

Enhancing Cross-Border Coordination for the Secure Transport of Radioactive Materials in East Africa: A Port-Based Perspective from Kenya

The secure transport of radioactive materials in East Africa is increasingly challenged by rising cargo volumes, diverse regulatory frameworks, and shifting geopolitical dynamics. As a frontline operator at Kenya's primary seaport—a vital gateway to East and Central Africa—I regularly encounter issues in screening cargo for illicit or misdeclared radioactive materials. These include concealment within mineral shipments, mislabeling of medical or industrial isotopes, and undeclared special nuclear materials from high-risk origins.

The region's expanding industrial and medical sectors have heightened reliance on radioactive materials, amplifying transport risks. Kenya's ports, especially Mombasa, serve landlocked nations such as Uganda, Rwanda, and South Sudan. Despite regional efforts under frameworks like AFRA and EAC protocols, enforcement remains uneven, and coordination limited, creating exploitable gaps in safety and security.

This paper shares operational insights into cargo screening, detection technologies, and risk profiling strategies used to intercept unauthorized radioactive materials. It highlights vulnerabilities stemming from inconsistent enforcement, limited data sharing, and inadequate emergency preparedness. Common concealment tactics include embedding sealed sources in mineral ores or mislabeling isotopes as benign cargo. Detection is further hindered by outdated equipment and insufficient staff training, increasing the likelihood of undetected threats, especially during peak cargo seasons.

A notable case involved a shipment labeled as medical equipment that contained a high-activity cobalt-60 source without documentation. The cargo had transited through two neighboring countries before arriving in Kenya, exposing weaknesses in upstream inspection and communication. This incident underscores the urgent need for harmonized protocols and real-time data exchange.

Drawing on case studies and anonymized incident data, the paper proposes a regional framework to strengthen coordination among East African states. Recommendations include harmonizing transport regulations and inspection protocols, establishing joint task forces and intelligence-sharing platforms, investing in detection infrastructure and personnel training, and integrating seaport screening data into national nuclear security strategies. The framework envisions multi-agency teams—customs, radiation safety officers, and law enforcement—working collaboratively across borders, supported by a centralized digital platform for alerts, cargo tracking, and regulatory updates.

The paper also explores emerging technologies such as passive radiation sensors, AI-driven cargo profiling, and blockchain-enabled tracking, offering scalable solutions suited to regional infrastructure and resource constraints. While grounded in Kenya's port operations, the insights and recommendations are applicable to other regions facing similar challenges. By fostering regional cooperation and leveraging technology, East Africa can become a model for secure transport practices globally.

Conference Theme Alignment: This paper aligns with the theme "safety and security during transport operation of Radioactive Materials," focusing on regional collaboration, operational best practices, and technology integration.

Country or International Organization

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