Assessment of the Radiological Safety of Exposure Devices For Industrial Gamma Radiography in Argentina
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1. Introduction

- Industrial gamma radiography is an extended technique used as a non-destructive assay method in Argentina.
- This activity is considered of a significant radiological risk, as it has been demonstrated by the magnitude and frequency of the radiological accidents occurred worldwide.
- There are some types of equipment not yet complying with ISO 3999.

2. Objectives

- Present the results of the safety assessment which could lead to the decision of the Nuclear Regulatory Authority of withdrawing from the use an important part of the inventory of gamma radiography equipment.

3. Methods

The data assessed was collected from the 68 facilities performing industrial gamma radiography activities in Argentina with portable exposure containers classified as Category II.

The main elements of the evaluation can be summarized as follows:
- decision of some manufacturers to discontinue the production of certain equipment models and the provision of their spare parts;
- failures in the compliance of the apparatus with the international recommendations;
- comparison between the requirements of the AR 7.9.1 Standard and the ISO 3999 Standard;
- validity of type B(U) package certificates for their transport.
- alternatives for the management of depleted uranium shielding of exposure containers.

4. Results

AR 7.9.1 Standard establishes the preventive maintenance and routine control of all the elements related to the industrial gamma radiography activity and that each exposure device should be checked on a yearly basis by an independent control carried out by a qualified institution certified by ARN, in order to ensure that it remains in safe operating conditions.

The alternatives assessed for the equipment to be withdrawn are:
- final disposal or recycling of the depleted uranium shielding;
- use as containers of radioactive sources.

5. Conclusions

- It is highlighted the need of a regulatory decision complementary to the AR 7.9.1 Standard concerning the operation of industrial gamma radiography equipment, in line with the current international recommendations and the commitment of Argentina to the good practices and safety culture.

- The Nuclear Regulatory Authority of Argentina is currently considering the potential benefit of the withdrawal of a significant part of the inventory of equipment used in industrial gamma radiography in the country, taking into account the compliance with the requirements of ISO 3999:2004(E) Standard as well as the validity of the authorization certificates for package models.