New publications

Economic and technical aspects of the nuclear fuel cycle

Nuclear Energy Data – 2003

ISBN 92-64-10326-0 – Price: € 21, US$ 24, £ 14, ¥ 2 700.

This new edition of *Nuclear Energy Data*, the OECD Nuclear Energy Agency's annual compilation of essential statistics on nuclear energy in OECD countries, offers additional textual and graphical information as compared with previous editions. It provides the reader with a comprehensive but easy-to-access overview of the status of and trends in the nuclear power and fuel cycle sector. This publication is an authoritative information source of interest to policy makers, experts and academics involved in the nuclear energy field.

Nuclear Energy Today

ISBN 92-64-10328-7 – Price: € 21, US$ 24, £ 14, ¥ 2 700.

Energy is the power of the world's economies, whose appetite for this commodity is increasing as the leading economies expand and developing economies grow. How to provide the energy demanded while protecting our environment and conserving natural resources is a vital question facing us today. Many parts of our society are debating how to power the future and whether nuclear energy should play a role.

Nuclear energy is a complex technology with serious issues and a controversial past. Yet it also has the potential to provide considerable benefits. In pondering the future of this imposing technology, people want to know: How safe is nuclear energy? Is nuclear energy economically competitive? What role can nuclear energy play in meeting greenhouse gas reduction targets? What can be done with the radioactive waste it generates? Does its use increase the risk of proliferation of nuclear weapons? Are there sufficient and secure resources to permit its prolonged exploitation? Can tomorrow's nuclear energy be better than today's?

This publication provides authoritative and factual replies to these questions. Written primarily to inform policy makers, it will also serve interested members of the public, academics, journalists and industry leaders.

Nuclear regulation and safety

The Regulatory Challenges of Decommissioning Nuclear Reactors

ISBN 92-64-02120-5 – Free: paper or web versions.

The purpose of this report is to describe the broad range of safety, environmental, organisational, human factors and public policy issues that may arise during the decommissioning of nuclear reactors and that the regulatory body should be prepared to deal with in the framework of its national regulatory system. The intended audience is primarily nuclear regulators, although the information and ideas may also be of interest to government authorities, environmental regulators, nuclear operating organisations, technical expert organisations and the general public.

Regulator and Industry Co-operation on Nuclear Safety Research

Challenges and Opportunities

ISBN 92-64-02120-5 – Free: paper or web versions.

Regulator-industry co-operation in nuclear safety research has potential advantages as well as disadvantages. This report provides research managers in industry, regulatory organisations and research centres with information on current practices in collaborative safety research in OECD member countries. It identifies means of establishing effective industry-regulator collaboration and provides indications on how to overcome difficulties that can arise. It also advises on possible areas of concern. The report addresses in particular the issue of regulator independence, means to preserve it and ways to demonstrate it to the public while undertaking collaboration with industry.

Radiation protection

A New Approach to Authorisation in the Field of Radiological Protection

The Road Test Report

ISBN 92-64-02122-1 – Free: paper or web versions.

The NEA Committee on Radiation Protection and Public Health (CRPPH) has been very active in developing its own suggestions as to how the system of radiological protection, as based on the Recommendations of the International Commission on Radiological Protection (ICRP), should evolve to better meet the needs of policy makers, regulators and practitioners. One of those suggestions is that a generic concept of "regulatory authorisation" of certain levels and types of exposure to radiation should replace the current and somewhat complicated concepts of exclusion, exemption and clearance. It has also been suggested that by characterising emerging sources and exposures in a screening process leading into the authorisation process, regulatory authorities could develop a better feeling for the type and scale of stakeholder involvement that would be necessary to reach a widely accepted approach to radiological protection.

In order to verify that these suggestions would make the system of radiological protection more understandable, easy to apply, and acceptable, independent consultants have "road tested" the CRPPH concepts of authorisation and characterisation. Their findings, which show that applying these concepts would represent significant improvement, are reproduced in this report. Specific approaches for the application of the new CRPPH ideas are also illustrated.

Chernobyl: Assessment of Radiological and Health Impacts

2002 Update of *Chernobyl: Ten Years On*

ISBN 92-64-18487-2 – Free: paper or web versions.

The international radiological protection community performed a major status review of the situation around the damaged Chernobyl reactor on the 10-year anniversary of the accident. Since then, studies of the accident site and the contaminated territories continue to be undertaken, which have yielded new scientific results and highlighted important social and health aspects. This report is a complete update of the NEA's earlier publication, *Chernobyl: Ten Years on*. In particular, it offers the reader the most recent information on the significant new experience gained in the areas of emergency management, long-term environmental behaviour of radioactive materials and health effects.

Engineered Barrier Systems and the Safety of Deep Geological Repositories

State-of-the-art Report

ISBN 92-64-18498-8 – Free: paper or web versions.

