

New publications



Economic and technical aspects of the nuclear fuel cycle

Government and Nuclear Energy

ISBN 92-64-01538-8 – Price: € 21, US\$ 26, £ 15, ¥ 2 700

The main objective of national energy policies in OECD countries is to ensure the availability of secure and economic supplies with minimal environmental impact. The means of achieving security and competitiveness in the supply of electricity differ between countries. Some governments resort to competitive markets while others maintain ownership and apply strict economic regulation. Environmental goals are pursued by direct regulation and sometimes, for example in the case of carbon dioxide emissions from power plants, by adopting market-based approaches. This publication addresses the roles and responsibilities of governments in the field of nuclear energy, within the context of broad national policy goals, and reviews the tools available to achieve those goals. It will be of particular interest to decision makers in government and the industry, as well as to energy policy analysts and journalists.

Nuclear Energy Data – 2004

Bilingual – ISBN 92-64-01632-5

Price: € 21, US\$ 26, £ 15, ¥ 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 graphical information as compared with previous editions allowing a rapid comparison between capacity and requirements in the various phases of the nuclear fuel cycle. It provides the reader with a comprehensive

but easy-to-access overview on 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.

Uranium 2003: Resources, Production and Demand

A Joint Report by the OECD Nuclear Energy Agency and the International Atomic Energy Agency

ISBN 92-64-01673-2 – Price: € 85, US\$ 106, £ 59, ¥ 10 900.

The "Red Book", jointly prepared by the OECD Nuclear Energy Agency and the International Atomic Energy Agency, is a recognised world reference on uranium. This edition, the 20th, presents the results of a thorough review of world uranium supplies and demands as of 1 January 2003 based on official information received from 43 countries. It paints a statistical profile of the world uranium industry in the areas of exploration, resource estimates, production and reactor-related requirements. It provides substantial new information from all major uranium production centres in Africa, Australia, Eastern Europe and North America and for the first time, a report for Turkmenistan. Also included are international expert analyses and projections of nuclear generating capacity and reactor-related uranium requirements through 2020. The long lead times required to bring resources into production underscores the importance of making timely decisions to pursue production capability well in advance of any supply shortfall.

Nuclear regulation and safety

Collective Statement Concerning Nuclear Safety Research

Capabilities and Expertise in Support of Efficient and Effective Regulation of Nuclear Power Plants

ISBN 92-64-02169-8 – Free: paper or web.

This statement articulates the value to efficient and effective regulation, as well as to safety, of maintaining safety research capability and expertise. It can serve as a guideline for consideration by NEA member countries in determining what safety research capability and expertise should be maintained in support of regulation and why.

Collective Statement Concerning Nuclear Safety Research

Good Practice and Closure Criteria

ISBN 92-64-02149-3 – Free: paper or web.

The method for setting nuclear safety research priorities and the criteria for ranking programmes and projects, including for their closure, vary from one country to another. This collective statement addresses good practices in conducting nuclear safety research and focuses on closure considerations. It also considers the effects that closure can have for regulators and the industry, including potential losses of technical capability, expertise and facilities.

Direct Indicators of Nuclear Regulatory Efficiency and Effectiveness

Pilot Project Results

ISBN 92-64-02061-6 – Free: paper or web.

The desired outcome of nuclear regulatory activities is the safe operation of nuclear facilities in a manner that protects public health and safety, and the environment. The operator has prime responsibility for safe operation; however, the actions of the regulator contribute to this objective. A task group was established by the NEA Committee on Nuclear Regulatory Activities (CNRA) to develop a set of direct performance indicators of regulatory efficiency and effectiveness. This report describes the pilot project carried out by the task group to test the indicators developed, and makes some general observations about the usefulness of

individual indicators as well as recommendations for future activities.

CSNI Technical Opinion Papers

No. 3: Recurring Events

ISBN 92-64-02155-8 – Free: paper or web.

Feedback on operating experience from nuclear power plants is intended to help avoid occurrence or recurrence of safety-significant events. Well-established feedback systems exist on the national and international levels. This technical opinion paper presents the international systems used to collect operating experience, the role of recurring events within them, examples of recurrence and ideas about how to improve the situation.

