



Environment Authority

Resolution no. 79/2023

To issue the Regulation of Radiation Protection

And the Security and Safety of Radiation Sources and Nuclear Materials

According to the Environment Protection and Pollution Control Law issued by Royal Decree No. 114/2001, and Royal Decree No. 106/2020 for establishing the Environment Authority, defining its specialties, and approving its organizational structure, and to the Regulation for the Control and Management of Radioactive Materials issued by Ministerial Resolution No. 249/97, and to the approval of the Ministry of Finance, and based on what the public interest requires.

It has been resolved that

First Article

Works related to radiation protection and security and safety of radiation sources and nuclear materials shall subject to terms of the attached regulation.

Second Article

The above mentioned ministerial resolution no. 249/97 shall be cancelled in addition to all what violates this resolution and the attached regulation, or contradicts their terms.

Third Article

This resolution shall be published in the Official Gazette and apply from the day following the date of its publication.

Issued on: 7th Dhu Al Hijja 1444 AH

Corresponding: 25th June 2023 AD

Dr. Abdullah bin Ali bin Abdullah Al Omary

President of Environment Authority



***The Regulation of Radiation Protection
And the Security and Safety of Radiation Sources and Nuclear Materials***

Chapter One

Definitions and General Provisions

Article (1)

In applying terms of this regulation, the following words and expressions shall have the meaning assigned to each of them, unless the context requires another meaning:

Authority:

Environment Authority

President:

President of the Authority

Competent Department:

Radiation Protection Department at the Authority

License:

The approval issued by the Authority to a party to deal with radioactive sources.

Licensee:

The natural or legal person who has a license to deal with radioactive materials and radioactive waste and their sources, and who bears the main responsibility for radiation protection, security and safety related to the facility or radiation source.

Ionization:

A physical process for converting an atom or molecule into ions by adding or removing charged particles such as electrons or other ions, often along with other chemical changes.



Ionizing Radiation:

Electromagnetic or particulate radiation that causes ionization for the medium through which it passes.

Non-ionizing Radiation:

Low-energy electromagnetic radiation that does not ionize the medium through which it passes.

Radioactive Material:

Any substance which has radioactivity.

Source Material:

It is the one that includes natural uranium or depleted uranium from the isotope Uranium 235, thorium, or any mixture of the mentioned materials.

Special fissile material:

It includes the isotope plutonium-239, the isotope uranium-233, uranium enriched with the isotope uranium-233 or enriched with the isotope 235, or any mixture of the aforementioned materials.

Nuclear Material:

Any source material or special fissile material.

Radioactive Source:

Any source or device that emits or can emit ionizing radiation or produce radioactive materials.

Sealed Radioactive Sources:

Any radioactive material placed in capsules in a permanent solid form, ensuring that the material does not leak out.



Disused Radioactive Source:

A radioactive source that is no longer used or intended to be used in the practice for which the license was granted.

Naturally Occurring Radioactive Materials (NORM):

They are natural, unmanufactured radioactive materials that have the ability to ionize the medium through which they pass.

Radioactive Waste:

It includes any radioactive sources, any nuclear materials, radioactive materials of natural origin resulting from practices that are not expected to have any future uses, and radioactively contaminated materials at levels exceeding the level determined by the Authority.

Radioactive Contamination:

Presence of residues of radioactive or harmful substances, whether inside or on the surface of a material, in a human body, or in any other environmental component.

Radiation Facility:

Any radiation facility that is established or rented to carry out any type of radiological work in accordance with the technical conditions and specifications that are commensurate with the purpose of its establishment.

Transportation:

The movement of radioactive materials, handling, loading and transportation of shipments and packages of radioactive materials, including designing, manufacture, maintenance, repair and storage of packaging materials in transit and unloading and delivering them to their final destination.

Exposure:

Exposure to radiation with all kinds and conditions.



Occupational Exposure:

Exposure of workers during their work, with the exception of exposure excluded or exempted under the provisions of this regulation.

Equivalent Dose:

A measure of dose that reflects the amount of resulting damage to a vital tissue or organ in the human body.

Effective Dose:

The product of summing the equivalent doses of vital tissue multiplied by the tissue weighting coefficient according to Attachment No. (1) contained within Appendix No. (1) of this regulation.

Controlled Areas:

Areas where radiation rates exceeded (7.5) $\mu\text{Sv/h}$.

Supervision Areas:

Areas where radiation rates range between (2.5) $\mu\text{Sv/h}$ and (7.5) $\mu\text{Sv/h}$.

