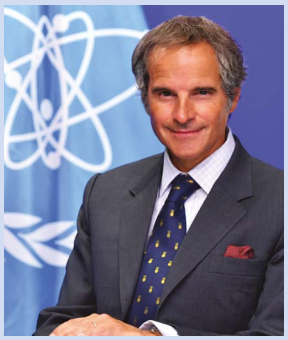
Nuclear Security Training and Demonstration Centre (NSTDC)

Catalogue of training courses and workshops

IAEA
International Atomic Energy Agency



"The NSTDC is the world's first international nuclear security training centre. It will unlock training opportunities for thousands of experts and enable the IAEA to respond effectively to its Member States' increasing need for technically sophisticated nuclear security training that complements their national activities."

Rafael Mariano Grossi
IAEA Director General

This catalogue provides descriptions of the training courses and workshops offered at the IAEA's Nuclear Security Training and Demonstration Centre (NSTDC).

Images: IAEA

NSTDC at a glance

The Nuclear Security Training and Demonstration Centre (NSTDC) — the first international nuclear security training centre — was established to assist countries in strengthening their capacities to tackle nuclear terrorism.

The NSTDC is a modern, specialized training facility which provides for experts' access to a unique training programme, supported by state of the art technical infrastructure. This unique training programme was developed based on analysis of the needs of countries as well as capabilities of the IAEA Collaborating Centres and Nuclear Security Support Centres (NSSCs) in different regions, which host various IAEA courses in nuclear security. Such analysis led to the identification of gaps that are now addressed by training offered at NSTDC, thus providing optimal support to countries in certain areas of nuclear security.

The NSTDC was built to respond to growing requests by States for capacity building in the field of nuclear security. Its operation increases the IAEA efforts and complements the existing national and international mechanisms of nuclear security capacity building, such as IAEA Collaborating Centres and NSSCs.

The NSTDC provides advanced training to an average 1000 participants per year in the following areas:

- physical protection of nuclear and other radioactive material and associated facilities; and
- detection and response to criminal or intentional unauthorized acts involving or directed at nuclear or other radioactive material, associated facilities or associated activities.

The training offered at NSTDC covers:

- computer and information security;
- operation, lifecycle management, hands-on practical application and maintenance of nuclear security equipment, particularly in support of physical protection upgrade projects;
- exercises and demonstrations of detection of nuclear and other radioactive material out of regulatory control, including maintenance and hands-on practical application of radiation detection equipment;
- response to nuclear security events, including radiological crime scene management;
- nuclear forensics;
- nuclear security for major public events;
- application of virtual reality technologies; and
- train-the-trainers approaches.

The NSTDC was inaugurated on 3 October 2023 and is located in the new Multipurpose Building (MPB) at the IAEA's Seibersdorf laboratories in Vienna, Austria. The establishment of NSTDC was completed within two years and three months after the groundbreaking ceremony in July 2021.

The NSTDC and the MPB are supported by donors' financial and in-kind contributions. As of 1 September 2024, support has been received from Armenia, Belgium, Brazil, Canada, China, Denmark, France, Germany, Italy, Republic of Korea, Russian Federation, Saudi Arabia, Sweden, Switzerland, United Kingdom, United States of America and the European Union.

The NSTDC mission is to assist countries in establishing and continuously strengthening their national nuclear security regimes to prevent, detect and respond to acts and threats of nuclear terrorism with the aim of protecting persons, property, society and the environment.

Through a training programme designed to address identified needs and gaps, the NSTDC offers access to hands-on training, advanced technology and equipment to thousands of experts.

NSTDC training courses and workshops

Currently the NSTDC offers 28 training courses and workshops:

1

Hands-on training on physical protection equipment installation, integration, operation and maintenance

Purpose and objectives

To train participants in planning, designing, implementing, commissioning, operating, maintaining and sustaining physical protection system elements.

Focus areas

- Physical protection system design and planning for nuclear and other radioactive material and associated facilities
- Video assessment system
- Intrusion detection system
- Access control system
- Physical protection system integration
- Diagnosis and fault finding of physical protection system
- Advanced physical protection technologies
- Computer security fundamentals for nuclear security

Training methods

- Lecture/presentation
- Group discussion, oral questioning
- Practical exercises and demonstrations using physical protection equipment

Specialized equipment/infrastructure to be used

- Central alarm station demonstration room
- Physical protection demonstration room

Target audience

Staff from the operating organizations, regulatory bodies, other competent authorities or organizations responsible for design, establishment, operation and evaluation of effectiveness of the physical protection systems.

Prerequisites

Completion of the following IAEA e-learning modules is required:

- Introduction to and Overview of IAEA Nuclear Security Series Publications
- Physical Protection
- Information and Computer Security

Completion of the following training courses is recommended:

- Basic and advanced level courses related to physical protection

Duration

20 days

2 Operational and performance testing of physical protection system

Purpose and objectives

To train the participants in operational and performance testing techniques and methodologies for accepting newly established and/or enhanced systems as part of physical protection upgrade projects.

