



Nuclear Security Training and Demonstration Centre (NSTDC)

Catalogue of training courses



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 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' equal 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 the development of training courses to be conducted 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 is located in the new Multipurpose Building (MPB) constructed at the IAEA's Seibersdorf laboratories in Vienna, Austria. The groundbreaking ceremony was held in July 2021 and the construction completed as planned for the NSTDC to be operational at the end of 2023.

The NSTDC and the MPB are supported by donors' financial and in-kind contributions. As of 1 September 2023, support has been received from Armenia, Belgium, Brazil, Canada, China, Denmark, Germany, Italy, Republic of Korea, Russian Federation, Saudi Arabia, 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

Currently the NSTDC offers 23 training courses:

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

Purpose and objectives

Support learning and development for the participants to plan, design, implement, commission, operate, maintain and sustain physical protection system elements.

Focus areas

- Physical protection system design and planning for nuclear and other radioactive material and associated facilities
- Closed-circuit television systems
- Intrusion alarm systems for nuclear and other radioactive material and associated facilities
- Access control systems for nuclear and other radioactive material and associated facilities
- Physical protection system integration and networking
- Security lighting
- Ingress protection and housing
- Emerging technologies
- Computer security fundamentals for nuclear 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 operating organizations, regulatory bodies, other competent authorities or organizations responsible for the design, establishment, operation and evaluation of the effectiveness of physical protection systems.

Prerequisites

- Completion of the following IAEA e-learning modules is required:
 - 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
 - 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
- Completion of the following training courses is required:
 - Basic and advanced level courses related to physical protection

Duration

20 days



Operational and performance testing of equipment to accept newly established systems or enhanced systems as a part of physical protection upgrade projects

Purpose and objectives

Support learning and development for the participants about testing techniques and methodologies for assessment of the performance of physical protection system elements.

Focus areas

- Introduction to performance testing
- Vulnerability process
- Development of performance test plan
- Performance testing of interior and exterior detection systems
- Performance testing of assessment systems
- Performance testing of access control systems
- Performance testing of detection systems for prohibited items
- Performance testing of access delay elements
- Performance testing of central alarm station equipment
- Computer security for operational and performance testing of physical protection systems

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

Prerequisites

- Completion of the following IAEA e-learning modules is required:
 - 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
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 - 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
- Completion of the following training courses is recommended:
 - Basic and advanced level courses related to physical protection

Duration

10 days



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

Purpose and objectives

Support the learning and development of operational staff with regard to knowledge and good practices associated with Central Alarm Station (CAS) operations and their role, responsibilities and practical skills associated with working in a CAS.

Focus areas

- Introduction to CAS systems
- CAS governance and standards
- Role, responsibilities and operational duties of CAS operators
- Computer security for CAS design and operations
- Operational practices for CAS systems

Training methods

- Lecture/presentation
- Group discussion, oral questioning, quizzes, 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:

- Basic and advanced training on practical operations of physical protection systems at facilities using nuclear or other radioactive material

Duration

5 days



Identification and implementation of physical protection upgrades at a nuclear facility

Purpose and objectives

Support learning and development with regard to the key steps and principles in 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, quizzes, 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 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
 - Nuclear Material Accounting and Control (NMAC) for Nuclear Security
- Completion of the following training courses is recommended:
 - Basic and advance training related to physical protection of nuclear material and nuclear facilities

Duration

5 days



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

Purpose and objectives

Enhance knowledge and understanding of how to perform 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 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:

- 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
- Transport Security
- Nuclear Material Accounting and Control (NMAC) for Nuclear Security
- Introduction to Nuclear Security Culture
- Preventive and Protective Measures against Insider Threats
- Security of Nuclear Information
- Information and Computer Security
- Nuclear Security Threats and Risks: Cyber Threats
- Conducting Computer Security Assurance Activities

Duration

5 days



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

Purpose and objectives

- Provide participants with knowledge and understanding related to the regulatory 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

