

NUCLEAR SECURITY INFRASTRUCTURE FOR DISPOSAL OF DISUSED SEALED SOURCE IN A BOREHOLE

The potential consequences of an act of terrorism using radioactive sources can be gauged from the consequences of serious accidents that have occurred involving radioactive sources. These include fatal and injurious radiation exposures, contamination of the environment, and serious economic and psychosocial costs the total effect of which is mass disruption. Steps are being taken to improve security for radioactive sources but strategic approaches that can minimize the threat of radiological terrorism should be considered. When justifying a practice that uses radioactive sources, the potential for diversion or use in terrorism should be considered to be a detriment. In this regard, the consideration and development of alternatives to radioactive sources, such as radiation producing machines, have been recommended by terrorism experts as measures to reduce the threat of radiological terrorism. If a practice using radioactive sources is determined to be justified, the need for special security measures to protect against terrorism should then become part of the safety assessment. After the 9/11 attack on the US there has been an increase in awareness of threat associated with disused radioactive sources around the globe. Attention had been drawn to the fact that there should be an increase awareness of the need for safety and security measures to protect against the potential use of radiation sources in terrorism. The first Nuclear Security Summit held in Washington in April 2010 focused mainly on the security of weapons-grade nuclear material such as highly enriched uranium (HEU) and separated plutonium but some leaders highlighted on the need of also securing other radioactive material, especially radioactive sources and urged participants to adequately address the risks associated with their use. These risks comprise –accidents following loss of control over, improper use or disposal of radioactive sources (disused and orphan sources), –malevolent use ranging from theft over illicit trafficking to the potential misuse by terrorists through building so-called dirty bombs.

The over six decades of peaceful application of Sealed Radioactive Sources (SRS) have resulted in the generation of Disused Sealed Radioactive Sources (DSRS) in Ghana. They represent a significant security threat and safety concerns to human health and the environment. They therefore must be managed in a safe and secure manner to reduce threat of getting to the hand of an adversary. The Radioactive Waste Management Centre (RWMC) established by Ghana Atomic Energy Commission (GAEC) was tasked to carry out the safe and secure management of radioactive waste materials generated at GAEC and in Ghana as a whole. The RWMC operates a secured Centralised Radioactive Waste Storage facility for characterization and storage of radioactive waste materials. Storage is an important interim management step, especially for DSRS containing very short-lived radionuclides, which can decay to exemption levels within a few years. However, long-term storage is considered unsustainable option for DSRS with long half-lives radionuclides such as Ra-226, which has a half-life of 1600years.

A national policy and strategy on the management of these disused sources is part of a broader policy and strategy, which will enable the Ghana to address all these provisions relating to management of disused sources in a comprehensible manner. The IAEA Guidance on the Management of Disused Radioactive Sources recommends States to incorporate provisions for the safe and secure management of disused sources into their legislation and regulations. The implementation of security measures for radioactive sources must take into consideration the potential for deliberate acts to attack or use radioactive sources to expose people and cause contamination. The IAEA, NSNS has over the years worked with Members States to securely manage Category 1 and 2 disused sources, through assessment missions, repatriation of disused sources, export of disused sources for recycling, and the pilot borehole disposal project. As Ghana does not have an extensive nuclear power programme that would require the development of a deep geological disposal facility, the GAEC have proposed the International Atomic Energy Agency's (IAEA's) developed Borehole disposal Of Spent Sources (BOSS) system for management of the DSRSs. The Government of Canada, support from the U.S. Nuclear Regulatory Commission's (NRC's) and the International Atomic Energy Agency (IAEA) is supporting the field deployment of the Borehole Disposal Concept (BDC) in Ghana, the Philippines and Malaysia for secure disposal of radioactive sources in Ghana. This is a first-of-its-kind implementation. The paper is to look at the nuclear security Infrastructure for disposal of disused sealed source in a borehole in Ghana. It will highlight the national regulatory framework for managing DSRS in Ghana.

Gender

Male

State

Ghana

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