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Strengthening Ghana's Regulatory Framework for Safe and Secure Radioactive Material Transport: Challenges and Prospects

The safe and secure transport of radioactive materials is a crucial requirement for protecting human health, the environment, and national security. It is also vital for sustaining public trust in the peaceful applications of nuclear science and technology. In Ghana, where radioactive sources are widely used in medicine, industry, research, and agriculture, the development and enforcement of a robust legislative and regulatory framework for transport has become increasingly important.

Ghana's framework is grounded in international conventions and standards, particularly the International Atomic Energy Agency's (IAEA) Regulations for the Safe Transport of Radioactive Material (SSR-6, Rev. 1). These requirements are harmonized with those of other global bodies such as the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO). At the national level, the Nuclear Regulatory Authority Act, 2015 (Act 895) provides the legal basis for regulating the transport of radioactive materials. Complementary instruments and guidelines empower the Nuclear Regulatory Authority (NRA) to authorize, inspect, and enforce compliance among institutions and individuals involved in transport activities.

The regulatory framework requires authorization prior to transport, strict adherence to packaging and labelling standards, and contingency planning for potential accidents. Package integrity and classification remain central to safety, ensuring containment, shielding, and heat dissipation under both normal and accident conditions. For higher-risk consignments, the framework mandates additional security provisions, including route planning, physical protection, real-time tracking, and coordination with security agencies to prevent theft, diversion, or sabotage.

Institutionally, the Ghana Atomic Energy Commission (GAEC) supports implementation through technical expertise, training, and collaboration with law enforcement, customs, and border control agencies. This integrated approach strengthens national capacity to oversee the safe and secure movement of radioactive materials while also aligning with international nuclear security initiatives.

However, challenges remain in the practical application of the framework. Limitations in specialized infrastructure, gaps in technical capacity, and the need for greater inter-agency coordination can hinder effective implementation. Public awareness of radioactive material transport is also limited, raising the risk of misinformation or resistance during emergency scenarios. Regionally, disparities in regulatory development among neighbouring countries complicate cross-border transport and emergency preparedness.

Despite these challenges, significant opportunities exist to enhance Ghana's framework. These include increased investment in modern transport infrastructure, expansion of training programs for regulators and operators, and the adoption of digital technologies for monitoring and tracking consignments. Regional cooperation under the auspices of the African Regional Cooperative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA) and other IAEA-led initiatives could further harmonize standards and strengthen emergency response mechanisms.

In conclusion, Ghana has established a strong legislative and regulatory foundation for the safe and secure transport of radioactive materials, reflecting both international best practice and national priorities. Yet, as the country expands its nuclear applications and prepares for a potential nuclear power program, sustained efforts to address existing challenges will be critical. By investing in capacity building, infrastructure, and international collaboration, Ghana can further strengthen its transport regulatory framework, ensuring that safety and security remain at the core of its nuclear technology agenda.

Country or International Organization

Instructions

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