PHYSICAL PROTECTION OF NUCLEAR MATERIAL

BY DR. MOHAMED ELBARADEI

The possible use of nuclear material for non-peaceful purposes underlines the need for its special protection. Effective systems are therefore required to protect nuclear material and facilities from theft and sabotage both for non-proliferation and radiation safety purposes. The responsibility clearly rests with governments for ensuring that such systems are properly established and operated. But physical protection of nuclear material is also of international concern since incidents in one State can have ramifications across borders. The international community therefore has a legitimate interest in the fulfillment by States of their physical protection responsibilities.

The basic guidelines for physical protection systems have been developed by the IAEA. (INFCIRC/225/Rev.3, *Recommendations for the Physical Protection of Nuclear Material.*) First published in 1972, the guidelines have been revised a number of times since then. They cover physical protection for nuclear material in use, storage and transport, both domestically and internationally. They have proven to be of significant importance in the development of national requirements and international agreements.

For nuclear material in international transport, the implementation of effective physical protection systems are of direct concern to the shipping, receiving and transit States. The Convention on the Physical Protection of Nuclear Material, which entered into force in 1987, obliges States Parties to implement specific protection measures for nuclear material in international transport. At the time of the negotiation of the Convention, States believed that physical protection in the domestic sphere should remain within their national responsibility and not subject to binding international standards. In September 1992, Parties meeting at a review conference convened by the IAEA continued to express support for the Convention in its current form.

The importance of having effective physical protection systems in place has been highlighted by the threat posed by the well-publicized cases of illicit nuclear trafficking in the mid-1990s. These incidents pointed to the possibility of unauthorized access to direct-use material and to potential weaknesses in the physical protection system. The potential for the smuggling of large quantities of weapons-usable material may be low. However, even trafficking of small quantities of such material deserves full attention in the context of non-proliferation, since quantities of nuclear material of strategic value could be accumulated. Also, radioactive sources have frequently been reported in illicit trafficking incidents. Although they do not pose a proliferation threat, they can cause, and have resulted in, fatal ionizing radiation exposure to individuals.

In light of these developments, the IAEA and its Member States have given increased attention to activities against illicit trafficking of nuclear material and other radioactive sources. Within its programme "Security of Material", the IAEA has initiated a number of activities to support Member States in improving their nuclear material accountancy and physical protection systems at State and facility levels.

Clearly, the first line of defense in protecting nuclear materials is an effective State System for Accountancy and Control (SSAC) through which States have an exact knowledge of the quantities and location of their nuclear material. These systems help deter illegal activities because of the possibilities of timely

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detection of missing material. For this reason, *inter alia*, the Agency has focused on the development and co-ordination of plans for technical support to establish and improve SSACs and physical protection systems. In addition to an SSAC, a comprehensive regulatory framework with adequate operational resources is also required in order to detect attempts of intrusion; delay access to the material; and activate preplanned response measures.

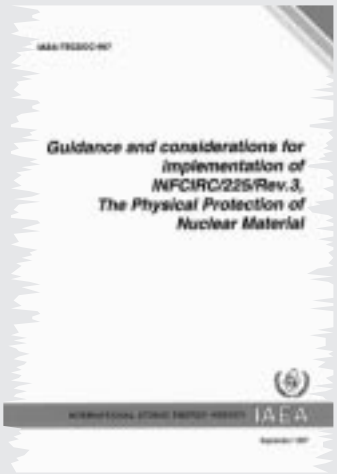
The IAEA is aware that improvements are needed in the international regime for the security of nuclear material and its implementation and is assisting States to improve their physical protection systems. It has set up an advisory peer review service for the evaluation of national physical protection systems, at the request of States. Four missions under the International Physical Protection Advisory Service (IPPAS) have been carried out in the past year, and a similar number will be conducted in 1998. Based on arrangements with the host country, an IPPAS team evaluates the physical protection systems at facilities and the supporting regulatory infrastructure. The reports of the IPPAS teams have been found useful by States who availed themselves of this service. The IAEA also is assisting several States as regards the development of legislation and the establishment of regulatory systems, and in areas of training, where national courses have been arranged in co-operation with some Member States. Regional courses also have been held in the Czech Republic, the Russian Federation, and will be held in China and in Argentina. Technical seminars also have been conducted in Ukraine and Kazakhstan.

Together with national experts, the IAEA has developed a Technical Document to provide additional guidance to States for implementing INFCIRC/225 *(see box)* and will be publishing a physical protection handbook to assist States in the development of their national programmes. The Agency also plans to convene a meeting in 1998 to review and upgrade lNFCIRC/225 Rev.3.

There is now growing concern among States about the limited scope of the Physical Protection Convention. While States Parties to the Convention committed themselves to a level of security comparable to the recommendations in INFCIRC/225, this was only for nuclear material in international transport. At its September 1997 meeting, members of the IAEA Board of Governors expressed support to move towards a possible review of the Convention. It was suggested that, to begin with, the Agency consider the possibility of convening a meeting of interested States to address the issues involved in such a review. Should there be sufficient support for this proposal, the Secretariat would convene such a meeting during 1998. Authorities are invited to make their views known regarding the possible extension of the Convention's scope.

The IAEA General Conference urged the Agency to do more to assist States to protect nuclear materials and radioactive sources from illegal use and illicit trafficking. The programme now depends on the extrabudgetary support of some Member States. However, to demonstrate the priority the Agency attaches to physical protection and its commitment in this field, I believe that additional funds for the programme should be provided through the regular budget. The Secretariat is already addressing this question in the budget preparation for the period 1999-2000. ❐

TIMELY GUIDANCE



Authorities in most countries rely to some extent on recommendations issued by the IAEA to set up and operate their systems for the physical protection of nuclear material. Additional guidance in applying these recommendations recently was issued in an IAEA Technical Document (IAEA-TECDOC-967, September 1997). It provides a broader basis for State authorities to prescribe appropriate requirements for the use of nuclear materials which are compatible with accepted international practice. The document supplements efforts to assist countries in assuring that the recommendations on the physical protection of nuclear material are applied uniformly and rigorously throughout the international nuclear community.