Focus areas

- Physical protection testing and evaluation
- Performance testing of intrusion detection system
- Performance testing of video assessment system
- Performance testing of access control and search systems
- Performance testing of access delay elements
- Performance testing of central alarm station equipment
- Computer security for operational and performance testing of physical protection system

Training methods

- Lecture/presentation
- Group discussion, oral questioning
- Practical exercises and demonstrations using physical protection equipment

Specialized equipment/infrastructure to be used

- Central alarm station demonstration room
- Physical protection demonstration room

Target audience

Staff from the operating organizations, regulatory bodies, other competent authorities or organizations responsible for design, establishment, operation and evaluation of effectiveness of the physical protection system.

Prerequisites

Completion of the following IAEA e-learning modules is required:

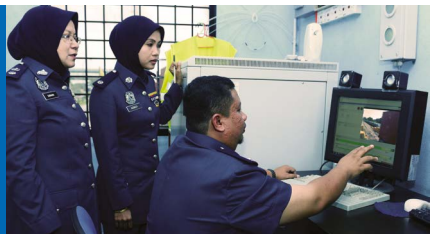
- Overview of Nuclear Security Threats and Risks
- Physical Protection
- Information and Computer Security

Completion of the following training courses is recommended:

- Basic and advanced level courses related to physical protection

Duration

10 days



3 Central alarm station design and operation for facilities using nuclear or other radioactive material

Purpose and objectives

Provide the participants with hands-on training in the skills and operations associated with working in central alarm stations (CASs) at facilities using nuclear or other radioactive material, as well as CAS design principles.

Focus areas

- Introduction to CAS
- CAS governance and standards
- Role, responsibilities and operational duties of CAS operators
- Computer security for CAS design and operations
- Practical exercises for CAS design and operations

Training methods

- Lecture/presentation
- Group discussion, oral questioning, knowledge check
- Case study, observation
- Demonstration, practice, drill

Specialized equipment/infrastructure to be used

- CAS demonstration room
- Physical protection demonstration room

Target audience

Staff involved in CAS operations at facilities handling nuclear material or other radioactive material and also staff working on design and evaluation of CAS systems at such facilities.

Prerequisites

Completion of the following training courses is required:

- Introduction to and Overview of IAEA Nuclear Security Series Publications
- Physical Protection

Duration

5 days

4

Identification and implementation of physical protection upgrades at a nuclear facility

Purpose and objectives

Provide the participants with hands-on training in the key steps and principles for identifying and implementing physical protection upgrades at nuclear facilities in line with national regulations and IAEA nuclear security guidance.

Focus areas

- IAEA nuclear security recommendations for physical protection of nuclear material and facilities
- Computer security fundamentals for physical protection systems upgrade projects
- Identification of physical protection upgrades at a nuclear facility
- Development of operational requirements and statements of work
- Implementation of physical protection upgrades
- Testing and commissioning of physical protection systems and upgrades
- Sustainability of physical protection systems and upgrades

Training methods

- Lecture/presentation
- Group discussion, oral questioning, knowledge check
- Case study, observation
- Demonstration, practice

Specialized equipment/infrastructure to be used:

- Physical protection demonstration room

Target audience

Staff from operating organizations, regulatory bodies, other competent authorities and organizations responsible for performing or supporting physical protection upgrades at a nuclear facility such as a nuclear power plant or research reactor.

Prerequisites

Completion of the following IAEA e-learning modules is required:

- Introduction to and Overview of IAEA Nuclear Security Series Publications
- Physical Protection

Completion of the following training courses is required:

- Training on practical operations of physical protection systems at facilities using nuclear or other radioactive material

Duration

5 days

5

Hands-on training on inspection of equipment for nuclear security at facilities using nuclear or other radioactive material

Purpose and objectives

Provide participants with basic knowledge and understanding on conducting regulatory inspections of physical protection systems at nuclear facilities.

Focus areas

- Introduction to nuclear security
- Preparation and conduct of regulatory inspections
- Inspection of security management measures
- Inspection of access control systems
- Inspection of physical barriers
- Inspection of intrusion detection systems
- Inspection of closed circuit television systems
- Inspection of illumination systems
- Inspection of central alarm stations
- Inspection of guard and response arrangements
- Inspection of computer security

Training methods

- Lecture/presentation
- Group discussion, oral questioning
- Case study, observation
- Demonstration, practice

Specialized equipment/infrastructure to be used

- Central alarm station demonstration room
- Physical protection demonstration room

Target audience

Staff from the regulatory bodies, other competent authorities or organizations responsible for performing inspections of physical protection systems at nuclear facilities.

Prerequisites

Completion of the following IAEA e-learning modules is required:

- Physical Protection
- Information and Computer Security

Duration

5 days

6 Regulatory functions for the security of nuclear material, nuclear facilities and associated activities

Purpose and objectives

- Enhance understanding of regulatory approaches, processes and functions for security of nuclear material, nuclear facilities and associated activities.
- Address the needs and priorities of regulatory staff to perform regulatory functions.

Focus areas

- Introduction to nuclear security
- Regulatory body and its functions
- Overview of physical protection concepts and security technologies
- Development of regulatory framework
- Review, assessment and authorization
- Inspection and enforcement
- Computer security fundamentals for regulatory functions for nuclear materials, facilities and associated activities
- Maintaining and sustaining regulatory functions

Training methods

- Lecture/presentation
- Case study
- Group discussions
- Practical exercises and demonstrations using mock-up facility models and physical protection equipment

Specialized equipment/infrastructure to be used

- Central alarm station demonstration room
- Physical protection demonstration room

Target audience

Staff from the regulatory bodies, other competent authorities or organizations responsible for performing or supporting regulatory functions related to the security of nuclear material, nuclear facilities and associated activities.

