Nuclear Security

Objective

To improve worldwide security of nuclear material, other radioactive materials and their associated nuclear facilities, in use, locations and transports, through support and assistance to Member States for the establishment of effective national nuclear security regimes.

Nuclear Security Assessments

The Agency assists national efforts to enhance nuclear security through prevention measures — comprising both protection and risk reduction components — and detection and response measures. Its evaluation missions based upon international legal instruments, guidelines and recommendations help States identify security needs. Using mission findings the Agency prepares, in consultation with the relevant State, Integrated Nuclear Security Support Plans (INSSPs) tailored to address each State's specific needs. This provides a tool by which the Agency, the State concerned and potential donors can plan and coordinate their technical activities and financial support. In 2006, 32 INSSPs were in various stages of development and consultation.

Capacity Building

Agency nuclear security capacity building activities continued to focus on education and training, equipment upgrades and technical support. During 2006, the Agency organized 59 international, regional and national training courses and workshops involving over 1500 participants from 80 States. Twenty-eight training courses were devoted to physical protection and the prevention of malicious acts. The topics included security objectives and fundamental principles, physical protection principles and methodologies, and protection of nuclear facilities against theft and sabotage. These training activities also included three design basis threat (DBT) workshops, bringing to 27 the total number of DBT workshops conducted by the Agency.

To assist States in establishing effective radiation detection capabilities at border crossing points and to respond to seizures of nuclear and other radioactive material, the Agency held 26 international, regional and national training courses in 2006. In addition, the Agency supplied detection and border monitoring equipment and also assisted with upgrading the physical protection of eight sites containing nuclear or radioactive material.

First Nuclear Security CRP

The Agency concluded its first nuclear security CRP on the improvement of technical measures to detect and respond to the illicit trafficking of nuclear and other radioactive material. The main achievements of the CRP included: the development of a sensitive, handheld neutron detector for the localization of weak neutron sources; improvements to handheld radionuclide identification devices (RIDs) and research into new scintillator materials to improve their performance; demonstrations of the application of RIDs for characterizing radioactive sources in legal shipments; and the completion of technical specifications for RIDs, personal radiation detectors, fixed radiation portal monitors and handheld neutron search detectors.

Risk Reduction

The Agency provided extensive assistance to States in reducing the vulnerability of a number of high risk radioactive sources (Fig. 1). This includes

FIG. 1. An example of nuclear material encased in a secure structure.

facilitating the recovery and conditioning of approximately 100 high activity and neutron sources in countries in Africa and Latin America. Other risk reduction activities, mentioned in greater detail elsewhere in this report, involved the conversion of research reactors from HEU to LEU fuel under the Reduced Enrichment for Research and Test Reactors (RERTR) programme, the decommissioning of shutdown reactors, and repatriating fresh and spent HEU fuel stocks to the country of origin. These activities make a substantial contribution to nuclear security by reducing the risk that stolen HEU could be used in an improvised nuclear explosive device.

Nuclear Security Guidance for Member States

Guidance publications in the IAEA Nuclear Security Series (INSS) incorporate best practices contributed by experts from around the world and provide a vehicle for disseminating these to the international community. In 2006, the first three reports were published and disseminated on the technical and functional specifications for border monitoring equipment (INSS No. 1), on nuclear forensics support (INSS No. 2) and on guidelines for monitoring of radioactive material in international mail transported by public postal operators (INSS No. 3). An extensive programme is under way to develop further guidance in the IAEA Nuclear Security Series in consultation with experts from Member States. Twenty-seven additional reports were started or were under development in 2006. As guidance publications are completed and issued, a comprehensive structure of internationally accepted recommendations on nuclear security will be constructed.

Financial Support to the NSF

The year saw a significant expansion of the partnership between the Agency and the European Union. Under the auspices of the first and second European Union Joint Actions, the Agency delivered nuclear security assistance to 26 States in Eastern Europe, the Middle East and North Africa. In June 2006, the Council of the European Union adopted a Third Joint Action, which extends the area of support to cover the countries of Africa, with the scope to include the implementation by support States of international legal instruments relevant to nuclear security and verification. By the end of 2006, the European Union had pledged more than $15 million to the Nuclear Security Fund in connection with the three Joint Action Cycles.

Nuclear Security Equipment Laboratory

To ensure that detection and monitoring equipment supplied by, or through, the Agency performs in accordance with to specifications and requirements, the Agency's Nuclear Security Equipment Laboratory (NSEL) carries out tests prior to delivery. Such testing is important as experience has shown that a significant portion of the instruments have deficiencies — approximately 13% failed acceptance testing in 2006. During the year, the NSEL tested 745 nuclear security instruments, the highest number in any year since the laboratory was established.

