

New publications

Economic and technical aspects of the nuclear fuel cycle

Forty Years of Uranium Resources, Production and Demand in Perspective – The “Red Book” Retrospective

ISBN 92-64-02806-4

Price: € 90, US\$ 121, £ 64, ¥ 12 500.



The Red Book Retrospective was undertaken to collect, collate, analyse and publish all of the key information collected in the 20 editions of the Red Book published between 1965 and 2004. Additionally, every effort has been made to fill in gaps in the record to provide the most complete and exhaustive information possible. As a result, the Red Book Retrospective gives a full historical profile of the world uranium industry in the areas of exploration, resources, production, reactor-related requirements, inventories and price. It provides in-depth information relating to the histories of the major uranium-producing countries including Australia, Canada, France, Germany (including the former German Democratic Republic), the Russian Federation (including the former Union of

Soviet Socialist Republics) and the United States. For the first time, for example, a comprehensive look at annual and cumulative production and demand of uranium since the inception of the atomic age is possible. Besides reporting and documenting the historical data, expert analyses provide fresh insights into important aspects of the industry including: the cost of discovery, resources to production ratios and the time to reach production after discovery, among others. Taken together, the Red Book Retrospective provides the most complete record of the uranium industry publicly available, dating from the birth of civilian nuclear energy through to the dawn of the 21st century.

Nuclear Power Plant Life Management and Longer-term Operation

ISBN 92-64-02924-9

Price: € 30, US\$ 40, £ 21, ¥ 4 100.



This book, prepared by NEA member country experts, contains data and analyses relevant to nuclear power plant life management and the plants' extended, longer-term operation (LTO). It addresses technical, economic and environmental aspects and provides insights into the benefits and challenges of plant life management and LTO.

It will be of interest to policy makers and senior managers in the nuclear power sector and governmental bodies involved in nuclear power programme design and management. The data and information on current trends in nuclear power plant life management will be useful to researchers and analysts working in the field of nuclear energy system assessment.

Now available!

Kernenergie heute

Originalfassungen veröffentlicht unter dem Titel: Nuclear Energy Today

ISBN 92-64-02653-3

Preis: € 25, US\$ 32, £ 16, ¥ 3 200.



Energie ist der Motor der Weltwirtschaft und mit der Expansion der führenden Volkswirtschaften und dem Wachstum der Entwicklungsländer steigt der Weltenergiebedarf stetig an. Die Befriedigung dieser Nachfrage bei gleichzeitigem Schutz der Umwelt und der natürlichen Ressourcen stellt eine der großen Aufgaben unserer Zeit dar. In weiten Teilen der Gesellschaft wird darüber debattiert, wie die Energieversorgung der Zukunft gesichert werden kann und ob der Kernenergie dabei eine Rolle zukommen sollte. Kernenergie ist eine komplexe Technologie, die wichtige Fragen aufwirft und seit ihren Anfängen von Kontroversen überschattet ist. Sie birgt jedoch zugleich große potenzielle Vorteile.

Nuclear safety and regulation

Learning from Nuclear Regulatory Self-assessment

International Peer Review of the CSN Report on Lessons Learnt from the Essential Service Water System Degradation Event at the Vandellós Nuclear Power Plant

ISBN 92-64-02310-0

Free: paper or web.



Nuclear regulatory self-assessment together with the benchmarking of regulatory practices against those of other countries operating nuclear power plants are key elements in maintaining a high level of nuclear safety. In that light, the Spanish *Consejo de Seguridad Nuclear* (CSN) formally asked the OECD Nuclear Energy Agency (NEA) to establish an international peer review team to assess the CSN report on the lessons learnt as a result of the 2004 Vandellós II event involving essential service water system degradation.

The International Review Team considers the CSN report prepared in follow-up to the Vandellós event to be a commendable effort in regulatory self-assessment. The report, complemented by this international peer review, should enable the CSN to take appropriate action to ensure that its regulatory supervision is in line with best international practice.

Radioactive waste management

Decommissioning Funding: Ethics, Implementation, Uncertainties

A Status Report

ISBN 92-64-02312-7

Free: paper or web.



This status report is based on a review of recent literature and materials presented at NEA meetings in 2003 and 2004, and particularly at a topical session organised in November 2004 on funding issues associated with the decommissioning of nuclear power facilities. The report also draws on the experience of the NEA Working Party on Decommissioning and Dismantling (WPDD).

This report offers, in a concise form, an overview of relevant considerations on decommissioning funding mechanisms with regard to ethics, implementation and uncertainties. Underlying ethical principles found in international agreements are identified, and factors influencing the accumulation and management of funds for decommissioning nuclear facilities are discussed together with the main sources of uncertainties of funding systems.

Releasing the Sites of Nuclear Installations

A Status Report

ISBN 92-64-02307-0

Free: paper or web.



