

**Kingdom of Morocco**



**Head of the Government**

**Moroccan Agency for Nuclear and Radiological  
Safety & Security**

**‘AMSSNuR’**



**NATIONAL POLICY  
ON RADIOACTIVE WASTE AND SPENT FUEL  
MANAGEMENT**

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**TABLE OF CONTENTS**

<b>A</b>	<b>INTRODUCTION</b> .....	<b>1</b>
<b>B</b>	<b>SCOPE</b> .....	<b>1</b>
<b>C</b>	<b>POLICY CONSIDERATIONS</b> .....	<b>2</b>
<b>D</b>	<b>POLICY STATEMENT</b> .....	<b>2</b>
<b>E</b>	<b>POLICY FRAMEWORK</b> .....	<b>4</b>
<b>F</b>	<b>LEGAL AND REGULATORY FRAMEWORK</b> .....	<b>5</b>
	F1 National Legislation and Regulation.....	5
	F2 International Obligations.....	5
<b>G</b>	<b>ROLES AND RESPONSIBILITIES</b> .....	<b>6</b>
	G1 -Radioactive Waste Generators.....	7
	G2 Waste Management Organization .....	7
	G3 Moroccan Agency of Nuclear and Radiological Safety and Security.....	8
<b>H</b>	<b>CLASSIFICATION OF RADIOACTIVE WASTE</b> .....	<b>9</b>
<b>I</b>	<b>PUBLIC INFORMATION AND STAKEHOLDER CONSULTATION</b> .....	<b>10</b>
	I1 Public Information .....	10
	I2 Stakeholder Participation in Decision-Making .....	10
<b>J</b>	<b>POLICY APPROVAL, IMPLEMENTATION AND UPDATE</b> .....	<b>11</b>
	J1 Approval and Implementation of this Policy .....	11
	J2 Updating the Policy.....	11
	<b>GLOSSARY</b> .....	<b>12</b>
	Definitions .....	12
	Abbreviations.....	15

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## A INTRODUCTION

Radioactive waste is defined in *Article 1 of Law 142-12* as a waste that contains or is contaminated with radionuclides at concentrations or activities greater than clearance levels as established by the regulatory body, the Moroccan Agency for Nuclear and Radiological Safety and Security (AMSSNuR).

In the framework of this policy, a radioactive waste is a material for which no further use is foreseen.

The levels of radiation associated with radioactive waste are to be considered in perspective to the natural background radiation to which everyone is exposed in everyday life, and the limitations prescribed by *Law 142-12* and its regulation.

The risk associated with radioactive waste depends largely on the mixture of radionuclides, and on the physical and chemical characteristics, the activity concentration, the half-life (rate of decay), and the chemical toxicity and radiotoxicity of the waste.

This radioactive waste management policy and its associated strategy serve as a commitment to address radioactive waste management in a coordinated and cooperative manner with all concerned parties, in keeping with the international agreements and instruments signed and/or ratified by the Kingdom of Morocco.

## B SCOPE

The present policy addresses radioactive waste produced during the operational and decommissioning phases of facilities associated with the following activities:

- The operation of nuclear reactors and other facilities within the nuclear fuel cycle;
- The production and use of radioactive materials in the fields of research, medicine, industry, agriculture, mines, commerce, education, and training;
- Environmental restoration programs associated with any of the above;
- Waste generated because of a nuclear or radiological incident or accident;
- Waste predisposal and disposal;
- Any other activities associated with the management of radioactive waste.

This policy applies to waste producers, waste managers, AMSSNuR, and other relevant governmental authorities.

Liquid and gaseous effluents (waste discharges) authorized by AMSSNuR for routine release to the environment, are excluded from the scope of this policy.

In the application of this policy, naturally occurring radioactive material (NORM) and technically enhanced naturally occurring radioactive material (TENORM) are excluded; however, they will be included in a separate policy.

This policy is based on the principles of safety, security, and sustainable development, and guided by the international commitments of the Kingdom of Morocco.

