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WHO THIS MODULE IS FOR

This module provides the overall context for nuclear security. It sets out the development of nuclear security as a discipline from a historical viewpoint and in relation to its main concepts and ideas.

This module is a great place to start to appreciate the relevance of nuclear security in relation to your professional responsibilities. The material is general and relevant to learners working in all aspects of the nuclear field.

Nuclear security requires the same level of attention as safety to protect ourselves, our colleagues, our society and our environment from the harmful effects of ionising radiation.

KEY ISSUES

The objective of this WINS Academy programme module is to set out the foundations of nuclear security: at the international level through the framework of international instruments, international organisations and international initiatives; at the national level through the legal and regulatory framework for nuclear security and the best practices that have been identified by competent authorities involved in nuclear security; and at the operational level through organisations (licensees/licence holders/duty holders/operators) and their implementation of nuclear security systems and measures to address the threats and reduce the risk arising from malicious acts involving nuclear and other radioactive materials, associated facilities and associated activities.

KEY LEARNING OBJECTIVES

This module discusses the objective, essential elements, concepts, and principles of nuclear security as these have been defined over time. The content of this course will enable you to understand the basis for sustainable nuclear security and how to apply this in your own context. It will allow you to improve the overall effectiveness of your nuclear security regime, at the national and operational levels, over time and having regard to a changing threat and risk environment.

By the time you have completed this module, you will:

- Appreciate the international historical developments that have shaped nuclear security in the 20th and 21st centuries
- Appreciate the international context for the development of nuclear security including international instruments and global initiatives
- Understand the central role of the International Atomic Energy Agency in coordinating global efforts in nuclear security
- Understand threats to and risks arising from the peaceful use of nuclear and other radioactive material, associated facilities, and associated activities





- Understand the objective of nuclear security: to protect people, property, society, and the environment from the harmful effects of a nuclear security incident
- Understand the objective of the nuclear security system is to reduce the risk of unauthorised removal of material for the purpose of dispersal or the construction of a device and to reduce the risk of sabotage having regard to its radiological consequences
- Understand what comprises a national nuclear security regime including all competent authorities involved in nuclear security and the role of the authorised person (licensee/operator/end user/shipper/carrier) and other key stakeholders
- Be introduced to key principles that guide the design, implementation and evaluation of nuclear security systems and measures
- Consider nuclear security in the context of material and facilities that are under regulatory control and material that is out of regulatory control
- Be introduced to the main principles involved in information security and a subtopic, cybersecurity, as well as secure transportation of nuclear and other radioactive material
- Understand the interface between nuclear security and other disciplines including radiation protection, nuclear safety, and safeguards, in particular, nuclear material accountancy and control
- Appreciate the importance of a diverse group of competent professionals working within nuclear security
- Understand how to strengthen and sustain a national nuclear security regime



OUTLINE

UNIT 1: INTERNATIONAL AND NATIONAL FRAMEWORK FOR NUCLEAR SECURITY

- 1.1 The Role of the International Atomic Energy Agency in Nuclear Security
- 1.2 International Atomic Energy Agency Support for Sustainable Nuclear Security
- 1.3 International Instruments for Nuclear Security
- 1.4 Other International Initiatives and Organisations
- 1.5 National Nuclear Security Regime

UNIT 2: PEACEFUL USE OF NUCLEAR AND OTHER RADIOACTIVE MATERIAL AND IMPLICATIONS FOR NUCLEAR SECURITY

- 2.1 Understanding Radiation and its Harmful Effects
- 2.2 Radioactive Source: Categorisation and the Graded Approach to Security Measures
- 2.3 The Nuclear Fuel Cycle and its Implications for Nuclear Security
- 2.4 Nuclear Material Categorisation and the Graded Approach to Nuclear Security Measures
- 2.5 Security Concerns Regarding Nuclear and Other Radioactive Material

UNIT 3: UNDERSTANDING THREAT AND RISK

- 3.1 Relationship of Threat and Risk in Nuclear Security
- 3.2 National Nuclear Security Threat Assessment and Development of Design Basis Threat and Representative Threat Statements
- 3.3 Insider Threat
- 3.4 Cyber Threat and Risk

UNIT 4: IMPLEMENTING AN EFFECTIVE NUCLEAR SECURITY SYSTEM

- 4.1 Common Nuclear Security Principles and Functions
- 4.2 Security Plans
- 4.3 Evaluation of the Security Systems
- 4.4 Guard Force

UNIT 5: SECURITY CULTURE

- 5.1 Introduction to Nuclear Security Culture
- 5.2 How Safety Culture Contributes to a More Effective Security Culture
- 5.3 Assessing and Measuring Security Culture

COURSE SUMMARY