

Nucleo-Guard prioritizes safety through stringent protection, regulatory compliance, and real-time oversight during the transport of radioactive materials

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Abstract

Transportation of radioactive materials is one of the most sophisticated and sensitive means of transport, where even a minor mistake can cause disastrous consequences—ranging from small or large radiological accidents to money loss, delivery delays, and threats to patient care. In order to overcome these obstacles, we created the “Nucleo Guard Application”, An overall digital platform based on 21 years of experience in nuclear logistics and radiation protection field. The application, offers an end-to-end control system intended to benefit not just expert companies with radioactive shipment, but also shipping companies and carriers, petroleum companies, and even first-timers in the industry. The Nucleo Guard application simplifies the preparation of document required by shipping regulations, issues alerts in case of deviations from regulatory requirements, and performs all decay and activity calculation necessary to ensure consignments reach the delivery destination with the intended activity at the specified time. Additionally, the platform enables real-time tracking of the shipments by recording and transmitting radiation dose-rates on container surfaces. This feature allows transparent monitoring for both clients and regulatory agencies. Among the most unique features of Nucleo Guard is its inbuilt reservation for flights, which displays exclusively authorized airlines approved to transport radioactive materials, thereby reducing administrative workload and ensuring operational safety. Furthermore, a technical team of licensed radiation protection specialists is available 24/7 to undertake technical consultancies, international regulatory advice (IAEA, IATA, ICAO), and emergency response support. By integrating regulatory compliance, operational performance, and advanced monitoring, Nucleo Guard enhances safety, reliability, and transparency for the international transport of radioactive materials.

Key Words: Nucleo-Guard, radioactive materials, Transport, Environment