- Development of a regulatory framework
- Development of procedures for authorization/licensing and regulatory inspections
- Use of security focused analytical techniques
- Personal and interpersonal effectiveness
- Sustainability of 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 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
 - 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
- Completion of the following training course is required:
 - IAEA Training Course on Developing Regulations and Associated Administrative Measures for Nuclear Security

Duration

10 days



Project support and management approach for sustainability of physical protection upgrade projects

Purpose and objectives

- Enhance awareness and understanding of the basic principles of project management while managing security-related projects and the IAEA approach to implementing and overseeing physical protection upgrade (PPU) projects.
- Provide participants with training on their role, responsibilities, the project support process and documents to be used, together with practical skills associated with delivering a successful project.

Focus areas

- General principles of project management applicable to PPU projects
- Approaches to project support and management
- Project definition and approval for PPU projects
- Project initiation and planning for PPU projects
- Project delivery and control for PPU projects
- Testing and commissioning of PPU projects
- Closing of PPU projects
- Computer security fundamentals for PPU 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

Participants from national authorities who are engaged with current or future physical protection upgrade projects in relation to facilities with nuclear and other radioactive material.

Prerequisites

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

- Overview of Nuclear Security Threats and Risks
- Physical Protection

Duration

5 days



Training on insider threats using the Shapash 3D model

Purpose and objectives

- Use the hypothetical facility Shapash Nuclear Research Institute (SNRI) 3D model to familiarize participants with nuclear security measures that address insider threats, including unauthorized removal of nuclear material (theft), sabotage and computer security at facilities containing nuclear material.
- Introduce the concepts that underlie the evaluation of preventive and protective measures and explain how these should be applied to enhance nuclear security with regard to insider threats.

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 the 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 who work 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



Tabletop exercise on contingency response planning for nuclear facilities using simulation systems

Purpose and objectives

- Prepare participants to facilitate effective use of the Contingency Response Simulation System (CRSS) at the national level for training of personnel responsible for the design and implementation of nuclear security measures, including facility operators and response force commanders.
- Familiarize participants with computer security fundamentals for nuclear security.

Focus areas

- Introduction to nuclear security and contingency response
- Computer security fundamentals for nuclear security
- Nuclear facility and tabletop exercise process familiarization
- Introduction to CRSS including installation and set-up

Training methods

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

Specialized equipment/infrastructure to be used

- CRSS tool
- Physical protection demonstration room

Target audience

Staff from regulatory bodies, other competent authorities and organizations responsible for the design and implementation of nuclear security measures or supporting regulatory functions related to the security of nuclear facilities, including facility operators and response force commanders.

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 workshops is recommended:
 - IAEA Workshop on Management of the Response to a Nuclear Security Event at Nuclear Facilities
 - IAEA Workshop on the Development and Conduct of Contingency Response Performance Testing Exercises at Nuclear Facilities

Duration

4 days



Nuclear material accounting and control for practitioners

Purpose and objectives

- Provide hands-on training for nuclear security professionals in domestic nuclear material accounting and control (NMAC) techniques to ensure accounting for and control of all nuclear material in facilities.
- Address the implementation of nuclear security controls such as administrative checks, item monitoring, surveillance, tamper-indicating devices/seals for day-to-day operations.

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

The course is intended for participants who work in nuclear materials security or nuclear safeguards, in ministries, regulatory bodies, or operating organizations. The course is intended mainly for persons who are responsible for designing, operating and/or assessing NMAC systems, as well as 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.

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



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 for 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



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

Purpose and objectives

Prepare nuclear security experts to conduct training courses 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 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
 - 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



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 the detection of 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 hand-held 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



Advanced use and maintenance of handheld detection instruments

Purpose and objectives

Provide participants with advanced knowledge and capability to calibrate, test, extract and analyze spectral data, and maintain both detection and spectroscopic radiation detection handheld equipment used in nuclear security for the detection of 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 hand-held 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 basic 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



Development of detection and response equipment life cycle management programmes

Purpose and objectives

Train participants on application of a sustainable and systematic approach to technical support and equipment life cycle management for detection of nuclear and other radioactive material out of regulatory control (MORC), as a key element of national nuclear security regimes.

