	E	978-92-0-126510-4	STI/PUB/1544	2012	26.00
IAEA TECDOC Series No. 1639	Assessment of Nuclear Energy Systems Based on a Closed Nuclear Fuel Cycle with Fast Reactors	E	978-92-0-101410-8	IAEA-TECDOC-1639	2010	15.00
IAEA TECDOC Series No. 1639/ Rev. 1	Assessment of Nuclear Energy Systems Based on a Nuclear Closed Fuel Cycle with Fast Reactors	E	978-92-0-134710-7	IAEA-TECDOC-1639/Rev1	2012	18.00
IAEA TECDOC Series No. 1648	Assessment of Partitioning Processes for Transmutation of Actinides	E	978-92-0-154510-7	IAEA-TECDOC-CD-1648	2010	15.00
IAEA Human Health Series No. 16	Atlas of Bone Scintigraphy in the Developing Paediatric Skeleton: The Normal Skeleton Variants and Pitfalls	E	978-92-0-112710-5	STI/PUB/1491	2011	65.00
Atomic and Plasma–Material Interaction Data for Fusion 15	Atomic and Plasma–Material Interaction Data for Fusion Vol. 15	E	978-92-0-131410-9	STI/PUB/023/ APID/15	2012	40.00
IAEA TECDOC Series No. 1667	Avoidance of Unnecessary Dose to Patients While Transitioning from Analogue to Digital Radiology	E	978-92-0-121010-4	IAEA-TECDOC-1667	2011	18.00
IAEA Nuclear Energy Series No. NF-T-1.2	Best Practice in Environmental Management of Uranium Mining	E	978-92-0-105909-3	STI/PUB/1406	2010	35.00
IAEA TECDOC Series No. 1653	Best Practices in the Management of an Operating Experience Programme at Nuclear Power Plants	E	978-92-0-108510-8	IAEA-TECDOC-1653	2010	18.00
IAEA TECDOC Series No. 1623	BN-600 Hybrid Core Benchmark Analyses Results from a Coordinated Research Project on “Updated Codes and Methods to Reduce the Calculational Uncertainties of the LMFR Reactivity Effects”	E	978-92-0-109409-4	IAEA-TECDOC-1623	2010	15.00
IAEA TECDOC Series No. 1623	BN-600 Hybrid Core Benchmark Analyses. Results from a Coordinated Research Project on “Updated Codes and Methods to Reduce the Calculational Uncertainties of the LMFR Reactivity Effects”	E	978-92-0-154710-1	IAEA-TECDOC-CD-1623	2010	15.00
IAEA TECDOC Series No. 1644	BOSS: Borehole Disposal of Disused Sealed Sources A Technical Manual	E	978-92-0-101810-6	IAEA-TECDOC-1644	2011	18.00
IAEA Safety Standards Series No. RS-G-1.4	Building Competence in Radiation Protection and the Safe Use of Radiation Sources Safety Guide	S	978-92-0-307010-2	STI/PUB/1108	2010	13.00
IAEA Safety Standards Series No. RS-G-1.9	Categorization of Radioactive Sources Safety Guide	F	978-92-0-214810-9	STI/PUB/1227	2011	18.00

Series & No.	Title	Language	ISBN	IAEA Reference	Published	PriceEuro
Proceedings Series	Challenges Faced by Technical and Scientific Support Organizations in Enhancing Nuclear Safety and Security, Proceedings of an International Conference, Tokyo, Japan, 25–29 October 2010	E	978-92-0-118810-6	STI/PUB/1519	2011	96.00
IAEA Safety Standards Series No. SSG-13	Chemistry Programme for Water Cooled Nuclear Power Plants Specific Safety Guide	E	978-92-0-107610-6	STI/PUB/1469	2011	25.00
IAEA Nuclear Security Series No. 6	Combating Illicit Trafficking in Nuclear and Other Radioactive Material	C	978-92-0-526710-4	STI/PUB/1309	2012	40.00
IAEA TECDOC Series No. 1583	Commissioning of Radiotherapy Treatment Planning Systems: Testing for Typical External Beam Treatment Techniques	E	978-92-0-169910-7	IAEA-TECDOC-CD-1583	2011	18.00
IAEA Nuclear Energy Series No. NG-T-6.7	Comparative Analysis of Methods and Tools for Nuclear Knowledge Preservation	E	978-92-0-113610-7	STI/PUB/1494	2011	32.00
IAEA TECDOC Series No. 1688	Comparison of Heavy Water Reactor Thermalhydraulic Code Predictions with Small Break LOCA Experimental Data	E	978-92-0-133710-8	IAEA-TECDOC-1688	2012	18.00
IAEA Human Health Series No. 4	Comprehensive Clinical Audits of Diagnostic Radiology Practices: A Tool for Quality Improvement Quality Assurance Audit for Diagnostic Radiology Improvement and Learning (QUAADRIL)	E	978-92-0-112009-0	STI/PUB/1425	2010	45.00
