PHYSICAL PROTECTION

BY ANITA B. NILSSON

Growing awareness of the need to protect nuclear material from unlawful activities has led the international community to take greater action for strengthening the physical protection regime. One step States are taking is to examine whether there is a need to, *inter alia,* broaden the scope of the international Convention on Physical Protection of Nuclear Material, which today has 64 Parties. *(See box, page 33.)*

Together with its Member States, the IAEA has reinforced efforts in recent years to strengthen its activities in areas of physicial protection. They include reviewing and revising international standards for physical protection. Also, at the request of an increasing number of States, more international appraisals of national physical protection systems are being arranged, and greater opportunities are being created for training staff involved in physical protection at national and facility levels; and for providing technical advice in key areas.

At the organizational level, the IAEA has created an Office of Physical Protection and Material Security in the Department of Safeguards. Its establishment visibly demonstrates the interrelationship between physical protection and nuclear non-proliferation issues.

These actions are important in the broader context of nuclear non-proliferation efforts. There has been greater recognition that nuclear material requires effective systems for physical protection to prevent unlawful uses of nuclear material; for example, in sub-national (e.g. terrorist) and criminal activities and illicit trafficking.

The responsibility for having a comprehensive physical protection system for nuclear materials and facilities within a State rests entirely with the Government of that State. Yet it is not a matter of indifference to the world whether and to what extent that State responsibility is fulfilled. Physical protection, therefore, has become a matter of international interest.

The need for global co-operation becomes evident in situations where the effectiveness of physical protection in one State depends on actions that other States take to deter or defeat hostile actions against nuclear facilities and nuclear materials. This can be particularly important when such materials are transported across national frontiers. The expectation that much more nuclear material will be available for peaceful applications as it is transferred from national military programmes further points to the need for national regulatory systems that meet agreed international standards for nuclear material control and protection. The IAEA programme assists States in their efforts to implement such systems for all aspects of their nuclear programmes.

Programme Overview. Since 1995, the world has seen an increased number of reported events involving illicit trafficking of nuclear material. Fortunately, most of these reported cases involved material which cannot be directly used for weapons purposes. However, the reports sent a serious warning to the international community that States need to strengthen their cooperative efforts for ensuring that nuclear material in general, and in particular material with a more strategic value, remains adequately protected.

In 1995, the IAEA Board of Governors endorsed the Agency's creation of a programme to assist Member States to protect nuclear material and other radioactive sources from unlawful, possible

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criminal, uses that could result in illicit trafficking; and to detect and respond to trafficking should it occur.

In 1997, one of the IAEA's main programmes was renamed "Nuclear Verification and Material Security"; it encompasses two programme elements --Safeguards (verification of national undertakings as regards the peaceful uses of nuclear material) and Security of Material (the protection and control of nuclear material, and other radioactive material). Activities under the programme "Security of Material" address the dimensions of both nuclear non-proliferation and radiation safety.

The Office of Physical Protection and Material Security, established in 1999, provides a focal point for Agency activities related to Security of Material and co-ordinates all associated activities. Four IAEA Departments are involved -- the Departments of Safeguards, Nuclear Safety, Technical Co-operation and Management. As part of its work, the Office develops and maintains contacts with participating States and international organizations on matters related to the programme.

STANDARDS & GUIDES FOR PHYSICAL PROTECTION

The Convention on the Physical Protection of Nuclear Material principally applies to nuclear materials used for peaceful purposes while in international nuclear transport. Some provisions of the Convention, however, (e. g. requirements that relate to making specified acts criminal offenses under national law, to establishing jurisdiction over those offenses and to prosecuting or extraditing alleged offenders) also apply to nuclear material used for peaceful purposes while in domestic use, storage and transport.

During 1998, a Senior Expert Group convened by the IAEA Director General to review all Agency programmes urged that consideration be given to the "possible revision of the Convention on the Physical Protection of Nuclear Material to address the issues of prevention of unauthorized possession of nuclear material and access to nuclear facilities". In response to the Group's recommendations and to requests by some Member States, the Director General convened an Open-ended Expert's Meeting 15-19 November 1999 to discuss whether there is a need to revise the Convention on the Physical Protection of Nuclear Material.

