

## BOARD APPROVES 2000 PROGRAMME & BUDGET, MORE PROTOCOLS FOR STRENGTHENED SAFEGUARDS

The IAEA's regular budget for the year 2000 - earmarking programme expenditures of about US \$221.7 million - was approved by the Agency's 35-member Board of Governors at mid-year meetings in June 1999. It represents zero real growth and covers activities in six major programme areas: nuclear power and the fuel cycle; nuclear applications; nuclear, radiation, and waste safety; nuclear verification and security of material; management of technical cooperation; and policy-making, coordination, and support. Also set by the Board was a recommended target of US \$73 million for the Technical Cooperation Fund.

In presenting the budget, IAEA Director General Mohamed ElBaradei emphasized major steps that the Secretariat had taken to maximize efficiency and generate savings to finance and implement growing programme activities requested by Member States. More cuts were not possible, he said, without sacrificing parts of the programme. He urged States to "judge the programme and the budget on their own merits" and to consider the crucial role of the Agency and its increasing responsibilities.

Among other actions, the Board:

- approved the Additional Protocol for strengthened safeguards concluded between the IAEA and Romania. Protocols for 41 States have been approved through June 1999. (See table, page 46.)

- took note of the *Safeguards Implementation Report for 1998*. The report states the IAEA

Secretariat's conclusion that the nuclear material and other items placed under safeguards remained in peaceful nuclear activities or were otherwise adequately accounted for. It notes, however, that the Agency is still unable to verify the correctness and completeness of the initial declaration of nuclear material made by the Democratic People's Republic of Korea (DPRK), and is therefore unable to conclude that there has been no diversion of nuclear material in the DPRK.

- approved the Agency's *Annual Report for 1998*. It highlights the IAEA's growing role in building a global nuclear safety culture, in underpinning the non proliferation regime, and in maximizing the contribution of nuclear science and technology to help countries achieve national development goals.

- took note of the *Technical Cooperation Report for 1998*.

The report reviews operations and achievements in Africa, Latin America, East Asia and the Pacific, West Asia, and Europe. It notes that in 1998 a record number of Member States -- 73, or 13 more than in 1997-- made voluntary pledges to the Technical Cooperation Fund.

- discussed the draft Medium Term Strategy, which looks to the next five years. It takes an Agency-wide programme perspective that integrates all activities under the three broad pillars of technology, safety and verification.

The Board next meets in September, before the 1999 regular session of the IAEA General Conference in Vienna. (See box below.)

### 1999 IAEA GENERAL CONFERENCE

The 43rd regular session of the IAEA General Conference convenes in Vienna with meetings beginning Monday, 27 September 1999. Delegates from the Agency's Member States are addressing issues related to nuclear safety, verification, and technology transfer. Also during the week, at a Scientific Forum, experts will examine the role of nuclear power in policies and programmes for sustainable development.

Items on the General Conference provisional agenda include measures to strengthen international cooperation in nuclear, radiation, and waste safety; strengthening of the Agency's technical cooperation activities; strengthening the effectiveness and improving the efficiency of the safeguards system and application of the Model Protocol; measures against illicit trafficking in nuclear materials and other radioactive sources; application of IAEA safeguards in the Middle East; implementation of safeguards in the Democratic People's Republic of Korea; and implementation of United Nations Security Council resolutions relating to Iraq.

As in years past, day-by-day information on the Conference will be available over the IAEA's *WorldAtom* Internet services at [www.iaea.org](http://www.iaea.org).

## NUCLEAR SAFETY: GLOBAL CONFERENCES SUSTAIN MOMENTUM

Two international conferences at the IAEA recently underlined the global importance of nuclear safety and moved ahead the agendas for cooperative action.

One Conference -- of States that are Parties to the international Convention on Nuclear Safety -- concluded that "steps in the right direction" are being taken to achieve and maintain a high level of safety at nuclear installations. A separate Conference -- on strengthening nuclear safety in Eastern Europe -- focused on particular types of nuclear reactors operating in that region. (*See box, this page.*)

The Convention's Contracting Parties met for two weeks in April 1999 at IAEA headquarters in Vienna to review progress and plans. The two-week Review Meeting -- with participation by 45 of the Convention's 50 Parties -- was the first within the framework of the Convention, which came into force in 1996 and calls for such "peer review" meetings to be convened at three-year intervals. The Convention's objective is to achieve and maintain a high level of nuclear safety worldwide, through the enhancement of national measures and international cooperation. Chairman of the meeting was Mr. Lars Hoegberg of Sweden.