## C POLICY CONSIDERATIONS

In the interest of providing for the sustainable use of radioactive materials in the Kingdom of Morocco, the government seeks to ensure that sound practices are planned and implemented for the safe, secure, and environmentally sound management of radioactive waste, recognizing that:

- While the application of nuclear technologies and radioactive materials provides significant benefits to society, it also generates radioactive waste;
- The potential present and future risk posed to human health and the environment by radioactive waste requires that radioactive waste be managed safely and securely;
- Government is responsible for the adoption within its national legal system of such legislation, regulations, standards, and measures to fulfil its national responsibilities and international obligations effectively;
- Government is responsible for the establishment of an independent regulatory body;
- The primary responsibility for ensuring the safety and security of radioactive waste rests with the organizations producing and performing activities related to radioactive waste management;
- Radioactive waste management must be optimized to reduce its associated risks;
- It is very important that the public be kept informed on issues related to all aspects of radioactive waste management; and
- An effective legal and technical infrastructure is required to address the above purposes.

The government has established the present radioactive waste management policy based on these considerations, and in keeping with the relevant international instruments with which the Kingdom of Morocco has agreed.

## D POLICY STATEMENT

The safety and security objectives for the management of nuclear spent fuel and radioactive waste in Morocco are stipulated in *Articles 84 and 85 of Law 42-142*, as follows:

- To achieve and maintain a high level of safety and security regarding the management of spent nuclear fuel and radioactive waste;
- To ensure adequate protection of workers, the public and the environment from the harmful effects of ionizing radiations, without compromising their ability to meet expectations;
- To prevent accidents and to mitigate their consequences; and
- To ensure that ownership of and primary responsibility for radioactive waste remain with the institution in charge of the centralized management of radioactive waste.

Based on these objectives, the policy statement is expressed as follows:

1. Management of radioactive waste in Morocco adopts the *Fundamental Safety Principles* of the International Atomic Energy Agency (IAEA), and the safety requirements related to radioactive waste management.
2. Radioactive waste management in the Kingdom of Morocco shall ensure achievement of the fundamental safety objective of protecting people and the environment, now and in the future, from the harmful effects of ionizing radiation.
3. Radioactive waste management in the Kingdom of Morocco is subject to strategic planning, and objectives that are consistent with this policy, such that safety is not compromised now or in the future.
4. All organizations shall clearly identify any roles and responsibilities associated with radioactive waste management, including the oversight of all related operations.
5. All organizations shall establish funding mechanisms that ensure the long term sustainability of radioactive waste management, including liability.
6. Radioactive waste shall be managed with consideration given to the interdependency between all the steps of predisposal, and between predisposal and eventual disposal activity.
7. Radioactive waste management shall follow the principles of waste avoidance, minimization, reuse, and recycling. Dilution of radioactive waste to reach the clearance limit is prohibited unless expressly authorized by the AMSSNuR.
8. Decision-making related to radioactive waste management shall be based on scientific information, sound safety-case, and resource optimization.
9. Radioactive waste shall be managed according to a graded approach.
10. The disposal of foreign radioactive waste is prohibited unless expressly approved by the Kingdom of Morocco.
11. Radioactive waste management shall be conducted in such a manner as to avoid the existence or production of unregulated radioactive waste within the Kingdom of Morocco.
12. Involved organizations shall ensure that the resources and competencies needed for appropriate radioactive waste management are available at all times.
13. Eventual disposal facilities shall ensure that coherent waste radioactive waste management practices are in place at all times, based on a comprehensive set of generic waste acceptance criteria.
14. This policy and associated national radioactive waste and spent fuel strategies are public documents.

## E POLICY FRAMEWORK

Radioactive waste management in the Kingdom of Morocco shall be managed in accordance with our *Environmental Charter and Sustainable Development*, set out in *Law 99-12*, related to, which aims to:

- Focus on the duties of the State, local authorities, public institutions and companies concerning sustainable development, recognizing the environmental rights that should be protected and respected;
- Strengthen the legal protection of resources and ecosystems by listing the types of actions or steps that the State proposes to take in order to fight against all forms of pollution;
- Create a coherent and efficient system to implement the proposed measures;
- Establish sustainable development as a core value shared by all segments of the society, and as a key element in public policy development; and
- Establish the groundwork for an environmentally responsible system.