CSNI Technical Opinion Papers

No. 4: Human Reliability Analysis in Probabilistic Safety Assessment for Nuclear Power Plants

ISBN 92-64-02157-4 – Free: paper or web.

This technical opinion paper represents the consensus of risk analysts in NEA member countries on the current state of the art of human reliability analysis (HRA) in probabilistic safety assessment (PSA) for nuclear power plants. The paper's objective is to present decision makers in the nuclear field with a clear technical opinion on HRA status as implemented in industrial PSAs.

CSNI Technical Opinion Papers

No. 5: Managing and Regulating Organisational Change in Nuclear Installations

ISBN 92-64-02069-1 – Free: paper or web.

If changes to staffing levels or organisational structures and systems are inadequately conceived or executed they have the potential to affect the way in which safety is managed. In this context, the NEA Committee on the Safety of Nuclear Installations (CSNI) and its Special Expert Group on Human and Organisational Factors (SEGHOF) organised an international workshop to discuss the management and regulation of organisational change. This technical opinion paper distils the findings of that workshop and sets out the factors that regulatory bodies might reasonably expect to be addressed within licensees' arrangements to manage organisational change.

Radiological protection

Evolution of the System of Radiological Protection

Asian Regional Conference, Tokyo, Japan, 24-25 October 2002

ISBN 92-64-02163-9 – Free: paper or web.

The development of new radiological protection recommendations by the International Commission on Radiological Protection (ICRP) continues to be a strategically important undertaking, both nationally and internationally. With the growing recognition of the importance of stakeholder aspects in radiological protection decision making, regional and cultural aspects have also emerged as having potentially significant influence on how protection of the public, workers and the environment are viewed. Differing cultural aspects should therefore be considered by the ICRP in its development of new recommendations. Based on this assumption, the NEA organised the Asian Regional Conference on the Evolution of the System of Radiological Protection to express and explore views from the Far East. Held in Tokyo on 24-25 October 2002, the conference included presentations by the ICRP Chair as well as by radiological protection experts from Japan, the Republic of Korea, China and Australia. The distinct views and needs of these countries were discussed in the context of their regional and cultural heritages. These views, along with a summary of the conference results, are presented in these proceedings.

The Future Policy for Radiological Protection

A Stakeholder Dialogue on the Implications of the ICRP Proposals – Summary Report, Lanzarote, Spain, 2-4 April 2003

ISBN 92-64-02165-5 – Free: paper or web.

At the end of the 1990s, the International Commission on Radiological Protection (ICRP) launched a process for establishing new recommendations, which are expected to serve as guidelines for national systems of radiological protection. Currently the ICRP's proposed recommendations are being subjected to extensive stakeholder comment and modifications. The NEA Committee on Radiation Protection and Public Health (CRPPH) has been actively involved in this process. Part of the Committee's work has been to undertake collaborative efforts with the ICRP

through, for example, the organisation of broad stakeholder fora. The first of these, held in Taormina, Italy in 2002, focused on the development of a policy basis for the radiological protection of the environment. The second forum, held in Lanzarote, Spain in April 2003, addressed the latest concepts and approaches in the ICRP proposed recommendations for a system of radiological protection. During this meeting, the ICRP listened to the views of various stakeholder groups, including radiological protection regulators, environmental protection ministries, the nuclear power industry and NGOs. As a result, the ICRP modified its proposals to better reflect stakeholder needs and wishes. This report presents the outcomes of the discussions, examining what the ICRP proposed and how its proposals have been affected and modified as a result of stakeholder input.

Occupational Exposures at Nuclear Power Plants

Twelfth Annual Report of the ISOE Programme, 2002

ISBN 92-64-02164-7 – Free: paper or web.

The Information System on Occupational Exposure (ISOE) was created by the OECD Nuclear Energy Agency in 1992 to promote and co-ordinate international co-operative undertakings in the area of worker protection at nuclear power plants. The ISOE Programme provides experts in occupational radiation protection with a forum for communication and exchange of experience. The ISOE databases enable the analysis of occupational exposure data from the 465 commercial nuclear power plants participating in the Programme (representing some 90 per cent of the world's total operating commercial reactors). The Twelfth Annual Report of the ISOE Programme summarises achievements made during 2002 and compares annual occupational exposure data. Principal developments in ISOE participating countries are also described.