For its part -- as noted by the Director General in his response to the Senior Expert Group's recommendations -- the IAEA Secretariat "has repeatedly expressed the view that in a number of areas the scope of the Convention is too narrow and that a revision is desirable".

At the meeting, experts agreed that a more detailed examination was required prior to any conclusions being drawn about the need to revise

CONVENTION ON THE PHYSICAL PROTECTION OF NUCLEAR MATERIAL

The Convention on the Physical Protection of Nuclear Material -- for which the IAEA is depositary -- opened for signature in March 1980 and entered into force in February 1987. To date, 64 States have become Parties to the Convention.

Under its provisions, the Convention is periodically reviewed. The first Review Conference was held in Vienna, Austria, 29 September to 1 October 1992, and was attended by 35 States Parties. The Conference unanimously expressed its full supprt for the Convention and urged all States to take action to become Party to it. The Parties considered, in particular, that the Convention provides an appropriate framework for international cooperation in protection, recovery and return of stolen nuclear material, and in the application of criminal sanctions against persons who commit criminal acts involving nuclear material.

For the full text of the Convention, and the list of Parties and Signatories, visit the IAEA's *WorldAtom* pages at www.iaea.org/worldatom/documents/legal/cppn.html. Also accessible through *WorldAtom* are IAEA documents and related information on physical protection of nuclear material. Click on the "Programmes" icon on the front page, which will take you to the pages covering IAEA Safeguards and Physical Protection.

the Convention. The expert's meeting decided to continue its work through the convening of a series of open-ended working group meetings, the first of which will take place in February 2000. The working group will analyse the nature and scale of illicit trafficking and the implications for physical protection. It will also consider the activities of the Member States and the Agency and other organizations in the physical protection field, with a view to better understanding and enhancing the contributions of these key actors. The working group will then make recommendations on what problems, if any, necessitate amendments to the Convention.

International Standards. The IAEA has long been involved in the development of non-binding international standards for physical protection. The first publication, entitled *Recommendations for the Physical Protection of Nuclear Material* (called "the gray book") was issued in 1972. It has been periodically revised and updated since then, with the fourth, and latest, revision conducted in 1998 and published in June 1999 as INFCIRC/225/Rev. 4, *The Physical Protection of Nuclear Material and Nuclear Facilities.*

These recommendations relate to physical protection of nuclear material in use and storage, as well as during transport and at nuclear facilities. In other words, there are no limitations to the scope of the recommendations, other than their express application to nuclear material. The recommendations are functional in nature, and it will be up to each State, in defining its own State System of Physical Protection of Nuclear Material and Nuclear Facilities, todecide how the functional requirements are fulfilled.

As further guidance to States, the Agency now is revising a technical document addressing the functional requirements; IAEA TECDOC-967, *Guidance and Considerations for Implementation of INFCIRC/225/Rev. 4, The Physical Protection of Nuclear Material and Nuclear Facilities.* The revised document is scheduled for publication in the year 2000.

Also being drafted is a *Handbook on Physical Protection of Nuclear Material and Facilities;* it is expected to be available in early 2000.

International Physical Protection Advisory Service (IPPAS). Beginning in 1995, the Agency has been organizing, upon request, IPPAS missions. Their purpose is to review a State's physical protection systems and assess whether they meet international standards. Toward this end, suggestions are made for improvements and good practices are pointed out.

So far, IPPAS missions mainly have been requested and conducted in States in Central and Eastern Europe. A substantial number of other States could benefit from such missions, for example, when addressing security concerns or fulfilling requirements for the supply of nuclear material and equipment. In November 1999, the first IPPAS mission to South America was performed. IPPAS missions could also well be part of a procedure to re-license a nuclear facility after a major upgrading of either safety or security systems.