The comprehensive policy framework for radioactive waste management governs the institutional and financial arrangements for waste, based on the following principles:

1. **Transparency regarding all aspects of radioactive waste management:** All radioactive waste management activities shall be conducted in an open and transparent manner, and the public shall have access to information regarding waste management where this does not compromise the security of radioactive material.
2. **Public participation:** Decisions pertaining to radioactive waste management shall consider the interests and concerns of all interested and affected parties.
3. **Sound decision-making based on scientific information, risk analysis, and optimization of resources:** Decision-making shall be based on proven scientific information and recommendations of competent experts from other domestic and international institutions dealing with radioactive waste management.
4. **Waste management streams:** All waste identified in the national waste inventory shall be associated with one of the three radioactive waste management streams recognized within the Kingdom of Morocco: “dilute and disperse,” “concentrate and contain,” and “delay and decay.”
5. **Import and export of radioactive waste:** As stipulated at *Article 5 of Law 42-142*, the import and export of radioactive waste is prohibited. However, authorization for temporary export of radioactive waste for processing abroad and re-importation of resulting radioactive residues may be exceptionally granted by the AMSSNuR in compliance with *Article 36 of Law N° 42-142*.
6. **Cooperative governance and efficient co-ordination:** Due to their cross-cutting nature, all activities involving radioactive waste management shall be conducted in a manner that prevents duplication of effort and maximizes coordination.
7. **International cooperation:** Recognizing that it shares a responsibility with other countries regarding global and regional radioactive waste management issues, the government’s actions shall follow the principles set out in this policy and in relevant regional and international agreements;



8. **Capacity building and education:** The government shall create opportunities to develop human resources, skills, capacity, and public understanding concerning radioactive waste management.

The government shall apply these principles when:

- Developing and implementing the present policy;
- Making decisions; and
- Where necessary, amending laws and regulations.

## **F LEGAL AND REGULATORY FRAMEWORK**

Radioactive waste shall be managed within the legal and regulatory framework, which includes domestic legislation and regulation, and international commitments.

### **F1 Domestic Legislation and Regulation**

The relevant domestic legislation and regulation includes (without being limited to):

- *Law 142-12* on nuclear and radiological safety and security, and the creation of the AMSSNuR;
- *Decree 2-86-195* of 19 January 1987, and *Decree 2-92-964* of 29 April 1993, governing the National Centre for Nuclear Energy, Science and Technology (CNESTEN);
- *Decree 2-94-666* of 7 November 1994, related to the authorization and control of nuclear installations;
- *Decree 2-97-30* of 28 October 1997, related to protection against ionizing radiation;
- *Decree 2-97-132* of 28 October 1997, relating to the use of ionizing radiation for medical purposes;
- *Law 12-02* relating to civil liability for nuclear damage promulgated by *Decree 1-04-278* of 7 January 2005;
- *Law 12-03* on environmental impact studies, promulgated by *Decree 1-03-60* of 12 May 2003, applicable to the development of nuclear installations, including radioactive waste management facilities;
- *Law 17-83*, promulgated by *Decree 1-85-98* of November 14, 1986, establishing CNESTEN under the Ministry of Energy, Mines and Sustainable Development;
- *Decree 2-99-111* of 26 February 1999, related to the authorization to construct the Maamora Nuclear Research Centre (CEMN), which includes a research reactor and radioactive waste management facilities.

### **F2 International Obligations**

Radioactive waste shall be managed under the international agreements and instruments signed and/or ratified by the Kingdom of Morocco.

According to the constitution all ratified international conventions are published in the official bulletin and are to be considered as a part of the regulatory framework.

### F2.1 Legally binding instruments

The Kingdom of Morocco has committed to the following legally binding international instruments:

1. *Convention on the Physical Protection of Nuclear Material (CPPNM)*, entered into force on September 22, 2002.
2. *Amendment to the Convention on the Physical Protection of Nuclear Material*.
3. *Convention on Early Notification of a Nuclear Accident*, entered into force on November 7, 1993.
4. *Vienna Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*, entered in force on October 7, 1993.
5. *Convention on Nuclear Safety*, signed on December 1st, 1994.
6. *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*, signed on September 29, 2001.
7. *Vienna Convention on Civil Liability for Nuclear Damage*, signed on November 30, 1984.
8. *Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage*, entered into force on October 4, 2003.
9. *Convention on Supplementary Compensation for Nuclear Damage*, entered in force on April 15, 2015.