Radioactive waste management

The Handling of Timescales in Assessing Post-closure Safety

Lessons Learnt from the April 2002 Workshop in Paris, France

ISBN 92-64-02161-2 – Free: paper or web.

A workshop entitled “The Handling of Timescales in Assessing Post-closure Safety” of deep geological repositories for radioactive waste was organised by the NEA in April 2002. This report presents the main lessons learnt from the workshop discussions and is intended to help promote the better understanding of issues related to the handling of timescales in a safety case.

The Regulatory Control of Radioactive Waste Management

Overview of 15 NEA Member Countries

ISBN 92-64-10650-2 – Price: € 50, US\$ 63, £ 35, ¥ 6 400.

Regulators are major stakeholders in the decision-making process for radioactive waste management. The NEA Radioactive Waste Management Committee (RWMC) has recognised the value of exchanging and comparing information about national regulatory practices and having an informal, international network for discussing issues of common concern. The RWMC Regulators’ Forum provides considerable opportunity for such activities. This report presents the initial results of the Forum’s work. Information is given for 15 NEA member countries in a format that allows easy accessibility to specific aspects and comparison between different countries. It includes an array of facts about national policies for radioactive waste management, institutional frameworks, legislative and regulatory frameworks,

available guidance, classification and sources of waste and the status of waste management. It also provides an overview of current issues being addressed and related R&D programmes.

Safety of Disposal of Spent Fuel, HLW and Long-lived ILW in Switzerland

An international peer review of the post-closure radiological safety assessment for disposal in the Opalinus Clay of the Zürcher Weinland

ISBN 92-64-02063-2 – Free: paper or web.

Studies are under way in Switzerland to investigate various aspects of the geological disposal of radioactive waste. This report presents the results of the international peer review organised by the OECD Nuclear Energy Agency (NEA) on behalf of the Swiss Federal Office of Energy (BFE) of a post-closure radiological safety assessment prepared by Nagra for geological disposal of spent fuel (SF), vitrified high-level waste (HLW) and long-lived intermediate-level waste (ILW) within the Opalinus Clay of the Zürcher Weinland in northern Switzerland.

Also available in German:

Die Sicherheit der geologischen Tiefenlagerung von BE, HAA und LMA in der Schweiz

Eine internationale Expertenprüfung der radiologischen Langzeitsicherheitsanalyse der Tiefenlagerung im Opalinuston des Zürcher Weinlands

Nuclear law

Nuclear Legislation in Central and Eastern Europe and the NIS

2003 Overview

ISBN 92-64-01542-6 – Price: € 48, US\$ 60, £ 33, ¥ 6 100.

This publication examines the legislation and regulations governing the peaceful uses of nuclear energy in eastern European countries. It covers 11 countries from Central and Eastern Europe and

12 countries from the New Independent States: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Former Yugoslav Republic of Macedonia, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Poland, Republic of Moldova, Romania, Russian Federation, Slovak Republic, Slovenia, Ukraine, Uzbekistan. The chapters follow a systematic format making it easier for the reader to carry out research and compare information.

Nuclear Law Bulletin No. 72

2003 Subscription (2 issues + supplements) – ISSN 0304-341X
Price: € 80, US\$ 80, £ 50, ¥ 9 400.

Considered to be the standard reference work for professionals and academics in the field of nuclear law, the *Nuclear Law Bulletin* is published twice a year in both English and French. It covers legis-

lative developments in almost 60 countries around the world as well as reporting on relevant jurisprudence and administrative decisions, bilateral and international agreements and regulatory activities of international organisations.

+ Supplement to No. 72: Switzerland

ISBN 92-64-01985-5 – Price: € 21, US\$ 24, £ 14, ¥ 2 700.

Nuclear science and the Data Bank

Benchmark on the Three-dimensional VENUS-2 MOX Core Measurements

Final Report

ISBN 92-64-02160-4 – Free: paper or web.

