

## POLAND: A COMPREHENSIVE APPROACH TO CESIUM SECURITY

The U.S. Department of Energy's Office of Radiological Security (ORS) cooperates with partner countries throughout the world to enhance the security of radioactive sources used for legitimate purposes. A large number of these sources are within hospitals, universities and other public establishments. High activity Cesium-137 is one of the primary isotopes used to irradiate blood for the prevention of Transfusion Associated Graft versus Host disease (TA-GvHD). As member states continue to intensify their support for the implementation of the IAEA security recommendations in Nuclear Security Series No. 11, Security of Radioactive Sources, operators face a growing strain on their security resources in both financial and human capital terms. ORS is pursuing a Global Cesium Security Initiative (GCSI) that focuses on enhancing physical protection of cesium irradiators.

In the course of discussions with partners, there is an emerging interest in strategies that enable the permanent reduction of the risks associated with Cesium-137. Although several countries, including France, Norway, the U.S. and Japan have pursued these strategies and moved towards X-ray as a non-ionizing technology to achieve critical service provision, there still has been limited adoption of X-ray internationally for these uses until more recently. In Poland, for example, a number of regional blood centers and hospitals have declared their intention to switch from Cs-137 to X-ray. The adoption of X-ray by the first Polish site is fairly new, but through the GCSI, ORS is working to transition at least six volunteer sites by 2020 from cesium-based irradiation to X-ray based blood irradiation. This momentum can be attributed in part to the age of the cesium devices and the procurement decision timeframe, but also the ability of the regulator to discuss the full cost of ownership for radio isotopic devices, such as security systems and disposition costs. The paper will highlight how technical exchanges among the Polish regulatory authority, waste management organization (ZUOP), radiological facilities and various subject matter experts (SMEs) created synergy to drive the risk reduction conversation. The costs associated with the security of radioactive sources can be significant. As regulators begin to enact legislation that requires sites to ensure the safe and secure disposal of old cesium based irradiators, and as sites consider the costs of potential liability that may arise from a malicious act involving radioactive sources, they have begun to realize the true cost of securing cesium for use, rather than exploring other other methods such as X-ray based irradiation.

In the case of Poland, radioactive sources licensees must provide financial resources in the form of an "escrow" to ensure the safe and secure disposition of disused sources at end of life. The focus on enhancing security regulations and lifecycle management of radioactive sources, coupled with technical exchanges, is leading licensees to evaluate the complete cost of ownership and operation of radioisotopic devices. The paper will identify the challenges, best practices, and lessons to be learned from Poland's experience grappling with the challenges of securing cesium-137 when the issue is considered holistically.

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