Radiation Security:

Measures that prevent unauthorized access to radioactive and nuclear sources with the aim of destroying, stealing, diverting, using or disposing of them in any way.

Radiation Safety:

Necessary measures to reduce the possibility of the occurrence of accidents involving radioactive or nuclear sources, and to limit and mitigate the effects of such accidents when they occur.



Radiation Protection Supervisor:

The person who is concerned with matters related to radiation protection, appointed by the Licensee to supervise the implementation of the requirements of these regulation, and licensed by the Authority.

Orphan Source:

A radioactive source that has not been subject to regulatory control, either because it was left, lost, stolen, or moved without permission.

Inspection:

Periodic follow-up of licensed entities through field visits to ensure their compliance with the provisions of this regulation and licenses requirements.

Regulatory control procedures for exempted radioactive sources:

The exempted radioactive sources shall be subject to notification and registration procedures, while remaining under the responsibility of the registered institution until they are disposed of as determined by the Authority.

Article (2)

This regulation aims to specify the requirements for radiation protection, the security and safety of radioactive sources, and the management of nuclear materials.

Article (3)

The provisions of this regulation apply to all practices that involve, or may involve, exposure to ionizing radiation, in particular the following:



- 1- Starting any practice related to ionizing radiation sources or stopping the practice temporarily or permanently.
- 2- Designing, manufacturing, assembling, importing, exporting, re-exporting, delivering, receiving, lending, borrowing, leasing, renting, selling, buying, distributing, possessing or transferring the possession of any radioactive sources in any way, or operating, using, maintaining or repairing, disassembling, taking out of service, storing, disposing of, or dealing with or handling them in any way.
- 3- Dispose of radioactive waste or deal with it in any way.
- 4- Establishing, operating, owning, maintaining, modifying or removing a radioactive facility, or part of it, or a stage thereof, or removing any works, investments or studies related to it in any way.

Article (4)

In addition to the provisions stipulated in this regulation, establishments dealing with non-ionizing radiation, nuclear materials and radioactive materials of natural origin are subject to the rules, conditions, guidelines and provisions set by the Authority.

Article (5)

The following radioactive sources are considered exempt from radiation licensing and inspection procedures, subject to registration procedures for the first time, and subject to regulatory control procedures as determined by the Authority:

- 1- Sources of night lighting resulting from radioactive isotopes.
- 2- Smoke detectors using radioactive isotopes.
- 3- Consumer products that contain radioactive sources.
- 4- The radioactive sources mentioned in the first list of general safety requirements issued by the International Atomic Energy Agency (GSR Part 3).
- 5- Educational and research x-ray devices, whose voltage is less than (35 kilovolts).
- 6- Ordinary dental radiography (Intraoral dental x-ray).



Article (6)

The materials mentioned in clauses (1, 2, and 3) of Article (5) of this regulation are subject to licensing and radiation inspection procedures, in the case of manufacturing and storage of cumulative quantities.

Article (7)

The materials mentioned in clauses (5, 6) of Article (5) of this regulation, whose voltage difference is less than (35) thirty-five kilovolts, are subject to regulatory control procedures.

Article (8)

Fees for registration of practices and issuance of licenses shall be determined in accordance with Appendix No. (2) attached to this regulation.

Chapter Two

Registration and Licensing

Article (9)

To practice any radiological activity, a license application shall be submitted to the Authority according to the following, on the form prepared for this purpose:

- 1- Radiation Practice License “possession and use”.
- 2- Radiation Practice License “service providers”: importing, exporting, re-exporting, transporting, installing, calibrating or maintaining radioactive sources, providing and analyzing personal badges for radiation protection, or calibrating radiation monitoring devices.



Article (10)

The Licensee to practice radiation activity shall appoint a radiation protection supervisor and obtain a license for that, in accordance with the requirements and rules set by the Authority.

Article (11)

In order to import, export, re-export, transport or transit radioactive sources, a license application shall be submitted to the Authority for each shipment, in accordance with Table No (3) of Appendix No (2) attached to these Regulations. In all cases, the import and transportation license shall not include more than four (4) sealed radioactive sources or radiation generators.

Chapter Three

Radiation Protection

Article (12)

The use of radiation sources shall be restricted by applying the following radiation protection principles:

- 1- Justification of Radiation Practices: No radiation activity may be carried out unless it is justified, and the Licensee must apply the principle of justification when introducing any new activity or updating any existing one, so that a comparison is made between all possible options to measure the ratio of harm to benefit for each of those options.
- 2- Optimum Radiation Protection: it shall be through the Licensee's commitment to achieve the optimal level of radiation protection and safety of radiation sources, and to reduce the exposure rate to the lowest possible level, without exceeding the limits set out by the Authority, and any additional protection requirements it sets for this purpose.
- 3- Commitment to the limits of radiation doses specified in Appendix No. (1) attached to this regulation.