The April meeting's main purpose was to review the national nuclear safety programme of each Contracting Party, in line with State obligations under the Convention. Sessions included the presentation of national

reports from Contracting Parties on their nuclear safety programmes, specifically focusing on measures they have taken and planned. Each national report was reviewed and discussed in depth, including the exchange of written questions and comments.

In a concluding Summary Report, the Contracting Parties noted that the review process had demonstrated the strong commitment to the Convention's safety objectives. At the same time, it was noted that there were variations among Contracting Parties with regard to the levels from which they started implementation of Convention obligations, as well as in the resources available nationally

for improvement programmes in progress. Even though additional steps are required, it was nevertheless noted that all Contracting Parties participating in the meeting are taking steps in the right direction.

The full Summary Report of the meeting was issued 23 April 1999 and is accessible over the IAEA's *WorldAtom* Internet services at <http://www.iaea.org>. The site includes links to the full text of the Convention and the latest status list of Contracting Parties. Also accessible on the site's *NuSafe* pages ([www.iaea.org/ns/nusafe](http://www.iaea.org/ns/nusafe)) are national reports and background information about the Review Meeting's organization and planning.

### NUCLEAR PLANT SAFETY IN EASTERN EUROPE

Progress over the past decade in upgrading safety levels at nuclear plants in Eastern Europe was reviewed at an IAEA-sponsored international conference in June 1999. The particular focus was on WWER and RBMK-type reactors designed in the former Soviet Union.

Experts from all Eastern European countries operating these types of reactors -- Armenia, Bulgaria, Czech Republic, Hungary, Lithuania, Russia, Slovakia, and Ukraine -- participated in the conference, as did officials from eighteen other countries and six organizations that support or run technical and financial assistance programmes. The Conference was chaired by Ms. Carol Kessler (*photo*), Senior Coordinator for Nuclear Safety at the US Department of State.

The Conference concluded that considerable progress has been made in operational safety improvements, among other areas. Further assistance is required to sustain momentum and support improvements in specific areas, including nuclear regulation, the analysis of feedback from operating experience, and the establishment of a safety culture at plants. Assistance through various established programmes would continue, it was reported.

A summary of the outcome of the Conference is accessible over the IAEA's *WorldAtom* Internet site at [www.iaea.org](http://www.iaea.org).



## STRENGTHENED SAFEGUARDS SYSTEM: STATUS OF ADDITIONAL PROTOCOLS

*More States have accepted Additional Protocols for the Agency's application of strengthened safeguards. The latest status report, as of June 1999, includes:*

Armenia	signed 29 Sept. 1997
Australia	signed 23 Sept. 1997; ratified 12 Dec. 1997
Austria (EU)	signed 22 Sept. 1998
Belgium (EU)	signed 22 Sept. 1998
Bulgaria	signed 24 Sept. 1998
Canada	signed 24 Sept. 1998
China	signed 31 Dec. 1998
Croatia	signed 22 Sept. 1998
Cyprus	(approved by IAEA Board, 25 Nov. 1998)
Denmark (EU)	signed 22 Sept. 1998
Finland (EU)	signed 22 Sept. 1998
France (EU)	signed 22 Sept. 1998
Georgia	signed 29 Sept. 1997
Germany (EU)	signed 22 Sept. 1998
Ghana	signed 12 June 1998
Greece (EU)	signed 22 Sept. 1998
Holy See	signed and ratified, 24 Sept. 1998
Hungary	signed 26 Nov. 1998
Ireland (EU)	signed 22 Sept. 1998
Italy (EU)	signed 22 Sept. 1998
Japan	signed 4 Dec. 1998
Jordan	signed and ratified, 28 July 1998
Korea, Rep. of	signed 21 June 1999
Lithuania	signed 17 March 1998
Luxembourg (EU)	signed 22 Sept. 1998
Monaco	(approved by IAEA Board, 25 Nov. 1998)
Netherlands (EU)	signed 22 Sept. 1998
New Zealand	signed and ratified 24 Sept. 1998
Norway	(approved by the IAEA Board; 24 March 1999)
Philippines	signed 30 Sept. 1997
Poland	signed 30 Sept. 1997
Portugal (EU)	signed 22 Sept. 1998
Romania	signed 11 June 1999
Slovakia	(approved by IAEA Board, 14 Sept. 1998)
Slovenia	signed 26 Nov. 1998
Spain (EU)	signed 22 Sept. 1998
Sweden (EU)	signed 22 Sept. 1998
UK (EU)	signed 22 Sept. 1998
Uruguay	signed 29 Sept. 1997
USA	signed 12 June 1998
Uzbekistan	signed 22 Sept. 1998; ratified 21 Dec. 1998

