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CONCEPTUAL DESIGN OF THE MOBILE TOOL KIT FACILITY FOR CONDITIONING OF DISUSED SEALED RADIOACTIVE SOURCES CATEGORY 3-5 IN THAILAND

The use of nuclear and radiation technology is currently widespread in Thailand, particularly in the fields of industry, research, and agriculture. Most of the applications for nuclear and radiation technology often involve the use of sealed radioactive sources (SRSs). SRS contains radioactive material that is permanently sealed in a capsule or closely bound and in a solid form. When SRSs are no longer in use, they are declared disused and managed as radioactive waste. The Radioactive Waste Management Center (RWMC) is responsible for the centralized collection, transport, conditioning, and storage of Disused Sealed Radioactive Sources (DSRS) in Thailand. The objective of conditioning DSRS is to ensure safe and separate from the environment and to prevent general public exposure for a specified period of time. Besides, it is recognized that conditioning DSRS will minimize the risk associated with them. The new innovation of waste packages is more suitable for handling, transport, storage, and/or disposal. In 2022, RWMC designed and developed the Mobile Tool Kit Facility for Conditioning of Thailand (MTKF-TH-01) to perform conditioning of DSRS categories 3–5. The basic idea was (i) to establish a workplace area for conditioning DSRS for categories 3–5, (ii) to build a flexible and movable workplace for moving to another building in the future, and (iii) to perform DSRS conditioning for new operators training. The MTKF-TH-01 is designed to consist of two containers (2.25 m x 3.20 m x 2.40 m) and is divided into three main areas: (i) reception and technical area; (ii) working and dispatch area; and (iii) dress change and contamination control area. In addition, radiation safety, health safety, security, and emergency assessment are implemented according to IAEA guidelines and Ministerial Regulations. The generic safety assessment and operational procedures were conducted for MTKF-TH-01. The design and development of MTKF were supported by the Thailand Science Research and Innovation (TSRI) budget.

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