



PREVENTIVE MEASURES TO SECURE RADIOACTIVE MATERIALS IN GHANA

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1. Background

Radioactive materials are currently used worldwide and its use is of serious concern and has therefore become a national responsibility to secure it from both nuclear proliferation and radiological hazard. In Ghana, its beneficial applications ranges from medicine, industry, agriculture and academia. In the application of radioactive materials in the above area of activities, many are poorly secured and vulnerable to theft, radiation risks to workers, the public and to the environment. Theft, sabotage and radiological hazards have occurred round the world during the use of radioactive materials as a result of ineffective regulatory control or as a result of lapses in management control. These hazards generally have radiological, social, psychological and economic consequences on the individual, the public and the environment as a whole. In Ghana, various security measures that may serve either as deterrence or prevent any unauthorized access to a protected nuclear facility and associated facilities are used. In ensuring that radioactive materials do not become the subject of unauthorized use leading to illicit trafficking, preventive measures are taken into consideration. In Ghana, preventive security measures are put into two level, these are, state level and facility level.

2. Preventive Security Measures



3. Preventive Measures at State Level

3.1 National Legal System

In 2015, the Nuclear Regulatory Authority act (Act 895) was passed into Law which establishes the Nuclear Regulatory Authority (NRA). It takes into account provisions relating to nuclear security issues with reference to international legal instruments and IAEA guidelines. It makes provisions for persons who commit offences to be liable to a summary conviction of a fine or term of imprisonment. Ghana has also signed a number of international legal instruments on nuclear security.

3.2 Development of Regulatory Infrastructure

The nuclear regulatory authority;

- has developed draft nuclear security regulations.
- ensure that radiation and nuclear energy is used by only persons authorized under the Act 895 for peaceful purposes.
- provide protection of persons and the environment against the harmful effects of radiation hazards.
- pursue and ensure strict compliance with Act 895 and Regulations.

3.3 Establishment of Cooperation and Coordination

The Nuclear Security Council (NSC) is a body with responsibilities for nuclear security matters in Ghana. To ensure effective implementation of Ghana's nuclear security regime, there is cooperation and coordination among security agencies and competent authorities to help put in place measures to prevent radioactive materials out of regulatory control.

3.4 Monitoring of Border Crossings

To secure our borders and prevent illicit trafficking of radioactive materials, training for Frontline Officers (FLOs) on nuclear security awareness and the use of detection equipment has been organized. IAEA and DOE US have provided nuclear security detection equipment which have been distributed to the FLOs.



Training of FLOs on the use of detection equipment

3.5 Human Resource Development

The state through the Ghana Atomic Energy Commission (GAEC) has established a graduate school (Graduate School for Nuclear and Allied Sciences) for the development of human resource to support all activities related to nuclear science, and to make arrangements of proper education and training of the human resource involved in nuclear security.

4. Preventive Measure at Facility Levels

4.1 Physical Protection

Most relevant facilities including hospitals, scanning companies, the research reactor, irradiation centre, radioactive waste management centre and other facilities which use radioactive materials have been upgraded with state-of-the-art physical protection systems (i.e. sensors, alarms, CCTV Cameras etc).

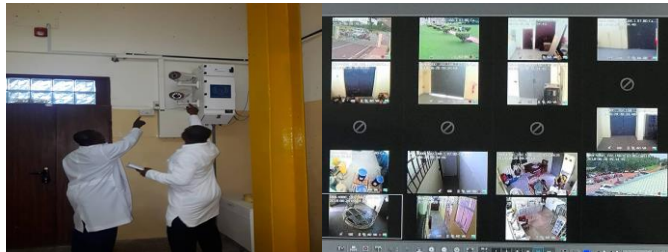


Above pictures shows up grades of physical protection at the Korle Bu teaching hospital.

- Replaced doors to the source rooms
- High security locks and key-safes
- Motion sensors inside the rooms
- CCTV cameras with DVR for alarm assessment
- Bars on windows to building

Upgrade at Waste Management Centre

- High security locks and key-safes
- Motion sensors inside of the rooms
- Bars on windows to building
- CCTV cameras with DVR for alarm assessment
- Duress alarms
- Good lighting



Assessment of the newly installed cameras at the reactor centre and the control room monitors.

4.2 Preventive measures related to facility functions

Authorized persons are required to perform the following in their facilities;

- Identity verification of visitors and staff
- Strict background check of employees
- Restriction on private vehicles
- Record keeping
- Escort and surveillance of the temporary workers
- Confidentiality of information
- Employee satisfaction
- Nuclear security culture Implementation and Assessment

5. Challenges

- Limited resources for nuclear security activities.
- Inadequate maintenance personnel to repair radiation detection equipment.
- Ineffective coordination between agencies responsible for collecting, evaluating, and disseminating intelligence information;

6. References

- [1] Nuclear Regulatory Authority Act 895.
- [2] IAEA Nuclear Security Series No.6, Combating Illicit trafficking in Nuclear and other Radioactive material.
- [3] Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5).