Releasing the site of a nuclear installation from radiological control is usually one of the last steps of decommissioning. To date, site release has been practised in a limited number of cases only as most decommissioning projects have not yet advanced to a state where the release of the site is imminent or because the site will continue to be used for nuclear activities. Therefore, for a number of decommissioning projects where planning for site release will soon start, this status report provides useful considerations based on NEA member country experience and expert advice.

In addition to describing the basic considerations which must be taken into account when deciding on the release of a site, the status report provides guidance on establishing release criteria. The report also addresses site release implementation, measurement techniques and underground contamination. It will be of particular interest to regulators, implementers, R&D experts and policy makers dealing with decommissioning and dismantling issues.

Radioactivity Measurements at Regulatory Release Levels

ISBN 92-64-02319-4

Free: paper or web.

The release of radioactive materials from regulatory control is subject to release limits which are often based on published recommendations of international organisations, which aim to minimise radiological risks. The application of the recommendations has thus led to limits being set at very low activity levels. Adequate methods of measurement must be available to demonstrate or verify that the activity levels are lower than the recommended values. Measurements would also have to be made under practical industrial conditions, where various constraints could significantly influence the results. Hence, the costs of activity measurements at extremely low levels on large quantities of equipment with complex geometries could be prohibitively high. The NEA Co-operative Programme on Decommissioning (CPD) established a special Task Group to study these issues in an analytical and structured manner. This report describes the group's findings regarding the objectives and methodology for radiological characterisation and the equipment used for measurements. The report also contains case studies from NEA member countries and a critical discussion of different methods and techniques.

Roles of Storage in the Management of Long-lived Radioactive Waste (The) Practices and Potentialities in OECD Countries

ISBN 92-64-02315-1

Free: paper or web.

This report examines the roles that storage plays, or might play, in radioactive waste management in OECD/NEA member countries. A better understanding of these roles provides valuable input to current debates on the end-points of long-lived radioactive waste management. The report focuses on spent nuclear fuel, high-level waste from reprocessing and other long-lived, solid radioactive wastes.

Safety of Geological Disposal of High-level and Long-lived Radioactive Waste in France

An International Peer Review of the "Dossier 2005 Argile" Concerning Disposal of the Callovo-Oxfordian Formation

ISBN 92-64-02299-6

Free: paper or web.



A major activity of the OECD Nuclear Energy Agency (NEA) in the field of radioactive waste management is the organisation of international peer reviews of national studies and projects. The peer reviews help national programmes assess accomplished work. The general comments expressed in the reviews are also of potential interest to other member countries. The present review was carried out to inform the French Government whether the "Dossier 2005 Argile" prepared by the National Agency for the Management of Radioactive Waste (Andra) was consistent with international practices and whether future research needs were properly identified.

Selecting Strategies for the Decommissioning of Nuclear Facilities

A Status Report

ISBN 92-64-02305-4

Free: paper or web.



This status report is based on the viewpoints and materials presented at a seminar held in Tarragona, Spain on 1-4 September 2003 as well as the experience of the NEA Working Party on Decommissioning and Dismantling (WPDD). It identifies, reviews and analyses factors influencing decommissioning strategies and addresses the challenges associated with balancing these factors in the process of strategy selection. It gives recognition to the fact that, in addition to technical characteristics, there are many other factors that influence the selection of a decommissioning strategy and that cannot be quantified, such as policy, regulatory and socio-economic factors and aspects that reach far into the future. Uncertainties associated with such factors are a challenge to those who have to take decisions on a decommissioning strategy. Potentially interested groups of readers are regulators, implementers, R&D experts and policy makers dealing with decommissioning and dismantling issues as well as politicians, decision makers and the general public.

Nuclear law

Indemnification of Damage in the Event of a Nuclear Accident

Workshop Proceedings, Bratislava, Slovak Republic, 18-20 May 2005

ISBN 92-64-02625-8

Price: € 40, US\$ 54, £ 28, ¥ 5 500.

The Second International Workshop on the Indemnification of Nuclear Damage was held in Bratislava, Slovak Republic, from 18 to 20 May 2005. The workshop was co-organised by the OECD Nuclear Energy Agency and the Nuclear Regulatory Authority of the Slovak Republic. It attracted wide participation from national nuclear authorities, regulators, operators of nuclear installations, nuclear insurers and international organisations. The purpose of the workshop was to assess the third party liability and compensation mechanisms that would be implemented by participating countries in the event of a nuclear accident taking place within or near their borders. These proceedings contain the papers presented at the workshop, as well as reports on the discussion sessions held.

International Nuclear Law in the Post-Chernobyl Period

ISBN 92-64-02293-7

Free: paper or web.



The accident at the Chernobyl nuclear power plant in 1986 heightened awareness of the need to improve the international legal framework governing the safe and peaceful uses of nuclear energy. Numerous legal instruments have subsequently been adopted. This compendium examines the developments which have taken place in international nuclear law since 1986. It reproduces a number of articles which have been published in the OECD/NEA *Nuclear Law Bulletin*, accompanied by some previously unpublished works. The principal legal instruments examined in this publication govern early notification and assistance in the event of a nuclear accident, nuclear safety, the safety of radioactive waste and spent fuel, and nuclear liability and compensation.

