Nuclear Security

Objective

To contribute to global efforts to achieve worldwide, effective security wherever nuclear or other radioactive material is in use, storage and/or transport, and of associated facilities, by supporting States, upon request, in their efforts to establish and maintain effective nuclear security through assistance in capacity building, guidance, human resource development, sustainability and risk reduction; to assist adherence to and implementation of nuclear security related international legal instruments; to strengthen the international cooperation and coordination of assistance given through bilateral programmes and other international initiatives in a manner which also would contribute to enabling a broader use of nuclear energy and of applications with radioactive substances.

Through its nuclear security programme, the Agency continued to provide assistance to Member States, primarily through the implementation of the *Nuclear Security Plan 2010–2013*. The increase in the regular budget for nuclear security enabled greater predictability in programme implementation, but the programme continued to be dependent on extrabudgetary contributions.

Strengthening Global Safety and Security

Over the past year, the Agency continued to strengthen synergies and interfaces between safety and security through, inter alia, the joint task force of the Advisory Group on Nuclear Security (AdSec) and the Commission on Safety Standards (CSS). The joint task force was assigned the remit of studying the feasibility of establishing a single set of standards covering both nuclear safety and nuclear security.

Guidance on Nuclear Security for Member States

Four high level publications were completed in 2010. The top level publication, entitled *Fundamentals of a State's Nuclear Security Regime: Objectives and Essential Elements*, was issued for final review by Member States. It contains objectives, concepts and principles of nuclear security and provides the basis for recommendations on nuclear security. Three second level publications — *Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)*, *Nuclear Security Recommendations on Radioactive Material and Associated Facilities*, and *Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control* — were completed and will be published in 2011. These IAEA Nuclear Security Series publications present best practices that should be adopted by States in the application of the Nuclear Security Fundamentals.

In consultation with Member States, the Agency continued to develop comprehensive guidance on nuclear security. For example, *Educational Programme in Nuclear Security* was issued in the IAEA Nuclear Security Series. Providing an overview of nuclear security and guidance on Master of Science and certificate programmes, it is intended for use by academic institutions in establishing or expanding their nuclear security curriculums.

Nuclear Security Assessments

Nuclear security advisory missions are key tools for assessing the nuclear security needs of States. During 2010, the Agency conducted 17 such missions. More than half dealt with physical protection and with legal, regulatory and practical measures for controlling nuclear and other radioactive material. Several additional missions reviewed the arrangements by States for detecting illicit nuclear trafficking and for responding to nuclear security emergencies and incidents. The Agency also conducted a number of technical visits, addressing security needs at locations including border crossings, medical facilities, scientific institutes and industrial sites.

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Human Resource Development

To assist States in developing their human resource capabilities in the area of nuclear security, the Agency conducted 72 training events involving the participation of more than 1750 people from 120 countries.

Essential to the establishment and maintenance of nuclear security is the availability of human resources with in-depth knowledge of nuclear security practices, principles and policy. Dedicated nuclear security education is key to cultivating such expertise. An important advance in this regard was the creation, in March 2010, of the International Nuclear Security Education Network (INSEN), a forum for collaboration between the Agency, educational institutions and research bodies. INSEN members work together to develop instructional texts and computer tools, conduct joint research activities and arrange for student and faculty exchange programmes.

Nuclear Security at Major Public Events

The Agency continued to help States to meet the unique nuclear security challenges associated with major public events. In 2010, the Agency assisted Colombia in security arrangements for the 2010 IX South American Games in Medellín, Colombia, by loaning radiation detection instruments and providing training and on-site technical assistance. The Agency also supported South Africa in its efforts to ensure the security of the 2010 FIFA World Cup by providing information support on illicit trafficking as well as more than 250 pieces of radiation detection equipment, and by conducting seven training events covering aspects of nuclear security related to major public events.

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In addition, the Agency assisted Mexico in its nuclear security arrangements for the major public events associated with the XVI Pan American Games, to take place in 2011. Poland and Ukraine also received assistance with their security preparations for the 2012 UEFA European Football Championship. The latter work included coordinating the donation by Finland of a sophisticated On-Site Nuclide Identification vehicle to Ukraine.