Article (13)

Control areas and supervision areas are classified as work areas, and the licensee must observe the following in these areas:

- 1- Clearly distinguishing each region to allow knowing the classification of the region easily.
- 2- Compliance with the requirements of radiation protection and the measures of the control and supervision areas in the facility.
- 3- Defining the areas subject to control and supervision during operation and setting their boundaries using appropriate means, in the cases where a source is operated intermittently, or when the source is moving from one place to another.

Article (14)

The licensee must comply with the following:

- 1- Appointing a suitable person and getting him/her a license from the Authority to work as a radiation protection supervisor as per the practices specified in the conditions and guidelines set by the Authority.
- 2- Providing devices and equipment for radiation protection, personal protective equipment, and radiation monitoring, and permanently verifying their suitability for use.
- 3- Establishing radiation protection programs according to which radiation levels shall be measured, continuous radiation monitoring is determined, radiation protection methods are determined, contamination removal methods are taken, the nature of the precautions to be taken, the effectiveness of these precautions is evaluated, and reviewing these programs periodically, and when any material change occurs in the nature, terms or conditions of the work, and submitting the programs to the Authority for approval.



- 4- Carrying out periodic inspection and necessary maintenance of the facility, radiation sources, and radiation examination and monitoring devices, as determined by the Authority.
- 5- Establishing a system for managing and controlling the quality of radioactive sources and radioactive practice which is commensurate with the volume and nature of radioactive work.
- 6- Carrying out periodic calibration of radiation sources and radiation examination and monitoring devices.
- 7- Providing the Authority with technical reports related to compliance with radiation protection in accordance with the instructions and guidelines set by the Authority for this purpose.
- 8- Providing workers with information related to the radiation risks of work, and the requirements of radiation protection, and in particular providing female workers with information related to the risks and additional protection requirements in cases of pregnancy and breastfeeding.
- 9- Ensuring the commitment of workers in radiation workplaces to use personal protective equipment and means, and ensuring their compliance with radiation protection requirements.

Article (15)

Regarding the radiological practices in the medical field, the following must be adhered to:

- 1- Not exposing any person directly to a radiation source except for the purposes of medical diagnosis or treatment.
- 2- Calibrating radiation sources and devices related to measuring radiation doses, measuring these doses, and conducting quality control checks on radiation sources and radiation practices.
- 3- Verifying that the radiation dose to be used is consistent with the reference values in accordance with best practices in this field.



- 4- Developing medical prevention programs to evaluate the health of workers, ensuring continuous compatibility between work and worker health, and providing the necessary information about it in cases of accidents and occupational diseases.
- 5- Ensuring that patients are provided with the necessary protective equipment during a medical exposure procedure, and taking the necessary measures to reduce exposure of non-target organs and body parts.
- 6- Patients who have been injected or ingested a radioactive substance are not allowed to leave without verifying that the radioactivity in their bodies has decreased below the levels approved by the Authority.
- 7- Taking the necessary measures for appropriate protection from radiation in cases where the patient is pregnant or breast-feeding, or if it is suspected that she is pregnant.

Chapter Four

Safety of Radioactive Sources

Article (16)

The Licensee shall comply with the necessary technical and administrative measures to ensure the safety of radioactive sources throughout their possession, starting from the date of their acquisition until their final disposal, in accordance with the rules, controls and procedures determined by the Authority and other competent authorities.



Article (17)

The internal rules and policies of the institution shall be written and announced to all employees, and posted in the control and supervision areas and for users of radioactive sources in Arabic and English languages at least, provided that they include work practices and procedures that must be followed by workers in each area.

Article (18)

The licensee shall ensure that the radioactive sources used by him comply with the relevant international standards, such as those of the International Commission on Radiological Protection (ICRP), the International Organization for Standardization (ISO), the International Atomic Energy Agency (IAEA), and the International Electrotechnical Commission (IEC).

Chapter Five

Security of Radioactive and Nuclear Sources

Article (19)

The licensee shall comply with the necessary administrative and technical measures to ensure the security of the radioactive and nuclear sources in his possession, starting from the date of their acquisition until their disposal, based on the potential security threat and the size of the consequences resulting from breaching the security of the radioactive and nuclear sources, taking the following into account:

- 1- Measures taken to ensure the security of the sources shall have the potential to be upgraded with the increase in the threat level.



