

Physically protecting nuclear materials in transport

The legal framework for security

by Ha-Vinh Phuong

Regulations for the safe transport of radioactive materials are designed to afford protection against *unintentional* opening of packages in normal handling and transport conditions, and against radiological damage that might arise in severe accident conditions. They do not provide for physical protection, which consists of security measures designed to protect against *wilful* acts, such as theft, sabotage, or unlawful removal and use of nuclear materials.

However, as the transport of nuclear materials is probably the operation most vulnerable to hostile acts, or such attempts, the need for ensuring their physical protection has long been recognized.

This is, of course, a matter that may affect public order and security; therefore, the responsibility for physical protection of nuclear materials and installations under a State's jurisdiction or control rests entirely with the Government of that State. It is within the Government's discretion to establish requirements aimed at deterring or defeating any deliberate act directed against a nuclear facility or nuclear material — or a means of transporting such material — that could endanger the public health and safety by exposure to radiation.

The lack of, or deficiencies in, physical protection requirements in a State may have an adverse impact in other States — particularly as regards shipments of nuclear materials across national boundaries. Because of possible threats or criminal acts involving such materials, a concerted approach to physical protection is needed at the international level that can contribute to facilitating the peaceful uses of nuclear energy.

The Agency's role

In this area, the only responsibility of the IAEA, under its Statute, is that of protecting nuclear materials in its possession against, *inter alia*, unauthorized removal, damage or destruction, including sabotage, and forcible seizure.* This responsibility, however, is confined to nuclear materials made available by Member States to the Agency and kept in its custody — a situation which has not materialized as foreseen in the Statute. The Agency, otherwise, has no statutory authority in regard to physical protection of nuclear materials anywhere.

Nonetheless, Member States have encouraged the Agency to facilitate international co-operation in this field because of the international implications of physical protection measures. Thus, recommendations that could serve as a basis for establishing national systems of physical protection were first issued by the Agency in 1972, and subsequently revised in 1975 and 1977, and published under the title *The Physical Protection of Nuclear Material* (document INFCIRC/225/Rev.1).

These recommendations, which are subject to review and updating as appropriate, are based on the current state-of-the-art and reflect a broad consensus among the Agency's Member States. They provide guidelines for the physical protection of nuclear material in use, storage, and transit, and of all current types of nuclear facilities. They cover both regulatory aspects and technical measures, and they have proved helpful for the design or improvement of national systems of physical protection.

The basic concept behind them is the *categorization of nuclear material*, based on its potential hazard which, in turn, depends upon its type, form, and quantity. Such categorization determines the *levels of physical protection required*. Detailed requirements are set out with respect to each category of nuclear material in transit.

Special measures

To minimize possibilities for unauthorized removal of, or deliberate damage to, nuclear material during transport, special attention is called to such measures as:

- Minimizing the total time during which the nuclear material remains in transit
- Minimizing the number and duration of nuclear material transfers
- Avoiding the use of regular movement schedules
- Requiring pre-determination of the trustworthiness of all individuals involved in transport operations.

For international transport, it is recommended that advance arrangements be made between the States concerned to ensure the continuity of physical protection measures as are relevant to each specific shipment over its entire journey. Such arrangements should, in particular, determine the point at which responsibility for physical protection is transferred from the shipper to the receiver, and identify other States that may be involved in an international shipment, with a view to securing their co-operation and assistance in case of need.

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* Article IX.H of the IAEA Statute.



Irradiated fuel shipment being escorted in France. (Credit: Cogema)

International co-operation

By a resolution of September 1975, the IAEA General Conference welcomed the Agency's recommendations and called upon Member States and the Director General to consider ways and means of achieving further international co-operation in the area of physical protection.*

The First Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons in May 1975 also had recognized the importance of this subject and the possibility of an international convention. It may be noted that the Agency's recommendations mentioned the desirability of such a convention for mutual co-operation and assistance among States in physical protection matters.

In the following period, the Agency started, in 1978, the organization of training courses and the provision of advisory services to Member States in the framing of national regulations on physical protection. With the help of experts from Member States, a guidebook was prepared — *Design Considerations for Physical Protection Systems Applicable to Nuclear Facilities with Particular Reference to Light-Water Reactor Plants*.**

This guidebook has been available since 1982 upon request and on a restricted basis (because of specific design information it contains) to national authorities.

* GC(XIX)/RES/328.

** Participating in the guidebook's preparation were experts from Brazil, Canada, Egypt, France, Federal Republic of Germany, India, Japan, United Kingdom, and United States of America.

Through them, it has been provided to nuclear facility operators for information and guidance as to the principles and methods of physical protection of nuclear power plants.

The Convention of 1979

Though physical protection is a matter entirely within the domestic jurisdiction of States, there are issues that require concerted action at the international level, in particular with regard to international shipments of nuclear material as mentioned earlier.