Prerequisites

Completion of the following IAEA e-learning modules is required:

- Introduction to the International Legal Framework for Nuclear Security
- Overview of Nuclear Security Threats and Risks
- Physical Protection

Duration

10 days

7

Project support and management approaches for nuclear security upgrade projects

Purpose and objectives

- To familiarize participants with project support and management approaches in order to enhance their capabilities for managing and supervising all current and future security upgrade projects implemented with the IAEA.

Focus areas

- General principles of project management applicable to nuclear security projects
- Project definition and approval
- Project initiation and planning
- Project delivery and control
- Testing and commissioning
- Project closure
- Computer security fundamentals for physical protection upgrade projects

Training methods

- Lecture/presentation
- Group discussion, oral questioning
- Case study, required reading
- Demonstration, practice, role playing

Specialized equipment/infrastructure to be used

- Central alarm station demonstration room
- Physical protection demonstration room

Target audience

Stakeholders of physical protection upgrade projects, primarily operators and regulators from the Member States.

Prerequisites

Completion of the following IAEA e-learning modules is required:

- Overview of Nuclear Security Threats and Risks
- Physical Protection

Duration

5 days

8

Training on insider threats using the Shapash 3D model

Purpose and objectives

- Familiarize the participants with nuclear security measures that can be used to address insider threats and cybersecurity vulnerabilities at facilities containing nuclear material using the Shapash 3D Model.

Focus areas

- Introduction to nuclear security, the threat posed by the insider and the hypothetical facility SNRI
- Preventive and protective measures against insider threats
- Computer security and insider threats
- Contingency plans, system evaluation and improvements

Training methods

- Lecture/presentation
- Group discussion, knowledge check
- Case study, walk through
- Demonstration

Specialized equipment/infrastructure to be used

- SNRI 3D model
- Physical protection demonstration room

Target audience

Participants working in nuclear materials security or nuclear safeguards, in ministries, regulatory bodies, law enforcement agencies or operating organizations. The course is intended mainly for persons who are responsible for designing, operating and/or assessing nuclear security systems, including the nuclear material accounting and control (NMAC) components, as well as physical protection measures at nuclear facilities; nuclear security management and staff; operators and managers of NMAC systems; those who prepare associated regulations; persons responsible for computer security at nuclear facilities; and persons from the competent authorities and related law enforcement agencies.

Prerequisites

Completion of the following IAEA e-learning module is required:

- Preventive and Protective Measures against Insider Threats

Duration

5 days

9

Implementation of facility-level nuclear material accounting and control measures for nuclear security

Purpose and objectives

- Provide practical training on the implementation of nuclear material accounting and control (NMAC) measures for nuclear security at the facility level.
- Provide hands-on training for nuclear security professionals on NMAC measures that enhance nuclear security by deterring and detecting in a timely manner any unauthorized access, removal, or use of nuclear material at a nuclear facility. Participants will gain practical experience implementing NMAC techniques, including accounting measures, such as identification of material balance areas, physical inventory taking, conduct of nuclear material measurements (e.g. destructive and non-destructive methods), and material balance evaluation (also known as material-unaccounted-for evaluation). In addition, participants will practice designing and implementing nuclear security controls, such as access control to nuclear materials and equipment, administrative checks, item monitoring, surveillance techniques, and tamper-indicating devices during the use, storage, and transport of nuclear materials.

Focus areas

- NMAC for nuclear security and interfaces with other elements of nuclear security
- Material balance areas
- Physical inventory taking
- Calculation and evaluation of material unaccounted for
- Nuclear material measurements
- Item and process monitoring
- Investigation and resolution of irregularities
- NMAC system assessments and performance testing

Training methods

- Lecture/presentation
- Group discussion, knowledge check
- Practice

Specialized equipment/infrastructure to be used

- Central alarm station demonstration room
- Physical protection demonstration room

Target audience

Nuclear security professionals from the State's competent authorities, facility managers, operators, NMAC organizations, with responsibilities for performing security inspections at nuclear facilities under planning, construction, in operation, shutdown or under decommissioning.

Prerequisites

Completion of the following IAEA e-learning module is recommended:

- Nuclear Material Accounting and Control (NMAC) for Nuclear Security

Completion of the following training courses is recommended:

- Use of Nuclear Material Accounting and Control for Nuclear Security Purposes at Facilities
- Control of Nuclear Material in Use, Movement and Storage

Duration

5 days

10

Introduction to life cycle security of radioactive material and associated facilities in cancer care

Purpose and objectives

Familiarize participants with key considerations towards ensuring life cycle security and sustainability of radioactive material and associated facilities used in cancer care, including information and computer security aspects of nuclear security.