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 equipment management and sustainability.

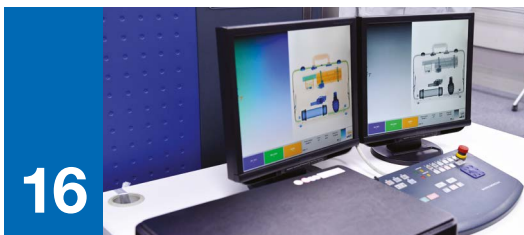
Prerequisites

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



Basic 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 detection of nuclear and radioactive material, as well as other contraband including chemicals, drugs, and explosives; and conduct of investigations and forensics using field portable active interrogation systems.

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



Integrated workshop on radiological crime scene management and nuclear forensics

Purpose and objectives

Provide awareness of the relationship between radiological crime scene management (RCSM) and nuclear forensics (NFS), including the importance of scientific support to RCSM and NFS support for prosecution. The workshop is based on the consideration of realistic hypothetical scenarios and conduct of hands-on activities, demonstrations, tabletop 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



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

Purpose and objectives

Provide participants with a practical training course on responding to criminal acts involving nuclear and other radioactive material, including those which 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

Practitioners from organizations responsible for the response to criminal acts involving nuclear and other radioactive material, including those which may trigger an emergency response. These organizations 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 courses is required:

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

Duration

5 days



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 taking place 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 or 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



IAEA assistance for emergencies triggered by nuclear security events using the Response and Assistance Network

Purpose and objectives

Provide participants with an overview of the assistance available to States responding to a radiological emergency triggered by a criminal act involving nuclear and other radioactive material using Response and Assistance Network (RANET).

Focus areas

- Overview of nuclear security, emergency preparedness and response and IAEA communication tools to assist Member States
- Practical exercise on submitting an event notification on the Unified System for Information Exchange in Incidents and Emergencies and completing a request for assistance in RANET
- Exercise on assistance and developing an assistance action plan
- Case study and exercise on developing assistance action plan for External Based Support
- Case study and exercise on developing assistance action plan for Field Assistance Team (FAT)
- Demonstration of equipment used by FAT including IAEA International Radiation Monitoring Information System (IRMIS) monitoring stations
- Demonstration of FAT activities

Training methods

- Lecture/presentation
- Group discussion, quizzes
- 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
- Link to IRMIS monitoring stations
- Detection and response demonstration room

Target audience

Participants from organizations with responsibility for responding to criminal acts involving nuclear and other radioactive material and emergencies triggered by such acts. Organizations likely to request assistance or receive assistance in such instances are preferable.

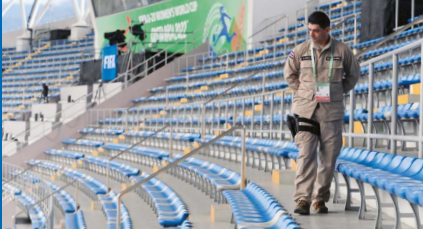
Prerequisites

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

- Radiation Protection Basics
- Overview of Nuclear Security Threats and Risks
- Use of Radiation Detection Equipment for frontline officers
- Radiological Crime Scene Management

Duration

4 days



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).

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
- 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

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

Duration

5 days



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 the nuclear security systems and measures described in IAEA NSS No. 18, *Nuclear Security Systems and Measures for Major Public Events* and present the benefits of implementing these measures as part of a State's overall security for a major public event (MPE).