Toward this objective, the Convention on the Physical Protection of Nuclear Material was adopted in Vienna, Austria on 26 October 1979 as a result of negotiations under the Agency's auspices in which 58 States and the European Atomic Energy Community (EURATOM) had participated. Up to 31 January 1985, the Convention, for which the Agency is the depositary, has been signed by 39 States and EURATOM, and ratified by 10 States.* (See table.) It requires 21 ratifications for entry into force.

The Convention does not apply to nuclear material used for military purposes; the importance of effective physical protection of such material is merely recognized in the preamble.

The Convention focuses primarily on physical protection of nuclear material during international transport — though several of its provisions deal with nuclear material in domestic use, storage, and transport.

* The Convention is reproduced in document INFCIRC/274/Rev.1.

Signatories to the Convention on Physical Protection of Nuclear Material

United States of America	Hungary
Austria	Sweden
Greece	Yugoslavia
Dominican Republic	Morocco
Guatemala	Poland
Panama	Canada
Haiti	Romania
Philippines	Brazil
German Democratic Republic	South Africa
Paraguay	Bulgaria
Union of Soviet Socialist Republics	Finland
Italy	Czechoslovakia
Luxembourg	Korea, Republic of
Netherlands	Norway
United Kingdom of Great Britain and Northern Ireland	Israel
Belgium	Turkey
Denmark	Australia
Germany, Federal Republic of	Portugal
France	Niger
Ireland	
EURATOM	

Status as of 31 January 1985.

Listing in chronological order by date of signing.

Those in **bold type** have ratified the Convention.

Undertakings by State Parties

Under the Convention, each Party must take steps to ensure that, during international transport, nuclear material is protected at the agreed level as long as the material is within its territory or aboard ship or aircraft under its jurisdiction. Each Party also agrees not to export or import nuclear material, or allow its transit through its territory, unless it has received assurances that the nuclear material will be protected during international transport according to the levels based upon the categorization of nuclear material, as set out, respectively, in Annexes I and II of the Convention.*

A Party must also apply such levels of protection to material which, during transit from one part of its territory to another, will pass through international waters or airspace. The Party responsible for receiving the requisite assurances must provide advance notice of the transfer to the States through whose territory the nuclear material will pass.

In the event of theft or robbery, or any threat of them, the Parties undertake to provide co-operation and assistance to any requesting State in the protection and recovery of the nuclear material involved.

Thus, even States not Parties to the Convention may invoke the benefit of this undertaking — and this is quite an innovation in international law that reflects the

objective of facilitating the widest possible international co-operation, irrespective of adherence to the Convention.

The Parties further undertake to consult and co-operate with each other, directly or through international organizations, on matters relating to the design, maintenance, and improvement of physical protection systems for the international transport of nuclear material.

Strategy against criminal acts

Pursuant to the Convention, each Party must make certain acts involving nuclear material serious criminal offences under its legislation and subject offenders to prosecution or extradition. Such acts include theft or robbery, embezzlement, extortion, and sabotage — that is, any unlawful act that causes or is likely to cause death or serious injury to persons, or substantial damage to properties.

Appropriate penalties will apply to such acts, irrespective of whether the nuclear material involved is in domestic use, storage, transit, or international transport. The Convention has thus adopted the strategy of “*no sanctuary*” to cope with criminal acts committed in those circumstances — as have some earlier conventions, in particular those relating to the safety of air transport.*

The importance of the Convention for greater co-operation among nations in the peaceful uses of nuclear energy, and the special interest attached by the international community to a speedy entry into force of the Convention, are reflected in two successive resolutions adopted by the Agency’s General Conference in September 1983 and September 1984. These resolutions expressed the hope that the Convention will enter into force at the earliest possible date, and that it will obtain the widest possible adherence.**

Indeed, in parallel to continuing efforts to further improve the safe transport of radioactive materials, action should be aimed at securing the adoption and enforcement, at both the national and international levels, of uniform standards for the physical protection of nuclear material in transport.

The Agency’s recommendations, together with its advisory activities, and the mutual co-operation and assistance mechanism provided by the Convention, are usefully supplementing each other to ensure the security of nuclear shipments.

* See the Multilateral Convention for the Suppression of Unlawful Seizure of Aircraft, The Hague, 16 December 1970, and the Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, Montreal, 23 September 1971. A similar approach also was followed by the Convention on the Prevention and Punishment of Crimes against Internationally Protected Persons, including Diplomatic Agents, adopted by Resolution 3166 of the 28th Session of the United Nations General Assembly and opened for signature in New York, 14 December 1973.

** GC(XXVII)/RES/415, and GC(XXVIII)/RES/424.

* The contents of the Annexes reflect the Agency’s recommendations as contained in INFCIRC/225/Rev.1.