Focus areas

- International legal framework for nuclear security
- Consequences of loss of control of radioactive sources and risk management
- Categorization of radioactive material and assigning security levels
- Security measures for radioactive material in use, storage and transport
- Radioactive material control and accounting systems
- Insider threat prevention
- Computer security challenges in the digitalization of the medical care setting
- Security management programme in security of radioactive material
- Facility plans: emergency, security and response
- Safety and security interface
- Security culture and awareness in medical facilities
- Security audits and inspections of radioactive material facilities
- Nuclear security events and international cooperation
- Case studies, future trends and sustainability

Training methods

- Lecture/presentation
- Group discussion
- Case study
- Demonstration

Specialized equipment/infrastructure to be used

- Central alarm station demonstration room
- Physical protection demonstration room

Target audience

Staff from medical facilities using, or planning to use, radioactive material in cancer care as well as representatives of relevant regulatory bodies and other competent authorities or organizations with nuclear security responsibilities. States participating in or planning to join the IAEA's Rays of Hope initiative are encouraged to enroll for this course.

Prerequisites

Completion of the following IAEA e-learning modules is recommended:

- Introduction to the International Legal Framework for Nuclear Security
- Introduction to and Overview of IAEA Nuclear Security Series Publications
- Overview of Nuclear Security Threats and Risks
- Nuclear Security Threats and Risks: Material and Facilities
- Physical Protection
- Transport Security
- Nuclear Material Accounting and Control (NMAC) for Nuclear Security
- Introduction to Nuclear Security Culture
- Preventive and Protective Measures against Insider Threats
- Information and Computer Security
- Nuclear Security Threats and Risks: Cyber Threats
- Security of Nuclear Information

Duration

10 days

11

Nuclear security threat assessment methodology for material under and out of regulatory control

Purpose and objectives

To train participants in conducting a harmonized approach to national-level threat assessment for design and implementation of sustainable nuclear security systems and measures for nuclear material and other radioactive material that is under regulatory control, and associated facilities and activities, as well as the prevention of, detection of and response to criminal and intentional unauthorized acts involving nuclear and other material out of regulatory control.

Focus areas

- Step-by-step methodology for conducting a national nuclear security threat assessment
- Risk informed approach for conducting threat and risk assessment
- Development, use and maintenance of the design basis threat
- Identification and assessment of threats, targets and potential consequences
- Selection, design and implementation of nuclear security measures

Training methods

- Lecture/presentation
- Group discussion, oral questioning
- Practical exercises and demonstrations using physical protection and radiation detection equipment

Specialized equipment/infrastructure to be used

- Central alarm station demonstration room
- Physical protection demonstration room
- Detection and response laboratory

Target audience

Staff from the operating organizations, regulatory bodies, other competent authorities or organizations responsible for design, development and implementation of nuclear security systems and measures for material under and out of regulatory control.

Prerequisites

Completion of the following IAEA e-learning modules is required:

- Introduction to the International Legal Framework for Nuclear Security
- Overview of Nuclear Security Threats and Risks
- Nuclear Security Threats and Risks: Cyber Threats
- Nuclear Security Threats and Risks: Material out of Regulatory Control
- Nuclear Security Threats and Risks: Material and Facilities

Duration

5 days

12 Nuclear security programme self assessment methodology

Purpose and objectives

To provide participants with the tools and training to select and implement nuclear security programme self assessment methodologies as well as strategies for coordination, collaboration and managing stakeholder contributions at the national level.

Focus areas

- Promoting accuracy and recognizing deficiencies
- Reviewing example self assessment frameworks and methodologies
- Human resource development programme assessment
- Technical support programme assessment
- Scientific support programme assessment
- Nuclear security culture programme assessment
- Exercise programme development and implementation
- Documenting and formulating appropriate corrective actions

Training methods

- Lecture/presentation
- Group discussion, oral questioning, scenario based discussions

Specialized equipment/infrastructure to be used

- Central alarm station demonstration room
- Physical protection demonstration room
- Detection and response laboratory

Target audience

Staff from the operating organizations, regulatory bodies, other competent authorities or organizations responsible for design, establishment, operation and evaluation of nuclear security programmes.

Prerequisites

Completion of the following IAEA e-learning modules is required:

- Introduction to Nuclear Security Culture
- Introduction to the International Legal Framework for Nuclear Security
- Introduction to and Overview of IAEA Security Series Publications
- Nuclear Security Detection Architecture Awareness
- Nuclear Security Threats and Risks: Cyber Threats
- Nuclear Security Threats and Risks: Material out of Regulatory Control
- Nuclear Security Threats and Risks: Material and Facilities
- Physical Protection
- Preventive and Protective Measures Against Insider Threats

Duration

5 days

13

Train-the-trainers course on contingency response planning for facilities using or storing nuclear material

Purpose and objectives

Prepare experts to conduct training courses, including tabletop exercises, on the elements of contingency response planning and implementation for facilities using or storing nuclear material.

Focus areas

- Nuclear security overview
- Crisis management
- Safety and security interface
- Coordination of emergency response and contingency response

Training methods

- Lecture/presentation
- Group discussion, oral questioning
- Case study, observation
- Demonstration, practice

Specialized equipment/infrastructure to be used

- Central alarm station demonstration room
- Physical protection demonstration room

Target audience

Staff from regulatory bodies, other competent authorities or organizations responsible for performing or supporting regulatory functions related to the nuclear security, nuclear facilities and associated activities.