IAEA Human Health Series No. 4	Comprehensive Clinical Audits of Diagnostic Radiology Practices: A Tool for Quality Improvement Quality Assurance Audit for Diagnostic Radiology Improvement and Learning (QUAADRIL)	S	978-92-0-312410-2	STI/PUB/1425	2011	45.00
IAEA Nuclear Security Series No. 17	Computer Security at Nuclear Facilities	E	978-92-0-120110-2	STI/PUB/1527	2011	33.00
IAEA Nuclear Security Series No. 17	Computer Security at Nuclear Facilities	C	978-92-0-536110-9	STI/PUB/1527	2012	33.00
IAEA Nuclear Security Series No. 17	Computer Security at Nuclear Facilities	R	978-92-0-435510-9	STI/PUB/1527	2012	33.00
IAEA Nuclear Security Series No. 17	Computer Security at Nuclear Facilities	F	978-92-0-237010-4	STI/PUB/1527	2013	33.00
IAEA Safety Standards Series No. NS-G-2.14	Conduct of Operations at Nuclear Power Plants Safety Guide	S	978-92-0-329710-3	STI/PUB/1339	2012	19.00
IAEA Nuclear Energy Series No. NP-T-2.5	Construction Technologies for Nuclear Power Plants	E	978-92-0-119510-4	STI/PUB/1526	2011	38.00
Proceedings Series	Control and Management of Radioactive Material Inadvertently Incorporated into Scrap Metal Proceedings of an International Conference held in Tarragona, Spain, 23–27 February 2009	E	978-92-0-114910-7	STI/PUB/1502	2011	70.00

Series & No.	Title	Language	ISBN	IAEA Reference	Published	PriceEuro
IAEA Safety Standards Series No. SSG-17	Control of Orphan Sources and Other Radioactive Material in the Metal Recycling and Production Industries Specific Safety Guide	E	978-92-0-115510-8	STI/PUB/1509	2012	31.00
IAEA Nuclear Energy Series No. NP-T-3.12	Core Knowledge of Instrumentation and Control Systems in Nuclear Power Plants	E	978-92-0-113710-4	STI/PUB/1495	2011	34.00
IAEA TECDOC Series No. 1637	Corrosion of Research Reactor Aluminium Clad Spent Fuel in Water	E	978-92-0-113409-7	IAEA-TECDOC-1637	2010	15.00
IAEA Nuclear Energy Series No. NG-T-4.3	Cost Aspects of the Research Reactor Fuel Cycle	E	978-92-0-101910-3	STI/PUB/1440	2010	23.00
	Country Nuclear Power Profiles - 2010 Edition	E	978-92-0-169810-0	IAEA-CNPP/2010/ CD	2010	95.00
	Country Nuclear Power Profiles - 2011 Edition	E	978-92-0-169710-3	IAEA-CNPP/2011/CD	2011	95.00
	Country Nuclear Power Profiles - 2012 Edition	E	978-92-0-184510-8	IAEA-CNPP/2012/ CD	2012	95.00
IAEA Safety Standards Series No. GSG-2	Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency General Safety Guide	E	978-92-0-107410-2	STI/PUB/1467	2011	41.00
IAEA Safety Standards Series No. GSG-2	Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency General Safety Guide	A	978-92-0-629410-9	STI/PUB/1467	2012	41.00
IAEA Safety Standards Series No. GSG-2	Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency General Safety Guide	F	978-92-0-224210-4	STI/PUB/1467	2012	41.00
IAEA Safety Standards Series No. GSG-2	Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency General Safety Guide	R	978-92-0-424810-4	STI/PUB/1467	2012	41.00
IAEA Radioisotopes and Radiopharma-ceuticals Series No. 3	Cyclotron Produced Radionuclides: Guidance on Facility Design and Production of $^{[18F]}$Fluorodeoxyglucose (FDG)	E	978-92-0-117310-2	STI/PUB/1515	2012	55.00
IAEA Radioisotopes and Radiopharma-ceuticals Series No. 4	Cyclotron Produced Radionuclides: Operation and Maintenance of Gas and Liquid Targets	E	978-92-0-130710-1	STI/PUB/1563	2012	35.00
IAEA Safety Standards Series No. WS-R-5	Decommissioning of Facilities Using Radioactive Material Safety Requirements	A	978-92-0-614409-1	STI/PUB/1274	2010	25.00
IAEA Safety Standards Series No. WS-R-5	Decommissioning of Facilities Using Radioactive Material Safety Requirements	C	978-92-0-514709-3	STI/PUB/1274	2010	25.00
