

# ILLICIT TRAFFICKING OF RADIOACTIVE SOURCES: EXPERIENCES WITH FAKE MATERIALS IN TANZANIA

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## ABSTRACT

*Radioactive materials although are very useful, they are one of the catastrophic sources of mass destruction if misused. These materials have a number of positive uses which makes them very essential in our modern society. Incidences such as the bombings of the US Embassies in East Africa, the September 11, and many others had formed a basis for international responsive actions to control illicit trafficking of Radioactive and Nuclear Materials. The aim of this work is to track the movements and subsequently uses of these materials. Tanzania is one of the countries where International Nuclear Safeguards protocols are fully operational and observed. In the efforts of control, a number of institutions have been mobilized nationally to the. While these control efforts are enforced, it is observed that several routes and different radioactive purported sources are imported to Tanzania. Although most of the motives of illegal trafficking intercepted have indication of radioactivity through marking and signs, there are cases where the material has been falsified. On the other hand, the motive behind appears to be not only for use but rather illegal dealings such as trading. This paper sites these incidences, their causes and influences on the control and proposes way forward.*

**Key Words:** *Illicit Trafficking, Nuclear Materials, Illicit Trafficking Database (ITDB), International Law on Radioactive and Nuclear Materials, Radioactive Sources*

## INTRODUCTION

There have been incidences of destruction and killings observed worldwide. This situation has necessitated collective international efforts to comprehend materials of mass destruction. Of recent the incidences of bombings has been common, acts like the September 11 could be disastrous if such sensitive materials technology like nuclear were involved [U.S. State Department, 1998; Natural Hazards Research and Applications Information Center; (2003)]. A number of international resolutions and protocols on prevention of terrorism acts including the Resolution 1373 [IAEA, 2006; IAEA, 2007] have been established and ratified. Radioactive materials although very useful for power generation and medical and research uses could cause hazardous cases of radiation which

could endanger living things and the environment. Such resolutions are aimed at comprehending the availability and use of these materials worldwide.

Tanzania on the other hand, has ratified Resolution 1373 by enacting the Prevention of Terrorism Act No. 23. of 2002 and is in the process to ratify the Convention for Suppression of Acts of Nuclear Terrorism, Convention of Physical Protection of Nuclear materials and Facilities and the IAEA Code of Conduct for Safety and Security of Radioactive Materials. Besides, the United Republic of Tanzania (URT) is also considering and is in the process to ratify United Nations Resolution No 1540. Besides, the URT participates in the International Atomic Energy Illicit Trafficking Database program since 2004. Tanzania Atomic Energy Commission (TAEC) is the national agency that is

mandated to the regulation and control of safe and peaceful use of atomic energy and nuclear technology.

The Tanzania Atomic Energy Commission, among other things has been involved in the education and comprehension of the illicit trafficking of nuclear material and ever since has the following technical capacities;

- A system to recover infant and illicit trafficked radioactive sources in Tanzania;
- Radiation Pagers have been distributed to a few Frontline Officers;
- A laboratory equipped with basic equipment for detection and quantify gamma emitting radionuclide has been established;
- A laboratory for gamma spectroscopy is established at TAEC.

In carry out the task, TAEC has been involved in:

- Mobilizing other institutions such as the Tanzania Police Force, Security, Immigration and Tanzania Revenue Authority and other entities so as to jointly participate in the Control of Illicit Trafficking of Nuclear material;
- Training the public on the hazards and risks involved in the handling of nuclear and radioactive materials;
- Registering and monitoring movements of radioactive and nuclear materials both legally or illegally traded or changing hands.