Prerequisites

Completion of the following IAEA e-learning modules is required:

- Introduction to the International Legal Framework for Nuclear Security
- Overview of Nuclear Security Threats and Risks
- Introduction to and Overview of IAEA Nuclear Security Series Publications
- Nuclear Security Threats and Risks: Material and Facilities
- Physical Protection

Completion of the following workshop is recommended:

- IAEA Workshop on Management of Response to a Nuclear Security Event at Nuclear Facilities

Duration

5 days

14 Basic use and maintenance of handheld detection instruments

Purpose and objectives

Provide participants with the basic knowledge to calibrate, test and maintain both detection and spectroscopic radiation detection handheld equipment used in nuclear security for material out of regulatory control.

Focus areas

- Basic radiation concepts and radiation protection
- Personal radiation detector (PRD) basic use and maintenance
- Radionuclide identification device (RID) basic use and maintenance
- Backpack radiation detector (BRD) basic use and maintenance
- Computer security fundamentals for handheld detection equipment

Training methods

- Lecture/presentation
- Group discussion/knowledge check
- Case study
- Demonstration, practice

Specialized equipment/infrastructure to be used

- Detection and response laboratory
- Handheld detection equipment (PRD, RID, BRD)

Target audience

Operational level participants from technical support authorities with knowledge of radiation detection.

Prerequisites

Completion of the following training is required:

- Training courses on chemical, biological, radiological and nuclear (CBRN) events/incidents, e-learning modules on detection and response
- Basic or advanced radiation protection training

Duration

5 days

15 Advanced use and maintenance of handheld detection instruments

Purpose and objectives

Provide participants with advanced knowledge to calibrate, test, extract and analyze spectral data, and maintain both detection and spectroscopic radiation detection handheld equipment used in nuclear security for material out of regulatory control.

Focus areas

- Radiation detection overview
- Personal radiation detector (PRD) advanced use and maintenance
- Radionuclide identification device (RID) advanced use and maintenance
- Backpack radiation detector (BRD) advanced use and maintenance
- High resolution radionuclide identification device use, maintenance and data acquisition and analysis
- Computer security fundamentals for handheld detection equipment

Training methods

- Lecture/presentation
- Group discussion, knowledge check
- Case study
- Demonstration, practice

Specialized equipment/infrastructure to be used

- Detection and response laboratory
- Handheld detection equipment (PRD, RID, BRD)

Target audience

Operational level participants from technical support authorities with knowledge of radiation detection.

Prerequisites

Completion of the following training is recommended:

- Training courses on chemical, biological, radiological and nuclear (CBRN) events/incidents, e-learning modules on detection and response
- Basic or advanced radiation protection training

Duration

5 days

16

Development of detection and response equipment life cycle management programmes

Purpose and objectives

Train participants on the application of a sustainable and systematic approach to the technical support and equipment life cycle management for detection equipment of nuclear and other radioactive material out of regulatory control, as key element of a State's nuclear security regime.

Focus areas

- Systematic approach to development of technical support services, specifically nuclear security equipment life cycle management
- Planning sustainable detection equipment procurement strategies
- Development of equipment operational and maintenance procedures

Training methods

- Lecture/presentation
- Case study and group discussions
- Practical exercises and demonstrations using handheld, portable and fixed radiation detection equipment

Specialized equipment/infrastructure to be used

- Detection and response laboratory

Target audience

Individuals with responsibilities for radiation detection and response equipment management and sustainability.

Prerequisites

Completion of the following IAEA e-learning modules is required:

- Radiation Basics and Consequences of Exposure to Radiation
- Use of Radiation Detection Instruments for Front Line Officers

Duration

5 days

17 Nuclear security applications of active interrogation technologies

Purpose and objectives

- Enhance States' ability to detect shielded nuclear materials and enhance other non-intrusive inspection applications of nuclear technology.
- Provide frontline officers (FLOs) with an understanding of portable (handheld) non-intrusive inspection equipment performance capabilities and limitations, radiation safety issues, and field applications for searching for a wide range of threat materials, including shielded nuclear and radioactive materials, strategic goods, explosives, weapons, and drugs.

Focus areas

- Application overview, basic theory
- Legal, policy and safety considerations
- Image analysis and data interpretation
- Equipment familiarization, demonstration and field exercises

Training methods

- Lecture/presentation
- Group discussion, knowledge check
- Case study
- Demonstration, practice

Specialized equipment/infrastructure to be used

- X ray backscatter systems, X ray fluorescence systems, Raman spectrometry system, X ray penetration systems, neutron interrogation system, personal radiation detectors, radiation identification devices (RIDs)
- Drums, boxes, vehicles, shielding for nuclear materials, radioactive sources and other threat/illicit material

Target audience

FLOs who have knowledge of and responsibilities in the use of active interrogation technologies (X ray, neutron) for a broad range of nuclear security and other threat, safety, and trade applications.

Prerequisites

Completion of the following IAEA e-learning modules is recommended:

- Radiation Basics and Consequences of Exposure to Radiation
- Use of Radiation Detection Instruments for Front Line Officers

Completion of the following training courses is recommended:

- FLO operator training and training on use and maintenance of radiation detection instruments conducted either by the IAEA or within a delegate's State

Duration

5 days

18 Integrated workshop on radiological crime scene management and nuclear forensics

Purpose and objectives

Develop better understanding of the key techniques and approaches commonly used in radiological crime scene management (RCSM) and nuclear forensics (NFS). The event is built on hypothetical but realistic scenarios and primarily consists of hands-on and interactive elements, including demonstrations, videos, tabletop exercises and live play exercises.