IAEA Safety Standards Series No. WS-R-5	Decommissioning of Facilities Using Radioactive Material Safety Requirements	F	978-92-0-215109-3	STI/PUB/1274	2010	25.00

Series & No.	Title	Language	ISBN	IAEA Reference	Published	PriceEuro
IAEA Safety Standards Series No. WS-R-5	Decommissioning of Facilities Using Radioactive Material Safety Requirements	R	978-92-0-415309-5	STI/PUB/1274	2010	25.00
IAEA Safety Standards Series No. WS-R-5	Decommissioning of Facilities Using Radioactive Material Safety Requirements	S	978-92-0-300110-6	STI/PUB/1274	2010	25.00
IAEA TECDOC Series No. 1633	Decommissioning of Fast Reactors After Sodium Draining	E	978-92-0-111809-7	IAEA-TECDOC-1633	2010	15.00
IAEA Safety Standards Series No. WS-G-2.2	Decommissioning of Medical, Industrial and Research Facilities Safety Guide	S	978-92-0-308210-5	STI/PUB/1078	2010	13.00
IAEA Safety Standards Series No. WS-G-2.4	Decommissioning of Nuclear Fuel Cycle Facilities Safety Guide	S	978-92-0-307110-9	STI/PUB/1110	2010	13.00
IAEA Nuclear Energy Series No. NW-T-2.3	Decommissioning of Small Medical, Industrial and Research Facilities: A Simplified Stepwise Approach	E	978-92-0-116610-4	STI/PUB/1517	2011	35.00
IAEA TECDOC Series No. 1649	Delayed Hydride Cracking of Zirconium Alloy Fuel Cladding	E	978-92-0-108610-5	IAEA-TECDOC-1649	2010	18.00
IAEA TECDOC Series No. 1657	Design Lessons Drawn from the Decommissioning of Nuclear Facilities	E	978-92-0-113210-9	IAEA-TECDOC-1657	2011	18.00
IAEA Safety Standards Series No. NS-G-1.9	Design of the Reactor Coolant System and Associated Systems in Nuclear Power Plants Safety Guide	S	978-92-0-306910-6	STI/PUB/1187	2010	18.00
IAEA Safety Standards Series No. SSG-2	Deterministic Safety Analysis for Nuclear Power Plants Specific Safety Guide	E	978-92-0-113309-0	STI/PUB/1428	2010	23.00
IAEA Safety Standards Series No. SSG-2	Deterministic Safety Analysis for Nuclear Power Plants Specific Safety Guide	S	978-92-0-333010-7	STI/PUB/1428	2012	23.00
IAEA Safety Standards Series No. SSG-3	Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants Specific Safety Guide	E	978-92-0-114509-3	STI/PUB/1430	2010	35.00
IAEA Safety Standards Series No. SSG-4	Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants Specific Safety Guide	E	978-92-0-102210-3	STI/PUB/1443	2010	22.00
IAEA Radiation Technology Reports No. 3	Development of Novel Adsorbents and Membranes by Radiation-Induced Grafting for Selective Separation in Environmental and Industrial Applications	E	978-92-0-134010-8	STI/PUB/1572	2012	18.00
IAEA Nuclear Security Series No. 10	Development, Use and Maintenance of the Design Basis Threat	A	978-92-0-634910-6	STI/PUB/1386	2012	18.00
IAEA Nuclear Security Series No. 10	Development, Use and Maintenance of the Design Basis Threat	C	978-92-0-523510-3	STI/PUB/1386	2012	18.00
IAEA Nuclear Security Series No. 10	Development, Use and Maintenance of the Design Basis Threat	F	978-92-0-232810-5	STI/PUB/1386	2012	18.00

Series & No.	Title	Language	ISBN	IAEA Reference	Published	PriceEuro
IAEA Nuclear Energy Series No. NW-T-1.20	Disposal Approaches for Long Lived Low and Intermediate Level Radioactive Waste	E	978-92-0-106009-9	STI/PUB/1407	2010	16.00
IAEA Safety Standards Series No. SSR-5	Disposal of Radioactive Waste Specific Safety Requirements	A	978-92-0-619110-1	STI/PUB/1449	2011	48.00
IAEA Safety Standards Series No. SSR-5	Disposal of Radioactive Waste Specific Safety Requirements	C	978-92-0-519210-9	STI/PUB/1449	2011	48.00
IAEA Safety Standards Series No. SSR-5	Disposal of Radioactive Waste Specific Safety Requirements	E	978-92-0-103010-8	STI/PUB/1449	2011	48.00
IAEA Safety Standards Series No. SSR-5	Disposal of Radioactive Waste Specific Safety Requirements	F	978-92-0-220310-5	STI/PUB/1449	2011	48.00