## IN MEMORIAM: MUNIR AHMAD KHAN



Mr. Munir Ahmad Khan, former Chairman of the IAEA Board of Governors and head of the Pakistan Atomic Energy Commission (PAEC) for nearly

two decades, passed away in Vienna, Austria, on 22 April 1999.

A nuclear engineer, Mr. Khan entered the international nuclear field through the "Atoms for Peace" programme in 1956 and worked at the Argonne National Laboratory in the United States before joining the IAEA in 1958. He served as an Agency staff member until 1972, when he returned to Pakistan to head the PAEC until 1991. He continued his close affiliation with the IAEA as a member of its Board of Governors for 12 years and as the leader of his country's delegations at 19 IAEA General Conferences. He was Chairman of the IAEA Board of Governors from 1986-87.

His record of national and international service included membership in various groups and organizations dealing with nuclear policy and development at regional and global levels. He was a Fellow of the American Nuclear Society, the International Nuclear Academy, and the Pakistan Nuclear Society, and was honoured in Pakistan for his governmental service as Minister of State.

Throughout retirement, Mr. Khan remained active on the international scene, working on activities relating to nuclear disarmament, non-proliferation, nuclear power, and the application of science and technology for economic development. His informative essay on the IAEA and its early development was published in 1997, on the occasion of the Agency's 40th anniversary, in the book *International Atomic Energy Agency: Personal Reflections*.

## NUCLEAR'S FUTURE: DIRECTOR GENERAL LOOKS AT GLOBAL DEVELOPMENTS

In recent statements in France and Japan, IAEA Director General Mohamed ElBaradei reviewed the major global challenges and opportunities facing nuclear power. "The global challenge is to develop strategies that foster a sustainable energy future that will be less dependent on fossil sources," he said in his address to the 32nd meeting of the Japan Atomic Industrial Forum. Nuclear power's future contribution, he said, is closely tied to two key factors – public confidence in its safe and exclusively peaceful use and the demonstration of its economic competitiveness in the energy marketplace.

In his remarks, the Director General focused on four major topics: nuclear power and the global energy mix; nuclear safety and the importance of public confidence; economic competitiveness and the role of research and development; and the importance of nuclear verification and prevention of illicit trafficking.

The full text of his statements are accessible over the Agency's *WorldAtom* Internet services at <http://www.iaea.org>. The list includes:

■ **Nuclear Power and World Energy Needs: Looking Ahead**, Institut de Relations Internationales et Strategiques, Paris, France, 5 May 1999.

■ **The Future of Nuclear Power: Looking Ahead**, Japan Atomic Industrial Forum, Sendai, Japan, 12 April 1999.

■ **Peaceful Uses of Nuclear Energy**, statement at the Diplomatic Institute, Amman, Jordan, 5 March 1999.

■ **Nuclear Energy in the Service of Development and Peace: The Role of the International Atomic Energy Agency**, statement at the India Habitat Centre in New Delhi, 19 February 1999.

■ **The Role of the International Atomic Energy Agency in Technology Transfer for the Peaceful Use of Nuclear Energy and the Strengthening of the Safeguards System**. During visits to Argentina, Brazil, and Chile, the Director General delivered separate speeches on this subject late last year in Brasilia, Buenos Aires, and Santiago.

## NUCLEAR POWER WORLDWIDE

Eighteen countries are relying on nuclear energy to provide 25% or more of their total electricity needs, based on data reported to the IAEA. Nuclear shares of total electricity generation among these countries in 1998 ranged from 77% in Lithuania to 27% in the United Kingdom. In 1998, four new nuclear plants came on line – three in the Republic of Korea and one in Slovakia, and construction started on four new plants in China and Japan. Thirty-six new nuclear plants are being built in 14 countries. All told, 31 countries are operating 434 nuclear plants. See page 55 for details.