- 2- Ensuring the security of information related to the sources and its security.
- 3- Enhancing a culture of security among his employees.
- 4- Not lifting control of any source or taking it out of service except after fully complying with all provisions of these Regulations with regard to the safe disposal of sources and informing the Authority of the same.
- 5- Immediately inform the Authority of any unusual matters that violate or may violate the security of those sources.

Article (20)

The licensee shall undertake an inventory of radioactive and nuclear sources, according to the following:

- 1- The Licensee shall have a clear, elaborate and accurate inventory system for counting and inventorying the radioactive and nuclear sources in his possession.
- 2- The inventory system shall include the tracking radioactive and nuclear sources, documenting their movement and locations at all times, especially during their use, transport, transfer of possession and final disposal.
- 3- The inventory system shall include a record of radioactive and nuclear sources when they are placed in or removed from the storage place.

Article (21)

The Licensee, upon his desire to transfer possession of radioactive or nuclear sources, shall comply with the following, and the recipient shall notify the Authority within one week of his possession of the source:

- 1- Submitting the transfer possession application to the Authority.
- 2- Not transferring possession except after ensuring that the transferee has a license to receive the source.
- 3- Documenting the transfer of possession of the source.



Article (22)

Radioactive and nuclear sources may only be stored in locations approved by the Authority, and a license for the storage facility of radioactive materials shall be obtained from the Civil Defense and Ambulance Authority. The licensee shall also comply with the design of the storage facility mentioned in Appendix No. (4) attached to this regulation.

Chapter Six

Transportation of Radioactive Materials

Article (23)

Radioactive materials and devices containing them shall not be entered into or taken out from the Sultanate of Oman except by air and radioactive materials shall not be transported inside the Sultanate of Oman except by land transport. An exception may be granted for some cases with the approval of the President based on the recommendation of the competent Department.

Article (24)

Radioactive materials shall not be transported except after obtaining a license from the Authority, in accordance with the conditions and controls it sets.

Article (25)

Any shipment containing radioactive materials shall be only inspected by persons qualified for this purpose, and the party they pertain to shall provide them with the necessary protective equipment.



Article (26)

Radioactive material shall only be transported inside containers designated for this purpose and which are commensurate with the nature of that material in terms of type and category, as per the classification of the International Atomic Energy Agency.

Article (27)

The party licensed to transport radioactive materials shall place and update labels, identification tags and warning signs, and data labels for packages of radioactive materials, in accordance with the regulations issued by the International Atomic Energy Agency regarding the safe transportation of radioactive materials.

Article (28)

Radioactive materials shall not be stored during the transport process without obtaining prior approval of the Authority, without prejudice to Article No (22) of these Regulation.

Article (29)

The party licensed to transport radioactive materials shall inform the competent Department in the Authority and other competent authorities immediately upon the occurrence of any accident during the transportation process, and shall provide the Authority with a detailed report on the accident, its causes and effects, and the measures taken to limit such effects within a period not exceeding one week of its occurrence.

Article (30)

The vehicle used to transport radioactive materials inside the Sultanate of Oman shall be licensed by the Public Authority of Civil Defense and Ambulance, before being used.



Article (31)

The vehicle designated for transporting radioactive materials shall meet the following requirements:

- 1- It shall be equipped with warning signs on both sides and on the rear when loaded with radioactive materials, written in Arabic and English, in accordance with the requirements set by the Public Authority of Civil Defense and Ambulance, provided, however, that such signs shall be removed when not loaded with radioactive materials.
- 2- It shall be equipped with devices and equipments of personal protection and public safety.
- 3- It shall be subjected to periodic inspection and maintenance, and records of technical inspection and maintenance of the vehicle shall be kept and made available to the Authority and the competent authorities upon request.

Article (32)

The personnel on the vehicle designated for transporting radioactive materials shall be drivers and escorts who are qualified and trained for this purpose.

Article (33)

When transporting radioactive materials, dose limits shall be complied with as follows:

- 1- The maximum dose rate at any point on the outer surface of any vehicle loaded with radioactive material shall be (2) millisieverts/ hour.
- 2- The maximum dose rate at a distance of (2) two meters from the outer surface of any vehicle loaded with radioactive material shall be (0.1) millisieverts/ hour.
- 3- The maximum dose rate in the driver's seat shall be (2.5) microsieverts/ hour unless it is classified, taking into account the time that the trip will take.



