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Situation on radiation safety management at titanium mining facilities in Binh Dinh province of Viet Nam

Vietnam has a diverse and abundant mineral resource with more than 60 types of minerals in more than 5000 mines and ore points. From 2000 to present, on average, mineral exploitation (including oil and gas) each year contributes about 10-11% of GDP and over 25% of total state budget revenue.

Binh Dinh is one of the provinces with quite abundant resources with 154 mines and ore points of 24 types of minerals, including many rare and precious minerals such as granite (reserves of 700 million m³), titanium ores (reserves of 2.5 million tons of ilmenite, concentrated in Quy Nhon city). Most of the coastal sand dunes in Binh Dinh contain titanium mineral ores with the scale of placer reserves (in 2007) reaching over 10 million tons, including Ilmenite, Rutile, Anatase, Leucocene, Zircon, Monazite minerals; In which, Ilmenite is the main mineral, accounting for over 90%. Zircon, Monazite contain radioactive elements, where the richer ore content, the higher the radioactive intensity.

The technology used by ore mining and sorting companies in the coastal titanium mining sites in Binh Dinh is quite similar. The main method of exploitation is to build floating rafts on the underground water holes taken from sand dunes. Ores after being raw are transported to workshops to shift to sorting the separation of concentrates such as ilmenite, rutile, zircon, monazite by magnetic and electromagnetic methods.

Through inspections at titanium mining facilities in Binh Dinh province show that: no report on radiation safety assessment in radioactive ore mining; no quantitative assessment of radioactivity in the environment of solid, liquid and gaseous wastes; not implemented measures to reduce internal radiation emission for worker; lack of radiation safety measures for NORM storage.

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