Contribution ID: **32** Type: **POSTER**

Management of Disused Radioactive Sources from the Irradiation Facility Product I in Cuba

The industrial irradiation facility, type Product I from the former Soviet Union, was put into operation in Cuba in 1987, in the Research Institute for Food Industry. It was used for irradiation of foodstuffs and other types of products. According to the IAEA classification, this is a category II irradiator, panoramic irradiator with dry storage of the radioactive sources. The facility was initially charged with 52 Co-60 sources, with total activity of 2.50E+15Bq. The facility stopped operating in the nineties.

In order to recover the irradiation capacities, it was necessary to recharge the irradiator with new Co-60 sources. The 52 disused radioactive sources (DSRS) had to be previously removed from this facility. Adequate container was not available to put the DSRS and transfer to the National Radioactive Waste Storage Facility. So a decision was taken to transfer and temporary store the sources in the reserve pit, located in the same room. The authorization from the Regulatory Body was necessary for this operation. Operational and safety procedures, radiation protection program, safety analysis, as well as the emergency plan were prepared and presented to the Regulatory Body to apply for authorization. A transfer container was available in the facility, but it had to be checked and repaired. Some auxiliary devices were designed and constructed to facilitate operations and to optimize operator doses. License was granted and the DSRS were transferred to the reserve pit in 2015, with the assistance of an IAEA expert. The irradiator was then prepared and recharged with new Co-60 sources.

Last year, a container for the 52 DSRS was received with the support of IAEA. The design of the container allows the direct loading of sources from the channels of the reserve pit, using a special tool. It provides adequate shielding for the 52 sources with total activity of 4.0E+13Bq.

Operational and safety procedures, radiation protection program and safety analysis were developed for the operations, including: transfer of the DSRS from the reserve pit to the container, preparation of the package and transport to the Storage Facility. The required documents were presented to the Regulatory Body for evaluation. The transportation should be carried out under special arrangement.

There is a plan to remove the 52 DSRS from the irradiation facility and transfer to the Waste Storage Facility this year, once the authorization for removal of sources and the Special Arrangement for transport are granted by the Regulatory Body.

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Session Classification: Solutions for Specific Wastes

Track Classification: 3. Solutions for Specific Wastes