Focus areas

- Introduction to RCSM and NFS
- Evidence collection and management demonstration
- Practical RCSM scenario-based exercises, isotope identification, in-field categorization of nuclear materials collected at the scene using a portable High Purity Germanium (HPGe) radiation detector
- Nuclear forensics laboratory examination demonstration

Training methods

- Lecture/presentation
- Group discussion, knowledge check, oral questioning
- Case study, observation
- Demonstration, practice, role play

Specialized equipment/infrastructure to be used

- Detection and response demonstration room
- Nuclear forensics demonstration laboratory
- RCSM starter pack including equipment for evidence collection demonstration and practice
- Portable high purity gamma spectrometer

Target audience

Multi-agency delegation of practitioners, such as crime scene investigators, crime scene managers, commanders, prosecutors, radiation protection experts, radiation detection experts, radiological assessors, nuclear forensic experts, scientists and regulatory body representatives.

Prerequisites

Completion of the following training is recommended:

- Training courses on chemical, biological, radiological and nuclear (CBRN) events/incidents, e-learning modules on detection and response, basic and/or advanced radiation protection training

Duration

5 days

19 Response to nuclear security events and emergencies triggered by nuclear security events

Purpose and objectives

Provide participants with practical focused training in responding to criminal acts involving nuclear and other radioactive material, including those that may trigger an emergency involving such materials.

Focus areas

- Basic radiation concepts, radiation protection and an introduction to criminal and intentional unauthorized acts involving nuclear and other radioactive material
- Criminal or intentional unauthorized acts involving nuclear or other radioactive material which may trigger a radiological emergency
- Demonstration of handheld radiation detection equipment used by responders and standard operating procedures for its use
- Functional outcomes when responding to criminal acts involving nuclear or other radioactive material
- Concept of operations for responding to nuclear security events, including those which may trigger a radiological emergency
- Use of handheld equipment by responders and standard operating procedures
- Computer security fundamentals for response to nuclear security events and emergencies triggered by material out of regulatory control

Training methods

- Lecture/presentation
- Group discussion, quizzes
- Case study
- Demonstration, practice

Specialized equipment/infrastructure to be used

- Major public events (MPEs) detection equipment, including personal radiation detectors (PRDs), low-resolution radiation identification devices (RIDs), backpack radiation detectors (BRDs), high-resolution RIDs, calibration sources, pedestrian radiation portal monitor (RPM), and vehicle-mounted detection system and set of MPE equipment
- Detection and response demonstration room

Target audience

Law enforcement frontline officers and responders, as well as operational commanders. Participants from scientific and technical support agencies who will support the response to nuclear security events is also encouraged.

Prerequisites

Completion of the following training courses is required:

- Awareness training on chemical, biological, radiological and nuclear (CBRN) events/ incidents response principles for individuals from response organizations

Duration

5 days

20

Tabletop and field exercises on response to nuclear security events and emergencies triggered by nuclear security events

Purpose and objectives

Provide a set of nuclear security exercises for participants ranging from response to information alerts through response to a radiological emergency triggered by a criminal act involving nuclear or other radioactive material. These exercises are designed to enable countries to test a range of response activities involving personnel from various authorities.

Focus areas

- Information alert regarding credible nuclear security threat without the confirmed presence of nuclear or other radioactive material
- Report of theft at a radioactive waste storage or similar facility storing radioactive material
- Potential misuse of materials out of regulatory control (MORC) by a criminal organization
- Criminal act involving MORC which triggers an emergency
- Radiological crime scene management field exercise

Training method

Exercise

Specialized equipment/infrastructure to be used

Detection and response demonstration room

Target audience

Depending on the nature of the exercise, participants may come from competent authorities and may include law enforcement, military, intelligence and technical support organizations, as well as other emergency response organizations which would be expected to respond to such criminal acts.

Prerequisites

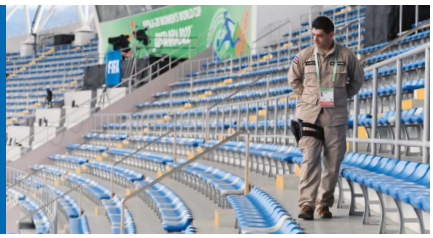
Completion of the following training is recommended:

- Training in nuclear security response-related activities or e-learning focused on nuclear security issues
- Responder commander training within a delegate's own organization

Duration

Various

21



Developing and implementing nuclear security systems and measures for major public events: An overview and technical demonstration

Purpose and objectives

Provide participants with a comprehensive overview of how to plan, develop and implement nuclear security systems and measures for major public events (MPEs), based on the IAEA NSS No. 18 *Nuclear Security Systems and Measures for Major Public Events.* The training will also reinforce the concepts described in the NSS No. 18, and involve several demonstrations using handheld radiation detection equipment during MPEs.