IAEA Safety Standards Series No. SSR-5	Disposal of Radioactive Waste Specific Safety Requirements	R	978-92-0-420010-2	STI/PUB/1449	2011	48.00
IAEA Safety Standards Series No. SSR-5	Disposal of Radioactive Waste Specific Safety Requirements	S	978-92-0-322010-1	STI/PUB/1449	2012	48.00
IAEA Human Health Series No. 15	Dual Energy X Ray Absorptiometry for Bone Mineral Density and Body Composition Assessment	E	978-92-0-110610-0	STI/PUB/1479	2011	50.00
Safety Reports Series No. 66	Earthquake Preparedness and Response for Nuclear Power Plants	E	978-92-0-108810-9	STI/PUB/1473	2011	50.00
IAEA Nuclear Security Series No. 12	Educational Programme in Nuclear Security	E	978-92-0-101710-9	STI/PUB/1439	2010	42.00
IAEA Nuclear Security Series No. 12	Educational Programme in Nuclear Security	C	978-92-0-523110-5	STI/PUB/1439	2012	42.00
Proceedings Series	Effective Nuclear Regulatory Systems: Further Enhancing the Global Nuclear Safety and Security Regime Proceedings of an International Conference, Cape Town, South Africa, 14–18 December 2009	E	978-92-0-103810-4	STI/PUB/1455	2010	94.00
IAEA Nuclear Energy Series No. NP-T-2.6	Efficient Water Management in Water Cooled Reactors	E	978-92-0-132610-2	STI/PUB/1569	2012	34.00
IAEA Human Health Reports No. 1	El físico médico: Criterios y recomendaciones para su formación académica, entrenamiento clínico y certificación en América Latina	S	978-92-0-311209-3	STI/PUB/1424	2010	16.00
IAEA Nuclear Energy Series No. NG-T-3.8	Electric Grid Reliability and Interface with Nuclear Power Plants	E	978-92-0-126110-6	STI/PUB/1542	2012	32.00
Reference Data Series No. 1	Energy, Electricity and Nuclear Power Estimates for the Period up to 2050 2010 Edition	E	978-92-0-108010-3	IAEA-RDS-1/30	2010	9.00
Reference Data Series No. 1	Energy, Electricity and Nuclear Power Estimates for the Period up to 2050 2011 Edition	E	978-92-0-119410-7	IAEA-RDS-1/31	2011	9.00

Series & No.	Title	Language	ISBN	IAEA Reference	Published	PriceEuro
Reference Data Series No. 1	Energy, Electricity and Nuclear Power Estimates for the Period up to 2050 2012 Edition	E	978-92-0-133510-4	IAEA-RDS-1/32	2012	16.00
IAEA Nuclear Security Series No. 4	Engineering Safety Aspects of the Protection of Nuclear Power Plants Against Sabotage	C	978-92-0-523310-9	STI/PUB/1271	2012	30.00
IAEA Safety Standards Series No. RS-G-1.8	Environmental and Source Monitoring for Purposes of Radiation Protection Safety Guide	S	978-92-0-306010-3	STI/PUB/1216	2010	26.00
IAEA TECDOC Series No. 1642	Environmental Impact Assessment of Nuclear Desalination	E	978-92-0-100810-7	IAEA-TECDOC-1642	2010	15.00
IAEA TECDOC Series No. 1678	Environmental Modelling for Radiation Safety (EMRAS) — A Summary Report of the Results of the EMRAS Programme (2003–2007)	E	978-92-0-129810-2	IAEA-TECDOC-1678	2012	18.00
IAEA TECDOC Series No. 1646	Establecimiento de Niveles Orientativos en Radiografía General y Mamografía	S	978-92-0-353510-6	IAEA-TECDOC-CD-1646	2010	15.00
IAEA Nuclear Security Series No. 19	Establishing the Nuclear Security Infrastructure for a Nuclear Power Programme	E	978-92-0-138010-4	STI/PUB/1591	2013	29.00
IAEA Safety Standards Series No. SSG-16	Establishing the Safety Infrastructure for a Nuclear Power Programme Specific Safety Guide	E	978-92-0-115310-4	STI/PUB/1507	2012	40.00
	Evaluated Nuclear Data for Nuclides within the Thorium-Uranium Fuel Cycle	E	978-92-0-101010-0	STI/PUB/1435	2010	29.00
IAEA TECDOC Series No. 1656	Evaluation of Human Resource Needs for a New Nuclear Power Plant: Armenian Case Study	E	978-92-0-113510-0	IAEA-TECDOC-1656	2011	18.00
IAEA TECDOC Series No. 1679	Exemption from Regulatory Control of Goods Containing Small Amounts of Radioactive Material	E	978-92-0-129910-9	IAEA-TECDOC-1679	2012	18.00