Provision of Equipment to Member States

A major element of the Agency's nuclear security assistance to States is the provision of equipment for detecting and responding to the unauthorized movement of nuclear and other radioactive material, including illicit trafficking. In this regard, the Agency coordinated the donation to States of 823 radiation detection instruments as well as the loan of an additional 474 instruments. In addition, Agency staff participated in 35 field missions, including those relating to the deployment of equipment and to activities to ensure the nuclear security of major public events. The Agency also contributed to nuclear security human resource development by hosting several graduate students and conducting on the job training courses for professionals.

Risk Reduction

As part of its efforts to assist States in establishing systems and technical measures for protecting nuclear material and associated facilities and transport, as well as radioactive sources and waste, against illicit access, the Agency helped to complete upgrades of three nuclear facilities in three States and of eight facilities housing other radioactive material in four States. Upgrades were under way at four additional nuclear facilities in three States and at 22 sites housing other radioactive material in seven States.

In 2010, the Agency was an implementing partner in operations to repatriate to the Russian Federation more than 109 kg of fresh high enriched uranium (HEU) fuel from Belarus, the Czech Republic and Ukraine. The Agency also assisted in the repatriation of around 376 kg of spent HEU fuel from Belarus, Poland, Ukraine and Serbia (13.2 kg from Vinča, Serbia, as reported below).

On 22 November 2010, a six year Agency project culminated in the repatriation shipment of HEU and low enriched uranium (LEU) spent fuel elements from the RA research reactor at Serbia's

FIG. 1. Two views of shipping containers containing HEU and LEU spent fuel elements being transported from the RA research reactor at Serbia's Vinča Institute of Nuclear Sciences to the Russian Federation.

Vinča Institute of Nuclear Sciences to the Mayak Fissile Material Storage Facility in the Russian Federation. Because the material had degraded significantly during several decades of storage, it was necessary to repackage all 8030 fuel elements using custom designed equipment prior to shipment, which contributed substantially to the complexity and duration of the project. Extensive physical protection upgrades were implemented to protect the material while the preparations for shipment were made. Nearly 400 Serbian and international experts, including 76 Agency staff members, participated in the work, which was the largest fuel repatriation project in the Agency's history (Fig. 1). Securing this spent nuclear fuel — which had been identified as being among the world's most vulnerable to illicit access — marked an important step in placing nuclear material in a secured facility beyond the reach of terrorists or other criminals.

Illicit Trafficking Database

Membership in the Agency's Illicit Trafficking Database (ITDB) expanded in 2010 to reach 110 Member States and one non-Member State. As of 31 December 2010, States had reported, or otherwise confirmed, a total of 1980 incidents to the database; 207 incidents were reported by States in 2010, of which 147 had occurred during the year. Of the latter, 13 incidents involved illegal possession and attempts to sell nuclear material or radioactive sources, and one incident was an attempted swindle to this effect that did not involve authentic nuclear or other radioactive material. In 22 cases, thefts or losses of radioactive sources were reported. The remaining 111 incidents involved discoveries of uncontrolled material, unauthorized disposals and the inadvertent, unauthorized movement or storage of nuclear material, radioactive sources and/or radioactively contaminated material.

Facilitating Adherence to the 2005 Amendment to the CPPNM

On 18 November 2010, the Secretariat convened a meeting on Facilitating Adherence to the 2005 Amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM). A total of 55 Member States and Euratom participated in the meeting, as well as representatives from the OSCE and the UNODC. The meeting examined the status of international support for the Amendment, which, five years after its adoption, still had not entered into force. The meeting recognized that, upon its entry into force, the Amendment would make a strong addition to the complement of legal instruments for strengthening nuclear security, though it acknowledged that each State faced a different situation with regard to the ratification process. Meeting participants also noted the

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importance of promoting States becoming parties to the Amendment to the CPPNM. In this regard, information was shared regarding assistance available from the Agency and other sources to States wishing to adhere to the Convention.

Contributions to the Nuclear Security Fund

New contributions were made to the Nuclear Security Fund by Belgium, Denmark, Estonia, Germany, Finland, France, Italy, Japan, the Republic of Korea, the Netherlands, New Zealand, the Russian Federation, Spain, the United Kingdom and the United States of America. The agreements with Germany, the Netherlands, Norway and the Russian Federation contain the provision for contributions to be made over a number of years. In addition, an instalment of a previously announced contribution was made by the European Union. Details of income to the Nuclear Security Fund in 2010 are set out in Note X to *The Agency's Accounts for 2010* (GC(55)/4).