Focus areas

- Overview of nuclear security for MPEs
- Preliminary arrangements for MPEs
- National experiences of good practices, lessons learned and challenges in hosting MPEs
- Pre-event preventive measures
- Detection by instruments
- Concept of operations for MPEs, command and control centre operations
- Assessment of alarms and alerts
- Response measures
- Preparedness and logistics for MPEs
- IAEA assistance to Member States hosting MPEs

Training methods

- Lecture/presentation
- Group discussion, quizzes
- Case study
- Demonstration, practice

Specialized equipment/infrastructure to be used

- Major public events detection equipment including personal radiation detectors (PRDs), low-resolution radiation identification devices (RIDs), backpack radiation detectors (BRDs), high-resolution RIDs, calibration sources, pedestrian radiation portal monitor (RPM), and vehicle-mounted detection system and set of MPE equipment
- Detection and response demonstration room

Target audience

Designated security coordinators and decision makers with national responsibility for MPE security planning. These should include policymakers, event organizers and representatives of law enforcement agencies, emergency services, and other relevant and technical support organizations.

Duration

5 days

22

International workshop and technical demonstration for senior officials on nuclear security measures for major public events

Purpose and objectives

Raise awareness among senior officials of States planning to host major public events (MPEs) of the nuclear security measures which can be implemented by their States to secure the events against nuclear security threats and to demonstrate how those measures can be deployed.

Focus areas

- Overview of nuclear security for MPEs
- Planning for implementation of nuclear security measures at MPEs
- National experiences in planning and preparing for an MPE
- Phased MPE concept of operations and resourcing requirements: pre-, during and post-event phases
- Demonstration of radiation detection instruments used at MPEs
- Demonstration of new developments in nuclear security for MPEs
- Good practices, lessons learned and challenges identified in implementing nuclear security measures during MPEs
- IAEA assistance to Member States hosting MPEs

Training methods

- Lecture/presentation
- Group discussion, oral questioning, quizzes
- Case study
- Demonstration, practices

Specialized equipment/infrastructure to be used

- Major public events detection equipment including personal radiation detectors (PRDs), low-resolution radiation identification devices (RIDs), backpack radiation detectors (BRDs), high-resolution RIDs, calibration sources, pedestrian radiation portal monitor (RPM), and vehicle-mounted detection system and set of MPE equipment
- Detection and response demonstration room

Target audience

Senior officials of organizations responsible for nuclear security at MPEs such as law enforcement, military, intelligence, technical support and similar security-focused organizations.

Duration

3 days

23

Train-the-trainers course on radiological crime scene management for subject-matter experts

Purpose and objectives

Prepare and train experts for the delivery of the IAEA Foundation Workshop on Radiological Crime Scene Management (RCSM) and on IAEA policies in order to support the implementation of national RCSM workshops.

Focus areas

- Adult learning and instructor skills
- Delivery of theory-based RCSM lessons, including radiation fundamentals and basics of radiation; crime scene management; roles and responsibilities of crime scene personnel; command, control and coordination; and nuclear forensics
- Delivery of skills-based training on RCSM workshop equipment, radiation detection instruments collection of evidence contaminated with radionuclides and RCSM personal protective equipment
- Demonstration of scenario-based discussions on investigative activities and tabletop exercises as well as a practical exercise

Training methods

- Lectures
- Group discussions
- Tabletop and live play exercises
- Demonstrations using handheld detection equipment and personal protective equipment

Specialized equipment/infrastructure to be used

- RCSM starter packs
- Detection and response demonstration room

Target audience

Subject-matter experts with experience in radiological crime scene management, including law enforcement personnel, CBRN experts, radiation protection and detection experts, nuclear forensic experts, scientists and radiological assessors.

Prerequisites

Completion of the following IAEA e-learning modules is required:

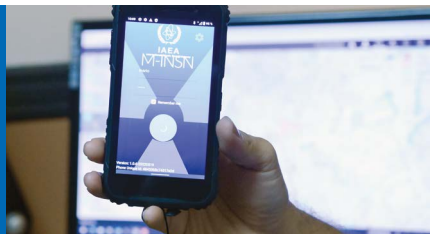
- Radiological Crime Scene Management
- Introduction to Nuclear Forensics
- Use of Radiation Detection Instruments for frontline officers

Completion of the following workshop is preferred:

- RCSM Foundation

Duration

5 days



24 Installation and administration of the Mobile-Integrated Nuclear Security Network

Purpose and objectives

Provide in-depth training on the installation process and use of the Mobile-Integrated Nuclear Security Network system (M-INSN) to enable its successful deployment in nuclear security activities such as major public events.

Focus areas

- M-INSN overview, installation, administration and maintenance

Training methods

- Lecture/presentation
- Group discussions, oral questioning, knowledge check.
- Case study, observation
- Demonstration, practice, role play

Specialized equipment/infrastructure to be used

- Detection equipment including personal radiation detectors (PRDs), low-resolution radiation identification devices (RIDs), high-resolution RIDs, calibration sources, pedestrian radiation portal monitor (RPM) and M-INSN installation package
- Detection and response demonstration room

Target audience

Personnel responsible for the installation and administration of M-INSN. Designated participants should have experience in information technology, software development or related field.

Prerequisites

Completion of the following IAEA e-learning modules is recommended:

- Nuclear Security Overview
- Use of Radiation Detection Instruments for Front Line Officers Computer Security

Duration

5 days

25

International workshop on cross-functional coordination between the computer security operations centre and central alarm station operators

Purpose and objectives

Provide participants with comprehensive knowledge on how to coordinate the communication between the computer security operations centre (CSOC) and central alarm station (CAS) operators. This workshop aims to equip participants with the skills needed to effectively coordinate and communicate across functional boundaries during nuclear security events.

