

SANTA QUITÉRIA PROJECT, CEARÁ, BRAZIL: BUILDING THE FUTURE

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ABSTRACT

Industrias Nucleares do Brasil (INB), the company responsible for the nuclear fuel cycle in Brazil, and Galvani, a Brazilian national fertilizer company that produces phosphates, have been working together since 2009, and plan to develop the Santa Quitéria Project (also known as the Itataia uranium/phosphate mine project), which includes the construction and operation of an industrial mining complex in the state of Ceará, Brazil.

The primary objective of the Santa Quitéria Project is to mine and process an ore composed of phosphate and uranium, known as colophanite, a massive cryptocrystalline variety of apatite. A phosphoric acid purification unit will be built for the removal of radioactive elements and production of uranium concentrate through the transformation of phosphate ore into phosphoric acid, then recovering uranium as a by-product using solvent extraction.

It is estimated that Santa Quitéria will annually produce about 1.05 million tonnes of phosphate-based fertilizers to supply agriculture, 220,000 tonnes of bicalcium phosphate (used for animal feed), and 2,300 tonnes of uranium concentrate. The uranium concentrate will be processed abroad and converted into uranium hexafluoride (UF₆) and enriched, then returned to Brazil and used in the production of fuel for the nuclear power plants Angra 1, Angra 2 and, in the future, Angra 3.

Galvani and INB refined the phosphate ore processing technology, having already developed a dry-processing mineral beneficiation technique, which does not require a mine tailings dam, and consequently consumes less water while improving metallurgical recovery.

Currently, the Santa Quitéria Project has two licensing procedures underway: (1) an environmental impact study and report, reviewed by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), and (2) a review by the National Commission for Nuclear Energy (CNEN), Brazil's nuclear regulatory body responsible for licensing nuclear power plants and nuclear facilities. As an important part of the environmental licencing process, public hearings were held in the cities of Santa Quitéria, Itatira, and Canindé (Ceará Estate) in June of 2022. In addition, INB and Galvani have been very transparent, openly discussing the project with local and regional stakeholders over the last few months, including leaders from several surrounding communities.