# New publications

## Nuclear development

### Actinide and Fission Product Partitioning and Transmutation

Sixth Information Exchange Meeting, Madrid, Spain, 11-13 December 2000

*ISBN 92-64-18466-X – 132 pages – Free: paper or web versions.*

The objective of the OECD/NEA Information Exchange Programme on Actinide and Fission Product Partitioning and Transmutation (P&T), established in 1989, is to enhance the value of basic research in this area by facilitating the exchange of information and discussions of programmes, experimental procedures and results. The Information Exchange Meetings form an integral part of the Programme and are intended to provide a biennial review of the state of the art in P&T. This book and its enclosed CD-ROM contain the proceedings of the 6th Information Exchange Meeting held in Madrid (Spain) on 11-13 December 2000. Recent developments and achievements and the new challenges in P&T are reported in four overview papers. Details are provided in the 79 papers that were presented during the meeting. The conclusions highlight some of the main aspects to take into consideration when planning future research and development on P&T.

## Nuclear regulation

### Improving Nuclear Regulatory Effectiveness

*ISBN 92-64-18465-1 – 48 pages – Free: paper or web versions.*

Ensuring that nuclear installations are operated and maintained in such a way that their impact on public health and safety is as low as reasonably practicable has been and will continue to be the cornerstone of nuclear regulation. In the past, nuclear incidents provided the main impetus for regulatory change. Today, economic factors, deregulation, technological advancements, government oversight and the general requirements for openness and accountability are leading regulatory bodies to review their effectiveness. In addition, seeking to enhance the present level of nuclear safety by continuously improving the effectiveness of regulatory bodies is seen as one of the ways to strengthen public confidence in the regulatory systems. This report covers the basic concepts underlying nuclear regulatory effectiveness, advances being made and future requirements. The intended audience is primarily nuclear safety regulators, but government authorities, nuclear power plant operators and the general public may also be interested.

## Investing in Trust: Nuclear Regulators and the Public

### Workshop Proceedings, Paris, France, 29 November-1 December 2000

*ISBN 92-64-19314-6 – 324 pages – Price: € 60, US$ 54, £ 37, ¥ 6 050.*

Good governance and efficiency in decision making by governmental authorities are increasingly dependent upon mutual trust and confidence between those authorities and the public. This workshop provided an opportunity to exchange information and views on how national nuclear regulatory organisations can improve their interface with the public.

## Nuclear Regulatory Challenges Arising from Competition in Electricity Markets

*Bilingual – ISBN 92-64-08460-6 – 34 pages – Free: paper or web versions.*

In recent years a worldwide trend has been developing to introduce competition in electricity markets. As market competition unfolds, it produces a wide range of safety challenges for nuclear power plant operators and regulators. Nuclear regulators must be aware of the potential safety challenges produced and consider whether new regulatory response strategies are warranted. This report describes many of these challenges, their implications and possible regulatory response strategies. The intended audience is primarily nuclear safety regulators, although government authorities, nuclear power plant operators and the general public may also be interested.

## Assuring Future Nuclear Safety Competencies

### Specific Actions

*ISBN 92-64-18462-7 – 58 pages – Free: paper or web versions.*

In many countries, retiring nuclear safety experts are not being replaced by younger counterparts. This risks creating a shortfall in the number of experts available to ensure the effective regulation of the nuclear power industry. It could also result in the loss of much of the present nuclear safety knowledge base. This report discusses specific ways to maintain future nuclear safety competencies in nuclear regulatory authorities and the nuclear industry.

# Nuclear safety

## Nuclear Safety Research in OECD Countries

### Major Facilities and Programmes at Risk

*ISBN 92-64-18463-5 – 64 pages – Free: paper or web versions.*

Major nuclear safety research facilities and programmes are facing increasing budgetary constraints, and in many cases are being closed or terminated. This report identifies major facilities of vital interest to the international nuclear safety community and makes recommendations for their continued operation in an international framework, either as joint projects or centres of excellence.

# Radiation protection

## Second International Nuclear Emergency Exercise INEX 2

### Final Report of the Hungarian Regional Exercise

*Bilingual – ISBN 92-64-08640-4 – 82 pages – Price: € 28, US$ 24, £ 17, ¥ 2 670.*

The Nuclear Energy Agency (NEA) initiated its programme of International Nuclear Emergency Exercises (INEX) by a table-top exercise (INEX 1) which allowed the 16 participating countries to examine how their response mechanisms addressed the international aspects of a large-scale nuclear emergency. Based on the experience thus gained, a series of more realistic exercises, INEX 2, was organised by the NEA. These exercises used as a basis a national-level emergency exercise at an existing power plant, and aimed to achieve three international objectives: the real-time exchange of information, public information and decision making based on limited information and uncertain plant conditions. This report summarises the experience gained and lessons learned during the third INEX 2 regional exercise which took place in Hungary.