All missions are performed with selected internationally recognized experts. The selection of experts is always made with the consent of the State requesting the mission. A team leader is appointed, with responsibility for documenting the results of the mission and assuring that all relevant topics are covered. As a first step, a pre-mission meeting is held between the IAEA, the team leader and representatives of the requesting State, including governmental authorities responsible for physical protection, the nuclear facility, and any other organization(s) involved in designing and maintaining the regulatory as well as technical systems. At this meeting, topics and nuclear facilities for review are set. INFCIRC/225/Rev. 4 is used as the basis for the review of physical protection systems that are implemented.

IPPAS missions may result in recommendations for system upgrades. Other States may, on a bilateral basis, be willing to provide the assistance required for the recommended upgrade. In several cases, such bilateral assistance has been provided as a result of an IPPAS mission, and in a few cases through Agency programmes.

It is recognized that the confidentiality of information on physical protection systems must be maintained. For that reason, reports being derived through IPPAS missions are only submitted to the requesting State, and experts conducting the mission.

The Agency, in offering this service to States, depends on

expertise available in Member States. As more missions take place, more qualified experts will gain the necessary experience to participate in future missions. The Agency thus is building a cadre of experts to participate in new IPPAS missions.

Physical Protection Training. Since 1995, a large number of physical protection training courses have been organized together with Member States.

One aim is to increase the regional areas in which these courses are conducted. Regional courses were held in November 1998 in Argentina for Latin American countries and in January 1999 in Cyprus for Mediterranean countries. For some years, training has been done in the Czech Republic for representatives from Eastern Europe and Central Asia. In such training courses or workshops, the training material is provided in the local language.

There is a need to continue and increase the training effort. Since physical protection systems also involve staff from non-nuclear organizations, it is important to design courses or workshops that are of interest to them. For example, staff involved in emergency response, be they from the local police or from a military establishment, need to know the physical protection system to which they are expected to contribute.

The Agency has also supported a small number of fellowships and individual training programmes for staff working in physical protection. Fellowships as a training tool have been useful and should be utilized more. Additional opportunities now are being sought for internships, fellowships, or associate schemes in States with developed systems of physical protection.

The recent revisions to INFCIRC/225/Rev. 4 also call for new training. One particular focus is on defining and offering guidance for what is known as a "design basis threat" to physical protection systems. Emphasis also is being placed on workshops to facilitate the implementation of INFCIRC/2225/Rev. 4 in national regulatory systems.

Exchange of Information. In 1997, the Agency organized its first Conference on Physical Protection. Well attended, the meeting highlighted the importance of exchanging views on the design and implementation of physical protection systems.

In 2000, the Agency will convene an International Seminar on Material Security, with emphasis on physical protection and detection of illicit trafficking at borders. At that meeting, results of the ongoing evaluation of equipment particularly designed for use at borders to detect smuggling of nuclear material and other radioactive materials will be presented. Sessions also will review other advances in equipment for use at facilities to detect intrusion or to provide barrier protection for nuclear material or vital equipment.

SUSTAINING INITIATIVES

As quantities of strategic nuclear material released from military applications increase as a result of the nuclear disarmament process, the awareness of the potential for unauthorized use of nuclear material also increases. A "successful" theft and subsequent illegal use of strategic nuclear material for weapons purposes must be prohibited.

At the international level, the Convention for Physical Protection of Nuclear Material is the key instrument to provide protection against sub-national or criminal threats involving nuclear material. Efforts to strengthen the Convention, and steps at the United Nations to negotiate a Convention for the Suppression of Acts of Nuclear Terrorism, are examples of initiatives at the global level.

In years ahead, the trend toward privatization of publicly owned nuclear installations also underlines the importance of having transparent regulatory systems for physical protection that ensure the implementation of adequate security measures at facilities. It needs to be increasingly recognized that physical protection of nuclear material is an integral part of control systems for nuclear non-proliferation, and that the effective maintenance of such systems may provide both deterrence and confidence of the safe and peaceful operation of nuclear programmes.

Building upon the work of recent years, the IAEA's programme for physical protection will continue to support States in their efforts to strengthen the protection of nuclear material, and to prevent its potential use for unauthorized or illegal purposes. ❐