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Some Experience with Illicit Trafficking of Radioactive Materials in Tanzania

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ABSTRACT

Illicit trafficking of radioactive materials (orphan sources or disuse sources) is of global concern. Reports on the IAEA Illicit Trafficking Data Base (ITDB) indicates increasing trend of incidents recorded in more than 40 countries on six continents[1]. It is suspected that nuclear trafficking is fueled by nuclear terrorism and is a threat for increasing illegal trade in nuclear and radioactive materials to manufacture Radiological Disposal Devices (RDD)- " dirty bombs". As such, the international co-operative efforts are needed to uncover and combat nuclear trafficking in order to minimize its consequences such as external radiation exposure of persons from source to various radiation levels during illicit movement and after seizure; rupture of source leading to internal exposure of persons and environmental contamination.

Although accidents with radioactive materials have not occurred in the United Republic of Tanzania (URT), incidents of illicit trafficking and unauthorized possession of radioactive materials has occurred thus prompting the Tanzania Atomic Energy Commission (TAEC) to strengthen its nuclear security of nuclear and radioactive material in the URT. Nuclear faclities and radioactive sources lacks adequate physical protection against theft, fire or different forms of unauthorized access. Tanzaniaia has recorded about thirteen (13) illicit trafficking incidents of radioactive between 1996-2006. Caesium-137, Uranium-238; and Uranium oxide standard and Radium-226 with activity ranging from low to significantly high were among the radiounuclides which were intercepted. Most of these incidents had their original outside Tanzania. The incidents were uncovered by informers in cooperation with the police. Despite the fact that the management of these incidents by the police were adequate, it was observed that there is an inadequate radiation protection arrangements during transport of seized sources; lack of precautions for safety when handling seized radiation sources; lack of radiation detection equipment; and also the lack of knowledge of radiation hazards as well as dangerous. In view of these deficiencies, there was an urgent need of improvement of radiation protection of the front line officers by providing them training and capability to deal with nuclear security, safety, illicit trafficking and emergencies of nuclear and radioactive materials by providing them with basic equipment for identification and detection in order to minimize accidental exposure resulting from lost of control and illicit trafficking of radioactive materials.

Recognizing this drawback, the government of the URT through TAEC in cooperation with the IAEA through the nuclear security implementation support project (RAF/0/021) and other donor agents such Department of Energy (DoE) of United States and Interpol has conducted five awareness training courses for front line officers (i.e police, security and customs officers) on identification and responce to incidents involving illicit trafficking of radiaoctive materials at entry points with the aim to strengthen the national capability to manage radiation incidents and deter a possibility on occurance of the illicit trafficking of nuclear and other radioactive materials. In addition, through the assistance from DoE six facilities with high risk radiation sources have been upgraded by providing fencing, hand held radios, alarm systems, grills on windows and doors and 24 hours guard force at the site. Also several other Front line officers have also been attended regional training courses on nuclear security organized by the IAEA. Further more, the Commission in cooperation with the DoE through Instrument transfer programs have supplied detectors to front line officers (i.e. police) in order to build the capability for identification and detection of radioactive materials acquired in the illicit trafficking of radioactive materials.

INTRODUCTION

1. Illicit trafficking in nuclear and radiaoctive materials is of global concern, with confrimed incidents recorded in more than 40 countries on six continents
2. Nuclear trafficking is fueled by nuclear terrorism with the threat of increasing trade in nuclear and radioactive materials to manufacture Radiological Disposal Devices (RDD)- " dity bombs".
3. Required international co-operative efforts to uncover and combat nuclear trafficking.
4. Efforts complemented by the IAEA, which sponsors intenstive training courses and workshops specifically designed to help member states to better nuclear security detectives.

STATUS OF NUCLEAR SECURITY IN TANZANIA

1. Although accidents with nuclear and radioactive materials have not occurred in Tanzania, incidents of illicit trafficking and unauthorized access has occurred showing weak nuclaer security.
2. Nuclear facilities and radioactive sources do not have adequate physical protection against theft, fire or different forms of unauthorized access.
3. Tanzania has a record of eleven illicit trafficking incidents of radioactive sources; and that though adhock, the management of these incidents has been adequate but needs great improvements.
4. The fear of malevolent use of high risk sources exists although the single terrorist event experienced by the Tanzania so far did not involve radiaoctive materials.
5. Infrasture and capability to deal with necluar security, safety , illicit trafficking and emergencies of nuclear and radiocative materials needs great improvement (i.e. in terms of legislation, human resources, equipment, etc)
6. Gauging from illicit trafficking events and uninvestigated reports one can suspect that Tanzania is a transit route of radiaoctive sources; and a potential for radiological emergiencies

EXPERIENCE WITH ILLICIT TRAFFICKING EVENTS

1. Inadequate radiation protection during transport of seized source: F-Los sometimes sit with source, etc
2. No precautions for safety were taken when handling seized radiation sources; and without any knowledge of radiation levels.
3. Adequate temporary storage prior to collection by the Tanzania Atomic Energy Commission (TAEC).
4. Reporting to the TAEC was generally prompt with essential details
5. Very high cooperation by criminal investigation officers (CIOs) in criminal investigation director (CID) and police particulary on preparations for legal actions.
6. Informers used to uncover illicit trafficking events and seize radiation sources

CONSEQUENCES OF ILLICIT TRAFFICKING OF RADIATION SOURCES

1. External exposure of persons from source to various radiation levels during illicit movement and after seizure
2. Rupture of source leading to internal exposure of persons and environmental contamination
3. Cleanup of environmental contamination and management of resulting radiaoctive waste
4. Management of seized source as waste or otherwise
5. Possible use by terrism groups to make and use RDD, etc

STRATEGIES FOR COMBATING MALICIOUS ACTS AND EMERGENCIES

1. Adequate phyical protection of all nuclear, radioactive materials and facilities including transport systems
2. Appropriate Regulatory control and enforcement mechanisms
3. Effective detection and interdection of illicit trafficking
4. Integration of nuclear safety and security systems
5. Readiness and capability of implementing emergency response plans

MANAGEMENT OF MALICIOUS ACTS AND EMERGENCIES

1. Documentary requirements include regulations, standard guidelines or recommendations
2. Detection, identification and isolation (keep public away or keep source away) of the radioactive source
3. Application of the principles of radiation protection i.e. Distance, time and shielding to contain and immobilize the radiation source
4. Prevention of possible contamination of persons and the environment
5. Reporting of the malicious act or emergency to regulatory authority
6. Seizure of source and apprehension of persons involved on malicious acts or facilitaion of the seizure of source or apprehension of persons involved as appropriate
7. Collection and documentation of data/details of malicious act or emergency
8. Preparation of legal actions and assistance of the competent authorities to implement them for mitigation and future deterrence

9. Transportaion or assistance (during mitigation) to transport the source to a more secure and safe store or storage facility.
10. Use of informers through motivation and other investigation skills to detect and deal with malicious acts.

REFERENCES

1. IAEA, (2006) Illicit Trafficking Database (ITDB) Report, *IAEA Information System on Illicit Trafficking and other Unauthorized Activities Involving Nuclear and Radiocative Materials*, Third Quarter Report 2006