*Mr. Jacques Diouf (left), Director General of the Food and Agriculture Organization (FAO) of the United Nations, and IAEA Director General Mohamed ElBaradei met at the Agency's headquarters in Vienna recently to discuss ongoing cooperation between the two organizations. The FAO and IAEA together operate the Joint Division of Nuclear Techniques in Food and Agriculture headquartered in Vienna. The Division assists Member States of both organizations in applying nuclear techniques and related biotechnologies in various fields. Research and technical assistance programmes cover soil and water management, crop nutrition, plant breeding and genetics, animal production and health, insect and pest control, and food and environmental protection. Supporting the work are the FAO/IAEA Agriculture and Biotechnology Laboratory and the FAO/IAEA Training and Reference Centre for Food and Pesticide Control, both located at the Agency's research laboratories in Seibersdorf, Austria. (Credit: Pavlicek/IAEA)*

## STATES JOINING INTERNATIONAL CONVENTIONS IN NUCLEAR FIELDS

More IAEA Member States are taking steps to join international conventions in nuclear safety and related fields that have been adopted under the Agency's auspices.

■ **Convention on Nuclear Safety.** Earlier this year, Cyprus and the United States became Contracting Parties to the Convention. On 11 April 1999, the United States ratified it, and Cyprus acceded to it 17 March 1999. Other countries who have joined over the past year include Denmark (13 November 1998, accepted), Belarus (29 October 1998, acceded), and Armenia (21 September 1998, ratified). As of late June 1999, the Convention had sixty-five signatories and fifty-one parties. (*See related item on the recent meeting of Contracting Parties, page 45.*)

■ **Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.** The Convention added four more Contracting Parties recently. On 10 May 1999, Croatia ratified the Convention, followed by Spain on 11 May 1999. Earlier, on 25 March 1999, the Czech Republic had approved the Convention, and on 25 February 1999 Slovenia had ratified it. The Netherlands signed the Convention 10 March 1999. Other signatures and ratifications over the past year include the Russian Federation (27 January 1999, signed), Canada (7 May 1998, signed and ratified), Hungary (2 June 1998, ratified), Peru (4 June 1998, signed), Philippines (10 March 1998, signed), Spain

(30 June 1998, signed), Austria (17 September 1998, signed), Bulgaria (22 September 1998, signed), Slovakia (6 October 1998, ratified), Germany (13 October 1998, ratified), and Australia (13 November 1998, signed). As of late June 1999, thirty-nine States had signed the Convention and nine States had become Parties.

■ **Convention on the Physical Protection of Nuclear Material.** On 1 April 1999, Panama ratified the Convention. In 1998, Uzbekistan and Moldova deposited instruments of accession (9 February 1998 and 7 May 1998, respectively) and Bosnia and Herzegovina an instrument of succession (30 June 1998). As of late June 1999, sixty-four States had become Parties.

■ **Vienna Convention on Civil Liability for Nuclear Damage.** On 13 April 1999, Uruguay deposited its instrument of accession. In 1998, Belarus deposited an instrument of ratification (9 February 1998), Moldova an instrument of accession (7 May 1998), and Bosnia and Herzegovina an instrument of succession (30 June 1998). As of late June 1999, thirty-two States had become Parties.

■ **Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage.** Romania ratified the Protocol 29 December 1998, becoming its first Contracting Party. As of late June 1999, the Protocol had fourteen signatories: Argentina, Belarus, Czech Republic, Hungary, Indonesia, Italy, Lebanon, Lithuania, Morocco, Peru, the Philippines, Poland, Romania, and Ukraine.

■ **Convention on Supplementary Compensation for Nuclear Damage.** Romania ratified the Convention 2 March 1999, becoming its first Contracting Party. As of late June 1999, the Convention had thirteen signatories: Argentina, Australia, Czech Republic, Indonesia, Italy, Lebanon, Lithuania, Morocco, Peru, the Philippines, Romania, Ukraine, and the United States.

■ **Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.** Panama ratified the Convention on 1 April 1999. Belgium ratified it earlier this year (4 January 1999). In 1998, Moldova acceded to it (7 May 1998) and Bosnia and Herzegovina succeeded to it (30 June 1998). As of late June 1999, seventy-nine States had become Parties.

■ **Convention on Early Notification of a Nuclear Accident.** Panama ratified the Convention 1 April 1999. Belgium ratified it earlier this year (4 January 1999). In 1998, Moldova acceded to it (7 May 1998) and Bosnia and Herzegovina succeeded to it (30 June 1998). As of late June 1999, eighty-four States had become Parties.