Security at Major Public Events

In response to a request from the German Government, the Agency provided assistance to the relevant State authorities for the development and implementation of radiological security at the 2006 FIFA World Cup (Fig. 2). Under the project, the Agency provided scientific, procedural and technical support to the German authorities, facilitated the provision of technical equipment and training, and provided information support, drawing on the Illicit Trafficking Database (ITDB).

The Agency further supported Member States by providing advice and assistance in the area

FIG. 2. Equipment used in applying nuclear security measures being examined by experts at the 2006 FIFA World Cup.

of emergency preparedness. Preparations were under way at the end of the year on cooperation arrangements regarding nuclear security measures with the organizers of forthcoming major public events in Latin America and Asia.

International Cooperation

Throughout the year, Member States called for continued and expanded action on nuclear security by the Agency. In February–March 2006, the Agency's International Conference on Effective Nuclear Regulatory Systems, held in Moscow, noted the need for authoritative guidance on nuclear security issues and called for: recognition of the IAEA Nuclear Security Series of publications as a resource for regulators; development of programmes of education and training; and increased cooperation with other international organizations dealing with problems relating to terrorism. The Pan American Meeting on Strengthening Implementation of International Instruments in the Americas for Enhanced Nuclear and Radiological Security, held in Quito in April, called for the Agency to continue to support States requiring assistance in developing and implementing the means for meeting national responsibilities under the legal instruments relevant for nuclear security. The Seminar on Strengthening Nuclear Security in Asian Countries, held in Japan in November 2006, called on the Agency to continue its efforts to ensure that acceptable levels of security are applied to all nuclear and other radioactive material under national jurisdictions, and according to effective national systems and functions.

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At the G8 summit in St. Petersburg, Presidents Putin and Bush announced a Global Initiative to Combat Nuclear Terrorism, which will focus on building partnerships. The Initiative underlines the importance of the Agency's Nuclear Security Plan, as well as the need for continued support of the Agency's activities.

The Agency continued to cooperate with other international and regional organizations whose mandates are relevant to nuclear security. A Cooperation Agreement was concluded with Interpol in 2006 that provides the framework for the establishment of a joint database on illicit trafficking and on other unauthorized activities as well as for sharing analyses and evaluations.

Illicit Trafficking Database Programme

Through the ITDB, the Agency continued to collect and analyse information on incidents of illicit trafficking and other unauthorized activities involving nuclear and other radioactive material (Fig. 3), and to facilitate its exchange among the Member States. Participation in the ITDB reached 95 States, growing by eight States during the year. A meeting of ITDB national Points of Contact was convened in May 2006 to review the scope, operation and development of the ITDB.

Of 149 reported incidents occurring in 2006, 15 were seizures of illegally possessed nuclear and radioactive material that some of the individuals involved were attempting to sell or smuggle across national borders. One incident involved the seizure in Georgia of 79.5 g of uranium enriched to 89%. Given the potential consequences of the use of an improvised nuclear device or a radiation dispersal device, all incidents of illicit trafficking in

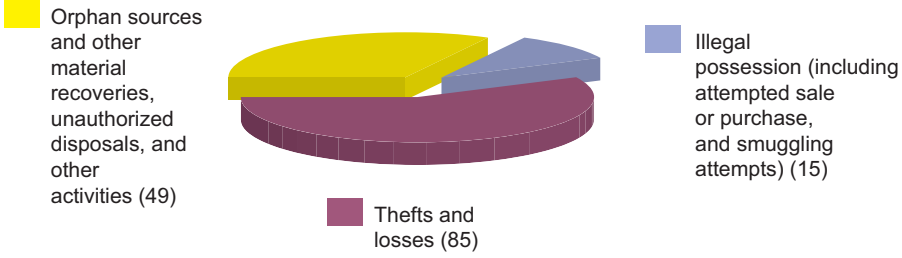

FIG. 3. Distribution of confirmed incidents in 2006 by type of activity.

HEU or plutonium are of major security concern. Of the remaining incidents, over 50% involved thefts and losses of material. In about 75% of the cases, the material has not been recovered, adding to the increasing pool of lost material, some of which is potentially available for malicious use. Recoveries of nuclear and radioactive material not under proper control, such as orphan sources, and unauthorized disposals of material made up the remaining incidents. This included 47.5 g of 80% HEU encrusted on metal found at a scrap processing facility in Germany. ■