Human Resource Development, Education and Training Activities in Nuclear Security

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Outline

I. Overview of IAEA Activities in Nuclear Security

II. HRD, Education, and Training Activities

III. Example of Recent Training Practices

IV. Summary and Key Considerations
I. Overview of IAEA Activities in Nuclear Security
Nuclear Security

Prevention

Detection

Response

... criminal or intentional unauthorized acts involving or directed at nuclear material, other radioactive material, associated facilities, or associated activities.

Measures taken to control and protect nuclear and other radioactive material from falling into the wrong hands.
IAEA Assistance

• Encouraging and facilitating adherence to international legal instruments
• Development of Nuclear Security guidance
• Peer reviews / advisory services
• HRD planning, education and training
• Technical assistance
• Information management and co-ordination
• Major public events
• Co-ordinated research projects
• Risk reduction
• Integrated Nuclear Security Support Plans (INSSPs)
IAEA Nuclear Security Series

Nuclear Security Fundamentals:
NSS 20 Objectives and Essential Elements of a State’s Nuclear Security Regime

Nuclear Security Recommendations
NSS 13 Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)
NSS 14 Nuclear Security Recommendations on Radioactive Material and Associated Facilities
NSS 15 Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control

Implementing guides: 14 NSS documents

Technical guidance: 8 NSS documents
II. HRD, Education, and Training Activities
(z) Underlining the importance of Agency programmes for education and training in nuclear security, as well as other international, regional and national efforts to this end, and encouraging the Secretariat to continue the coordinated research projects (CRPs) in the field of nuclear security and to provide further information in this respect.

20. Encourages ongoing initiatives of Member States, in cooperation with the Secretariat, to further enhance nuclear security culture, as well as skills and knowledge of personnel, with a view to developing and building human resources in this regard, through nuclear security education and training, and through dialogue with the nuclear industry and collaborative international and regional networks, as appropriate, including through centres of excellence, Nuclear Security Support Centres (NSSCs) and the International Nuclear Security Education Network (INSEN), and taking into account and promoting relevant Nuclear Security Series publications, and requests the Secretariat to continue to report to the Board of Governors on its activities in this respect;
IAEA Activities in Human Resource Development for Nuclear Security

Nuclear Security Plan 2018-2021
(Approved September 2017)

“The objective of the Agency’s Nuclear Security Programme is:
To contribute to global efforts to achieve effective nuclear security, by establishing comprehensive nuclear security guidance and, upon request, promoting its use through peer reviews and advisory services and capacity building, including education and training”

In particular, the Nuclear Security Plan specifically addresses human resource development and modular training programmes covering all aspects of nuclear security, following a systematic approach to training.
IAEA Activities in Human Resource Development for Nuclear Security

**Ultimate Goal:** To develop capabilities for supporting sustainable implementation of the international legal instruments and IAEA guidelines for nuclear security worldwide, and to foster nuclear security culture.

### HRD Planning and Need Analysis
To assist member states in evaluating and analyzing their human resource needs (SAT) in order to develop and implement a comprehensive HRD programme in nuclear security.

### Comprehensive Training Programme
To raise awareness, to fill gaps between the actual performance of personnel and the required competencies and skills and, to build-up qualified instructors/trainers.

### Nuclear Security Support Centres
To support member state capacity in nuclear security through human resource development, technical and scientific support.

### Nuclear Security Education
To support the development of teaching material, faculty expertise and preparedness, and the promotion of nuclear security education in collaboration with the academic and scientific community.
Workshops in Support of HRD in Nuclear Security

- National workshops:
  - Chile – April 2016
  - Egypt – April 2016

- Regional workshops:
  - Africa (Ghana) – July 2016
  - Asia and the Pacific (Republic of Korea) – December 2016
  - Africa (Senegal) – May 2017
  - Europe (Montenegro) – October-November 2017

- International workshops (Sustainability of training for Nuclear Security Detection Architecture – IAEA, November 2016; Mexico, July 2017)

