

# New publications

## Economic and technical aspects of the nuclear fuel cycle —



### Externalities and Energy Policy: The Life Cycle Analysis Approach

Workshop Proceedings, Paris, France, 15-16 November 2001

ISBN 92-64-18481-3 – 240 pages – Free: paper or web versions.

Getting the prices right is a prerequisite for energy market mechanisms to work effectively towards the development of sustainable energy mixes. External costs of energy have been recognised and assessed in many studies, and the life cycle analysis (LCA) approach provides a conceptual framework for a detailed and comprehensive, comparative evaluation of alternative technology options. Despite this, results from analytical work on externalities and LCA studies are seldom used in policy making.

The International Energy Agency (IEA) and the OECD Nuclear Energy Agency (NEA) organised a workshop on “Externalities and Energy Policy: The Life Cycle Analysis Approach” to bring together policy makers and experts from governmental agencies and the industry to discuss key issues regarding the role and limitations of external cost evaluations and LCA results. The presentations and discussions reported in these proceedings will be of interest to senior analysts, policy makers and other stakeholders concerned with the sustainable development of the energy sector.



### Environmental Remediation of Uranium Production Facilities

A Joint NEA/IAEA Report

ISBN 92-64-19509-2 – 350 pages – Price: € 70, US\$ 63, £ 43, ¥ 7 050.

Environmental remediation activities in uranium mines and mills have become increasingly important in the last few decades due to the large number of facilities which have been taken out of operation, the growing interest in remediating previously abandoned sites and the increasingly strict environmental regulations that are being put in place. Remediation programmes are being implemented to ensure the return of affected areas to previously existing environmental conditions or to a land use that will be sustainable in the long term and acceptable to all stakeholders.

This report provides a summary of the most relevant issues and practices in remediation programmes or uranium production facilities and an overview of activities and plans in reporting countries. It covers the areas of site characterisation, dismantling and decommissioning, waste management facilities, water remediation, long-term stewardship and monitoring, policies and regulations, and costs. The country profiles of remediation activities and plans include information considered to be important by the country and are based on survey responses provided by 22 countries (12 OECD and 10 non-OECD countries).



### Trends in the Nuclear Fuel Cycle

Economic, Environmental and Social Aspects

ISBN 92-64-19664-1 – 160 pages – Price: € 37, US\$ 33, £ 23, ¥ 3 700.

The role of nuclear energy in a sustainable development context has multiple facets, a significant number of which relate to the nuclear fuel cycle. This report provides a description of the developments and trends in the nuclear fuel cycle that may improve the competitiveness and sustainability of nuclear generating systems over the medium and long term. It also presents criteria and indicators for future nuclear energy systems. Prepared by experts from the nuclear industry, government agencies and research organisations, this report will be of interest to those involved in nuclear energy policy and decision making.

## Radiation protection

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### Better Integration of Radiation Protection in Modern Society

Workshop Proceedings, Villigen, Switzerland, 23-25 January 2001

ISBN 92-64-19694-3 – 280 pages – Price: € 60, US\$ 54, £ 37, ¥ 6 050.

The societal aspects of risk governance are increasingly becoming a part of public decision-making processes. This tendency is particularly evident in matters dealing with the protection of human health and the environment. These proceedings address the roles of various stakeholders in the decision-making process, and their expectations regarding how a modern system of radiological protection should be integrated within the broader context of risk governance. Case studies are presented to illustrate good practice and as a basis for drawing conclusions regarding general lessons that can be applicable in many different national contexts. These proceedings will be of interest to policy makers, radiation protection experts and interested members of the public.



### ISOE - Information System on Occupational Exposure

Ten Years of Experience

ISBN 92-64-18480-5 – 40 pages – Free: paper or web versions.

The Information System on Occupational Exposure (ISOE) was created in 1992 to provide a forum for radiation protection experts from both utilities and national regulatory authorities to discuss, promote and co-ordinate international co-operative undertakings in the area of worker protection at nuclear power plants. The ISOE System is jointly managed by the OECD Nuclear Energy Agency (NEA) and the International Atomic Energy Agency (IAEA).

This report provides an overview of the experience gained from, and benefits provided by, the ISOE System over the past ten years. Active participation of a large number of utilities in ISOE has contributed to a reduction in occupational exposure at nuclear power plants worldwide.

## Radioactive waste management

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### Radionuclide Retention in Geologic Media

Workshop Proceedings, Oskarshamn, Sweden, 7-9 May 2001

ISBN 92-64-19695-1 – 272 pages – Price: € 55, US\$ 49, £ 34, ¥ 5 550.

Retention of radionuclides within the geosphere for prolonged periods is an important safety function of deep geologic disposal concepts for radioactive waste. In addition to the material presented during the workshop, this publication includes a technical synthesis reflecting the discussions that took place as well as the conclusions and recommendations made, notably during the working group sessions.



### GEOTRAP: Radionuclide Migration in Geologic, Heterogeneous Media

Summary of Accomplishments

ISBN 92-64-18479-1 – 52 pages – Free: paper or web versions.