## Experience from International Nuclear Emergency Exercises

### The INEX 2 Series

*ISBN 92-64-18464-3 – 42 pages – Free: paper or web versions.*

In case of a nuclear emergency, countries need to be well prepared to manage a crisis situation. In order to help countries improve their emergency planning, preparedness and management, the OECD Nuclear Energy Agency (NEA) organised a series of international nuclear emergency exercises called INEX 2. This report summarises the lessons learned from all four exercises in the series, which took place in Switzerland (1996), Finland (1997), Hungary (1998) and Canada (1999), in the areas of: decision making based on limited information and on uncertain plant conditions; real-time exchange of information; public and media communications; and preparation and conduct of emergency exercises on an international level. The report will be of interest to both policy makers and technical managers in the nuclear emergency field.

# Radioactive waste management

## Nuclear Waste Bulletin

### Update on Waste Management Policies and Programmes – No. 14 – 2000 Edition

*ISBN 92-64-18461-9 – 136 pages – Free: paper or web versions.*

The NEA *Nuclear Waste Bulletin* is prepared by the Radiation Protection and Radioactive Waste Management Division of the OECD Nuclear Energy Agency in order to provide a means of communication amongst the various technical and policy groups within the radioactive waste management community. It delivers concise information on current activities, policies and programmes in 18 NEA Member countries and 3 international organisations. It also provides biennial updates of progress in the development of technologies for the management and disposal of radioactive waste.

## Confidence in Models of Radionuclide Transport for Site-specific Assessments

### Workshop Proceedings, Carlsbad, New Mexico, USA, 14-17 June 1999

*ISBN 92-64-18620-4 – 312 pages – Price: € 96, US$ 84, £ 58, ¥ 9 100.*

GEOTRAP is the OECD/NEA Project on Radionuclide Migration in Geologic, Heterogeneous Media carried out in the context of site evaluation and safety assessment of deep repository systems for long-lived radioactive waste. Performance assessment of proposed waste disposal sites requires models of radionuclide transport through the geosphere. To be used in repository planning and development, these models must have the confidence of both national waste management programmes and the wider scientific community. The fourth GEOTRAP workshop, "Confidence in Models of Radionuclide Transport for Site-specific Performance Assessments" held in June 1999, addressed the issue of technical confidence building and provided an overview of current developments in this field. Proposed approaches to confidence building and approaches that have already proven successful were presented and discussed. 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.

## Gas Generation and Migration of Radioactive Waste Disposal

### Safety-relevant Issues, Workshop Proceedings, Reims, France, 26-28 June 2000

*ISBN 92-64-18672-7 – 190 pages – Price: € 45, US$ 39, £ 27, ¥ 4 300.*

In underground repositories for radioactive waste, significant quantities of gases may be generated as a result of several processes. The potential impact of gas generation, accumulation and migration on the performances of the various barriers and, ultimately, on the long-term safety of a repository, should therefore be assessed in the development of safety cases for underground repositories. It was in this context that the EC and the NEA organised a workshop on "Gas Generation, Accumulation and Migration in Underground Repository Systems for Radioactive Waste: Safety-relevant Issues" in Reims, France on 26-28 June 2000. This book includes the texts of the invited presentations, the reports of the deliberations held in the five working groups, as well as the main conclusions of the workshop.

## Using Thermodynamic Sorption Models for Guiding Radioelement Distribution Coefficient (Kd) Investigations

### A Status Report

*ISBN 92-64-18679-4 – 190 pages – Price: € 50, US$ 45, £ 31, ¥ 5 050.*

A general consensus has been reached among technical experts that high-level radioactive waste can safely be disposed of in deep geological repositories. Safety studies are carried out to evaluate the overall capacity of a particular disposal site to confine waste and minimise radioactive releases. Since the principal way in which radioactive elements might eventually reach the biosphere is by transport of dissolved radionuclides in groundwater, the safety study calculations must be able to estimate their rate of transfer through each of the barriers surrounding the repository. It is well known that, for many radioelements, sorption reactions can lead to a reduction of the amount of radionuclides present in the solution phase. How best to take radionuclide sorption reactions into account in repository performance assessment models is the subject of this book.

## Pressurised Water Reactor Main Steam Line Break (MSLB) Benchmark

### Volume II: Results of Phase I on Point Kinetics

*ISBN 92-64-18280-2 – 136 pages – Free: paper or web versions.*

The benchmark is based on a well-defined problem concerning a 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 event is characterised by significant space-time effects in the core caused by asymmetric cooling and an assumed stuck-out control rod during reactor trip. It is based on reference design and data from the Three Mile Island Unit 1 Nuclear Power Plant (TMI-1). It includes a description of the event sequence with set points of all activated system functions and typical plant conditions during the transient. This report summarises the results contributed by international participants concerning Phase I of the exercise: point kinetics simulation to test the primary and secondary system model responses.