### F2.2 Non-Legally instruments

The Kingdom of Morocco has committed to the following non-legally binding international agreements.

1. *Code of Conduct on the Safety and Security of Radioactive Sources*.
2. *Supplementary Guidance on the Import and Export of Radioactive Sources*.
3. *Code of Conduct on the Safety of Research Reactors*.

## G ROLES AND RESPONSIBILITIES

According to *Article 83 of Law 142-12*, the main responsible organizations dealing with radioactive waste management are:

- Radioactive waste generators;
- Radioactive waste management organization; and
- AMSSNuR.

In the absence of a duly designated party, the Government shall remain liable to provide appropriate measures for the effective management of radioactive waste.

In addition to *Article 92 of Law 142 12*, the government shall establish a funding mechanism to ensure the operation of a Waste Management Office (WMO), and long-term liability coverage related to the radioactive waste.

## **G1 -Radioactive Waste Generators**

Licence holders of facilities generating radioactive waste, and practitioners licensed to utilize radiation sources, are required to comply with *Law 142-12*, and with the objectives, principles, and requirements stated in this *Radioactive Waste Management Policy*.

Waste generators and source users bear the primary responsibility for the safety and security of their facilities and practices.

*Article 86 of Law 142-12* requires that waste generators:

1. Ensure that the generation of radioactive waste is kept to the minimum levels practicable.
2. Take waste acceptance criteria into account when considering the interdependencies between radioactive waste management steps (such as treatment, conditioning, storage and disposal).
3. Take into account the biological, chemical, and other hazards that may be associated with radioactive waste management.
4. Comply with all regulatory requirements related to radioactive waste management.
5. Maintain updated records of radioactive waste generated and/or managed (types, characteristics, quantities, status, location), and periodically report on those records to the AMSSNuR according to the obligations set out in *Article 90 of Law 142-12*.
6. Periodically report to AMSSNuR and to the WMO on the current inventory and expected short-term and long-term inventory of radioactive sources.
7. Ensure that adequate competencies and resources are available to maintain these resources.

Furthermore, allowing for operational experience and research and development insights gained over time, licence holders of facilities generating radioactive waste are required to periodically reassess to ensure that their facilities and practices remain up to date. This reassessment is expected to confirm that the radiological and environmental impact of their activities on their workers, the public, and the environment remains within acceptable limits that apply at the time of the reassessment. Licensees shall also establish financial arrangements for waste management in accordance with the *Polluter Pays Principle*, stated in *Article 92 of Law 142-12*.

## **G2 Waste Management Organization**

In addition to those set out in *Article 84 of Law 142 12*, the WMO has the following responsibilities:

- Oversee facilities and activities associated with predisposal of radioactive waste;
- Carry out facility safety assessments;
- For each facility and activity, establish and implement a radioactive waste management system that covers all phases of the lifecycle;
- Develop a safety case for each identified waste stream, and propose a set of waste acceptance criteria for each stream to the AMSSNuR;

- Ensure that siting, design, construction, commissioning, operation, shut down and decommissioning of predisposal radioactive waste management facilities are carried out in compliance with all regulatory requirements;
- Carry out periodic safety reviews, and implement any improvements indicated by those reviews or by lessons learned through operational experience;
- Ensure an integrated and coherent approach to predisposal of radioactive waste management that takes into account the interdependencies of all predisposal steps;
- Conduct research and development as needed to support radioactive waste management activities, including eventual disposal; and
- Contribute to the development of a national strategy for radioactive waste management.

### **G3 Moroccan Agency of Nuclear and Radiological Safety and Security**

*Law 142-12* establishes AMSSNuR as an independent regulatory body under the Head of Government, and covers all aspects of safety and security associated with nuclear and radioactive materials and sources in the Kingdom of Morocco.