Article (34)

Transportation of radioactive materials shall comply with the following:

- 1- Putting any radioactive packages in a tightly sealed container and making sure it is completely fixed to the floor of the vehicle, provided that the container is placed in a way that reduces the dose rate in the driver's seat.
- 2- The radioactive material shall not be transported in the driver's cabin.
- 3- No person is allowed - other than the driver and authorized persons - to move with any radioactive shipment in the vehicle.
- 4- It is not allowed to transport anything else in the same vehicle carrying radioactive materials.

Chapter Seven

Safe Disposal of Radioactive Waste

Article (35)

Radioactive waste may not be disposed of in any way except in accordance with the provisions of this regulation.

Article (36)

It is prohibited for any person to bring any materials classified as radioactive waste into the lands of the Sultanate of Oman for any purpose such as using, dealing with, transporting, storing, disposing of or burying.

Article (37)

The person who has license of the radiological practice shall store the radioactive waste generated from the practice and limit the resulting environmental impact, as determined by the Authority.



Article (38)

The person who deals with radioactive waste in any way shall adhere to the following:

- 1- Providing special facilities equipped to store radioactive waste to ensure the safety and security of such waste as determined by the Authority.
- 2- Providing the necessary equipment, including appropriate measuring devices, to measure the radioactivity in the waste and the resulting dose rates.
- 3- Providing qualified persons, training programs and sound work procedures to carry out works related to all stages of dealing with radioactive waste.

Article (39)

The licensee must sort the radioactive waste at the place of its formation based on its physical and chemical properties, radioactivity, and the half-life of the isotopes included in its composition. After sorting the waste, each type shall be isolated separately.

Article (40)

When purchasing a sealed radioactive source or obtaining it in any other way, the licensee shall obtain a written undertaking from the manufacturer or supplier confirming his acceptance to return the sealed radioactive source upon completion of its usage in the Sultanate of Oman. The Authority shall be provided with a copy of that undertaking.

Article (41)

Sealed radioactive sources shall be classified as disused sealed radioactive sources upon completion of their usage or in the event of taking them out of service directly.



Article (42)

It is prohibited to disassemble or open any sealed radioactive source with the purpose of reusing it or using any part of it, or for other purposes.

Article (43)

The licensee shall return the sealed radioactive sources to the manufacturer.

Article (44)

The Authority may approve for the licensee to store radioactive waste for a specific period in the following cases:

- 1- During the period of verifying the existence of potential licensees who can benefit from the radioactive source.
- 2- During the waiting period until completing the procedures for returning the disused source to the product or supplier.
- 3- During the period in which the radioactivity of the radioactive waste may decrease to the levels of lifting control.
- 4- During the period of studying the optimal methods for the final disposal of radioactive wastes that the licensee could not dispose of.

Article (45)

The licensee shall treat the radioactive waste when necessary, in accordance with the regulations and procedures set by the Authority.



Article (46)

The licensee shall finally dispose of the radioactive waste that can't be reused, and whose radioactivity can't be reduced to levels of lifting control within a reasonable time, or can't be returned to the manufacturer or supplier, in the manner specified by the Authority.

Article (47)

The licensee shall take all necessary administrative and technical measures to prevent unsafe or unsecure disposal of radioactive waste. In the event of loss or theft of radioactive waste, the licensee must inform the Authority immediately and submit a report containing the procedures taken within a week from discovering the incident.

Article (48)

The licensee shall keep records of the collection, treatment and storage of radioactive wastes throughout the period of his radioactive practice, and submit semi-annual reports to the Authority.

Chapter Eight

Radiation Emergency

Article (49)

The licensee shall establish a radiation emergency plan which is commensurate with the nature of radiological practice and the nature of the radioactive sources in his possession, provided that it should be approved by the Authority and the Civil



Defense and Ambulance Authority, and he must update it whenever the need arises. The licensee shall also train the personnel participating in it appropriately.

Article (50)

Upon the occurrence of any radiological accident, the licensee shall immediately inform the Authority, conduct an internal investigation, determine its causes and effects, take measures to prevent its recurrence, and provide the Authority with a detailed report about the accident and the results of the internal investigation within a period not exceeding (7) seven days from the date of its occurrence.

Article (51)

The licensee shall ensure that workers participating in emergency intervention are not exposed to a dose that exceeds the maximum allowed dose for radioactive workers in one year as specified in Appendix No. (1) attached to this regulation, except in the following cases:

- 1- Carrying out operations which aim at avoiding a large collective dose.
- 2- Preventing disasters from occurring.
- 3- Saving lives or avoiding severe injuries.