Repositories for the disposal of radioactive waste generally rely on a multi-barrier system to isolate the waste from the biosphere. This multi-barrier system typically comprises the natural geological barrier provided by the repository host rock and an engineered barrier system (EBS). The EBS project being conducted by the NEA Integration Group for the Safety Case (IGSC) seeks to clarify the role that an EBS can play in the overall safety case for a deep geological repository. It is in this context that the European Commission and the NEA have prepared the present report, which describes the state of the art for engineered barrier systems and provides a common basis of understanding from which to plan future programmes. It is based on answers to a questionnaire received from 13 countries and 17 organisations.

The Handling of Timescales in Assessing Post-closure Safety of Deep Geological Repositories

Workshop Proceedings, Paris, France, 16-18 April 2002

ISBN 92-64-09911-5 – Price: € 49, US$ 49, £ 31, ¥ 5 700.

A workshop entitled the "Handling of timescales in assessing post-closure safety" of deep geological repositories for radioactive waste was organised in Paris on 16-18 April 2002 and hosted by the French Institute for Radiological Protection and Nuclear Safety (IRSN). These proceedings include the presentations made at the workshop as well as a summary of the discussions held. They will be of interest to radioactive waste repository managers and engineers.

Radiological Protection of the Environment: The Path Forward to a New Policy?

Workshop Proceedings, Taormina, Sicily, Italy, 12-14 February 2002

ISBN 92-64-09969-7 – Price: € 52, US$ 52, £ 33, ¥ 6 050.

The international system of radiological protection is currently being revised with the aim of making it more coherent and concise. During the revision process, particular attention is being given to the development of an explicit system for the radiological protection of the environment in addition to that of human beings. In order to support the ongoing discussions of the international community of radiological protection experts, these proceedings try to answer the questions: Is there an international rationale behind the wish to protect the environment from radiation? Do we have enough scientific information to develop and define a broadly accepted policy? What are the socio-political dynamics, beyond science, that will influence policy on radiological protection of the environment? What are the characteristics of the process for developing a system of radiological protection of the environment? These proceedings comprise the views of a broad range of invited speakers, including policy makers, regulators, radiological protection and environmental protection professionals, social scientists and representatives of both industry as well as non-governmental and intergovernmental organisations.

Radiological Protection of the Environment

Summary Report of the Issues

ISBN 92-64-18497-X – Free: paper or web versions.

SAFIR 2: Belgian R&D Programme on the Deep Disposal of High-level and Long-lived Radioactive Waste

An International Peer Review

ISBN 92-64-18499-6 – Free: paper or web versions.

This report presents the common views of the International Review Team established by the NEA Secretariat on behalf of the Belgian Government to perform a peer review of the SAFIR 2 report, produced by the Belgian Agency for Radioactive Waste and Enriched Fissile Materials (ONDRAF/NIRAS) to describe the research, development and demonstration activities in the Belgian programme on the disposal of high-level and long-lived radioactive waste in a deep geological repository excavated within an argillaceous formation.

Nuclear law

Indemnification of Damage in the Event of a Nuclear Accident

Workshop Proceedings, Paris, France, 26-28 November 2001

ISBN 92-64-09919-0 – Bilingual – Price: € 90, US$ 90, £ 58, ¥ 11 050.

The Workshop on the Indemnification of Damage in the Event of a Nuclear Accident, organised by the OECD Nuclear Energy Agency in close co-operation with the French authorities, was held in Paris from 26 to 28 November 2001. These proceedings contain a comparative analysis of legislative and regulatory provisions governing emergency response and nuclear third party liability, based upon country replies to a questionnaire. This publication also includes the full responses provided to that questionnaire, as well as the texts of presentations made by special guests from Germany and Japan describing the manner in which the public authorities in their respective countries responded to two nuclear accidents of a very different nature and scale.

Nuclear Law Bulletin No. 70 + Supplement (Germany)

Volume 2002/2

2003 Subscription (2 issues + supplements) – ISSN 0304-341X – Price: € 80, US$ 80, £ 50, ¥ 9 340.
Supplement – ISBN 92-64-19974-8 – Price : € 20, US$ 20, £ 12, ¥ 2 300.

Nuclear science and the Data Bank

Burn-up Credit Criticality Benchmark

Phase IV-A: Reactivity Prediction Calculations for Infinite Arrays of PWR MOX Fuel Pin Cells

ISBN 92-64-02123-X – Free: paper or web versions.

Phase IV-B: Results and Analysis of MOX Fuel Depletion Calculations

ISBN 92-64-02124-8 – Free: paper or web versions.