IAEA TECDOC Series No. 1686	Experiences and Trends of Manufacturing Technology of Advanced Nuclear Fuels	E	978-92-0-132710-9	IAEA-TECDOC-1686	2012	18.00
IAEA TECDOC Series No. 1660	Exposure of the Public from Large Deposits of Mineral Residues	E	978-92-0-116410-0	IAEA-TECDOC-1660	2011	18.00
Proceedings Series	Fast Reactors and Related Fuel Cycles: Challenges and Opportunities (FR09) Proceedings of an International Conference Held in Kyoto, Japan, 7–11 December 2009	E	978-92-0-102410-7	STI/PUB/1444	2012	98.00
IAEA TECDOC Series No. 1687	Fuel Modelling at Extended Burnup (FUMEX-II)	E	978-92-0-133810-5	IAEA-TECDOC-1687	2012	18.00
	Fusion Physics	E	978-92-0-130410-0	STI/PUB/1562	2012	90.00
IAEA Safety Standards Series No. SSG-14	Geological Disposal Facilities for Radioactive Waste Specific Safety Guide	E	978-92-0-111510-2	STI/PUB/1483	2011	32.00
IAEA Nuclear Energy Series No. NP-T-5.2	Good Practices for Water Quality Management in Research Reactors and Spent Fuel Storage Facilities	E	978-92-0-112810-2	STI/PUB/1492	2011	26.00
IAEA TECDOC Series No. 1650	Good Practices in Heavy Water Reactor Operation	E	978-92-0-105710-5	IAEA-TECDOC-1650	2010	15.00

Series & No.	Title	Language	ISBN	IAEA Reference	Published	PriceEuro
IAEA Safety Standards Series No. GSR Part 1	Governmental, Legal and Regulatory Framework for Safety General Safety Requirements Part 1	C	978-92-0-511310-4	STI/PUB/1465	2010	45.00
IAEA Safety Standards Series No. GSR Part 1	Governmental, Legal and Regulatory Framework for Safety General Safety Requirements Part 1	E	978-92-0-106410-3	STI/PUB/1465	2010	45.00
IAEA Safety Standards Series No. GSR Part 1	Governmental, Legal and Regulatory Framework for Safety General Safety Requirements Part 1	F	978-92-0-211210-0	STI/PUB/1465	2010	45.00
IAEA Safety Standards Series No. GSR Part 1	Governmental, Legal and Regulatory Framework for Safety General Safety Requirements Part 1	S	978-92-0-310810-2	STI/PUB/1465	2010	45.00
IAEA Safety Standards Series No. GSR Part 1	Governmental, Legal and Regulatory Framework for Safety General Safety Requirements Part 1	A	978-92-0-610510-8	STI/PUB/1465	2011	45.00
IAEA Safety Standards Series No. GSR Part 1	Governmental, Legal and Regulatory Framework for Safety General Safety Requirements Part 1	R	978-92-0-410710-4	STI/PUB/1465	2011	45.00
IAEA TECDOC Series No. 1671	Greater Agronomic Water Use Efficiency in Wheat and Rice Using Carbon Isotope Discrimination	E	978-92-0-123910-5	IAEA-TECDOC-1671	2012	18.00
Technical Reports Series No. 475	Guidelines for Remediation Strategies to Reduce the Radiological Consequences of Environmental Contamination	E	978-92-0-134110-5	STI/DOC/010/475	2012	46.00
Technical Reports Series No. 472	Handbook of Parameter Values for the Prediction of Radionuclide Transfer in Terrestrial and Freshwater Environments	E	978-92-0-113009-9	STI/DOC/010/472	2010	45.00
Non-serial Publication	Handbook on Nuclear Law: Implementing Legislation	E	978-92-0-103910-1	STI/PUB/1456	2010	90.00
Non-serial Publication	Handbook on Nuclear Law: Implementing Legislation	A	978-92-0-604010-2	STI/PUB/1456	2011	90.00
Non-serial Publication	Handbook on Nuclear Law: Implementing Legislation	F	978-92-0-204210-0	STI/PUB/1456	2011	90.00
Non-serial Publication	Handbook on Nuclear Law: Implementing Legislation	R	978-92-0-404310-5	STI/PUB/1456	2011	90.00
Non-serial Publication	Handbook on Nuclear Law: Implementing Legislation	S	978-92-0-314710-1	STI/PUB/1456	2012	90.00
IAEA TECDOC Series No. 1645	High Temperature Gas Cooled Reactor Fuels and Materials	E	978-92-0-153110-0	IAEA-TECDOC-CD-1645	2010	15.00
Proceedings Series	Human Resource Development for Introducing and Expanding Nuclear Power Programmes: Summary of an International Conference, Abu Dhabi, United Arab Emirates, 14–18 March 2010	E	978-92-0-134410-6	STI/PUB/1574	2012	40.00
