



# REGULATORY FUNCTIONS AND PRACTICES TO PREVENT AND DETECT ILLICIT TRAFFICKING OF RADIOACTIVE SOURCES IN GHANA

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## 1. Background

Illicit trafficking of radioactive materials is of serious concern in countries and across country's borders; this has become a problem from both nuclear proliferation and radiological hazard point of view. The regulations and procedures set to ensure the control of radioactive materials is to prevent and detect illicit trafficking of radioactive materials. In ensuring that radioactive materials do not become the subject of unauthorized use leading to illicit trafficking, preventive and detective measures should be taken into consideration. In achieving these, the following measures should be adopted to achieve the goals of prevention and detection of illicit trafficking of radioactive materials. The measures which are accounting for, control of radioactive materials and physical protection of such materials should be adopted.

To achieve the goal of ensuring adequate protection of the public health and the environment in the peaceful uses of radioactive materials in Ghana, the following principal regulatory functions are considered, these are; establish regulations and guides, issuance of authorization, inspection of facilities, import and export control, maintaining effective inventory accounting and controls and training of frontline officers and other security agencies.

## 2. Regulatory Functions

### 2.1. Legal Instruments

Act 895 of the Republic of Ghana which establishes the Nuclear Regulatory Authority (NRA) as an independent regulatory body has the duty to control all activities using radioactive materials. The NRA is mandated to provide regulations and guides to control activities and practices involving peaceful use of radioactive materials to ensure protection of persons and the environment against the harmful effects of radiation hazards. The regulations and guides define the capabilities and activities that need to be satisfied by facility operators to protect against theft which could lead to illicit trafficking. The NRA pursues and ensures strict compliance with Act 895 and Regulations.

The NRA ensures that radiation and nuclear energy is used by only persons authorised under the Act for peaceful purposes. The NRA also ensures that persons who go contrary to the use of radioactive materials or commit offences are liable to a summary conviction of a fine or term of imprisonment as enshrined in the Regulations.

### 2.2. Issuance of Authorization

Persons shall not engage in an activity or practice which involves the use of radioactive materials, unless the person is authorised by the NRA. An individual or organization intending to utilize radioactive materials shall obtain license from the NRA. The applicant submits an application to the NRA. The NRA staff reviews the submittals to ensure that the applicant's assumptions are technically correct and that the proposed activities will not adversely affect human and environment. It also helps the regulatory body to know the number and the type of radioactive materials to be used and where they are located. The regulatory body can then produce a reliable register of radioactive materials.

### 2.3. Inspection of Facilities

The inspections are the basic mean to identify undeclared disused radioactive materials or to control safety and security of the declared disused and in-used radioactive sources. In Ghana, periodic announced and unannounced inspections are carried out to ensure that nuclear materials are accounted for and controlled. Inspectors verify compliance and reviews the records and inventory of radioactive materials of facilities and upgrade their records. The Inspector also ensures that physical protection measures are in place to;

- Protect against theft and other unlawful taking of nuclear material. These measures are taken to deter both the external adversaries and the insider against unauthorised removal of radioactive materials.
- Locate and recover missing or stolen nuclear material.



Assessing camera effectiveness at a facility

## 3. Other Regulatory Practices

### 3.1 Import and Export Control

In Ghana, regulatory activities are carried out during import and export of radioactive materials. These activities are necessary to guide against the illicit trafficking of radioactive sources.

#### 3.1.1 Import

A person importing a radioactive material must possess authorization to use radioactive material. The person submits a notification and authorization forms together with a written application to the NRA for an intention to import a radioactive material. The NRA reviews the submittals and import license is issued if all requirements are met.

#### 3.1.2 Export

A person exporting a radioactive material submits a notification and authorization to the NRA which is reviewed and this leads to the issuance of an export licence. The approval to export the radioactive sources is communicated to the responsible facility if only the following details are submitted to the NRA.

The NRA carries out a pre-shipment inspection to verify adequate packaging, physical protection measures, labelling and Radiation Protection Programme.

Safety and security in the import and export of radioactive sources is further guaranteed by a close working relationship between the NRA and other law enforcement agencies including the Customs, Police, Immigration and the Department of National Security.

### 3.2 Cross Border Movement

Unauthorized transfers of nuclear and other radioactive material across an international boundary fall within the scope of criminal or unauthorized acts. Although the authorities in a country may be able to effectively handle some incidents resulting from criminal or unauthorized acts, the transboundary movement of material can significantly hamper an effective response [3].

In Ghana, the borders and the ports are protected by the customs and the immigration personnel. In performing their duties, they also detect events involving intentional illicit trafficking, inadvertent movement of radioactive sources. The NRA has provided some handheld devices to the customs to be used at the borders and the ports in the detection of illicit trafficking of radioactive sources. A Mobile Detection System (MDS) Van has also been donated to Ghana by the US DOE to help in the detection of illicit trafficking of radioactive sources along the borders of the country.



Left: In of the MDS Van.

Right: The MDS Van and staff preparing to move to a location

### 3.3 Regulatory Authority Information System (RAIS)

The NRA uses the Regulatory Authority Information System (RAIS) version 3.4 for effective inventory, accounting and controls of radioactive materials. It is used to maintain the registries and records of regulatory data, to manage regulatory activities, and to manage regulatory information.

### 3.4 Training of frontline officers and other security agencies

The NRA organizes periodic training for the Police, Immigrations, Custom, National Security and other security agencies on nuclear security such as Detection, Response, Emergency Preparedness and the use of detection equipment. An MOU has been agreed by the NRA and the Police, Immigration and the Customs to include the study of nuclear security in their curriculum for the training of new recruits. The Customs, Police and the Immigration have been equipped with detection equipment to detect illicit trafficking of radioactive materials at the borders and within the country.



Training of Security personnels on Nuclear Security

## 4. Conclusion

Illicit trafficking of radioactive material is a very important issue which needs governmental and competent authority's interventions. All stake holders are expected to play their roles effectively to curb illicit trafficking of radioactive materials. Ghana as a nation have in place measures to prevent and deter illicit trafficking of radioactive materials in ensuring that these materials do not become the subject of unauthorized use leading to illicit trafficking.

## 5. Acknowledgement

The authors are very grateful to the IAEA, the Acting Director General of the Nuclear Regulatory Authority, the Acting Director of Nuclear Installations Directorate and the Head and Staff of the Nuclear Security Department.

## 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).