



PROTECTING PEOPLE AND ENVIRONMENT FROM POTENTIAL ADVERSE EFFECTS OF IONIZING RADIATION

PROMOTING SUSTAINABLE DEVELOPMENT

Nuclear technologies benefit people in many areas, including health, agriculture, the generation of electricity and manufacturing. The radioactive waste generated by such processes can be safely managed, using robust and sustainable approaches to ensure that it poses no risk to people or the environment, now or in the future.

The considerable capacity of the Tanzania Atomic Energy Commission (TAEC) to provide radiation protection services and General Support Services is focusing on the improvement of waste management infrastructure, development and improvement of the national capacity for addressing the radiological liabilities arising from the anticipated uranium mining, enhancing nuclear security by improving the physical protection of nuclear facilities and materials as well as the prevention of illicit trafficking.

While recognizing its ultimate responsibility of strengthening and enhancing the effectiveness of national regulatory infrastructure for nuclear safety, radiation safety, radioactive waste and transport safety, and the security of radioactive sources, pursuant to the 2003 Atomic Energy Act, 2003, TAEC is mandated “to establish and operate or facilitate the establishment and operation of a system for the control of radioactivity in foodstuffs and the



environment; and for the management of radioactive waste emanating from various atomic energy and nuclear technology applications". Management of radioactive waste in the United Republic of Tanzania follows the Fundamental Safety Principles of the International Atomic Energy Agency and respects international treaties and conventions to which the country is a signatory.



Radioactive waste is managed according to national laws and regulations governing safety and security. As a Member State of the IAEA and future Party to the Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management, the United Republic of Tanzania is committed to manage radioactive waste in a safe, secure and sustainable manner in accordance with internationally recognized principles related to nuclear and radiation safety. The application of those principles aims to ensure adequate protection of workers, the general public and the environment, now and in the future, from the harmful effects of ionizing radiation. Requirements for nuclear and radiation safety apply to all types of radioactive waste present in the country, regardless of their physical and chemical characteristics or origin, at all stages of their management. Compliance with International Standards implies in particular the implementation of ICRP recommendations on radiation protection and the application of Fundamental Safety Principles as specified in IAEA Safety Publications.



In addition to matters of safety, the United Republic of Tanzania is committed to establishing a beneficial, responsible and sustainable Radioactive Waste Management system. When applied to the management of radioactive waste in the United Republic of Tanzania, these require: minimization of generation and optimization of the management of radioactive waste; establishment of methods and approaches for building trust among persons involved and affected by the management of radioactive waste; implementation of radioactive waste management methods that ensure the protection of people and the environment both now and in the future; implementation of physical protection systems relevant

to radioactive waste; incorporation of nuclear safeguards requirements in the design and operation of facilities for the management of future possible spent nuclear fuel; development of solutions that provide for the long term management of radioactive waste; promotion of radioactive waste management methods and schemes that save resources and utilize them efficiently; and steady improvement of methods and technologies in radioactive waste management.

Taking a holistic approach to manage radioactive sources from 'cradle to grave' enhances safety and security, and enables countries to overcome limitations to obtain radioactive sources for use in health care, agriculture and industry. This holistic approach stipulates that measures are taken at every stage of the life of a radioactive source to ensure its safety and security, and to prevent radiation accidents or emergencies. It is vital that radioactive sources are properly labeled and registered at their origin, and that appropriate control mechanisms are in place to trace them throughout their life cycle, from the manufacturer to the user and ultimately to their safe disposal.

Tanzania is participating in the IAEA 'cradle to grave' technical cooperation project that has resulted in participating Member States enhancing their regulatory infrastructures for radiation safety, improving management systems for the recovery, conditioning, storage and disposal of radioactive sources, and increasing capacities to develop safety cases and licenses for storage and disposal facilities. The project also facilitated the preparation of radioactive sources for safe and secure storage, and the repatriation of several disused sources with high radioactivity levels to their country of origin. This project will continue to assist Member States in strengthening regulatory frameworks, developing policies and strategies for the management of radioactive sources, and building the capacities of organizations responsible for managing sealed radioactive sources.

The Central Radioactive Waste Management Facility (CRWMF) was built by the government in order to ensure safety and security of radioactive sources/materials after being observed that various users of these materials did not have the capability to ensure their safe disposal after their useful life. A number of sources from medical, industrial and research institutions have been collected and are being stored in this facility and some have been conditioned to ensure much safer disposal. Initiatives to establish, a radioactive waste management infrastructure started in 1993 after it was observed that many disused radioactive sources have been abandoned by institutions which possessed them or did not have the capability of disposing of the sources in accordance with the recommended waste management standards.

In order to avert the potential risk of radiation hazard posed by the disused sources, The Tanzania Atomic Energy Commission (TAEC) initiated the development of a

radioactive waste management infrastructure and capability as a result of which Regulations for radioactive waste management were enacted in 1999. Furthermore, the Commission established a “Temporary Radioactive Waste Storage Facility” which was basically a 30 feet ISO container in which most of the spent radioactive sources collected from various institutions were safely stored.

Efforts by the Commission to construct a dedicated “Central Radioactive Waste Management Facility” (CRWMF) started in 1999; and by 2005 the Facility had been completed and was commissioned in the same year. Most of the thick walls including those partitioning the rooms of the Facility are constructed of special reinforced concrete designed to provide shielding to disused radioactive sources inside the Facility. The Facility has spacious rooms specifically designated for receipt, decay, operational area, storage of high activity sources, fume hood and a room for the storage of conditioned radioactive sources. In this storage room, up to 150, two hundred liter drums, can be satisfactorily stacked while allowing space for the movement of personnel and a small size fork lift for manipulation of the drums. Monitoring of radiation dose rates both inside and outside the Facility are regularly carried out to ensure safety of TAEC staff working in the facility and also the general public near the facility.

Physical security is provided by guards on site for 24 hours and also electronic alarms have been installed to deter burglary or unauthorized entry into the facility. In addition to the aforementioned measures, the safety and security of the spent sources in the facility have been enhanced by installation of a Radio communication facility and also the use of a mobile phone in order to ensure efficient communication between the Commission staff and security guards at the facility. The completion and commissioning of this Facility paved the way to a better radioactive waste management regime in the country.

Way Forward

- Review and update legal and regulatory framework addressing disused sealed radioactive source
- Upgrade regulations to control radioactive sources
- Upgrade and operationalise licensing system for facilities and activities
- Establish and implement a national policy and strategy for radioactive sources
- Develop and strengthen appropriate human resources to ensure long-term sustainability of the legal and regulatory activities
- Develop safety assessment and safety case.
- Develop and implement environmental monitoring and environmental impact assessments.

- Update and maintain a national inventory and registry of radioactive sources including disused sealed radioactive sources
- Conduct feasibility studies for Borehole disposal for long term management.
- Conduct search and secure programme to recover orphan sources
- Enhance TAEC capability in the management of sealed radioactive sources and related disciplines.
- Conduct national awareness-raising, visibility, and communication campaigns.
- Promote International collaboration.
- Establish technological capabilities for conditioning, storing pre-disposal and disposal of disused radioactive source
- Develop generic resources planning for dealing with long-term resource management.