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



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 training 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

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

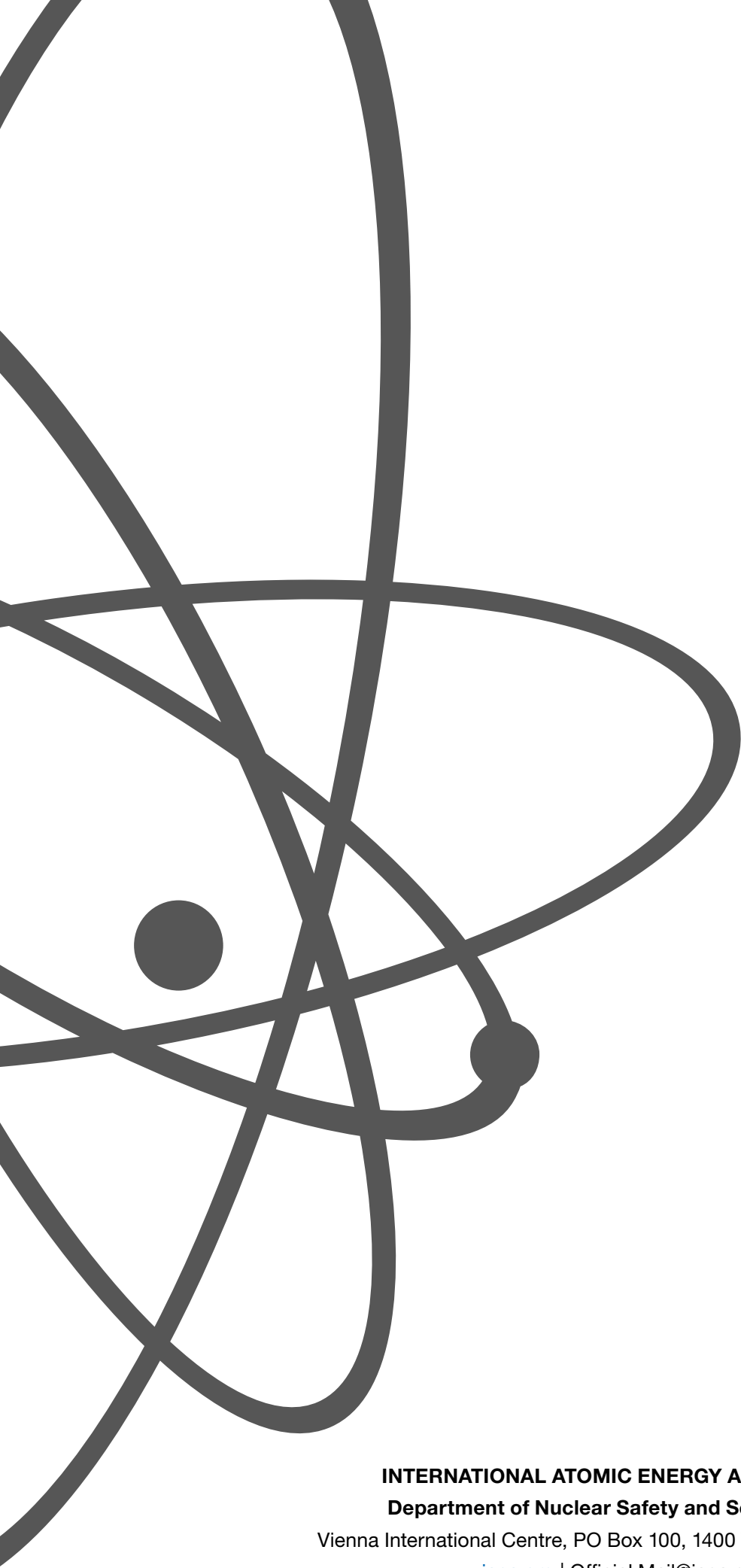
There are road signs for 'IAEA Laboratories' providing directions when you approach the nearby area.



For more information,
please visit the
NSTDC webpage:



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INTERNATIONAL ATOMIC ENERGY AGENCY

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