Article (52)

The licensee undertakes to bear all financial consequences, repair damages resulting from radiological and nuclear accidents, and remove pollution.



Chapter Nine

Administrative Penalties

Article (53)

The Authority has the right to cancel the license if it finds that the licensee has provided incorrect data or followed illegal methods that resulted in issuance of the license.

Article (54)

The Authority may suspend the license immediately and for the period it determines in the following cases:

- 1- If the licensee violates the requirements stipulated in this regulation, or breaches the requirements of radiation protection or the security and safety of the sources.
- 2- If it turned out, as a result of reviewing the safety assessment of the practice, that there is, or is likely to be, a danger to the licensee, his workers, third parties, the environment, or property as a result of exposure to ionizing radiation resulting from the licensed practice.

Article (55)

The Authority may give the licensee a period to implement the required corrective measures and comply with the provisions of this regulation before suspending or canceling the license.

Article (56)

When the license is suspended or cancelled, the licensee shall immediately stop the practice and take the necessary measures to ensure radiation protection and the safety and security of the sources which are still in his possession in accordance with the requirements of this regulation, and notify the Authority in writing of what has been done.



Article (57)

In the event of cancellation of the license, the licensee shall dispose of the radioactive sources in his possession according to the provisions of this regulation.

Article (58)

In the event that the licensee fails to take the necessary precautions for radiation protection and the safety and security of radioactive sources and nuclear materials stipulated in this regulation, the Authority may decide to take the necessary precautions as its sole discretion at the expense of the licensee, in addition to imposing fines in accordance with the provisions of this regulation.

Article (59)

Without prejudice to any more severe penalty stipulated in the Environment Protection and Pollution Control Law and any other law, anyone who violates the provisions of this regulation shall be punished with the administrative fines stipulated in Appendix No. (3) attached to this regulation.

Article (60)

In the event that the violator repeats the same violation, the Authority may double the penalty.

Article (61)

The Authority may, when there is an imminent danger to public health or environmental damage, close the facility until the reasons of the violation are removed at the expense of the violator.



Appendix No. (1)

First: Radiation Dose Limits

First: Dose Limits for Professional Exposure:

- A- Occupational exposure of workers is restricted to the following limits:
- 1- An effective dose of (20) twenty millisieverts per year.
 - 2- An equivalent dose received by the lens of the eye is (20) twenty millisieverts per year.
 - 3- An equivalent dose received by the skin or extremities of (500) five hundred millisieverts per year.
- B- For those between the ages of sixteen and eighteen, who may be exposed to radiation through training or studying, their professional exposure shall be restricted so that it could not exceed the following limits:
- 1- An effective dose of (6) six millisieverts per year.
 - 2- An equivalent dose received by the lens of the eye of (20) twenty millisieverts per year.
 - 3- An equivalent dose received by the skin or extremities of (150) one hundred and fifty millisieverts per year.
- C- For any pregnant worker: The exposure of a pregnant worker is restricted so that the equivalent dose to the surface of the abdomen during the period extending from announcing her pregnancy until it ends shall be (2) two millisieverts.



Second: Dose Limits in General Exposure:

The average doses received by the general public should not exceed:

- 1- An effective dose of (1) one millisievert per year.
- 2- An equivalent dose received by the lens of the eye of (15) fifteen millisieverts per year.
- 3- An equivalent dose received by the skin or extremities of (50) fifty millisieverts per year.

Third: Dose Limits for Patient Assistants:

Exposure of persons who visit or assist patients voluntarily - and not through their work or job - is restricted to the following limits:

- 1- (5) Five millisieverts during the period of diagnosis of any patient or during his treatment.
- 2- For child visitors: the dose should be restricted to less than (1) one millisievert.