AMSSNuR's core mission is to authorize the use of nuclear and radioactive activities and sources, and to perform controls and inspections to ensure compliance with all applicable laws and regulations. In addition, as stated in *Article 172 of Law 142-12*, AMSSNuR's mandate includes responsibility for:

1. Proposing legislation and regulations relating to nuclear and radiological safety and security to the government.
2. Providing feedback on draft laws and regulations on the subject.
3. Advising governmental authorities on matters relating to nuclear and radiological safety and security.
4. Publishing regulatory guides for operators, as appropriate.
5. Establishing a national system of accounting and control for nuclear materials, in accordance with the (IAEA) *Comprehensive Safeguard Agreement* and the additional appropriate protocol.
6. Assisting the government in establishing and implementing a system of physical protection of materials and nuclear facilities.
7. Setting up a national inventory of radioactive materials and sources of ionizing radiation.
8. Assisting in the establishment and implementation of the plan of action referenced in *Article 118 of Law 142-12*.
9. Establishing cooperative relationships with similar domestic or international organizations.
10. Assisting the government in international negotiations in the areas of its competence, and representing Morocco in international forums at the request of the government.
11. Making appropriate arrangements for informing the public on regulatory processes, and on any issues related to the safety and security of authorized activities.
12. Encouraging establishment of a culture of safety and security in authorized facilities and activities, in accordance with the provisions of *Law 142-12*.

13. Maintaining a list of authorizations and declarations filed, pursuant to the provisions of *Law 142-12*.
14. Ensuring the dissemination of the relevant information to the relevant government agencies, as appropriate the scope of each agency's competence.
15. Acting in concert with organizations with expertise directly or indirectly related to its activities.
16. Ensuring a permanent awareness of radiological and nuclear safety and security, safeguards, non-proliferation, and scientific, health and medical matters regarding the effects of ionizing radiation on health, taking international progress into account .
17. Ensuring that radioactive waste disposal is carried out in a safe, environmentally sound, comprehensive, and integrated manner.
18. Developing regulatory requirements to regulate producers and owners to ensure that they comply with legal requirements, including those associated with meeting funding and operational responsibilities associated with approved waste disposal plans.
19. Establishing its own integrated management system.
20. Coordinating the development and implementation of a national Waste Management Strategy

## H CLASSIFICATION OF RADIOACTIVE WASTE

For the purposes implementing this policy and establishing a strategy for radioactive waste management, Morocco generally follows the guidelines set out in IAEA *Safety Guide GSG-1* regarding the classification of radioactive waste, expressed as follows::

1. **Exempt waste (EW):** Waste that meets the criteria for clearance established by AMSSNuR.
2. **Very short-lived waste (VSLW):** Waste that can be stored for decay for up to a few years, and subsequently cleared from regulatory control according to arrangements approved by AMSSNuR for uncontrolled disposal, use, or discharge.
3. **Very low-level waste (VLLW):** Waste that does not necessarily meet the criteria of EW, but that does not need a high level of containment and isolation. Concentrations of longer lived radionuclides in VLLW are generally very limited. Suitable for disposal in near surface landfill type facilities with limited regulatory control.
4. **Low-level waste (LLW):** Waste that is above clearance levels, but that contains limited amounts of long lived radionuclides. LLW covers a very broad range of waste, and may include short lived radionuclides at higher levels of activity concentration, and long-lived radionuclides at relatively low levels of activity concentration. Requires robust isolation and containment for periods of up to a few hundred years, and is suitable for disposal in engineered near-surface facilities.
5. **Intermediate level waste (ILW):** Waste with content (particularly long lived radionuclides) that requires a greater degree of containment and isolation than that provided by near surface disposal. ILW needs little or no provision for heat dissipation, and therefore requires disposal at greater depths of the order of tens of metres to a few hundred metres.
6. **High level waste (HLW):** Waste with levels of activity concentration high enough that the radioactive decay process can be expected to generate significant quantities of heat dissipation, or waste with large quantities of long lived radionuclides that need to be considered in the design of a disposal facility for such waste. Disposal in deep,

stable geological formations, usually several hundred metres or more below the surface, is the generally recognized option for disposal of HLW.

Waste management solutions shall be consistent with these waste classifications.

## **I PUBLIC INFORMATION AND STAKEHOLDER CONSULTATION**

### **I1 Public Information**

Openness and transparency shall drive the public information process with respect to radioactive waste management activities and incidents. The WMO and AMSSNuR shall provide the public with information about activities related to waste management and radioactive waste transport, if doing so does not compromise nuclear security.

