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BACKGROUND AND GOAL OF THE PRESENT WORK

The decommissioning of radioisotope production facilities can generate tons of long-lived radioactive waste, requiring specific procedures for dismantling, demolition, packaging, and managing the radioactive waste generated. In Brazil, advances in the area of radioisotope production resulted in the publication of a recent regulatory framework for radioisotope production facilities with cyclotron accelerators, in which the decommissioning stage was considered from the construction stage, aiming at cost and radiological environmental impacts reduction, and sustainability.

RESULTS

Radioisotope production facilities with cyclotron accelerators are subject to the CNEN NN 6.11 Requirements for Safety and Radiological Protection in Radioisotope Production Facilities with Cyclotron Accelerators, published in October/2020.

The regulatory framework establishes decommissioning requirements since the Construction Authorization:

- A preliminary decommissioning plan and adequate financial resources to cover the costs associated, including the management of waste arising from this operation, also considering a possible premature decommissioning of the facility.
- The project must describe the removal layer for decommissioning,
- Computational estimates for the activation of concrete and equipment components,
- Justify the constructive aspects chosen about radiological impacts and complexity for future decommissioning.

Decommissioning Authorization: The decommissioning plan updated and containing:

- Objectives and justification
- Description of the areas
- Schedule
- Inventory (physical, chemical, and radiological) of sources, systems, and equipment;
- Organizational aspects
- Methodology
- Radiation protection
- Monitoring and maintenance
- Operational procedures
- Waste management



Figure 1: Characterization of bunker's concrete blocks during decommissioning process in Cyclotron facility in Brazil (CNEN collection)



Figure 2: Hot cell dismantling during the decommissioning step in Cyclotron facility in Brazil (CNEN collection)

Inspections: The regulatory body carries out inspections before, during, and after the decommissioning process.

CONCLUSIONS

The pre-operational assessment of decommissioning factors is an excellent regulatory approach for the sustainability and cost reduction of the decommissioning step of radioisotope production facilities.

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REFERENCES

- [1] CNEN NN 6.11 Requirements for Safety and Radiological Protection in Radioisotope Production Facilities with Cyclotron Accelerators, 2020.