### INTERNET UPDATES

*For updated status reports and texts of international conventions related to the IAEA's work, visit the Agency's WorldAtom Web site at <http://www.iaea.org>. On the front page, simply click on "Laws/Conventions" in the Quick Index for easy access to the pages.*

## IAEA INTERNATIONAL SEMINARS & SYMPOSIA IN 1999

■ **International Symposium on Technologies for the Management of Radioactive Waste from Nuclear Power Plants and Back-End Nuclear Fuel Cycle Activities, Taejon, Republic of Korea, 30 August-3 September 1999.** This Symposium reviews the status of technological infrastructures needed for safe, environmentally sound, and cost-effective management of radioactive waste generated from a range of activities. Presentations examine the status of integrated and optimized waste management systems; major achievements; and progress in areas of special importance to achieving further technological improvements.

■ **International Symposium on Research Reactor Utilization, Safety and Management, Lisbon, Portugal, 6-10 September 1999.** This Symposium examines global concerns related to the use of research reactors. They include the need for their modification and refurbishment, either for improving utilization or for general upgrades and modernization; the safety aspects of older facilities and of modification projects; the implications of core conversion to lower enriched fuels; spent fuel storage problems; management of radioactive waste; the maintenance of quality of equipment and personnel; the introduction of a safety culture in research reactor facilities; mothballing and decommissioning; and regulatory approaches. Participants include designers, operators, managers, and regulators in the areas of

research reactor utilization, safety, and management.

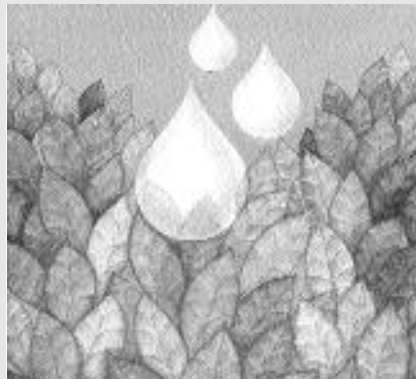
■ **FAO/IAEA Seminar on Mutation Techniques and Molecular Genetics for Tropical and Subtropical Plant Improvement in Asia and the Pacific Region, Manila, Philippines, 11-15 October 1999.** Gene transformation technology has facilitated the creation of novel crop varieties that are tolerant to diseases and some insects. Molecular marker technologies have localized the chromosomal regions of importance for yield as well as inherent resistance to pests. The application of these techniques, in combination with induced mutations, in agriculture shows great promise for increasing crop production. This Seminar focuses on the status and application of

mutation techniques and related molecular genetic approaches.

■ **International Conference on Irradiation to Ensure Safety and Quality of Food, Antalya, Turkey, 19-22 October 1999.** Jointly organized by the IAEA, FAO, and WHO, the seminar assesses the role of irradiation to ensure hygienic quality of food; examines the role of irradiation as a substitute for fumigation and to facilitate international trade in food and agricultural commodities; reviews regulatory practices in approving and controlling the application of food irradiation; reviews communication strategies for consumers and the food industry to expand

*continued on next page...*

## IAEA TEAMS WITH PARTNERS ON WORLD WATER ISSUES



Building on a partnership of longstanding experience, the IAEA, United Nations Educational, Scientific and Cultural Organization (UNESCO), and the World Meteorological Organization (WMO) are planning to join forces through a new international programme on

isotopes in the global water cycle. The work will help to shed greater light on water problems facing the world.

Techniques involving stable and radioactive isotopes in the environment can be used to track and better understand specific hydrological processes.

The planned programme was strongly endorsed at the 10th International Symposium on Isotope Techniques in Water Resources Development and Management. The meeting was organized 10-14 May 1999 in Vienna by the IAEA, UNESCO, WMO, and

*continued on next page...*

**SEMINARS & SYMPOSIA**

*continued from previous page*

the acceptance and application of this technology; and identifies key issues for ongoing development of food irradiation to ensure food safety and quality.