Other responsible institutions shall ensure that the public is promptly and accurately informed of any risks related to radioactive waste management activities and incidents, and the potential impact of those risks on public health and safety and the environment.

### **I2 Stakeholder Consultation**

Processes for stakeholder participation in decisions regarding waste management (such as the construction of radioactive waste management facilities) are established through *Law 12-03 on Environmental Impact Assessments*. This *Law* was promulgated by *Decree 1-03-60 of 12 May 2003*, and applies to the development of nuclear installations, including radioactive waste management facilities.

*Law 142-12* stipulates that all relevant information shall be provided to interested individuals and organizations. Any individual or organization may submit comments, information, analyses, and opinions that they consider relevant to the proposed development. These comments are then considered in the decision-making process.

According to *Article 13 of Law 142-12*, at the local level, any construction project related to Category I installations, such as radioactive waste management facilities, shall be submitted to the scrutiny of Local Councils from the proposed siting area. Local Councils have four months to submit opinions and comments and to the State Authorities through AMSSNuR.

*Article 9 of Law 12-03* and *Article 14 of Law 142-12* prescribe that stakeholder consultation be conducted through public hearings be at the local level during the licensing process. Public hearings are to be arranged by the Chairmen of Local Councils.



## **J POLICY APPROVAL, IMPLEMENTATION, AND UPDATE**

### **J1 Approval and Implementation of this Policy**

The Government is the authority to approve this policy and any revision or modification to this policy.

This policy is implemented in accordance with the *National Radioactive Waste and Spent Fuel Management Strategy*, annexed to this policy. Any subsequent revision to this policy shall be submitted with an updated *Strategy* for approval.

AMSSNuR shall lead the preparation of the *National Radioactive Waste and Spent Fuel Management Strategy* annexed to this policy, in collaboration with relevant inter-ministerial government departments such as CNSTEN, Direction Générale de la Sûreté Nationale (DGSN), Direction Générale de la Protection Civile relevant du Ministère de l'Intérieur (DGPC), Centre National de Radioprotection relevant du Ministère de la Santé (CNRP)/Health Ministry, the Ministry of Foreign Affairs and International Cooperation, the Ministry of Energy Mines and Sustainable Development, the Office National de l'Electricité et de l'Eau potable (ONEE), and any other departments as needed.

AMSSNuR shall report annually on the implementation of this *Policy* and its associated *Strategy*.

### **J2 Updating the Policy**

In addition to the responsibility established by *Law 142 12*, AMSSNuR shall:

- Periodically review the current policy to confirm its ongoing validity, and propose amendments as appropriate;
- Consult with relevant stakeholders and government agencies on the proposed amendment(s) or modification(s); and
- Submit the updated policy for government approval.

During the consultation period, the WMO and nuclear waste producers may propose suggested policy amendments to AMSSNuR.

## GLOSSARY

### Definitions

**AMSSNuR:** Moroccan Agency of Nuclear and Radiological Safety and Security.

**Clearance level:** Values established by the regulatory body and expressed in terms of volume or mass activity, and/or total activity, at or below which ionizing radiation sources may be exempted from the application of the effective legislative and regulatory provisions.

**Closure:** Completion of all operations at some time after the emplacement of spent fuel or radioactive waste in a disposal facility. These operations include the final engineering or other work required to bring the facility to a condition that will be safe in the long term.

**Commissioning:** The process by which systems and components of facilities and activities are made operational, and are verified to be in accordance with the design and to have met required performance criteria.

**Containment:** Methods or physical structures designed to prevent or control release and dispersion of radioactive substances;

**Contamination:** The unintended or undesirable presence of radioactive substance on surfaces, within solids, liquids, or gases, including in the human body.

**Decommissioning:** All steps leading to the release from control of a nuclear facility, other than a disposal facility, including the processes of decontamination and dismantling.

**Disposal:** Emplacement of waste in an appropriate facility without the intention of retrieval.

**Emergency plan:** A description of the objectives, main directions, and operations to be carried out in response to an emergency, including the structure, authorities, and responsibilities for a systematic, coordinated, and effective response. The emergency plan serves as basis for the development of other plans, procedures, and checklists.