Second: Table of Tissue Weighting Coefficients

Tissue	Radiation weighting factor	Total Tissue Weighting Coefficients
Red bone marrow, colon, lung, stomach, breast and other tissues	0.12	0.72
Genital glands (gonads)	0.08	0.08
Bladder, esophagus, liver and thyroid gland	0.04	0.16
surface of bones, brain, salivary glands, and skin	0.01	0.04
	Total	1.00



Appendix No. (2)

Registration and License Fees

Table No. (1): Fees for issuing and renewing licenses for practices

SN	Type of License	Fees (Omani Riyals)
1	Licensing Radiation Practice (possession and use) in the commercial and industrial field (every two years)	(100) One Hundred
2	Licensing Radiation Practice (possession and use) in the medical, scientific, research, agricultural and security fields (every two years)	(100) One Hundred
3	Licensing Radiation Practice (service providers) in the commercial and industrial field (every two years)	(100) One Hundred
4	Licensing Radiation Practice (service providers) in the medical, scientific, research, agricultural and security fields (every two years)	(100) One Hundred

Table No. (2): Fees for issuing or renewing personal licenses (every two years)

S. N.	Type of License	Fees (R.O.) In the commercial and industrial field	Fees (R.O.) In the medical, scientific, research, agricultural and security fields
1	Personal license for the radiation protection supervisor	(30) Thirty	(30) Thirty



**Table No. (3): Fees for issuing license for import
Or transportation or export or re-export or transit or storing**

S. N.	Type of License	Fees (R.O.) In the commercial and industrial field	Fees (R.O.) In the medical, scientific, research, agricultural and security fields
1	Import and transport of radioactive sources (every year)	(80) Eighty	(80) Eighty
2	Transiting radioactive sources through the accesses of the Sultanate of Oman (for a period of 50 fifty days)	None	None
3	Exporting or re-exporting radioactive sources (for a period of 50 fifty days)	None	None
4	Storage Facility for Radioactive Sources (every three years)	(35) Thirty Five	(35) Thirty Five



Table no. (4): Registration Fees for Exempt Radioactive Sources (only for one time)

S. N.	Type of License	Fees (R.O.) In the commercial and industrial field	Fees (R.O.) In the medical, scientific, research, agricultural and security fields
1	Registration of import and transport of exempted radioactive sources	None	None
2	Registering the use and storage of exempt radioactive sources	None	None



Appendix No. (3)

Administrative Fines According to the Type of Violation

S. N.	Type of Violation	Value of Violation (R.O.)	
		The commercial or industrial field	The medical, scientific, research and security field
1	Practicing radiological work without a practice registration license or with an expired practice registration license	(100) one hundred for every (3) three months or part thereof, which does not exceed (1,000) thousand	(50) fifty for every (3) three months or part thereof, which does not exceed (500) five hundred
2	Non-renewal of the personal license within a maximum period of one month from the expiry date	(50) fifty for each year or part thereof, which does not exceed (500) five hundred	(25) Twenty-five for each year or part thereof, which does not exceed (250) two hundred and fifty
3	Importing, re-exporting, transiting through the accesses of the Sultanate of Oman, transporting, using or storing radioactive sources without obtaining a license from the Authority	(1000) One Thousand	(300) Three Hundred



Continue: Appendix No. (3) Administrative Fines According to the Type of Violation

S. N.	Type of Violation	Value of Violation (R.O.)	
		The commercial or industrial field	The medical, scientific, research and security field
4	Use of a storage facility for radioactive materials without license or with an expired license that has not been renewed within a maximum period of one month from the expiry date	(500) Five Hundred	None
5	Making misleading statements while applying for a license	(500) Five Hundred	(200) Two Hundred
6	Not showing the license at the work site	(100) One Hundred	(20) Twenty
7	Non-compliance with licensing requirements	(1000) One Thousand	(200) Two Hundred
8	Anyone who receives, possesses, transfers, alters or disposes, without a license, of radioactive sources or nuclear materials	(5000) Five Thousand	(2000) Two Thousand
9	Violating Article No. (4) of the Regulation	A fine of no less than (1,000) one thousand and no more than (5,000) five thousand	



Continue: Appendix No. (3) Administrative Fines According to the Type of Violation

