



European  
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## Strengthening Nuclear Security through professional development and training: from best practice to successful implementation

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### 1. Introduction

Illicit trafficking of nuclear and other radioactive material remains an issue of concern due to radiological hazards linked to proliferation and the threat of nuclear terrorism.

Additionally, the widespread use of radioactive materials for medical and industrial applications is therefore associated with the risk of theft of such materials with their potential use in criminal and terrorist acts. These increased threat concerns lead to clear consensus among security experts that strong preventative measures are needed to lock down nuclear materials around the world and that only well-educated and trained professionals can ensure a robust nuclear security culture. There has been a concerted effort to promote and support nuclear security education and training – European Commission Joint Research Centre has been heavily involved in this effort.



### 2. Education and training in Nuclear security

Recent years have seen a surge of interest in nuclear security education and training courses driven by a growing international recognition of the importance of a strong nuclear security culture. Training is indeed considered as a systematic process through which a nuclear security organization's human resources gain knowledge and develop skills by instruction and practical activities that result in improved States nuclear security capabilities. Consequently, several States and international organizations have launched initiatives in nuclear security training and education assistance as their contribution to enhancing the security of both nuclear and radiological material and know-how. Knowledge and expertise in this specific subject are, nevertheless, not enough to ensure that training is effective, thus focus is put on "train-the-trainers" (T3) sessions.

The international community has predominantly focused efforts at border and customs officials. Nevertheless, complementary efforts had to focus to assist law enforcement in thwarting the acquisition of nuclear and radiological materials by terrorists, by similarly increasing their capacity and capability to secure all materials and prevent a potentially catastrophic event from happening. The combination of individual and cross training all nuclear security involved stake holders of a State play a critical role in maintaining effective national-level nuclear detection architecture.

There is a clear consensus among training experts that Instructional systematic design (ISD) approach to curriculum development is critical to collaboration efforts, the efficacy of the resulting training and its portability across organizations and training centers.

Provides framework for subject matter experts to contribute to the technical content of the material

Helps ensures that stakeholder roles and responsibilities are appropriately incorporated into curriculum

**Instructional  
systematic  
design (ISD)**

Promotes the development of progressive techniques, such as "flipped classroom" approach that enhances student engagement

Extends the impact when curriculum is implemented in regional centers such as EU Centres of Excellence and IAEA Nuclear Security Support Centres

Hands on trainings for front line officers and experts



Radiological crime scene management



Mobile detection capabilities



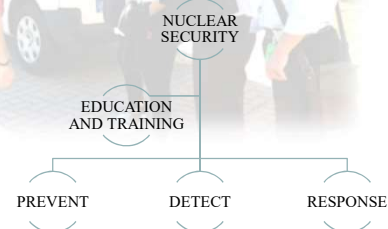
### 3. Nuclear Security training at EUSECTRA

The combination of individual and cross training all nuclear security involved stake holders of a State play a critical role in maintaining effective national-level nuclear detection architecture.

With the view to keeping abreast of Member State's needs in this particular area as their programme gain maturity, one can mention the support of the European Commission to international training activities with the help of its European Nuclear Security Training Centre (EUSECTRA) operated by the Joint Research Centre support.

The European Commission sustains building of multidisciplinary and cross agency capacity through training and exercises to prevent and respond to the terrorist and other criminal offences involving nuclear or other radioactive material.

Training for front line officers and proficient experts aims to be done in the most realistic way possible. Training centres use generally different small radioactive sources or simulated sources to inject radiation detection spectra into the radiation detector and thus produce "realistic" observables. Few training centres such as the EUSECTRA seeks to provide a "train as you fight" approach training by providing realistic scenarios with real special nuclear material. The training program offers then a unique opportunity for trainees to see and experience actual materials and commodities, as EUSECTRA is one of the few places in the world where a wide range of samples of plutonium and uranium of different isotopic compositions can be used for training in detection, categorization and characterization.



### 4. Strengthening Nuclear Security through networking and capacity building

The provided training courses shall aim to transfer practical knowledge and skills immediately applicable to participants' professional responsibilities to combat illicit trafficking; stimulate and encourage inter-institutional communication and collaboration to combat illicit trafficking at the operational level; provide a standardized course format and materials that national partners can easily replicate after receiving initial training and assistance. Significant efforts may be granted to deliver an extensive range of equipment and apparatus to cover anticipated national or international customers commonly deployed and operated gears. Cross-over agency trainings and field exercises shall then support enhancement of efficient networking and capacity building.

This global approach in providing training and expertise dissemination is then expected to better meet the transfer and the dissemination of knowledge necessary to spread worldwide rigorous nuclear Security Culture and its successful implementation.

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