

# Establishing capabilities for combating illicit trafficking: The Syrian experience

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**Abstract:** Since the late 80's, Syria has been taking steps towards combating illicit trafficking or inadvertent movement involving radioactive or nuclear material within the country or across its border. By applying the proper combination of technical and procedural measures, an acceptable level of performance has been achieved. The measures undertaken by AECS include anticipative measures, which aim at identifying potential loss of control over radioactive sources and potential illicit trafficking within the country, as well as defensive measures which aim at detection of and response to events of illicit trafficking. In addition, a tight follow up of radiation source along their entire lifetime in the Syrian territory, supported by proper data analysis is one of the most efficient tools for identifying potential loss of control over sources. AECS has established Border Monitoring Centers (BMC) in almost all border crossings. They work in close cooperation with the customs and other relevant authorities at the Syrian borders. AECS has been also providing the necessary training for the frontline officers.

**Keywords:** *Illicit Trafficking, radiation sources, border monitoring*

## 1. Introduction

Illicit nuclear trafficking has been drawing increased awareness since the 1990's. The information available on attempts or successful illicit trafficking cases [1] clearly demonstrates the seriousness of this matter, its international character and the need to undertake measures for its combating on states as well as international levels [1].

Syria, being an active member in the international community, has been taking efforts to control unauthorized movement of radioactive material including nuclear material since the early nineties. Efforts have been maintained for continuous improvement of the Syrian capabilities to detect and prevent illicit trafficking. International cooperation through the IAEA and the IAEA technical assistance has proven to be valuable for this improvement.

This paper describes the efforts undertaken by the Syrian authorities to combat illicit trafficking within the Syrian territory and across its border, taking into consideration that the scope of the use of radioactive material in Syria is in the medical, industrial, agricultural, research and academic uses only as Syria is not operating nuclear power plants. The only nuclear facility in Syria is a 30 kW research reactor of MNSR type.

The description will not follow the chronological order of development, but it will rather provide an overview on the current status and an outlook on possible improvements.

## 2. Legal instrument

In 2005 the legislative decree no. 64 on radiation protection and safety and security of radiation sources has been issued [2]. This legislative decree explicitly addresses the issue of illicit trafficking and malicious use of nuclear or radioactive materials, criminalizes and makes punishable such offences and empowers the Atomic Energy Commission of Syria (AECS) to undertake appropriate measures to detect those actions.

This legislative decree includes provisions which ensure consistency with the international instruments such as the Convention on Physical Protection of Nuclear Material [3], the Security Council resolution no. 1540 [4] and the code of conduct on the safety and security of radioactive sources [5].

Article 13 of the legislative decree obliges the Atomic Energy Commission of Syria (AECS) to "detect cases of illicit trafficking and illegal brokerage with nuclear or radioactive material".

Article 20 states that "Any person stealing, robbing, embezzling, fraudulently obtaining, bringing into or out of Syrian territories without a legal permission a radiation source shall be punishable with

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imprisonment from six months to five years and a fine from one million to five millions Syrian Pounds".

The punishment is to be increased if the radioactive material involved in the criminal offence is a dangerous source: "if the action is related to a radiation source which causes or may cause a severe damage to persons, environment or properties, the punishment shall be imprisonment for at least five years and a fine from five to thirty millions Syrian Pounds."

Article 21 addresses the malevolent actions involving radioactive material: "Any person committing any of the following actions shall be punishable with imprisonment from three to five years and a fine from one million to three millions Syrian Pounds:

1. Attempting to obtain a radiation source by using force or by threatening to use force or by any other form of intimidation or blackmail.
2. Threatening to use a radiation source to cause damage to persons, environment or properties.
3. Threatening to commit an action against a facility or an action involving the use of a radiation source in order to compel a natural or legal person, including international organizations or states, to do or to refrain from doing any act."

In 2007 Syria issued revised regulations for radiation protection and safety and security of radiation sources [6]. These regulations describe in details the obligations of the user to ensure the security of the radioactive sources under his possession and provide for measures to reduce the likelihood of malicious acts. Furthermore they, in conjunction with the national emergency response system for radiological or nuclear emergencies, provide for rapid response for events involving loss of control over radiation sources.

Being the responsible authority for the implementation of the above mentioned legislative decree, AECS has been implementing measures for the detection and prevention of illicit trafficking within Syrian territory as well as across Syrian borders. Those measures include *anticipative* measures, which aim at identifying potential loss of control over radioactive sources and potential illicit trafficking within the country as well as *defensive* measures which aim at detection and response to events of illicit trafficking.

The anticipative measures are basically based on tight regulatory control, regulatory information analysis and tracking radioactive sources along their entire lifetime in Syria.

The defensive measures include radiological border monitoring, close cooperation with the relevant authorities such as customs and security forces, and strengthening the Syrian capabilities for response to events involving illicit trafficking of radioactive material.

### **3. Regulatory Control**

With the assistance of the IAEA, AECS has been strengthening its regulatory control over radioactive material. Regulatory activities such as authorization, inspection and enforcement have been designed and implemented as to ensure continuous control over radioactive material from cradle to grave and to minimize the potential of illicit trafficking within the country

Of particular importance is the control of import and export of radioactive sources. This is ensured on different levels by (1) the legal framework which prohibits import/export of radiation sources without a license from AECS, (2) coordinated operations between AECS and the customs and (3) examining the identity of the source at the port of import /export by AECS staff.