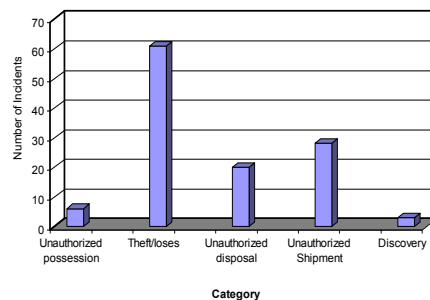
## STATUS OF ILLICIT TRAFFICKING

### *Global Situation*

During the period between 1993-2008, a total of 1567 incidents were reported to the Illicit Trafficking Data Base (ITDB). Nuclear or radioactive materials that have often been reported included among others Caesium-137, Americium-241, Radium-226 and Am/Be-241. These radioactive sources are often industrial

sources used in the manufacturing or processing and road construction industries. The Nature of the reported incidents ranged from theft, attempted sell, unauthorized possession, unauthorized disposal, unauthorized shipments, discovery and losses of nuclear/radioactive materials. Most of the incidents were reported in Europe (Russia, Germany) and also in the United States of America (USA) but some other similar ones were also reported from Africa member states. It is important to note also that in the majority of the reported cases, police intelligence was the method used to uncover the incidents.

At global level, one hundred and eight incidents were reported by Points of Contact or otherwise and were confirmed by member States in the first and second quarter of 2009. Of these, 33 incidents occurred during the 1<sup>st</sup> half while the remaining 75 reports concerned incidents that had occurred previously. A summary of the nature of incidents is given below in Figure 1. It is indeed evident that theft and loses lead in this list followed by illegal shipment or unauthorised disposal. This situation again derails the overall aim of controlling the use for weaponry as initially discussed [Zatseva & Steinhausler, 2004; Bunn & Steinhausler, 2001]. These two works have emphasized that the control of illicit trafficking will entail the guarding of nuclear material against theft since most of the other sources will be closed, therefore the only open ended route is through theft.

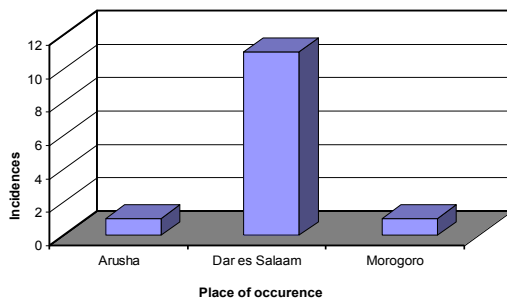


**Figure 1: Global Illicit Trafficking incidences for the 1<sup>st</sup> and 2<sup>nd</sup> quarter of 2009 (Source: Developed from ITDB)**

**National Situation**

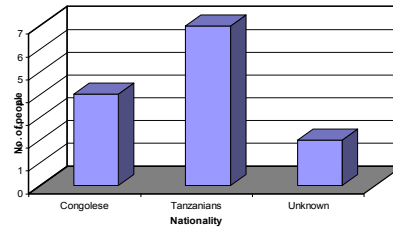
African member states which reported significant number of incidents to the IAEA ITDB include Uganda, Nigeria, Algeria, Democratic Republic of Congo, Namibia, Kenya and the United Republic of Tanzania (URT). URT topped the list with more than 13 incidents between 1996-2008, followed by Kenya and Namibia. The last incident reported by URT is that one in which one person was arrested in Arusha in May 2008 with a device purportedly containing Uranium material. The arrested person intended to sell the material for economic gain.

In analyzing the national incidences, it is evident from Figure 2 that most of the events reported occurred in Dar es Salaam. This is because of the port, which offers a route for the transnational shipments. However another theory could be that Dar es Salaam is seriously monitored than other borders and therefore the comprehension becomes easier. An analysis of the reported sources in terms of the persons nationalities is presented in Figure 3. From this figure, it is evident that most of the comprehended people are Tanzanians and Congolese from the Democratic Republic of Congo. Some of the cases involved both Tanzanian and Congolese nationals, and figure 4 shows a list of radioactive sources stored in Central Radioactive Waste Management Facility (CRWMF) including the illicit trafficking sources stored since 1996.

