Position Statement - WG4 – Education and Training

Interdisciplinary requirements for nonproliferation education

Profs. Sukesh Aghara and Marco Marzo
Integrated Nuclear Security and Safeguards Laboratory (INSSL)
University of Massachusetts Lowell

What we need:

– Professionals that know deeply nonproliferation and safeguards, and not only are aware of those areas;
– To establish a formal educational process that builds experts on nonproliferation, nuclear safeguards and security;
– To form professionals that are able to improve practices and procedures, and not only follow procedures;
– To form professionals which understand and are able to apply the synergies between nuclear safeguards and nuclear security.

Objectives of a formal educational process:

– Nuclear nonproliferation, and nuclear safeguards have to be considered in a broader sense, as they present multidisciplinary nature. Therefore it is essential to educate professionals with a broad overview on all aspects relevant to nonproliferation and safeguards.

– An expert should know:

  (1) All elements of the nonproliferation regime
  (2) The technical aspects related to nuclear materials, nuclear facilities and nuclear safeguards and security, getting a deeper understanding in nuclear fuel cycle, safeguards application at International, State, and facility levels.
  (3) International and geopolitical issues related to nonproliferation, including the historical evolution of nonproliferation and international safeguards; and
  (4) International and domestic legal framework on nuclear safeguards and security

How to establish the Education Program

– We envisage a graduate certificate on nuclear security and safeguards
– Through core courses, students would develop skills and knowledge on nonproliferation regime, international safeguards, weapons of mass
destruction, global and regional treaties, import/export controls on dual-use technologies, detecting special nuclear material, and methods for assessing and quantifying the risk of nuclear terrorism;

- By completing optional courses the students would get a deeper understanding in nuclear fuel cycle, international non-proliferation regime, the safeguards approaches at State and facility levels, the verification methods for safeguards, nuclear forensic, and radiation detection and instrumentation techniques.

- The courses should foster the development of analytical skills, emphasizing the information evaluation as primary and essential tool for nonproliferation and safeguards.

**Specific Courses**

- Weapons of Mass Destruction
- Fundamentals of nuclear security and safeguards
- Non-Proliferation regime and International Safeguards
- Nuclear Fuel Cycle and Acquisition Path Analysis
- Nuclear Material Accounting and Control
- State-level approaches
- Information evaluation
- Safeguards approaches at facility level
- Synergies between nuclear safeguards and security
- Mechanisms of trade control
- Threat Assessment and Risk Management
- Nuclear Instrumentation