Invited Presentation 1

THE USE AND MANAGEMENT OF NORM RESIDUES IN PROCESSING BAYAN OBO ORES IN CHINA

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Bayan Obo mine has a deposit of iron and rare earth ores. In which, it is renowned as a large rare earths deposit. The ores are rich in radioactive elements, with a 0.01-0.05% concentration of ThO_2 and a 0.0005-0.002% of U_3O_8. The deposit has been mined for more than 50 years. The ores are transported by train to the refinery plants in Baotou to process for products of iron and steel, rare earths (RE) and their compounds. Meanwhile, a large amount of NORM residues produced is being regulated and controlled. At present, about 560×10^6 tons of waste rocks produced are stored in the on-site waste rock dumps around the open pits, 149×10^6 tons of tailings are stored in tailing pond, about 55×10^6 tons of ferrous slag are stored in a ferrous slag dump, 437.3×10^3 tons of RE slag are stored in the Radioactive Waste Storage Facility. Most of wastewater after treated, is discharged in tailing pond and then pumped to milling plant for reuse. Waste gas after off-dust cleaning is discharged to environment. Any utilization of NORM residues must comply with radiological regulations in China. A substantial amount of blast furnace iron slag has been made into cement, concrete, bricks or used directly for highway construction. The development and exploitation of NORM residues is of importance for waste minimization. However, it raises serious environmental concerns. How to implement the ALARA principles of optimization, to safely utilize the residues, and to reduce the waste are therefore important topics in the management of NORM residues.