National Efforts in Securing Orphan and Legacy Sources

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1.0 BACKGROUND

Nigeria has long before the establishment of the Nigerian Nuclear Regulatory Authority (NNRA) employed the use of radioactive sources in various sectors of the economy such as health, petroleum, mining, manufacturing, education, agricultural and water resources sectors. Some of the radioactive sources used in these sectors became orphan or vulnerable at some point due to bankruptcy, economic realities or government policies. Therefore the possibility that these material could be acquired illicitly for terrorist acts if not properly regulated cannot be ruled out especially as Nigeria has recorded several terrorist attacks over the past decade. Additionally, recent incidents on the International Atomic Energy Agency (IAEA)'s Incident and Trafficking Data Base (ITDB) buttressed the fact that radioactive sources might be used for malicious purposes and highlighted the need for an improved regulatory control of the radioactive sources.

This presentation therefore will give an overview of our National Efforts in Securing Orphan and Legacy Sources. It will also give insight on some of the achievements and challenges recorded so far in searching for and securing orphan sources in the country.

2.0 OBJECTIVES

- Enhance regulatory control of all nuclear and other radioactive material within the Nigerian State
- Search, recover and secure orphan and legacy radioactive sources across the Country
- Establish accurate status of some vulnerable radioactive sources and update the National Register

3.0 NATIONAL STRATEGY FOR LOCATING AND SECURING ORPHAN AND LEGACY RADIOACTIVE SOURCES

The IAEA Code of Conduct on the Safety and Security of Radioactive Sources Basic Principle 7(a) mandates every Member State to institute appropriate systems and measures for the protection of life and property from harmful effects of ionizing radiation. Consequently, Nigeria developed National Strategy for locating nuclear and other radioactive material out of regulatory control (MORC). One of the strategic goals was to locate and secure all orphan and legacy sources within the Nigerian territory. strategy adopted in the search and secure of orphan and legacy sources included:

- Identification of all activities that could have involved the use of nuclear and other radioactive material
- Identification of the sites and locations
- Provision of Calibrated Equipment
- Training of the Search Team
- Conduct of the Search and Secure Programme

3.1 Identification of Activities that Could have Involved the Use of Nuclear and Other Radioactive Material

The National Search and Secure programme covered both existing and defunct industries. Some of the sectors covered in the programme included:

- Research Institutes and Training Institutes
- Steel Rolling/Recycling Companies
- Textile Industries
- Scrap Metal companies
- Tobacco factories
- Bottling companies
- Sugar processing companies
- Construction companies
- Mining Sites

3.2 Identifications of Search Sites

The search and secure programmes focused on unlicensed facilities (existing and defunct). The search and secure programmes focused on unlicensed facilities (existing and defunct). Based on the identified activities that could have used or might be using radioactive material, the search sites were then identified using the Nigerian Yellow Pages Business Directory and the Nigerian Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA) Business Directory. The search and secure programmes focused on unlicensed facilities (existing and defunct).

3.3 Provision of Calibrated Equipment

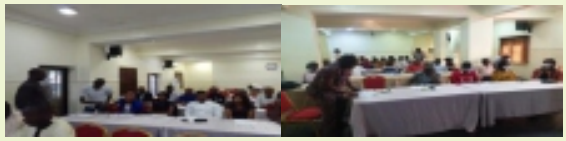
The appropriate equipment for search and secure programmes were identified, provided, and calibrated based on the nature of the identified search sites. Some of the equipment used were PackEye (BackPack), multipurpose survey meter, Radioisotope Identification Device (RID), contamination monitors, Laser Meters, Cameras, Handheld GPS Trackers, radioactive sources transport containers etc. Most of the equipment were donated by the international Atomic Energy Agency and the United States of America Department of Energy (USDOE) National Nuclear Security Administration (NNSA) Office of Radiological Security (ORS).

3.4 Training Need for the Search Team and the Conduct of the Training

The following Trainings were identified:

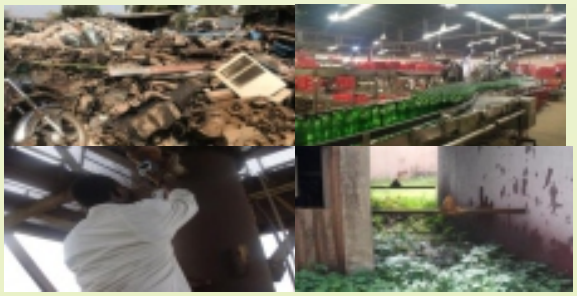
- Basic Radiation Protection
- Operation of radiation detection equipment and
- Maintenance of radiation detection Equipment.

Thereafter, the search team were trained. Additionally, each year, prior to the commencement of search and secure programmes, the technical teams always have a refresher training course on safety and security of radioactive sources, radiation detection equipment usage, search and secure techniques for orphan and legacy sources.



3.5 Conduct of Search and Secure Programmes

The pilot search and secure programme was conducted in 2010 and since then it has been an annual event. The identified search sites are visited by a team comprising Officers from the NNRA and the Nigerian Police Force Explosives Ordinance Disposal (EOD) Unit. The NNRA Officers conducted the search at the sites while the Police Officers provide security for the exercises as well as assist in the securing and transportations of the found sources (if any).



4.0 ACHIEVEMENTS

The search and secure programmes conducted over the years have significantly improved the safety and security of the vulnerable radioactive sources in Nigeria. Some of the discovered radioactive sources were transferred to the Temporary Radioactive Waste Storage Facility (TRWSF), while seeking for assistance for the repatriation of some of the radioactive sources

Some of the recent achievements of the search and secure programme included the discovery of the following:

- Several legacy radioactive sources in research institutes, NDT Companies, Steel Companies, Manufacturing Industries, etc
- Orphan source in a newly rented apartment and scrap metal yards
- Facilities operating without authorization from the NNRA
- Some X-ray facilities without authorization

Additionally,

- The legacy radioactive sources at the Ajaokuta Steel Complex were collated and securely stored at the Isotope Laboratory of the facility.
- Some facilities that were discovered during the search and secure programme have been brought under regulatory control

5.0 CHALLENGES

The search and secure programmes conducted over the years have been successful. However, some challenges were encountered during the conduct of the programmes such as:

- Most members of the public are not aware of the hazards associated with radioactive sources
- Inability to locate and access some defunct facilities
- Limited number of radiation detection equipment
- Lack of training on equipment maintenance
- Logistics

6.0 WAY FORWARD

- Engage the facilities especially the scrap metal yards' operators in an enlightenment campaign
- Sustain the regular conduct of search and secure programme for orphan and legacy radioactive sources
- More collaborations with international partners especially in the area of provision of equipment andcapacitybuilding

CONCLUSIONS AND ACKNOWLEDGEMENTS

The Federal Republic of Nigeria through NNRA has been conducting search and secure programme for Orphan and Legacy Sources to ensure the safety and security of the vulnerable radioactive sources in the Country and will continue to sustain the programmes despite its limited resources.

We wish to express our sincere gratitude to the IAEA and US-DOE NNSA Office of Radiological Security (ORS) for their supports especially in the area of capacity building, provision of equipment and physical protection system upgrade.