Focus areas

- CAS incident identification
- CAS and CSOC terminology comparison
- CAS and CSOC roles and responsibilities
- Cross-functional communication and coordination between CSOC and CAS
- Effective response and recovery for CAS and CSOC response

Training methods

- Lecture/presentation
- Hands-on training
- Scenario-based interactive discussions
- Role play
- Knowledge checks

Specialized equipment/infrastructure to be used

- CSOC workstation
- Computer security workstation
- Nuclear reactor fuel element mock-up
- Physical protection demonstration room
- CAS room
- Training workstations and network infrastructure

Target audience

CSOC and CAS operators and other professionals involved in nuclear security, physical protection, and computer security. This may include CSOC and CAS supervisors and managers, physical protection specialists, computer security analysts and incident responders, regulatory body representatives, law enforcement and emergency response personnel with responsibilities related to nuclear facility security.

Prerequisites

Completion of the following IAEA e-learning modules is required:

- Nuclear Security Threats and Risks: Cyber Threats
- Conducting Computer Security Assurance Activities

Duration

5 days

26

Train-the-trainers course on the computer security modules of the Nuclear Security Training and Demonstration Centre training activities

Purpose and objectives

Prepare and train computer security experts for the delivery of computer security training modules, demonstrations and hands-on exercises conducted during training activities at the IAEA's NSTDC.

Focus areas

- Computer security IAEA guidance
- Computer security for nuclear facilities and associated activities
- Computer security for radioactive material and associated activities
- Computer security for detection architecture
- Computer security regulatory framework
- Computer security supply chain
- Defensive computer security architecture
- Insider threats

Training methods

- Lecture/presentation
- Group discussions, oral questioning, knowledge check
- Case study, observation
- Demonstration, practice, role play

Specialized equipment/infrastructure to be used

- Asherah Nuclear Power Plant Simulator
- Gula Hospital Simulator
- Nuclear reactor fuel element mock-up
- Radiation portal monitor
- Computer security workstation
- Training workstations and network infrastructure
- Radiation detection equipment

Target audience

Subject-matter experts with experience in computer security training, including information technology and systems engineering professionals.

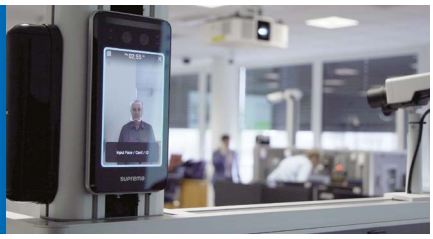
Prerequisites

- Knowledge of IAEA nuclear security guidance and technical documents
- Knowledge and experience in nuclear material and associated facilities, materials outside of regulatory control and instrumentation and control systems
- Experience in professional training and learning techniques

Duration

5 days

27



Train-the-trainers course on conducting computer security incident response for nuclear security

Purpose and objectives

Provide participants with comprehensive knowledge on how to conduct training courses on computer security incident response planning and implementation in nuclear facilities, based on guidance in IAEA–TDL–005, *Computer Security Incident Response Planning at Nuclear Facilities.*

Focus areas

- Computer security graded approach and defense in depth
- Computer security incident response planning
- Computer security incident response roles and responsibilities
- Detection and analysis
- Containment, eradication and recovery techniques
- Incident response reporting
- Post incident response activities

Training methods

- Lecture/Presentation
- Group discussions
- Group exercises and presentations
- Knowledge check

Specialized equipment/infrastructure to be used

Training workstations and network infrastructure

Target audience

Computer security trainers, information technology professionals, senior technical staff, managers in nuclear facilities and representatives from regulatory bodies who are involved in or transitioning to roles responsible for developing and delivering computer security incident response training programmes at the national level.

Prerequisites

Completion of the following IAEA e-learning modules is recommended:

- Security of Nuclear Information
- Nuclear Security Threats and Risks: Cyber Threats
- Introduction to Computer Security for Nuclear Security Practitioners
- Conducting Computer Security Assurance Activities

Duration

5 days

28 Public communication in nuclear security

Purpose and objectives

Provide a comprehensive understanding of the theoretical and practical aspects of public communication in nuclear security, and with the necessary skills to manage the specifics of communicating about nuclear security.

Focus areas

- The basics of nuclear security within the public communication context
- The importance of public communication in nuclear security
- Challenges in nuclear security communication
- Engagement of stakeholders
- Communication in case of nuclear security events

Training methods

- Lecture/presentation
- Group discussions
- Case study analysis
- Group exercises and role play
- Guest speakers

Target audience

Communication experts and spokespersons in organizations with nuclear security responsibilities, nuclear security professionals with responsibilities to communicate about nuclear security, as well as government officials and policy makers.

Prerequisites

Completion of the following IAEA e-learning modules is recommended:

- Introduction of the International Legal Framework for Nuclear Security
- Overview of Nuclear Security Threats and Risks

Duration

3 days

How to get to NSTDC

The IAEA Laboratories in Seibersdorf are located near the towns of Reisenberg and Seibersdorf, about 35km southeast of Vienna, in Austria on the road L168.

Address

Friedenstraße 1, A-2444 Seibersdorf, Austria.

GPS coordinates

47°58’16”N 16°31’08”E

There are road signs for ‘IAEA Laboratories’ providing directions when you approach the nearby area.

For more information, please visit the NSTDC webpage:

September 2024

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