Nuclear Law Bulletin No. 77

ISSN 0304-341X

Price: € 92, US\$ 111, £ 60, ¥ 12 200.

Considered to be the standard reference work for both professionals and academics in the field of nuclear law, the *Nuclear Law Bulletin* is a unique international publication providing its subscribers with up-to-date information on all major developments falling within the domain of nuclear law. Published twice a year in both English and French, it covers legislative developments in almost 60 countries around the world as well as reporting on relevant jurisprudence and administrative decisions, international agreements and regulatory activities of international organisations.

Nuclear science and the Data Bank

International Evaluation Co-operation

Vol. 7: Nuclear Data Standards

ISBN 92-64-02313-5. Free: paper or web.

Vol. 20: Covariance Matrix Evaluation and Processing in the Resolved/Unresolved Resonance Regions

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ISBN 92-64-02317-8. Free: paper or web.

JEFF-3.1 Nuclear Data Library – JEFF Report 21

ISBN 92-64-02314-3. Free: paper or web.

Nuclear Production of Hydrogen

Third Information Exchange Meeting, Oarai, Japan, 5-7 October 2005

ISBN 92-64-02629-0

Price: € 80, US\$ 108, £ 57, ¥ 11 100.

Hydrogen has the potential to play an important role as a sustainable and environmentally acceptable energy carrier in the 21st century. Since natural sources of pure hydrogen are extremely limited, it is necessary to develop technologies to produce large quantities of hydrogen economically. The currently dominant technology for producing hydrogen is based on reforming fossil fuels, a process which releases greenhouse gases. Hydrogen produced by water cracking, using heat and surplus electricity from nuclear power plants, requires no fossil fuels and results in lower greenhouse gas emissions. This report presents the state of the art in the nuclear production of hydrogen and describes its associated scientific and technical challenges.

Perspectives on Nuclear Data for the Next Decade

Workshop Proceedings, Bruyères-le-Châtel, France, 26-28 September 2005

ISBN 92-64-02857-9

Price: € 70, US\$ 94, £ 50, ¥ 9 700.

With a declining number of nuclear data evaluators in the world and an increasing demand for high quality data, there is a risk that evaluators will concentrate on producing new nuclear data to the detriment of developing new models and methods for evaluating existing data. In this context, it is essential to identify the basic physics issues that are going to be important for future nuclear data evaluation processes. At the same time, demand for new types of data, which will be needed in emerging nuclear applications, could warrant new evaluation techniques that are presently only used in the context of fundamental research and not in nuclear data production. These proceedings present the main findings of the workshop, which explored innovative approaches to nuclear data evaluation with the aim of opening new perspectives, building new research programmes and investigating prospects for international collaboration.

Source Convergence in Criticality Safety Analysis

Phase I: Results for Four Test Problems

ISBN 92-64-02304-6

Free: paper or web.

The NEA Working Party on Nuclear Criticality Safety established an Expert Group on Source Convergence in Criticality Safety Analysis to explore the problems of slow convergence and statistical fluctuations that can combine to produce unreliable source distributions and fission rates as well as underestimates of k_{eff} and its uncertainty. Aimed at fostering improved robustness of criticality safety analyses with respect to source convergence, the group's first task was to assemble four test problems that represent cases previously encountered in criticality safety analyses. The problems include a reactor fuel storage array, a spent fuel pin array, an aqueous processing system and an array of small fissile components. The results of the four test problems are described.

Speciation, Techniques and Facilities for Radioactive Materials at Synchrotron Light Sources

Workshop Proceedings, Berkeley, California, United States, 14-16 September 2004

ISBN 92-64-02311-9

Free: paper or web.

This NEA workshop is the third in a series devoted to the application of synchrotron accelerator-based techniques to radionuclide and actinide sciences. As synchrotron radiation is particularly well-suited for obtaining information about the molecular structure of radionuclides and actinide species, it is useful for understanding and predicting the behaviour of these hazardous elements in the environment. Application areas include risk assessment of nuclear waste storage, remediation of contaminated sites, development of effective separation technologies and radiopharmaceutical chemistry. These proceedings contain all of the abstracts and some of the full papers presented at the workshop. In addition to presenting the latest experimental and theoretical results, the workshop also provided opportunities for knowledge transfer between established experts in the field and young scientists.

Very High Burn-ups in Light Water Reactors

ISBN 92-64-02303-8

Free: paper or web.

This publication investigates the limitations and potential benefits of very high fuel burn-up (60-100 GWd/t) in light water reactors. It covers technical aspects, such as fuel fabrication, thermal-hydraulic design limits and fuel performance, as well as economic aspects. The report provides several recommendations regarding scientific and technological areas in which further development is required to achieve these very high burn-ups.

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