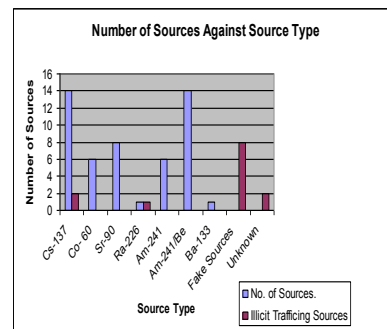


**Figure 2: Illicit Trafficking of Radioactive materials between 1998-**

**2009 by location (Source: Developed from TAEC Data)**



**Figure 3: Nationalities of the comprehended sources during 1998-2008 in Tanzania (Source: ITDB Database, 2009)**



**Figure 4: Number of sources stored in the Central Radioactive Waste Management Facility.**

**Experiences from the Incidences**

The illicit trafficking incidences reported so far in Tanzania have been combined efforts of the Public, Police, Security and Revenue Authority. Following a series of training and mobilizations, the three national institutions have been working together towards realizing the intended goals. In carrying out the tasks, a number of experiences are worth recording:

- About 45% of the materials comprehended ended up being fake or falsified materials which were not actually of any value or risk. In many cases, wherever such incidences occur in series, the involved authorities tend to feel that they are not actually doing their work or they are cheated by the Tanzania Atomic Energy Commission,

- After the initial hint or tip on such illicit trafficking, the process or tracking and subsequently comprehending the materials takes a long time, resources and at times they are too risky. It is easy to lose hope and morale to follow up by the involved officers,
- In many cases, the initial tip or hint usually starts with a tip from the public. This essence has made the Tanzania Atomic Energy Commission feel that it is important to educate the public since their involvement is vital. In this case, there is a need to put together efforts and campaigns for the fruitful success,
- Although majority of the reported incidences occurred in Dar es Salaam, there is no evidence that many of the radioactive sources originated from Tanzania. In many cases, the incidences are linked with neighbouring countries. In this case, regional efforts are needed where proper coordination, tracking and follow up could be made [Johnson, 2003].

### **NEED FOR STRENGTHEN CONTROL**

Based on the increased use of radioactive materials in Industry in Tanzania, and considering the increased number of incidents involving loss, theft and missing sources which often lead to unauthorized possession and subsequently the tendency to sell the sources for economic gains, Tanzania has embarked on a long term programme to strengthen the capability of the Police, Border security agents and also Customs officials of their capability to detect and recognize radioactive devices so that illicit trafficking incidents are minimized. TAEC is also conducting public awareness programs on radiation hazards and also maintains an inventory of both sources in use and also spent

(disused) sources in order to keep track on all the sources in the URT

In order to fulfil this objective TAEC has also initiated a campaign for training the aforementioned Institutions in hazards of Ionizing radiation, Radiation protection principles, detection and measurements of ionizing radiation, basic radiological emergency response and preparedness and specialized training in dealing with cases involving unauthorized possession/use of nuclear and radioactive materials based on the existing local and international legal instruments [Iriato, 2009; Demeyere, 2007].

Other programs also being considered include:-

- Installation of radioactive detectors at its borders (Tunduma, Kigoma Port, Mwanza Port, and Namanga Border Post
- Improving the facilities at the TAEC head offices in order to be able to detect a wide range of radiations (alpha, gamma and beta),
- Improving the manpower for the detection of the radioactive materials

### **CONCLUDING REMARKS**

The paper has outlined the process and efforts to comprehend illicit trafficking of radioactive and nuclear materials in Tanzania. Different institutions have been involved and this is what leads to the success story portrayed here. Among the comprehended sources, some are stolen, some are illegally owned or shipped and some are actually fake materials purportedly to be radioactive or nuclear materials of value. Most of the sources were for sale, although it was not possible to establish the market. From the foregoing discussions, it can be concluded that;

- a) There is a need to reward or recognize the efforts made by respective people in comprehending such materials. In doing so, this is likely to motivate and make them feel honored. This could

- be in the form of certification, medal or even monetary terms,
- b) Although many of the incidences involved faked material, the efforts need be continued because fake dealings are also illegal and are punitive by the law,
  - c) Regional coordination and cooperation in the control of illicit trafficking of nuclear materials are needed since most of these materials are across the national boundaries, originating from one country and landing into another. In this efforts, there is a need to harmonize the laws and their enforcements within the region,
  - d) There is a need for improved detection in all entry points. Detection installations may be necessary while portable ones are also needed, and
  - e) Human capacity building is vital because the number of personnel mobilized for this task is low and can not comprehend everything. In this case, IAEA and other institutions are required to extend a helping hand to control this situation.

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