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## **Role of Nuclear Forensics in Supporting National Organizations in Combating Against Smuggling of Nuclear Materials**

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Due to the serious threats arising from smuggling of nuclear and radioactive materials and the possibility of diverting these materials to produce nuclear weapons and dirty bombs, the responsibility of undertaking the necessary measures to prevent any nuclear security violations, discovering and responding to it, if it occurred, rests with the state.

In the present work, the national and international efforts, reinforced by nuclear forensics, for detecting and intercepting smuggling of nuclear and radioactive materials are treated.

The role of nuclear forensics in supporting the investigations and giving answers to questions raised by the investigating authorities through examination of the physical, biological and documentary evidence in order to reveal, how, when and where the nuclear materials were produced and their planned use and also to reveal the relationship between personnel, places and materials involved. The role of nuclear forensics in reducing or preventing the occurrence of smuggling events as a result of the existence of some unnoticed deficiencies in the nuclear security system was very helpful in attracting the attention of the administration to improve the components of the nuclear security systems. Nuclear forensics plays an important role in deterring persons or groups from attacking nuclear or radioactive materials knowing that the investigating authorities can discover them and condemn them according to the provisions of the law.

The state should establish nuclear forensic infrastructure at first by reviewing suitable candidates existing in the state for selection. The state should annex a nuclear forensic plan to the national response plan to nuclear security events such as smuggling .etc. Moreover, the state should provide the necessary tools for inspecting collected evidences and for analysis and preparing a safe place for preserving them.

International support in capacity building of human resources in nuclear forensics is very helpful through know- how transfer, training and expert missions.

In combating against smuggling of nuclear and radioactive materials, nuclear forensics plays a complementary role to the role of other state organizations responsible for detecting and preventing smuggling of these materials such as the national customs organization and the state police department. International support to national nuclear forensics plans through the International Customs Organization and the INTERPOL is greatly recommended

The IAEA also plays an important role in supporting nuclear forensics through rapid information exchange in case of nuclear security events or accidents. IAEA assists member states in developing their legislations and also improving the control systems on nuclear and radioactive materials. IAEA prepared a draft document on “Nuclear Forensics in support of criminal investigations” that includes a model plan of nuclear forensics and indicated the most important steps that should be taken in consideration by the member states

IAEA supported the efforts of member states in combating against nuclear smuggling by supporting the national customs and police organizations in cooperation with the ICO and INTERPOL as will be explained in the present work.

In Egypt the Nuclear and Radiological Control Authority regularly organizes training courses and workshops oriented to members from state police and the state customs organizations for improving their awareness and their understanding in decreasing and preventing nuclear and radioactive materials smuggling. In the future

it is planned to improve the ability of nuclear forensics personnel on examining the physical, biological and documentary evidence for identifying the time, place of production of the nuclear and radioactive materials and their planned use.

### **Country and/or Institution**

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