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Waste and Decommissioning Waste from a NORM industry

The Santo Amaro Plant - USAM - was a monazite chemical processing industrial unit that operated for 43 years in São Paulo, Brazil. The control of USAM by Indústrias Químicas Reunidas S.A. - Orquima occurred until 1956 when the company was nationalized and Indústrias Nucleares do Brasil S/A - INB became responsible for the liabilities of that industrial unit in 1988.

The chemical processing of monazite had three main steps: (i) alkaline opening to separate a soluble product (trisodium fosfate) and an insoluble product (rare earth, thorium and uranium hydroxide); (ii) selective dissolution of the rare earths in hydrochloric acid, leave all thorium and uranium insoluble in a compound called Torta II and (iii) demesotorization to precipitate the radio and lead achieve the final product rare earth chloride, no radioactive.

The industrial unit was composed of mills, reactors, filters, crystallizers and water pipes phases of the process. In a few moments, the processing unit had contact with radioactive products handled on site and the decommissioning required dismantling, monitoring everything and decontaminating what was possible.

In mid of 1992, INB stopped activities and decided to deactivate the industrial unit. Actions by the the Federal Public Ministry resulted in an agreement for the decommissioning of the 13,265 m2 factory. Decommissioning started in 1994, after approval of the control, radiological protection and waste management plans.

The problematic issues of this operation were the deadline stipulated by the Public Ministry, the resources for radiological monitoring and the place for storing radioactive waste. As time was running out, the radiological control team to adopt more restrictive measures in the segregation of tailings, which caused an increase in the volume to be sent to the deposit.

It was provisionally defined that the initial deposition of tailings would be in the warehouses of the Interlagos Unit and to minimally adapt the warehouses, works were carried out on the floor, roof and access gates.

In order to finalize the decommissioning of USAM within the deadline, waste was kept that had not been properly segregated, which may contain non-radioactive materials stocked with radioactive waste and nuclear materials (Torta II) in the initial deposit. The stock requires a new and more accurate segregation operation.

The segregation operation, including radiological monitoring of the packages, segregation of the contents, destination for non-radioactive waste and repackaging of radioactive waste, is been in planning.

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