■ **International Symposium on Restoration of Environments with Radioactive Residues, Arlington, Virginia, USA, 29 November-3 December 1999.**

Radioactive residues can originate from a number of sources. They include the decommissioning of various installations of the nuclear fuel cycle; radioactive waste disposal; nuclear testing and weapons production; use of radionuclides in medicine and research; use of sealed and unsealed radiation sources in industry; the extraction and processing of materials containing natural radionuclides, and other activities that may generate enhanced levels of natural radionuclides (radium, thorium, phosphates, oil and gas production); misuse of materials containing natural radionuclides (e.g. uranium mill tailings); and accidents involving the release of radionuclides into the environment. One aim of this Symposium will be to take the first steps towards harmonizing national policies and criteria for the remediation of sites affected by radioactive residues.

*Please note that information about IAEA meetings is subject to change. Visit the Meetings Calendar of the IAEA's WorldAtom Internet services at <http://www.iaea.org> for updates and related information. Just click on the meetings icon on the front page.*

**WORLD WATER RESOURCES**

*continued from previous page*

International Association of Hydrological Sciences. About 250 experts from 65 countries participated in sessions.

The Symposium served as a global forum for assessing advances in the applications of isotopes to issues of water resource management and sustainable development. Topics thematically focused on hydrological processes at the interface between the atmosphere and hydrosphere; investigations of surface and ground water; problems and techniques to investigate sedimentation; water pollution, contamination, salinization; and the interpretation of isotope data and modelling approaches.

A roundtable discussion illustrated the substantive

contributions of isotope techniques to water studies designed to improve the management and development of existing resources. Experts emphasized that isotopes should be an integral part of routine investigations related to the use and protection of water resources. In that context, they strongly endorsed the IAEA's envisaged new international programme, to be carried out jointly with UNESCO and WMO, on isotopes in the hydrological cycle.

More information about global water issues and the Symposium, whose proceedings are being published on CD-ROM by the IAEA, is available over the IAEA's *WorldAtom* Internet site at [www.iaea.org](http://www.iaea.org).

*In a recent visit to Slovakia, IAEA Director General Mohamed ElBaradei and Deputy Director General for Nuclear Safety Zygmund Domaratzki met with Mr. Miroslav Lipar, Head of the Slovak nuclear regulatory authority, and other national officials. The group visited the Mochovce nuclear power plant being built in eastern Slovakia.*



**■ New IAEA Member State.**

The Republic of Benin deposited an instrument of acceptance of the Agency's Statute on 26 May 1999, becoming the 129th Member State of the IAEA.

**■ Next IAEA Member State.**

Honduras is poised to become the 130th Member State of the IAEA. The IAEA Board of Governors has recommended approval of the country's application for membership. The recommendation goes before the IAEA General Conference in September.

**■ Nuclear Law.** A recent international symposium in Budapest, Hungary, focused on the reform of civil nuclear liability regimes at the national and international levels. The symposium was organized by the Paris-based Nuclear Energy

Agency (NEA) in cooperation with the IAEA and the European Commission. It was hosted by the Hungarian Atomic Energy Authority and the Institute for Legal Studies of the Hungarian Academy of Sciences. More information is available from the NEA, Le Seine St. Germain, 12, boulevard des Iles, 92130 Issy-les-Moulineaux, France. Email: [news.contact@nea.fr](mailto:news.contact@nea.fr). The Web site is [www.nea.fr](http://www.nea.fr).

**■ Women In Nuclear.** The IAEA was among organizations represented at the seventh annual meeting of Women in Nuclear, a global organization of nearly 1000 professional women and men in 45 countries. The meeting was held recently in Washington, DC. One of the group's major goals is to objectively inform the public, especially women,

about nuclear energy and radiation issues, noted Ms. Agneta Rising, the group's president and senior radiation protection adviser at the Swedish utility Vattenfall AB. WIN members work in various nuclear-related fields and are active in organizing workshops, training sessions, and other activities to develop public understanding about nuclear technologies. More information about WIN is accessible over the group's Internet site. The address is [http://shell.rmi.net/~jgraham/WININ4\\_new.html](http://shell.rmi.net/~jgraham/WININ4_new.html). Also visit the IAEA's *WorldAtom* Internet site at [www.iaea.org](http://www.iaea.org) for more information about women working in international nuclear safeguards at the IAEA. Simply click on the "Jobs" icon on the front page for easy access to the pages.

