

OVERVIEW OF THE CURRENT SAFE AND SECURE TRANSPORT OF PACKAGES CONTAINING RADIOISOTOPE MATERIAL IN MALAYSIA

Since Malaysia began developing radioactive material in 1982 using the 1MW TRIGA MARK II research reactor and relies on imports to meet its growing nuclear demands [1], the safe and secure transport of radioactive packages is essential. The transport of packages containing radioactive material is a crucial activity that protects the public and environment from accidental radiation exposure, ensures national security against misuse, and maintains public trust in nuclear technology [2]. This paper reviews Malaysia's current transport system for packages containing radioactive materials by covering its legislative foundation, operational practices, and ongoing challenges. The paper will explore the safe and secure transportation of new radioactive materials, radioactive waste, and radioactive materials used for inspection by operators during non-destructive testing within Malaysia and during international transit. The objective is to demonstrate compliance with both national and international standards.

The transport of packages containing radioactive materials in Malaysia is a highly regulated activity governed by the Atomic Energy Licensing Board (AELB), which operates under the authority of the Atomic Energy Licensing Act 1984 (Act 304) and the Radiation Protection (Transport) Regulations 1989 [3]. As the central regulatory authority in Malaysia, the AELB is responsible for issuing licenses and enforcing compliance with the rules. The AELB also outlines the specific requirements for all parties involved (consignor, carriers, and consignees) along with the necessary specifications for packaging, handling, and documentation [4,5]. Malaysia's system tightly integrates with global best practices by adopting the International Atomic Energy Agency (IAEA) Regulations for the Safe Transport of Radioactive Material (SSR-6, and SSR-6 Rev.1). Furthermore, the International Maritime Dangerous Goods (IMDG) Codes and the International Air Transport Association (IATA) rules also applied to all sea and air transport carried out in Malaysia [3]. The subsequent section of this paper will address the classification of packages and detail the critical logistical requirements necessary for transporting materials with short half-lives, where timely delivery is paramount [4,5].

The paper provides a technical analysis of operational requirements and safety measures for radioactive packages transport in Malaysia [3-8]. It details packaging requirements, which follow a graded approach based on the material's activity, type, and form, and meet testing standards adopted from IAEA guidelines. Key safety measures reviewed include radiation protection, the Transport Index (TI), and contamination control to guarantee containment and shielding during accidents [2,9]. Furthermore, the paper addresses proper marking, labelling, and documentation, and discusses in-transit security through security plans tailored to the radioisotope's category. Transport relies mainly on road transport in Peninsular Malaysia, with air or sea transport for Sabah, Sarawak, and international shipments, requiring compliance with the IATA and IMDG Code [3,6,7,8]. Lastly, the paper concludes by focusing on future initiatives to strengthen the system of transportation of packages containing radioactive material in Malaysia, such as an enhancing public education, implementing continuous training, and adopting real-time tracking.

References

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Country or International Organization

Instructions

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