

## Safeguard

Nuclear materials and technologies can be used in the civil environment for medical, industrial, research and energy production purposes. However, they can also be unduly used for the development of nuclear weapons. In order to ensure that nuclear materials and technologies are used for peaceful purposes, there are various levels of control and verification, exercised internationally, in the community and nationally.

The most important international agreement governing the possession of nuclear weapons is the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

It forbids "militarily nuclear States" from transferring anyone with weapons or other nuclear explosive devices, and from "militarily non-nuclear states" to produce them on their own or take possession of them in any other way. The International Atomic Energy Agency (IAEA) is in charge of verifying the exclusively peaceful nature of the States' nuclear programs.

The IAEA is indeed the key element of the international nuclear non-proliferation regime. Under the Treaty, Non-Nuclear States continue to have the legitimate right to develop programs only for the purpose of civil use of nuclear Energy and the NPT assigns to IAEA the task of ensuring that these States do not redirect use of nuclear materials and technologies for non-peaceful purposes. The IAEA therefore verifies, through its own verification and inspection system, that the member countries comply with their obligations deriving from the Nuclear Non-Proliferation Treaty (NPT) and other non-proliferation agreements on the use of materials and technologies for exclusively peaceful purposes. For this purpose, the IAEA concludes with the Member States safeguard agreements, with which they agree to submit to the inspection powers of the Agency.

The set of technical measures and verifications that the IAEA applies on nuclear materials and technologies, in order to verify that they are exclusively intended for peaceful uses, is called "safeguards".

For the Member States of the European Union it is also necessary to consider that the Treaty of Rome (Euratom) provides that the Commission, regardless of the methods of use, verify that minerals, raw materials and special fissile materials are not diverted from the uses stated. Under the Euratom Treaty, the Commission is responsible for controlling the appropriate (in particular, non-military) and peaceful use of nuclear materials: Euratom security checks are carried out by specialized inspectors, who carry out physical and accounting checks in all nuclear plants in the Community.

For the Member States of the Community that do not have nuclear weapons, the two control and verification regimes, the IAEA and the Commission, come together with the Safeguard Agreement, called the Euratom-IAEA Verification Agreement (INFCIRC 193), which provides that the Community also carries out the checks required by the NPT in the Member States, while the IAEA verifies the results of the Community control.

In particular, Euratom controls are implemented through a specific Regulation, valid for all the Member States of the Community. It incorporates the technical progress registered in the sector and allows the signatory states of the Non-Proliferation Treaty (NPT) to meet the obligations undertaken with the Verification Agreement.



The Regulation establishes the requirements that regulate the transmission to the Commission, by operators, of information and data concerning the matters and installations where they are held. With this Regulation the accounting and control system has assumed the connotation of a management structure on an IT basis. In particular, a veritable architecture of control and synthesis tasks was outlined for the accounting system, providing all the procedures necessary to provide, at any time, a complete and reliable description of the nuclear materials held, as well as precise information on their location.

Based on the information provided by the Commission, the IAEA carries out specific data and information analyzes and conducts inspections of the various plants.

In addition to the levels of control and verification at the Community and national level, there is also national control over the materials. The legislation defines for the holders, the procedures for keeping the records relating to the accounting of nuclear materials and periodic reporting to the ISIN. The aforementioned Decree provides for the possession notification to both the Ministry of Economic Development and ISIN while, for the relevant updates, it is expected to be sent only to the ISIN.

The Inspectorate manages the database of the holders and operates direct supervisory actions both on the accounting inventories and on the physical ones.

The system of traditional safeguards (based on the control of nuclear materials) has not prevented some non-NPT States from acquiring nuclear weapons. In the 90s the revisional process of the system led to the Additional Protocol to the Safeguard Agreement.

The Protocol has extended the IAEA's control activities to the studies, even theoretical, to the equipment and activities that somehow refer to the nuclear fuel cycle.

The implementation of the Protocol in the national legislation due to the presence of EURATOM required an extension of the mandate already assigned to EURATOM through the Treaty of Rome.

With the Law n. 332/2003, the model of Additional Protocol valid for the States of the European Union without nuclear weapons was implemented, and with a subsequent decree the methods of application of the same law were fixed to national operators.

The prominence of this regulatory is extended but its application is still incomplete; in particular, the new application model, defined as "integrated safeguards", extends the control also to universities that carry out studies with effects on the fuel cycle and, more generally, on dual-use goods of possible use in nuclear industry; even industries that build or provide support for the use of the above mentioned dual-use goods are subject to the new obligations established by the Additional Protocol.

The law identifies the Ministry of Economic Development as the competent authority for activities in the territory. The MISE has delegated, through an onerous agreement, almost all of the reporting activities and all the verification actions to ISPRA, now ISIN. The effect of this delegation involves, for the ISIN, the management of a computerized document center and the need to proceed to the verification of the declarations produced by the operators that constitute the basis for the national declaration, of which the State is responsible, which by means of EURATOM is transmitted to IAEA.



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The IAEA, on the basis of the statements made, together with the available information, also on the so-called "open sources", verifies the correctness of the information and, if necessary, proceeds to request further information or specific inspection accesses.

In relation to the framework outlined above, the ISIN, in order to ensure the fulfillment of the Italian State's obligations regarding safeguards, verifies the statements of the operators to the Commission and represents the State towards the European Commission and the IAEA during the inspections. In fact, ISIN participates in the EURATOM and IAEA inspections, contributing to ensuring the fulfillment of the obligations arising for the State from the Safeguard Agreement and verifying that the inspections are carried out in the manner prescribed by the Agreement.

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