IAEA Nuclear Security Series No. 5	Identification of Radioactive Sources and Devices	C	978-92-0-518010-6	STI/PUB/1278	2011	45.00
IAEA Nuclear Security Series No. 16	Identification of Vital Areas at Nuclear Facilities	E	978-92-0-114410-2	STI/PUB/1505	2012	22.00

Series & No.	Title	Language	ISBN	IAEA Reference	Published	PriceEuro
IAEA Nuclear Energy Series No. NF-T-3.8	Impact of High Burnup Uranium Oxide and Mixed Uranium-Plutonium Oxide Water Reactor Fuel on Spent Fuel Management	E	978-92-0-114310-5	STI/PUB/1490	2011	25.00
IAEA TECDOC Series No. 1665	Impact of Soil Conservation Measures on Erosion Control and Soil Quality	E	978-92-0-113410-3	IAEA-TECDOC-1665	2011	18.00
IAEA Human Health Reports No. 4	Implementation of the International Code of Practice on Dosimetry in Diagnostic Radiology (TRS 457): Review of Test Results	E	978-92-0-114010-4	STI/PUB/1498	2011	58.00
IAEA TECDOC Series No. 1455	Implementation of the International Code of Practice on Dosimetry in Radiotherapy (TRS 398): Review of Testing Results	E	978-92-0-100610-3	IAEA-TECDOC-CD-1455	2010	15.00
IAEA TECDOC Series No. 1683	Improved and Harmonized Quality Control for Expanded Tsetse Production, Sterilization and Field Application	E	978-92-0-130110-9	IAEA-TECDOC-1683	2012	18.00
IAEA TECDOC Series No. 1640	Improving Livestock Production Using Indigenous Resources and Conserving the Environment	E	978-92-0-100310-2	IAEA-TECDOC-1640	2010	15.00
IAEA Human Health Reports No. 3	Inequity in Cancer Care: A Global Perspective	E	978-92-0-107810-0	STI/PUB/1471	2011	30.00
IAEA TECDOC Series No. 1651	Information Technology for Nuclear Power Plant Configuration Management	E	978-92-0-106310-6	IAEA-TECDOC-1651	2010	18.00
IAEA TECDOC Series No. 1684	INPRO Collaborative Project: Proliferation Resistance: Acquisition/Diversion Pathway Analysis (PRADA)	E	978-92-0-130310-3	IAEA-TECDOC-1684	2012	18.00
IAEA TECDOC Series No. 1526	Inspection of Radiation Sources and Regulatory Enforcement (Supplement to IAEA Safety Standards Series No. GS-G-1.5)	S	978-92-0-308310-2	IAEA-TECDOC-1526	2010	18.00
IAEA TECDOC Series No. 1526	Inspection of Radiation Sources and Regulatory Enforcement (Supplement to IAEA Safety Standards Series No. GS-G-1.5)	F	978-92-0-235010-6	IAEA-TECDOC-1526	2012	18.00
IAEA Nuclear Energy Series No. NP-T-3.10	Integration of Analog and Digital Instrumentation and Control Systems in Hybrid Control Rooms	E	978-92-0-107710-3	STI/PUB/1470	2010	30.00
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IAEA Nuclear Energy Series No. NP-T-1.12	Introduction to the Use of the INPRO Methodology in a Nuclear Energy System Assessment	E	978-92-0-110410-6	STI/PUB/1478	2011	23.00

Series & No.	Title	Language	ISBN	IAEA Reference	Published	PriceEuro
IAEA Nuclear Energy Series No. NP-T-1.12	Introduction to the Use of the INPRO Methodology in a Nuclear Energy System Assessment	R	978-92-0-416310-0	STI/PUB/1478	2011	23.00
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IAEA TECDOC Series No. 1675	Knowledge Management for Nuclear Research and Development Organizations	E	978-92-0-125510-5	IAEA-TECDOC-1675	2012	18.00
IAEA Safety Standards Series No. SSG-12	Licensing Process for Nuclear Installations Specific Safety Guide	E	978-92-0-107510-9	STI/PUB/1468	2010	27.00
IAEA Safety Standards Series No. SSG-12	Licensing Process for Nuclear Installations Specific Safety Guide	S	978-92-0-318410-6	STI/PUB/1468	2011	27.00
INSAG Series No. 26	Licensing the First Nuclear Power Plant	E	978-92-0-134210-2	STI/PUB/1573	2012	25.00
IAEA Nuclear Energy Series No. NP-T-1.6	Liquid Metal Coolants for Fast Reactors (Reactors Cooled by Sodium, Lead and Lead-bismuth Eutectic)	E	978-92-0-131810-7	STI/PUB/1567	2012	25.00
