

Additional Protocol Implementation in Industries That Produce Technologically Enhance Naturally Occurring Radioactive Material (TENORM) in Indonesia

Indonesia is a country rich in natural resources, both metal and non-metallic mineral resources, including tin and zircon. The by-products of tin and zircon processing still contain valuable minerals such as ilmenite, rutile, monazite and pyrite with a significant amount. However, the by-products of tin and zircon processing have the potential to have high radiation exposure compared to normal exposure. This is caused by the content of natural radionuclides contained in it, such as U-232 and Th-232. In addition, to being obliged to administer storage permits (BAPETEN Chairman Regulation, BCR No. 9-2009 and BCR No. 16/2013), businesses are also required to report the source material (Uranium and Thorium) content they have (BCR No. 9-2006 and BCR No. 9-2008). This is also requirement from the International Atomic Energy Agency by INFCIRC 153/ Add.1 and INFCIRC 540.

The purpose of this paper was to explain the interface between Technologically Enhance Naturally Occurring Radioactive Material (TENORM) and implementation of additional protocols in industries that produce TENORM in Indonesia.

BAPETEN did monitoring, verification, licensing and inspection of TENORM. The currently subject of TENORM supervision was tin and zircon industries in Indonesia. BAPETEN also reported to IAEA, the containing of uranium and thorium annually with additional protocol declaration.

Based on BAPETEN supervision, tin and zircon industry produce by product that contain source materials consist of uranium until 0.09%.and thorium 2.5 %. The radionuclides concentrations were 6.2-18.4 Bq/gram thorium and 1.0 –7.2 Bq/gram uranium. The industries equipped with security personnel, detection system, barrier and permanent inventory.

Keywords: additional protocol, TENORM, material source, security.

Gender

Male

State

Indonesia

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