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The NORM residues management: a practical approach in decommissioning of dismissed phosphate plants in Italy

We present, as example of NORM residues management in Italy, the practical approach adopted on the Gela (Sicily) site during urgent remediation operation of a large concrete decanter damaged by corrosion and atmospheric agents. For decades, the decanter had contained residues in two separate phases: about 700 tons of concentrated liquid phosphoric acid and several hundred tons of chemically aggressive sediments. The National Inspectorate for Nuclear Safety and Radioprotection (I.S.I.N.) exerts the role of Italian National Authority in cooperation with other public competent authorities, such as Regional Agencies for the Environmental Protection, the National Health Institute, the National Institute for protection of workers and Prefects, responsible for coordinating interventions in areas polluted by NORM residuals from former plants that ceased their productive activities.

In order to effectively deal with the time constraints imposed on operations during the remediation action, an informal working group was set up with the involvement of all the public and private stakeholders. It aims to address solutions to technical and regulatory problems through comprehensive examinations and shared discussions of multidisciplinary, interconnected and, sometime, conflicting issues.

Three main “standard operating phases” of our approach have been identified as typically arising during the remediation sub-processes for each type of NORM residue of concern: Characterization (radiological and radioprotection evaluation, chemical, etc.) - Treatment (physical/chemical inertization, pH neutralization, decontamination, etc.) - Final Destination (disposal, recycling, etc...). For each phase analytical results, comments and conclusions are presented.

At present, this practical approach developed on a specific case of Gela’s decanter, is being also applied to many other cases of dismissed Italian phosphate plants. In this regard, to better understand the origin and the complexity related to the decommissioning of phosphate industries in Italy, an historical review is briefly illustrated.

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