This report provides an overview of the project's main findings and accomplishments over its five-year life. This summary should help make the valuable information collected and generated by the GEOTRAP project accessible to a wide readership both within and outside the radioactive waste community. It is a reflection of the careful attention paid by this community to the question of radionuclide transport.



## An International Peer Review of the Yucca Mountain Project TSPA-SR

Total System Performance Assessment for the Site Recommendation (TSPA-SR)

*ISBN 92-64-18477-5 – 96 pages – Free: paper or web versions.*

The Department of Energy of the United States of America (USDOE) has been studying the Yucca Mountain site in Nevada for more than 15 years to determine whether it is a suitable place to construct an underground repository for US spent nuclear fuel and high-level radioactive waste of commercial and military origins. A number of performance assessments have been carried out over the past decade by the USDOE, the latest of which is the Total System Performance Assessment supporting the site recommendation process (TSPA-SR) of December 2000. This report presents the results of the jointly organised NEA-IAEA international peer review of the TSPA-SR, performed upon the request of the USDOE. The review was carried out by a team of ten international specialists.

## Nuclear law

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### Nuclear Law Bulletin

No. 68 + Supplement (Volume 2001/2)

*2001 Subscription (2 issues + supplements) – ISSN 0304-341X – Price: € 71, US\$ 80, £ 48, ¥ 9 550.*



### Nuclear Legislation: Analytical Study – Update 2001 Regulatory and Institutional Framework for Nuclear Activities

*ISBN 92-64-19743-5 – 180 pages – Price: € 40, US\$ 36, £ 25, ¥ 4 000.*

The 2001 Update consists of replacement chapters for Australia, Canada, Hungary, Italy, Japan, Luxembourg, Norway and Spain. In addition, there is a completely new chapter for the Slovak Republic, which became a member of the OECD on 14 December 2000, and which was not previously covered by this publication. An information note is also provided on Poland, pending revision of this chapter upon adoption of legislation to implement the new Polish Atomic Law.

## Nuclear regulation/nuclear safety

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### Nuclear Fuel Safety Criteria Technical Review

*ISBN 92-64-19687-0 – 68 pages – Price: € 20, US\$ 19, £ 12, ¥ 1 900.*

In this report, brief descriptions of 20 fuel-related safety criteria are presented along with both the rationale for having such criteria and possible new design and operational issues which could have an effect on them. No attempt was made to categorise the criteria according to event type or risk significance. This report will be of particular interest to nuclear engineers working in the area of fuel safety and to all those interested in general aspects of nuclear safety.



## Collective Statement on Major Nuclear Safety Research Facilities and Programmes at Risk

Joint OECD Projects and Centres of Excellence

*Bilingual – 16 pages – Free: paper or web versions.*

## Nuclear science and the Data Bank

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### Fission Gas Behaviour in Water Reactor Fuels

Workshop Proceedings, Cadarache, France, 26-29 September 2000

*ISBN 92-64-19715-X – 564 pages – Price: € 120, US\$ 107, £ 74, ¥ 12 100.*

During irradiation, nuclear fuel changes volume, primarily through swelling. This swelling is caused by the fission products and in particular by the volatile ones such as krypton and xenon, called fission gas. Fission gas behaviour needs to be reliably predicted in order to make better use of nuclear fuel, a factor which can help to achieve the economic competitiveness required by today's markets.

These proceedings communicate the results of an international seminar which reviewed recent progress in the field of fission gas behaviour in light water reactor fuel and sought to improve the models used in computer codes predicting fission gas release. State-of-the-art knowledge is presented for both uranium-oxide and mixed-oxide fuels loaded in water reactors.



### Comparison Calculations for an Accelerator-driven Minor Actinide Burner

*ISBN 92-64-18478-3 – 200 pages – Free: paper or web versions.*

In 1999, the NEA organised a benchmark exercise for an accelerator-driven minor actinide burner to check the performances of reactor codes and nuclear data for ADS with unconventional fuel and coolant. The benchmark model was a lead-bismuth-cooled subcritical system driven by a beam of 1 GeV protons. This report provides an analysis of the results supplied by seven participants from eight countries. The analysis reveals significant differences in important neutronic parameters, indicating a need for further investigation of the nuclear data, especially minor actinide data, as well as the calculation methods. This report will be of particular interest to reactor physicists and nuclear data evaluators developing nuclear systems for nuclear waste management.



### PENELOPE – A Code System for Monte Carlo Simulation of Electron and Photon Transport

Workshop Proceedings, Issy-les-Moulineaux, France, 5-7 November 2001

*ISBN 92-64-18475-9 – 250 pages – Free: paper or web versions.*

PENELOPE is a modern, general-purpose Monte Carlo tool for simulating the transport of electrons and photons, which is applicable for arbitrary materials and in a wide energy range. PENELOPE provides quantitative guidance for many practical situations and techniques, including electron and x-ray spectroscopies, electron microscopy and microanalysis, biophysics, dosimetry, medical diagnostics and radiotherapy, and radiation damage and shielding. These proceedings contain the teaching notes of a recent workshop/training course on PENELOPE, with a detailed description of the physics, numerical algorithms and structure of the code system.

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