In order to validate the calculation methods and nuclear data used for the prediction of power in MOX-fuelled systems, the OECD Nuclear Energy Agency (NEA) has examined a series of theoretical physics benchmarks and multiple recycling issues of various MOX-fuelled systems. This has led to many improvements and clarifications in nuclear data libraries and calculation methods. The final validation requires linking those findings to data from experiments. Hence, the first experiment-based benchmarks using the VENUS-2 MOX core measurement data were undertaken in 1999. The two-dimensional benchmark was completed in 2000. A full three-dimensional benchmark using 3-D VENUS-2 MOX core experimental data was launched in 2001 for a more thorough investigation of the calculation methods. This report provides details of the comparative analysis of the 3-D calculation results against experimental data. Results obtained with the latest nuclear data libraries and various modern 3-D calculation methods are analysed. The report will be of particular interest to reactor physicists and nuclear engineers as well as to nuclear data evaluators.

Chemical Thermodynamics of Americium

Reprint of the 1995 Review

ISBN 92-64-02168-X – Free: paper or web.

The present volume is a reprint of the 1995 edition of *Chemical Thermodynamics of Americium*. As part of Phase II of the NEA Thermochemical Database Project (TDB), a new publication entitled *Update on the Chemical Thermodynamics of Uranium, Neptunium, Plutonium, Americium and Technetium* was

published by Elsevier in 2003. For americium (and for the topics dealt with in the 1995 Appendix on uranium), this Update contains a review of the literature published since the cut-off date for the literature reviewed in the 1995 edition cited above. As a consequence of this new TDB Review, some of the values selected in the earlier publication have been superseded while others have retained their validity. The 2003 Update is self-contained with respect to any new data selections, but the discussions leading to the retained selections can in most cases only be found in the 1995 publication. Since the latter is no longer available from its original publisher, the NEA is making the present reprint available to the scientific community.

Chemical Thermodynamics of Uranium

Reprint of the 1992 Review

ISBN 92-64-02167-1 – Free: paper or web.

The present volume is a reprint of the 1992 edition of *Chemical Thermodynamics of Uranium*. As part of Phase II of the NEA Thermochemical Database Project (TDB), a new publication entitled *Update on the Chemical Thermodynamics of Uranium, Neptunium, Plutonium, Americium and Technetium* was published by Elsevier in 2003. For uranium, this Update contains a review of the literature published since the cut-off date for the literature reviewed in the 1992 edition cited above. As a consequence of this new TDB Review, some of the values selected in the earlier publication have been superseded while others have retained their validity. The 2003 Update is self-contained with respect to any new data selections but the discussions leading to the retained selections can in most cases only be found in the 1992 publication. Since the latter is no longer available from its original publisher, the NEA is making the present reprint available to the scientific community.

Nuclear Production of Hydrogen Second Information Exchange Meeting

Argonne, Illinois, USA, 2-3 October 2003

ISBN 92-64-10770-3 – Price: € 65, US\$ 81, £ 45, ¥ 8 300.

Hydrogen has the potential to play an important role as a sustainable and environmentally acceptable source of energy in the 21st century. Present methods for producing hydrogen are mainly based on the reforming of fossil fuels with subsequent release of greenhouse gases. To avoid producing greenhouse gases, the possibility to use heat and surplus electricity from nuclear power plants to produce hydrogen by water cracking is being investigated. This report presents the state of the art in the nuclear production of hydrogen and describes the scientific and technical challenges associated with it.

Research and Development Needs for Current and Future Nuclear Systems

ISBN 92-64-02159-0 – Free: paper or web.

Research capability and technical expertise in the area of nuclear science are needed to maintain a high level of performance and safety of present nuclear installations, as well as to develop future-generation nuclear power programmes. The NEA Nuclear Science Committee (NSC) has completed a study on future research and development needs in specific areas of nuclear science, covering nuclear data; reactor physics and systems behaviour; and reactor fuels, materials and coolants. This report contains information on past and present international R&D activities conducted under the aegis of the NSC and on R&D needs for new nuclear systems in different NEA member countries. Recommendations for further work in the areas mentioned above are also given in the report. Possible follow-up actions to these recommendations will be considered by the NSC.

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