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Proceedings Series	Management and Storage of Research Reactor Spent Nuclear Fuel: Proceedings of a Technical Meeting held in Thurso, United Kingdom, 19–22 October 2009	E	978-92-0-138210-8	STI/PUB/1592	2013	49.00
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Safety Reports Series No. 69	Management System Standards: Comparison between IAEA GS-R-3 and ISO 9001:2008	E	978-92-0-120710-4	STI/PUB/1529	2012	29.00
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IAEA Safety Standards Series No. SSG-18	Meteorological and Hydrological Hazards in Site Evaluation for Nuclear Installations Specific Safety Guide	E	978-92-0-115210-7	STI/PUB/1506	2011	38.00

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IAEA TECDOC Series No. 1661	Mitigation of Hydrogen Hazards in Severe Accidents in Nuclear Power Plants	E	978-92-0-116510-7	IAEA-TECDOC-1661	2011	18.00
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Safety Reports Series No. 67	Monitoring for Compliance with Exemption and Clearance Levels	E	978-92-0-115810-9	STI/PUB/1511	2012	45.00
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IAEA Nuclear Security Series No. 3	Monitoring for Radioactive Material in International Mail Transported by Public Postal Operators	C	978-92-0-523210-2	STI/PUB/1242	2012	23.00
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Reference Data Series No. 2	Nuclear Power Reactors in the World 2012 Edition	E	978-92-0-132310-1	IAEA-RDS-2/32	2012	12.00
Proceedings Series CD Edition	Nuclear Research Applications and Utilization of Accelerators Proceedings of an International Topical Meeting held in Vienna, Austria, 4–8 May 2009, Vienna	E	978-92-0-150410-4	STI/PUB/1433	2010	15.00
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IAEA Nuclear Security Series No. 15	Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control	A	978-92-0-635210-6	STI/PUB/1488	2012	23.00
IAEA Nuclear Security Series No. 15	Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control	C	978-92-0-522910-2	STI/PUB/1488	2012	23.00
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IAEA Nuclear Security Series No. 15	Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control	S	978-92-0-324410-7	STI/PUB/1488	2012	23.00
IAEA Nuclear Security Series No. 13	Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)	A	978-92-0-624510-1	STI/PUB/1481	2011	28.00
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IAEA Nuclear Security Series No. 13	Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)	R	978-92-0-424110-5	STI/PUB/1481	2011	28.00
IAEA Nuclear Security Series No. 13	Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)	C	978-92-0-526210-9	STI/PUB/1481	2012	28.00
IAEA Nuclear Security Series No. 13	Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)	F	978-92-0-222110-9	STI/PUB/1481	2012	28.00
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IAEA TECDOC Series No. 1586	Planning and Execution of Knowledge Management Assist Missions for Nuclear Organizations	R	978-92-0-431910-1	IAEA-TECDOC-1586	2012	18.00
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IAEA Safety Standards Series No. GSR Part 5	Predisposal Management of Radioactive Waste General Safety Requirements Part 5	F	978-92-0-214609-9	STI/PUB/1368	2010	45.00

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IAEA Safety Standards Series No. GSR Part 5	Predisposal Management of Radioactive Waste General Safety Requirements Part 5	R	978-92-0-415209-8	STI/PUB/1368	2010	45.00
IAEA Safety Standards Series No. GSR Part 5	Predisposal Management of Radioactive Waste General Safety Requirements Part 5	S	978-92-0-314209-0	STI/PUB/1368	2010	45.00
