

Safety and Security during Transport Operations

International shipment of category 1 sources under special arrangement

Leticia Pica*; Virginia Roldós*

*Autoridad Reguladora Nacional en Radioprotección (ARNR) – Ministerio de Industria, Energía y Minería, Uruguay

Since 2010, a multipurpose self-shielded modular irradiator (EMI-9) containing category 1 cobalt-60 sources has been operating in Uruguay. Its main applications include the irradiation of food and agriculture products as well as sterilization of medical and health items. The irradiator was designed and manufactured in the same country where the sources are produced. One characteristic of the design is that the module containing the sources during operation also functions as the transport package.

In the past, this container module was transported by road to the country where the sources are manufactured, for its initial loading and subsequent first reloading. On both occasions, a valid competent authority certification for a type B(U) radioactive materials package design certificate was in place.

In 2022, in order to increase irradiation capacity, the owner company of the irradiator requested authorization to the regulatory body (National Regulatory Authority on Radiation Protection – ARNR-) to carry out a new reloading abroad. This involved the transporting of the complete module containing the sources in use, and subsequently returning it to Uruguay with the additional sources.

At the time of request, the Type B(U) package design certificate had expired, and the original equipment manufacturer, holder of the design rights, had ceased operations. As a result, renewal of the certificate was not feasible. The owner company of the equipment made efforts to obtain the design rights from the design authors in order to pursue certificate renewal with the competent authority of the country of origin, but these attempts were unsuccessful.

The proposed paper will present the stages of the shipment process carried out under special arrangement for reloading the container module and its subsequent return. It will also outline the provisions approved by the competent authorities involved in compliance with the IAEA transport regulations (*SSR-6 Regulations for the Safe Transport of Radioactive Material 2018 Edition*).

This international transport of category 1 sources was conducted in full compliance with the *Guidelines on the Import and Export of Radioactive Sources* associated with the *Code of Conduct on the Safety and Security of Radioactive Sources*.

Approval and execution of this shipment represented a significant challenge for the staff of the uruguayan regulatory body, as there was no previous national experience with international shipments under special arrangements. The shipment also required bilateral coordination and cooperation between regulatory authorities. The process highlighted the importance of regulatory body preparedness, international cooperation, and bilateral collaboration to ensure the safe and secure transport of category 1 radioactive sources.