- Workshops planned for 2017-2018:
  - Regional workshop (the Russian Federation) – October 2018
  - Regional workshop (Chile) – August 2018
  - National workshops (Viet Nam / November 2018, etc.)
  - Regional workshops on training for Detection Architecture
IAEA Nuclear Security Education

- IAEA Nuclear Security Series (NSS) No. 12 – *Educational Programme in Nuclear Security*
  - Published in 2010
  - Master of Science Programme
  - Certificate Programme
  - Currently under revision

- 25 teaching materials (textbooks)

- First six students graduated in December 2014 with a degree from TU Delft (as part of a European university consortium)

- Two new Master programmes
  - University of National and World Economy (UNWE), Bulgaria (2015)
  - Brandenburg University of Applied Sciences (Germany) + consortium (2018)

- Schools on Nuclear Security
International Nuclear Security Education Network (INSEN)

Membership is informal and open to any educational and research institution already involved or planning to be involved in nuclear security education in the future, or any competent authority that is interested or involved in nuclear security education.

**Mission:** to enhance global nuclear security by developing, sharing and promoting excellence in nuclear security education

Established in 2010

Currently 169 member institutions from 62 countries
Overview of IAEA Nuclear Security Training Activities

- **80** items (64 instructor-led and 16 e-learning courses) in the Training Catalogue covering all aspects of nuclear security + additional courses on State’s request through official channels

- **80 to 100** training courses conducted annually, over **1500** participants

- Developing **recommendations** on the use of a Systematic Approach to Training (SAT); human resource, education and training needs analysis; human resource development planning; national training programmes; instructor training programmes

- **16** e-learning courses on various topics in nuclear security
Nuclear Security e-Learning courses

- 6 basic e-Learning modules in nuclear security
  - Use of Radiation Detection Instruments for Front-Line Officers
  - Transport Security
  - Computer Security
  - Nuclear Material Accounting and Control for Nuclear Security
  - Radiological Crime Scene Management
  - Physical Protection

- Available on the Nuclear Security Training Portal in 6 languages

- 10 newly deployed courses
  - IAEA NSS publications, radiation basics, radioactive sources applications, categorization of radioactive material, nuclear security threats and risks, insider threats, etc.

- <Triple Bars in Nuclear Security>
  - Awareness-raising course developed by a MS based on the NSS

http://elearning.iaea.org
Examples of Support for Training in Nuclear Security

Support for Project Management (including training of National Project Teams)

Support for development of training-related documents: Legislations Regulations Training Policy Training Procedures

Support for implementation of Systematic Approach to Training (SAT)

Support for Training Needs Analysis and evaluation of effectiveness (a part of SAT)

Support for the development of job / function specific training programmes & materials

Support for establishment of Training Organizations / Training Centres / NSSCs (National and Regional): organizational structures, equipment, etc.

Support (existing and planned) to training in the field of Nuclear Security

Exercises (table-top and field)

Support for the conduct of self-assessment

Management training and development

Leadership Development

E-learning tools

Support for Instructor selection, training and development

IAEA 60 Years

IAEA Agency for Nuclear Development

Examples of Support for Training in Nuclear Security

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Nuclear Security Support Centres (NSSC)

Primary objectives of the Centres:

- Developing **human resources** through the implementation of a tailored training programme and establishing a network of experts.
- Provide **technical support** for lifecycle equipment management and **scientific support** for the prevention and detection of and the response to nuclear security events.