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IAEA Nuclear Security Series No. 8	Preventive and Protective Measures Against Insider Threats	F	978-92-0-236710-4	STI/PUB/1359	2013	20.00
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Safety Reports Series No. 76	Radiation Protection and NORM Residue Management in the Titanium Dioxide and Related Industries	E	978-92-0-132110-7	STI/PUB/1568	2012	32.00
IAEA Safety Standards Series No. NS-G-2.7	Radiation Protection and Radioactive Waste Management in the Operation of Nuclear Power Plants Safety Guide	S	978-92-0-312610-6	STI/PUB/1138	2011	18.00
IAEA Safety Standards Series No. GSR Part 3 (Interim)	Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards - Interim Edition General Safety Requirements Part 3	E	978-92-0-120910-8	STI/PUB/1531	2011	65.00

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IAEA Safety Standards Series No. TS-G-1.3	Radiation Protection Programmes for the Transport of Radioactive Material Safety Guide	S	978-92-0-312310-5	STI/PUB/1269	2011	32.00
IAEA Safety Standards Series No. SSG-11	Radiation Safety in Industrial Radiography Specific Safety Guide	E	978-92-0-107210-8	STI/PUB/1466	2011	33.00
IAEA Safety Standards Series No. SSG-11	Radiation Safety in Industrial Radiography Specific Safety Guide	A	978-92-0-633110-1	STI/PUB/1466	2012	33.00
IAEA Safety Standards Series No. SSG-8	Radiation Safety of Gamma, Electron and X Ray Irradiation Facilities Specific Safety Guide	E	978-92-0-103710-7	STI/PUB/1454	2010	30.00
IAEA TECDOC Series No. 1663	Radioactive Particles in the Environment: Sources, Particle Characterization and Analytical Techniques	E	978-92-0-119010-9	IAEA-TECDOC-1663	2011	18.00
IAEA Nuclear Energy Series No. NW-O	Radioactive Waste Management Objectives	E	978-92-0-117010-1	STI/PUB/1521	2011	18.00
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IAEA Safety Standards Series No. SSR-6	Regulations for the Safe Transport of Radioactive Material - 2012 Edition Specific Safety Requirements	E	978-92-0-133310-0	STI/PUB/1570	2012	44.00
IAEA Safety Standards Series No. SSR-6	Regulations for the Safe Transport of Radioactive Material - 2012 Edition Specific Safety Requirements	A	978-92-0-638410-7	STI/PUB/1570	2013	44.00
IAEA Safety Standards Series No. SSR-6	Regulations for the Safe Transport of Radioactive Material - 2012 Edition Specific Safety Requirements	C	978-92-0-538110-7	STI/PUB/1570	2013	44.00
IAEA Safety Standards Series No. GS-G-1.5	Regulatory Control of Radiation Sources Safety Guide	F	978-92-0-218310-0	STI/PUB/1192	2011	25.00
IAEA Safety Standards Series No. GS-G-1.5	Regulatory Control of Radiation Sources Safety Guide	A	978-92-0-633910-7	STI/PUB/1192	2012	25.00
IAEA Safety Standards Series No. WS-G-5.1	Release of Sites from Regulatory Control on Termination of Practices Safety Guide	S	978-92-0-306510-8	STI/PUB/1244	2010	27.00

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IAEA Safety Standards Series No. WS-G-3.1	Remediation Process for Areas Affected by Past Activities and Accidents Safety Guide	S	978-92-0-315009-5	STI/PUB/1282	2010	18.00
IAEA TECDOC Series No. 1659	Research Reactor Application for Materials under High Neutron Fluence	E	978-92-0-116010-2	IAEA-TECDOC-1659	2011	18.00
Proceedings Series CD Edition	Research Reactors: Safe Management and Effective Utilization Proceedings of an International Conference, Rabat, Morocco, 14–18 November 2011	E	978-92-0-184610-5	STI/PUB/1575	2012	18.00
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	Risk Management of Knowledge Loss in Nuclear Industry Organizations	R	978-92-0-432210-1	STI/PUB/1248	2012	18.00
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