**INTERNATIONAL SYMPOSIUM: THE MOX FUEL CYCLE**

A recent international symposium at the IAEA addressed a range of issues related to the mixed-oxide (MOX) fuel cycle, including potential advanced cycle options. It concluded that the use of MOX fuel is currently based on mature technology. However, further technological development is needed if it is intended to use MOX fuel to reduce substantially the quantity of accumulated plutonium. The symposium also discussed developments concerning the beginning of the use of ex-weapons plutonium in MOX fuel, a key element in the process of future nuclear disarmament in the Russian Federation and the United States.

The Symposium, convened 17-21 May 1999, was organized by the IAEA in cooperation with the Nuclear Energy Agency of the Organization for Economic Cooperation and Development. More than 200 experts from 34 countries and five international organizations attended. Participants presented 48 papers and 21

technical posters that reported on the status of the technology and prospects for future development. Topics covered included plutonium recycling programmes; MOX transport; performance, design, and safety of MOX fuel; disposition of surplus weapons-grade plutonium; and technical and institutional challenges.

Experience with MOX fuel stretches over four decades, including the fabrication of some 2000 fuel assemblies with the use of 85 tonnes of plutonium separated from reactor spent fuel. More separated plutonium is projected to arise from nuclear power production in years ahead, contributing to existing stockpiles. The number of countries engaged in the recycling of plutonium as fuel is expected to grow in the future, and further capacity is being made available in the industry to meet anticipated requirements.

A more detailed summary report of the Symposium is accessible on the IAEA's *WorldAtom* Internet site at [www.iaea.org](http://www.iaea.org).

■ **UNSCEAR Update.** The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) recently held its 48th session in Vienna with the participation of 20 Member States. The IAEA was among organizations invited to attend the meeting as observers. UNSCEAR is preparing a new scientific publication on the sources, exposure, and biological effects of ionizing radiation, and participants at the latest meeting reviewed documents on a range of topics. The UNSCEAR 2000 publication, for submission next year to the United Nations General Assembly which recently reaffirmed the Committee's mandate, will include more than 1000 pages of analysis and detailed scientific annexes. The Committee's last assessment was issued in 1996; its publications form the scientific basis on which international and national agencies develop radiation protection standards for workers, patients, and the general public. UNSCEAR's next meeting is scheduled for 2-11 May next year.

■ **World Environment Day.** Japan hosted celebrations to mark World Environment Day in June. Among the country's initiatives was organizing a World Conference on Global Commons on issues including those related to energy development. During the celebrations in Japan, the United Nations Environment Programme (UNEP) launched its third International Photographic Competition, entitled "Focus on Your

World". Entries are invited from people the world over to illustrate how they see our planet. More information is available from UNEP in Nairobi, Kenya, PO Box 30552, or by email at [ipainfo@unep.org](mailto:ipainfo@unep.org), or via its Internet site at [www.unep.org](http://www.unep.org).

■ **World Energy Consumption.** Energy analysts in the United States project a 65% increase in world energy consumption over the next twenty years, despite global economic troubles that have severely hampered recent growth in energy demand. The projections were issued by the Energy Information Administration (EIA), the statistical and analytical arm of the US Department of Energy in its report *International Energy Outlook 1999*. The report examines environmental implications of rising energy use, including the outlook for carbon emissions and possible impacts of different energy strategies. Prospects for nuclear power to maintain a growing share of global electricity generation are uncertain, the report states. (*Also see item below.*) More information about the report is available from the EIA's National Energy Information Center in Washington, DC. The email address is [infoctr@eia.doe.gov](mailto:infoctr@eia.doe.gov). Nearly all EIA publications also are offered on the Internet site at [www.eia.doe.gov](http://www.eia.doe.gov).

■ **Nuclear Power Generation.** Electricity produced from nuclear power plants in the world's industrialized countries is projected to grow at just

under one percent a year over the next decade, reports the Nuclear Energy Agency (NEA) of the Organization for Economic Cooperation and Development. In its latest survey, entitled *Nuclear Energy Data*, the NEA reports that nuclear's share of total electricity production in OECD/NEA member countries is projected to be about 21.6% in 2010, down from its present share of 23.8%. Altogether 345 nuclear power plants are installed in OECD/NEA member countries, while 11 reactors are under construction in the Republic of Korea, Japan, Czech Republic, and France; three other plants are reported as firmly committed in planning stages. A number of plants, mostly in the United States and United Kingdom, are expected to be taken out of service over the next decade. More information is available from the NEA, Le Seine St. Germain, 12, boulevard des Iles, 92130 Issy-les-Moulineaux, France. Email: [news.contact@nea.fr](mailto:news.contact@nea.fr). The Web site is [www.nea.fr](http://www.nea.fr) in Paris, France.