**Exemption level:** The value established by the regulatory body as being exempt from regulatory control, and expressed in terms of activity concentration, total activity, dose rate, or radiation energy.

**Export:** The transfer of nuclear substance, equipment, information, or related technology, from the Kingdom of Morocco to an importing State.

**Graded approach:** An approach by which requirements are applied based on risk significance, such as the importance and complexity of the facility or activity, the associated hazards and potential impact (risk) on safety, health, and the environment.

**Import:** The transfer of a nuclear substance, equipment, information, or related technology, from an exporting State to the Kingdom of Morocco.

**Incident:** Any unintended event, including operating errors, equipment failures, initiating events, accident precursors, near misses, or other mishaps, or any unauthorized malicious or non-malicious act, the consequences or potential consequences of which are not negligible from the point of view of protection, safety and security.

**Ionizing radiation:** For the purposes of radiation protection, radiation capable of producing ion pairs in biological material.

**Nuclear activity:** Any activity associated with a nuclear facility or nuclear material.

**Nuclear facility:** Any facility in which radioactive materials are produced, processed, used, handled, stored, or definitively disposed. The nuclear facility includes the associated buildings and equipment, such as the nuclear fuel fabrication facility, the nuclear power plant, the research reactor (including critical and subcritical assemblies) the spent fuel storage facility, the enrichment facility, and the reprocessing facility.

**Nuclear fuel cycle:** All operations associated with the production of nuclear energy, including: mining and the processing of uranium or thorium ores, enrichment of uranium, manufacture of nuclear fuel, operation of nuclear reactors, reprocessing of spent fuel, all waste management activities associated with the production of nuclear energy, and any related research and development activities.



**Nuclear material:** Includes plutonium (except that with isotopic concentration exceeding 80% plutonium-238), uranium-233, uranium enriched in the isotope 235 or 233, uranium containing the mixture of isotopes as occurring in nature other than in the form of ore or ore residue, and any material containing one or several of the elements or precipitate isotopes.

**Nuclear safety:** The achievement of proper operating conditions, prevention of accidents or mitigation of accident consequences, resulting in protection of workers, the public, and the environment from undue hazards associated with ionizing radiation.

**Nuclear security:** Measures aimed to prevent, detect, and respond to theft, sabotage, unauthorized access, illegal transfer, or other malicious acts involving nuclear material or other radioactive substances or their associated facilities.

**Operator:** Any organization or person authorized and responsible for nuclear safety and security, radiological safety and security, radioactive waste safety and security, or transport safety and security when undertaking activities in relation to any nuclear activities or sources of ionizing radiation.

**Physical protection:** Measures to protect from unauthorized access to nuclear material, removal of fissile material, or sabotage of safeguards, as, for example, in the *Convention on the Physical Protection of Nuclear Material*.

**Radiation risks:**

- Detrimental health effects of exposure to radiation, including the likelihood of such effects occurring;
- Any other safety related risks (including those to the environment) that might arise as a direct consequence of:
  - exposure to radiation,
  - the presence or the release to the environment of radioactive materials, including radioactive waste,
  - the loss of control over a nuclear reactor core, nuclear chain reaction, radioactive source, or any other source of radiation.

**Radioactive discharges:** Radioactive substances arising from sources associated to a practice, which are discharged to the environment as gases, aerosols, solids or liquids, generally with the purpose of their dilution or dispersion.

**Radioactive material:** Any material that contains one or several radionuclides whose activity or concentration can be neglected from the radiation protection perspective.

**Radioactive source:** Radioactive material that is permanently sealed in a capsule or closely bonded in a solid form and which is not exempt from regulatory control. This also includes any radioactive material released if the radioactive source is leaking or broken, but does not include material encapsulated for disposal, or nuclear material within the fuel cycle of research and power reactors.

**Radioactive waste management facility:** A facility specifically designed to handle, treat, condition, and store radioactive waste.

**Radioactive waste management:** All administrative and operational activities associated with the handling, pretreatment, treatment, conditioning, transport, storage, and disposal of radioactive waste.

**Radioactive waste:** Waste that contains, or is contaminated with, radionuclides at concentrations or activities greater than clearance levels as established by the regulatory body. Radioactive waste may occur in a gaseous, liquid or a solid form that may range from low radioactivity (e.g., medical and laboratory waste and certain mining wastes) to highly radioactive waste (e.g., used fuel and certain spent sealed radioactive sources). It may also occur together with other hazardous chemical or biological material.