## Pyrochemical Separations

### Workshop Proceedings, Avignon, France, 14-16 March 2000

*ISBN 92-64-18443-0 – 332 pages – Price: € 77, US$ 66, £ 46, ¥ 7 230.*

The industrial treatment of spent nuclear fuel is presently performed using different wet chemical processes. Alternative dry processes, using pyrochemical methods, have received some attention due to their potential advantages in terms of plant design and criticality safety, as well as radiation dose. Recent progress in the transmutation of long-lived fission products and minor actinides has brought renewed interest in pyrochemical methods, as effective transmutation will be based on multi-recycling of the fuel with very high burn-up and short cooling times, conditions under which pyrochemical methods offer various advantages over wet processes. Studies of pyrochemical processes have so far been carried out at laboratory level. Considerable R&D work is still required in order to upgrade these processes to the current level of industrial aqueous processing.

## Evaluation of Speciation Technology

### Workshop Proceedings, Tokai-mura, Ibaraki, Japan, 26-28 October 1999

*ISBN 92-64-18667-0 – 436 pages – Price: € 80, US$ 70, £ 49, ¥ 7 600.*

It has been widely recognised among researchers that speciation data are essential for proper and reliable modelling of radionuclide behaviour, which is studied *inter alia* in the context of radioactive waste management. Participants at the OECD/NEA workshop on "Evaluation of Speciation Technology" reviewed the various techniques used to identify different species of actinide and fission product elements present in nuclear waste and nuclear reprocessing streams. The review takes into account the advantages, disadvantages and limitations of the various methods in relation to their field of application. Recommendations for future R&D are also provided. These proceedings will primarily be of interest to chemists specialised in separation techniques and radioactive waste management experts.

## Shielding Aspects of Accelerators, Targets and Irradiation Facilities – SATIF 5

### Workshop Proceedings, Paris, France, 18-21 July 2000

*ISBN 92-64-18691-3 – 426 pages – Price: € 84, US$ 75, £ 52, ¥ 8 450.*

Over the last 50 years particle accelerators have evolved from simple devices to powerful machines, and will continue to have an important impact on research, technology and lifestyle. Today, they cover a wide range of applications, from television and computer displays in households to investigating the origin and structure of matter. It has become common practice to use particle accelerators for material science and medical applications. In recent years, requirements from new technological and research applications have emerged, giving rise to new radiation shielding aspects and problems. These workshop proceedings review recent progress in radiation shielding of accelerator facilities, evaluating advancements and discussing further developments needed with respect to international co-operation in this field.

## Nuclear Production of Hydrogen

### First Information Exchange Meeting, Paris, France, 2-3 October 2000

*ISBN 92-64-18696-4 – 244 pages – Price: € 55, US$ 49, £ 34, ¥ 5 550.*

Hydrogen has the potential to play an important role as a sustainable and environmentally acceptable energy source in the 21st century. However, hydrogen does not exist as a gas on earth and thus has to be produced from, for example, water or natural gas by different separation techniques. One way to do so would be to use nuclear-produced energy or heat in this separation process. The present publication gives an overview of the advancements in the scientific and technological fields related to the nuclear production of hydrogen.

## CD-CINDA 2000

### Index to Literature and Computer Files on Microscopic Neutron Data

*CD-ROM – Free on request.*

Published on behalf of the USA National Nuclear Data Center, the Russian Nuclear Data Center, the NEA Data Bank and the IAEA Nuclear Data Section.

# Where to buy NEA publications

For customers in North America

### OECD Washington Center

2001 L Street NW, Suite 650, Washington DC 20036-4922, USA
Tel.: +1 (202) 785 6323 – Fax: +1 (202) 785 0350
Toll-free number for orders: +1 (800) 456 6323
E-mail: washington.contact@oecd.org – Internet: www.oecdwash.org

For customers in Asia

### OECD Tokyo Centre

Landic Akasaka Bldg, 2-3-4 Akasaka, Minato-ku, Tokyo 107-0052, Japan
Tel.: +81 (3) 3586 2016 – Fax: +81 (3) 3584 7929
E-mail: center@oecdtokyo.org – Internet: www.oecdtokyo.org

For customers in Central and South America

### OECD Mexico Centre

Av. Presidente Mazaryk 526, Colonia: Polanco,
C.P. 11560, Mexico D.F., Mexico
Tel.: +52 (5) 281 3810 – Fax: +52 (5) 280 0480
E-mail: mexico.contact@oecd.org – Internet: rtn.net.mx/ocde/

For customers in the rest of the world

### OECD Paris Centre

2, rue André-Pascal, F-75775 Paris Cedex 16, France
Tel.: +33 [0(1)] 45 24 81 67 – Fax: +33 [0(1)] 45 24 19 50
E-mail: sales@oecd.org

### Online Ordering: www.oecd.org/bookshop

Secure payment with credit card.

# Where to order free NEA publications

### NEA Publications

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 Ordering: www.nea.fr