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IMPROVING SAFETY AND SUSTAINABILITY ASPECTS OF THE URANIUM PRODUCTION CYCLE AND NORM INDUSTRY PROJECTS IN ARGENTINA.

From 1952 to 1997, Argentina produced approximately 2,600 tU at the average grade of 0.1% U in the form of ammonium diuranate, intended to meet the domestic Argentinian demand. Seven production centres (not simultaneous), and a pilot plant processed the mineral ore from about 13 U deposits, distributed throughout the territory country, where both open pit and underground mining methods were used, with shares of 82% and 18%, respectively. Heap-leaching with ionic exchange resins extraction was the main processing technique applied for yellowcake production. Consequently, as a result of the low grade of the mineral ore and the milling technology a large amount of approximately 67 million tonnes of mining and processing wastes/residues has remained in the former mining-milling facilities which has been object of remediation at low scale so far.

Besides the Uranium Production Cycle (UPC), there are other current and potential sources of NORM in the country, such as oil and gas industry, metal mining, coal extraction, phosphate mining, REE mining, and tourism and recreation.

Mining production projects have many aspects in common with the uranium production cycle and are similarly considered to be conducted within the framework of a national mining and safety policy and sustainable strategy, with project-specific environmental and social situation. However, a UPC project and NORM industry must also take into account aspects may not be present with other mining projects such as radiation protection and safeguards.

Appropriate regulatory frameworks and proper wastes/residues management of former uranium production in the country are essential aspects for achieving long-term safety of residues management. Thus, the uranium and REE (U,Th) projects that could be put into operation in the middle-long term should avoid the generation of new legacy sites.

Fossil fuels and metal mining production are activities that represent a very important volume of the country's economy, with evident growth prospects in the coming years. These industrial activities involving NORM and generating NORM residues should be managed in a safe, secure and sustainable manner. The aforementioned criteria are also applicable to the production of fertilizers from phosphate rocks.

It is thought that sustainability aspects of UPC and management of NORM must be improved in line with IAEA safety standards and good practices. On the one hand, the remediation of uranium mining legacies, resource comprehensive recovery concept and perspectives of uranium In Situ Leaching (ISL) mining will help to change the social perception for future uranium recovery projects. On the other hand, it would be also beneficial to establishing a regulatory framework and carrying out new surveys and inventory for NORM industry.

The paradigm shift pursued by this proposal has been firmly supported by all the treaties during the implementation of the IAEA Interregional Technical Cooperation projects "Supporting Uranium Exploration, Resource Augmentation and Production Using Advanced Techniques, INT 2015 (2012-2015)", "Deploying Technology and Management of Sustainable Uranium Extraction Projects, INT 2019 (2016-2019)", and "Supporting Capacity Building in Member States for Uranium Production and Safety of Naturally Occurring Radioactive Material Residue Management, INT 2022 (2020-2023)".

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