ILLICIT TRAFFICKING OF NUCLEAR MATERIAL AND OTHER RADIOACTIVE SOURCES

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ABSTRACT
As it is known, for the fact that the illicit trafficking and trading of nuclear materials are being increased over the past few years because of the huge demand of third world states. Nuclear materials like uranium, plutonium, and thorium are used in nuclear explosives that has very attractive features for crime groups, terrorist groups and, the states that are willing to have this power. Crime groups that make illegal trade of nuclear material are also trying to market strategic radioactive sources like red mercury and Osmium. This kind of illegal trade threatens public safety, human health, environment also it brings significant threat on world peace and world public health.

For these reasons, both states and international organizations should take a role in dealing with illicit trafficking. An important precondition for preventing this kind of incidents is the existence of a strengthened national system for control of all nuclear materials and other radioactive sources. Further, Governments are responsible for law enforcement within their borders for prevention of illegal trading and trafficking of nuclear materials and radiation sources.

INTRODUCTION
The Republic of Turkey signed Treaty on the Non-Proliferation of Nuclear Weapons (NPT) on January 28, 1969 and the Treaty was ratified by the Turkish Parliament on March 29, 1979. After ratifying the NPT, the Republic of Turkey signed a Safeguards Agreement with IAEA for the application of safeguards in connection with the NPT, on June 31, 1981. Effective September 1, 1981 Turkey accepted the international safeguards administered by IAEA. Besides NPT, Turkey signed the Convention on Physical Protection of Nuclear Materials in 1983 and ratified in 1984.

The regulatory activities regarding nuclear, radioactive materials and facilities including nuclear material accountancy and control, and physical protection of nuclear materials is under supervision of Turkish Atomic Energy Authority (TAEA) in Turkey.
TAEA was established by the Act No.2690 of 9th July 1982 and replaced the Turkish Atomic Energy Commission created by the Act No.6821 in 1956. TAEA’s general objective is to promote the peaceful uses of nuclear energy under the energy development plans approved by the Turkish Government and the application of nuclear techniques.
The Department of Nuclear Safety, which is one of the specialized technical departments, was established under TAEA in 1973, as the central organization to conduct the respective roles on licensing and safety of nuclear installations. Among its other activities this department is responsible for the accountancy and control and physical protection of nuclear materials.

After signing the Safeguards Agreement with the IAEA, Nuclear Material Safety Division (NMSD) was established under the Nuclear Safety Department in 1981 and was given the responsibility for establishing and maintaining the Turkey’s SSAC, including independent verification of all nuclear materials and notifying illicit movement of Nuclear Material incidents to IAEA. In the same year, SSAC was designed based on IAEA document “Guidelines for SSAC, IAEA/SG/INF/2” to meet Turkey’s obligations arising from Safeguards Agreement.

NATIONAL STATUS RELATED WITH ILLICIT TRAFFICKING of NUCLEAR MATERIALS and OTHER RADIOACTIVE SOURCES

Turkey has given full support to international activities concerning Combating Illicit Trafficking of Nuclear Materials and other Radioactive Sources besides its national activities.

In 1996, Turkey notified that it accepted IAEA’s Database System for Illicit Trafficking of Nuclear Materials and Other Radioactive Sources and provided the name of a person who could be contacted directly by the Agent to obtain information concerning illicit trafficking incidents.

In addition to the Agency’s Database System, Turkey has established its own Database System in TAEA (Turkish Atomic Energy Authority) to collect the information regarding illicit trafficking incidents in NMSD (Nuclear Material Safety Division) of TAEA.

In Turkey, many incidents have been occurring, but most of the captured materials by the security forces, when analyzed in laboratories have been found that they are harmless chemicals without any significant importance. Illicitly trafficked nuclear materials have been of fairly small quantities usually with low enriched Uranium content. The applied procedures are as follows:

• The materials captured by the police are send to TAEA’s research centers,
• In these research centers, the material that is claimed to be nuclear material or radioactive source is analyzed in the Neutron Activation Analysis Laboratory with multichannel gamma spectroscopic analyze method and other methods.
• The results of analyze include measurements of the materials (elemental and isotopic composition, impurities, chemical form, radiation levels etc.), possible origins of the material and any other information that could be useful to the Authority.
• All this information is sent to NMSD of TAEA to keep the records and to supply to IAEA with the “Illicit Trafficking in Nuclear Materials and Other Radioactive Sources Incident Notification Form”.

• The nuclear material is kept at the research centers, which is a temporary depository of the material. A final decision about the permanent location of the material is given by a court. The material is open to IAEA safeguards inspections.

The smugglers that contribute in the smuggling incidents of nuclear and other radioactive sources in our country, are not really professional. Usually captured smugglers are not expert on this subject furthermore they have no idea of what they smuggle or its radiobiological effects on their health.

CONCLUSION

In order to prevent the illegal movements of nuclear materials and other radioactive sources, following measures are considered:

• To upgrade the available related regulations and systems on nuclear material accountancy and control, and physical protection. (The studies are going on)

• To establish of a “Remote Detection and Analysis of Low Level Radiation System” at the customs checkpoints, and to train customs staff on nuclear material, radioactive sources and equipment use (So as to get proper equipment to prevent illicit trafficking at the customs checkpoints, meetings have been done with the relevant organizations).

• To enhance cooperation among the countries, in particular bordering countries.

• To develop national legislation against the unauthorized transport of nuclear and radiation materials and penal statutes which could provide penal liability of perpetrators. Law proposal prepared by a co-operation of TAEA and Minister of Justice. This proposal forward to the National Assembly of Turkey.

It is believed that, besides the activities carried out in Turkey, neighboring countries should also establish or upgrade their own SSAC and physical protection systems to prevent the illicit trafficking and the IAEA should support and coordinate these activities.
Figure 1: International Incidents Recorded in IAEA Data Base according to states.

Figure 2: Incidents Recorded by IAEA according to years
Seized Other Radioactive Material Between 01.1993-07.2000

Figure 3: Type of Seized Radioactive Sources recorded by IAEA

International Incidents Recorded by IAEA
Between 01.1993-07.2000

Figure 4: Distribution of Nuclear Material and Radioactive Source in the international incidents
Figure 5: Distribution of Nuclear Material in international incidents

DISTRIBUTION OF NUCLEAR MATERIAL IN THE INTERNATIONAL INCIDENTS BETWEEN 01.1993-07.2000

Pu 6%
Th 2%
U 92%

Figure 6: Distribution of national incidents notified to IAEA

REFERENCES

3. IAEA’s Database System for Illicit Trafficking of Nuclear Materials and Other Radioactive Sources.