

Safe and Secure Transport of Nuclear and Radioactive Material: Definition, Importance, Egyptian Legislation, and Recommendation

Regarding their multi-plentiful applications in different fields, the safe (avoiding accidents) and secure (protecting from theft, attack, and sabotage) transport of radioactive materials is becoming a critical environmental and political issue to prevent accidents and avoid radiological releases. Furthermore, the decommissioning activities of the existing nuclear power plant will increase the transportation of radioactive waste to the interim waste storage facilities and/or the final disposal.

In Egypt, the nuclear program includes various activities with peaceful applications such as research reactors, radiological facilities (accelerators, gamma irradiation units, Radioisotope production facility), facilities using radioactive isotopes and sealed radioactive sources (hospitals and medical laboratories, research laboratories, industrial sector), and radioactive waste management facilities. In this regard, the Egyptian Nuclear and Radiological Regulatory Authority (ENRRA) was established as the independent regulatory body for the management of all activities relating to the transport of radioactive materials inside the country, through the ports and territorial waters. Therefore, the Egyptian legislation in accordance with ENRRA board decree No.2 of 2022 for the safe transport of radioactive materials has been developed based on all the regulations of the IAEA (as SSR-6, 2018), aligned with international laws. According to the Egyptian law no. 7 of 2010, the Egyptian Atomic Energy Authority, EAEA (Hot Laboratories Center-Radioactive Waste Management Unit, RWMU), is responsible for the safe and secure transportation, storage, and management of radioactive waste in Egypt.

Practically, the transportation of nuclear and radioactive materials in Egypt, which are carried by air, road, rail, and sea, is performed under the control of ENRRA as follows: a) International transportation: All the documents of radioactive material consignments shall be submitted to the ENRRA for compliance assurance prior to their arrival by at least 2 weeks to regulate safe entrance in the country or the safe passage of such consignments through the different ports. On the arrival of these consignments, the experts of the Egyptian radiation detection team from EAEA examine all incoming shipments to ensure they are free of any artificial radioactive contaminants. Radiation inspection committees from the EAEA are deployed across all Egyptian sea, air, land, and river ports. In the case of shipments rejected for radioactivity, the ENRRA will be informed to take the final decision. b) Internal transportation of radioactive materials/waste (Radioisotopes, SRS, DSRS, NORM, etc.): - Also, the documents of these consignments are submitted to the ENRRA by the Radiation Protection Expert at least 7 days before the transportation to coordinate with police, and civil defense to emphasize the safe and secure delivery and to mitigate the transportation threats and their consequences.

Finally, I would suggest some recommendations to guarantee the safe and secure transportation of radioactive materials: a) Full details about the consignments (nature, number, and weight, etc.), licenses (facility, persons) and the transportation mode should be provided; b) Training of the personnel involved in the transportation to handle the radioactive material safely; c) Revision and updating of the guidance on physical security during transport of radioactive materials; d) Lessons learned and sharing information between the competent authorities and stakeholders (designers, manufacturers, consignors, carriers, consignees) regarding the safe transport; and e) Initialize the computer security role in the radioactive material transportation.

The present paper will introduce more comprehensive details regarding the best practices and regulations for managing a sustainable, synergistic, and integrated approach between safety and security in the transportation of nuclear/radioactive materials/waste.

Country or International Organization

Instructions

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Track Classification: Track 1 Legislative and Regulatory Framework for Safe and Secure Transport