■ **Baltic Ring Project.** Utilities are pooling their resources through the Baltic Ring project to supply electricity to localities in northern Europe and Scandinavia. Nuclear plants are generating an important share of the electric power, reports Mr. Frigyes Reisch, a former IAEA staff member of the Department of Nuclear Safety. Around the Baltic Sea, various types and sizes of nuclear reactors are being operated, many of them being modernized in line with guidelines issued by the IAEA.

Nuclear power plants in the Baltic Ring project are operating in Finland (Olkilouto, Loviisa); Germany (Brunsbuttel); Sweden (Oskarshamn, Forsmark, Barsebaeck, Ringhals), Russian Federation (St. Petersburg, Kola); and Lithuania (Ignalina); additionally part of the project is a low-power research reactor (Halden) in Norway.

The nuclear share in the Baltic region is high, with reactors supplying nearly half of Sweden's total electricity and about 90% of Lithuania's. Over the 1998 winter, no capacity margins were left in Sweden. Mr. Reisch notes that electricity consumption there is known to rise about 400 megawatts for every degree the temperature falls below the freezing point. Similarly, the capacity of hydropower plants in the region is challenged during dry seasons, as happened several years ago. Electricity consumption is rising about one percent a year in the Baltic region, and the Baltic Ring project is designed to help utilities meet demands for electric power at lower prices.

■ **Comprehensive Nuclear Test Ban Treaty (CTBT).** In accordance with the Treaty's provisions, Parties to the CTBT are requesting the United Nations to convene a Conference in October 1999 to consider what further measures can be taken to achieve the Treaty's entry into force. The expected dates are 6-8 October, based on a recent report in *Trust & Verify*, the newsletter of the Verification Research, Training, and Information

Centre (VERTIC) based in London. Ratification from 44 specifically named States is required for the Treaty's entry into force, and as of mid-June 1999, eighteen of them had ratified it. The Treaty opened for signature in September 1996, and since then has been signed by 152 countries. Altogether 37 States have ratified the Treaty, including 18 of the 44 States from whom ratification is required before the Treaty can enter into force. More information is accessible over the Internet sites of the CTBTO ([www.ctbto.org](http://www.ctbto.org)) and VERTIC ([www.fhrit.org/vertic](http://www.fhrit.org/vertic)).

■ **Nuclear Disarmament History.** A special exhibit at the Vienna International Centre earlier this year focused on the history and achievements of the United Nations in the field of nuclear disarmament. It was organized by three non-governmental organizations associated with the UN Department of Public Information – the Veterans Against War of Japan, the Veterans for Peace of the United States, and Franciscans International. It was co-sponsored by the UN Centre for Disarmament Affairs and the Non-Governmental Committee on Disarmament, with support from the Permanent Mission of Japan to the United Nations. The presentation of the exhibit, which featured panels, photographs, and narratives highlighting the UN's extensive efforts over the past half century for building a nuclear-weapon-free world, was organized by Mr. William Epstein, former Director of the UN Centre for Disarmament.

■ **Nuclear Non-Proliferation Seminars.** The Nuclear Non-Proliferation Verification Institute in the United States has announced its inaugural programme later this year at the University of Virginia. The programme takes place 5-9 December 1999 and includes topical seminars led by noted experts on nuclear proliferation, methods to prevent proliferation, and techniques to verify non-proliferation and arms control agreements that underpin international security. Specific topics include the IAEA's strengthened safeguards system, nuclear export controls, new verification arrangements, and case studies of nuclear programmes. Keynote speaker is Mr. Robert Gallucci, US Ambassador-at-Large and Special Envoy appointed to address the threat posed by the proliferation of ballistic missiles. Programme sessions will be led by the Institute's faculty, which includes former IAEA safeguards inspectors and officials, former policymakers and senior government officials, scientists from US national laboratories, and independent researchers in fields of international security, nuclear non-proliferation, and arms control. More information about the programme is available from Nuclear Non-Proliferation Verification Institute, University of Virginia, PO Box 3697, Charlottesville, Virginia, 22903-0697, or by email to [koneill@isis-online.org](mailto:koneill@isis-online.org), or from the Internet site of the Institute for Science and International Security at [www.isis-online.org](http://www.isis-online.org). □