The analysis of regulatory programme data is a powerful tool for the detection of illicit trafficking events and potential loss of control over radioactive sources within the country. AECS has been using a locally extended version of the IAEA's Regulatory Authority Information System RAIS 3.0 as a tool to manage and analyze the programme data. The introduced extensions to this system focus in particular on the tracking of sources and the early identification of potential or real events of illicit trafficking involving radioactive material [7].

The implemented regulatory measures have been contributing also in increased awareness among those who possess or use radiation sources that illicit trafficking and inadvertent movement are illegal and criminal offences. This awareness leads on the long term to more compliance and, ultimately, it reduces the likelihood of illicit trafficking and inadvertent movement involving radioactive material.

#### **4. Border monitoring**

Syria started radiological border monitoring as early as 1987, shortly after Chernobyl accident. At that time the main objective of the monitoring was to examine imported commodities against radiological contamination. In the early nineteen's, the so called "Border Monitoring Centers" (BMC) have been established for systematic radiological monitoring at the Syrian border crossings.

Now days, border monitoring has been extended to:

- Monitor imported commodities for radiological contamination.
- Strengthen regulatory control over import and export of radiation sources.
- Detect events involving intentional illicit trafficking, inadvertent movement of radioactive or nuclear material.

Additionally the BMC provide for the first response in case of radiological incidents at the borders.

The BMC are equipped with portable gamma survey-meters type Saphymo SPP2 and portable activity meter type Berthold LB200. At four locations, automatic gamma detection systems are installed. The BMCs will soon be equipped with portable spectrometers for fast identification of the radioisotopes.

The border monitoring results are evaluated against "safe limits" [8], i.e. values for each category of commodities. Those values take into considerations the presence of natural radioactivity in some materials, or the artificial add-on of radioactive substances to commodities such as fluorescent lantern mantles containing radioactive substances and thorium containing welding rods.

Measurements readings which are higher than those safe limits indicate either radiological contamination or illicit trafficking of radioactive material within the commodities. In this case, BMC staff takes appropriate steps for more in depth investigations; forward the information to the customs and other relevant authorities at the border and contact AECS headquarter for advice.

For food staff and agricultural products, samples are to be taken and analyzed using LB200. This analysis takes maximally half an hour. Sampling is to be done by the customs officers LB200 provides for quick analysis of radioactivity. The analysis is supported by working procedures which compensate for the LB200 limited accuracy. According to those working procedures, the LB200 analysis results are only considered reliable if they are higher than the permissible levels of radioactivity in food staff or lower than half of it [9]. Should the analysis result be between those two values, then samples are to be sent to the AECS laboratory for accurate analysis, which may take up to a few days.

The BMCs also contribute in the import/export of radiation sources. They examine the identity of the to-be-imported/exported sources and check it against the relevant authorization. In case of discrepancy, import or export will be denied.

The BMCs work in close cooperation with the relevant authorities at the borders, particularly with the customs. Their working procedures are adjusted as to ensure harmony with the working practices of the customs.

To close the loop, AECS has been taking steps to extend border monitoring to cover all vehicles and persons crossing the borders. First trial has been done at the border to Jordan, where an automated system for passenger vehicles monitoring has been installed. Arrangements with the relevant border authorities are being developed. The efficiency of this system is still under evaluation. Other systems will be installed at the border to Iraq, Turkey and Lebanon. Persons monitoring at airport and Sea ports is pending.

This Extension of the border monitoring is faced by challenges in purchasing the necessary equipment because of economic factors and, more importantly, because of the politically motivated embargo of the US against Syria. This embargo contradicts the calls for international cooperation to combat illicit trafficking and to minimize its likelihood. IAEA technical assistance may be requested to provide such a monitoring capability.

#### **5. Training of frontline officers**

An important aspect of building capability for the detection and prevention of illicit trafficking is the cooperation with the relevant authorities. AECS has been aware of the need for harmonizing operations, increasing awareness and training of frontline officers.

AECS has organized several training occasions in this regard:

- Coordination meeting with high level officers of the security forces for proper coordination with the response forces in case of radiological emergencies (2002). Emphasis has been set on the issue of losing control over radioactive sources or locating orphan sources
- Training course for the security forces on radiation protection and safety and security of radiation sources (2004). This training course addressed in particular the role of security forces in radiological emergencies and illicit trafficking.
- Training course on radiation protection for customs (2006). This training course was based on the training material jointly developed by the IAEA and WCO [10]. It was extended however to address topics related to illicit trafficking and border monitoring.
- Regional Training course on physical protection of radioactive sources with the assistance of the IAEA (2007). AECS has invited participants from the security forces to attend this training course.

## 6. Conclusions

Syria has been taking serious steps towards combating illicit trafficking or inadvertent movement involving radioactive or nuclear material within the country or across its border. By applying the proper combination of technical and procedural measures, an acceptable level of performance has been achieved. Currently, Syria is taking steps to improve its border monitoring capability. This is however a challenging process.

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