**Radioactive:** With radioactivity, emitting or related to the emission of ionizing radiation or particles.

**Radioactivity:** The phenomenon of spontaneous random disintegration, usually accompanied by the emission of radiation.

**Radiological safety:** Measures aimed at minimizing the likelihood of accidents involving radioactive sources and mitigating the consequences in case such an accident occurs.

**Radiological security:** Measures aimed at preventing unauthorized access or damage to radioactive sources, and the loss, theft, transfer, or use of those sources.

**Radionuclide activity:** The quantity (A) for an amount of radionuclide in a given energy state at a given time, defined as  $A(t)=dN/dt$ , where dN is the expected value for the number of spontaneous nuclear transformations from the given energy state in the time interval (dt). The SI unit of activity is measured in becquerels (Bqs).

**Reprocessing:** The process or operation of extracting radioactive isotopes from spent fuel for further use.

**Safeguards agreement:** The Agreement between the Kingdom of Morocco and the IAEA relating to the application of *Treaty of Non-proliferation of Nuclear Weapons*, signed in January of 1973 and entered into force in February of 1975.

**Safety analysis:** The assessment of potential hazards associated with the conduct of an activity.

**Safety assessment:** The assessment of all safety-relevant aspects of a facility or activity.

**Safety measure:** Any action that might be taken, condition that might be applied, or procedure that might be followed to fulfil safety requirements.

**Safety standards:** Standards issues pursuant to the Statute of the IAEA.

**Safety:** Nuclear and radiological safety.

**Sealed source:** Radioactive material that is permanently sealed in a capsule or closely bonded in a solid form.

**Security:** Nuclear and radiological security;

**Spent fuel management:** All activities that relate to the handling or storage of spent fuel, excluding off-site transport.

**Spent fuel:** Nuclear fuel that has been irradiated in and permanently removed from a reactor core.

**Storage (temporary, mid- and long-term storage):** The holding of radioactive sources, spent fuel, or radioactive waste in a facility that provides for its containment, with the intention of retrieval.

**Supplier:** Any person or organization to whom a registrant or licensee delegates duties, totally or partially, in relation to the design, manufacture, production, or construction of a source.

**Unsealed source:** A source that does not meet the definition of a sealed source.

**Waste characterization:** Determination of the physical, chemical, and radiological properties of waste to establish the need for further adjustment, treatment, or conditioning, or its suitability for further handling, processing, storage, or disposal;

**Waste generator:** Operator of a facility or activity that generates waste.

## Abbreviations

<b>AMSSNuR</b>	Agence Marocaine de Sécurité et Sûreté Nucléaires et Radiologiques
<b>CENM</b>	Centre d'Etudes Nucléaires de la Maâmora
<b>CNESTEN</b>	Centre National de l'Energie, des Sciences et des Techniques Nucléaires
<b>CNRP</b>	Centre National de Radioprotection relevant du Ministère de la Santé
<b>CPPNM</b>	Convention on the Physical Protection of Nuclear Material
<b>DGPC</b>	Direction Générale de la Protection Civile relevant du Ministère de l'Intérieur
<b>DGSN</b>	Direction Générale de la Sûreté Nationale
<b>DSRS</b>	Disused sealed radioactive sources
<b>EW</b>	Exempt waste
<b>LILW</b>	Low and intermediate level waste
<b>LILW-SL</b>	Short lived waste
<b>LILW-LL</b>	Long lived waste
<b>HLW</b>	High level waste
<b>MEMDD</b>	Ministry of Energy, Mines and Sustainable Development
<b>NORM</b>	Naturally occurring radioactive material
<b>NPP</b>	Nuclear power plant
<b>ONEE</b>	Office National de l'Electricité et de l'Eau potable
<b>RW</b>	Radioactive waste
<b>RWM</b>	Radioactive waste management
<b>SNF</b>	Spent nuclear fuel
<b>TENORM</b>	Technologically-enhanced naturally occurring radioactive material
<b>WMO</b>	Waste Management Office (the national institution in charge of the management of radioactive waste)