See IAEA TECDOC 1734
Established by consensus in February 2012 at a topical meeting in Vienna

Mission
- To contribute to the global efforts to enhance nuclear security capacity building through an effective and collaborative network of nuclear security training and support centres

Objectives
- Coordination and cooperation among NSSCs
- Identification of NSSC best practices, lessons learned, needs and capabilities
- Sharing of information and resources

Mechanisms
- Network meetings and other activities
- Network pages on NUSEC
- Regional sub-networks
- Cooperation with academic institutions (via INSEN)

Membership
- Currently 60 member states
- Membership open to all IAEA Member States
III. Example of Recent Training Practices in Nuclear Security
Examples of Performance-Based and Practical Training

- Border Control (including Cross Border Security Exercises)
- Front Line Officer (FLO) Training
- FLO Instructor Training
- Transport Security training (table-top and field)
- Development of a Security Plan for Radioactive Material Facilities
- Practical training on Preventive and Protective Measures against Insider Threats (e.g. target identification, insider characterization, abrupt theft, sabotage, protracted theft, facility NMAC exercises)
- Training on Drafting of IPPAS Findings
- Training on National Response Plan for Nuclear Security Events
- Exercises on Criminal Investigation
- Practical training on Nuclear Forensics
Front Line Officer (FLO) Training Course

General Radiation Overview

What is the FLO looking for and why?  
*Nuclear Security Threats and Risks*

What is the FLO looking for and why?  
*Types of Material FLOs will Encounter*

Naturally Occurring Radioactive Materials and Products  
*NORM Chart Activity*

How do FLOs find what they are looking for?  
*Detection Technologies*

How do FLOs find what they are looking for?  
*Suspicious Indicators*

How do FLOs find what they are looking for?  
*Detection by Information Alert*

Bulgarian Seizure & the Law Enforcement Role in the Detection Architecture

How do FLOs confirm what they found?  
*Alert and Alarm Assessment*

How do FLOs confirm what they found?  
*Secondary Inspection*

What do you do with the material once found?  
*Initial Response*

How can FLOs support follow-up?

Hands-on Training: Focus On Standard Operating Procedures  
*Portal Monitors: Vehicle/Cargo Inspection*  
*Portal Monitors: Pedestrian/Passenger Inspection*  
*Table-Top exercises (TTX) and open discussion*
Training Programme - FLO Instructor on Nuclear Security Detection

• 15 – 26 May 2017, Kuala Lumpur, Malaysia

• 15 trainees from three organizations:
  o Royal Malaysian Police (RMP)
  o Royal Malaysian Customs (RMC)
  o Atomic Energy Licensing Board (AELB)

• Purpose
  • Train instructors to implement the Front Line Officers’ (FLO) Training Course on Nuclear Security Detection
  • Emphasize a systematic approach to training
  • Assess trainees’ performance
  • Conduct in-training evaluation (in particular, receiving inputs from trainees, instructors, evaluators and observers for further improvements)
Training Programme - FLO Instructor on Nuclear Security Detection

- Training programme and training courses are designed based on analysis of FLO Instructor tasks
- Goals and training objectives identified according to FLO Instructor competency areas
- Training objectives are grouped and sequenced, that resulted in the three logically organized courses:
  - Course 1 - Instructor Basic Training Course (3 days)
  - Course 2 - FLO Instructor Initial Training Course (3 days)
  - Course 3 - FLO Instructor Course on Nuclear Security Detection
- Feedback on the pilot course was generally very positive
- Malaysia NSSC subsequently hosted and helped lead/deliver IAEA Regional Training Course on the Development of NSSC Capabilities in Nuclear Security Detection, 4-8 Sep 2017
- IAEA will be looking for opportunities to follow this approach with other mature NSSCs in various technical areas (e.g. physical protection, insider threat, nuclear forensics, etc)
IV. Summary and Key Considerations

- The IAEA continues to receive a strong mandate for and an increasing number of requests from its Member States to provide support in HRD, education, and training activities in nuclear security.

- To that effect, the Agency supports States in building sustainable national HRD programmes using an integrated, systematic approach.

- The Agency’s training activities in nuclear security include various types of training, from awareness raising to performance-based training in the field, and various training modes and training settings.

- The IAEA also coordinates two international Networks to foster collaboration among states on HRD for nuclear security.

- As a part of a longer-term strategy, the Agency has expanded its use of e-Learning to augment in-person training and will continue to focus on building partnerships with NSSCs to host and lead IAEA regional training courses.
Thank you for your attention!

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