The OECD/NEA Expert Group on Burn-up Credit was established in 1991 to address scientific and technical issues connected with the use of burn-up credit in nuclear fuel cycle operations. Following the completion of six benchmark exercises with uranium oxide fuels irradiated in pressurised water reactors (PWRs) and boiling water reactors (BWRs), the present reports concern mixed uranium and plutonium oxide (MOX) fuels irradiated in PWRs.

Physics of Plutonium Recycling

Volume VII: BWR MOX Benchmark – Specification and Results

ISBN 92-64-19905-5 – Price: € 45, US$ 45, £ 29, ¥ 5 500.

The commercial recycling of plutonium as PuO_2/UO_2 mixed-oxide (MOX) fuel is an established practice in pressurised water reactors (PWRs) in several countries, the main motivation being the consumption of plutonium arising from spent fuel reprocessing. Although the same motivating factors apply in the case of boiling water reactors (BWRs), they have lagged behind PWRs for various reasons, and MOX utilisation in BWRs has been implemented in only a few reactors to date. One of the reasons is that the nuclear design of BWR MOX assemblies (or bundles) is more complex than that of PWR assemblies. Recognising the need and the timeliness to address this issue at the international level, the OECD/NEA Working Party on the Physics of Plutonium Fuels and Innovative Fuel Cycles (WPPR) conducted a physics code benchmark test for a BWR assembly. This volume reports on the benchmark results and conclusions that can be drawn from it.

Pressurised Water Reactor Main Steam Line Break (MSLB) Benchmark

Volume III: Results of Phase II on 3-D Core Boundary Conditions Modelling

ISBN 92-64-18495-3 – Free on request.

This benchmark is based on a well-defined problem concerning a pressurised water reactor (PWR) main steam line break, which may occur as a consequence of the rupture of one steam line upstream of the main steam isolation valves. This report summarises the results contributed by international participants concerning Phase II of the exercise: a coupled 3-D neutronics/core thermal-hydraulics response evaluation using inlet and outlet core transient boundary conditions.

VVER-1000 Coolant Transient Benchmark

PHASE 1 (V1000CT-1) – Vol. I: Main Coolant Pump (MCP) Switching On – Final Specifications

ISBN 92-64-18496-1 – Free: paper or web versions.

In the field of coupled neutronics/thermal-hydraulics computation there is a need to enhance scientific knowledge in order to develop advanced modelling techniques for new nuclear technologies and concepts, as well as current applications. Recently developed best-estimate computer code systems for modelling 3-D coupled neutronics/thermal-hydraulics transients in nuclear reactor cores and for the coupling of core phenomena and system dynamics need to be compared against each other and validated against results from experiments. International benchmark studies have been set up for this purpose. The present volume describes the specification of such a benchmark. The transient addressed is caused by the switching on of a main coolant pump when the other three are in operation. It is based on an experiment that was conducted by Bulgarian and Russian engineers during the plant commissioning phase at the VVER-1000 Kozloduy Unit 6.

Utilisation and Reliability of High Power Proton Accelerators

Workshop Proceedings, Santa Fe, New Mexico, USA, 12-16 May 2002

ISBN 92-64-10211-6 – Price: € 90, US$ 90, £ 60, ¥ 11 500.

Both accelerator scientists and reactor physicists gathered together at an NEA workshop to discuss, *inter alia*, the reliability of the accelerator and the impact of beam interruptions on the design and performance of the ADS; spallation target design characteristics and their impact on the subcritical system design; safety and operational characteristics of a subcritical system driven by a spallation source; and test facilities. These proceedings contain all the technical papers presented at the workshop as well as summaries of the discussions held during each technical session.

Where to buy NEA publications

For customers in North America

OECD Turpin North America

P.O. Box 194
Dowington, PA 19335-0194, USA
Tel.: +1 (610) 524-5361 – Fax: +1 (610) 524-5417
Toll free: +1 (800) 456-6323
E-mail: sriaz@turpinna.com

For customers in the rest of the world

OECD Turpin Distribution Services Limited

P.O. Box 22, Letchworth SG6 1YT, UK
Tel.: +44 (0) 1462 672555 – Fax: +44 (0) 1462 480947
E-mail: books@turpinltd.com
Internet: www.turpin-distribution.com

Online Ordering: www.oecd.org/bookshop

Browse OECD titles online at www.oecd.org/bookshop.
Purchase the paperback and download the PDF e-book.
Save 20% by buying just the PDF file.
Consult our list of worldwide distributors.

Secure payment with credit card.

Where to order free NEA publications

OECD/NEA Publications Service

12, boulevard des Îles, F-92130 Issy-les-Moulineaux, France
Tel.: +33 (0) 1 45 24 10 15 – Fax: +33 (0) 1 45 24 11 10
E-mail: neapub@nea.fr – Internet: www.nea.fr

Online reports: www.nea.fr