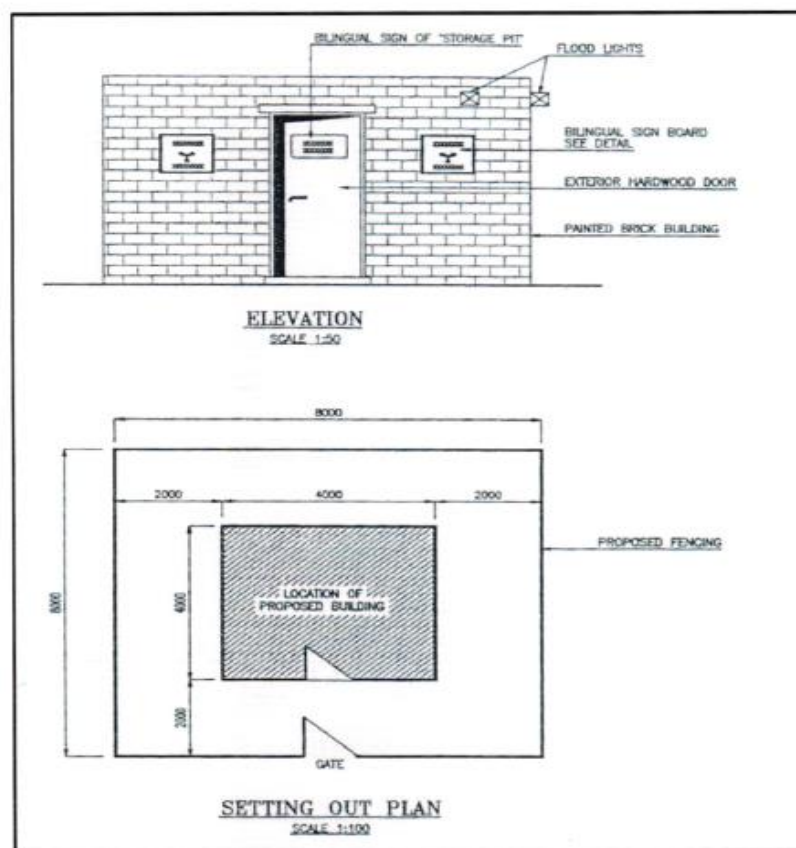
S. N.	Type of Violation	Value of Violation (R.O.)	
		The commercial or industrial field	The medical, scientific, research and security field
10	Violating provisions of articles from (13) to (17) of the regulation	A fine of no less than (500) five hundred and no more than (3,000) three thousand	
11	Violating provisions of articles from (18) to (24) of the regulation	A fine of no less than (500) five hundred and no more than (3,000) three thousand	
12	Violating provisions of articles from (25) to (35) of the regulation	A fine of no less than (500) five hundred and no more than (3,000) three thousand	
13	Violating provisions of articles from (36) to (42) of the regulation	A fine of no less than (500) five hundred and no more than (5,000) five thousand	
14	Violating provisions of articles from (43) to (47) of the regulation	A fine of no less than (1,000) one thousand and no more than (5,000) five thousand	



Appendix No. (4)

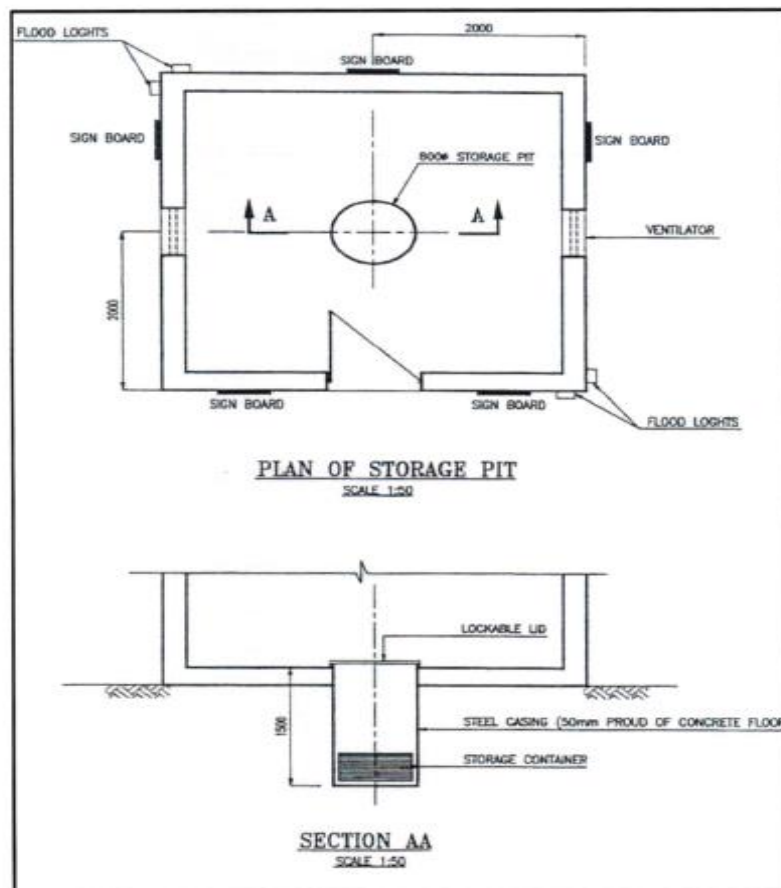
Design for Radioactive Material Storage Facility

A- External Structure:



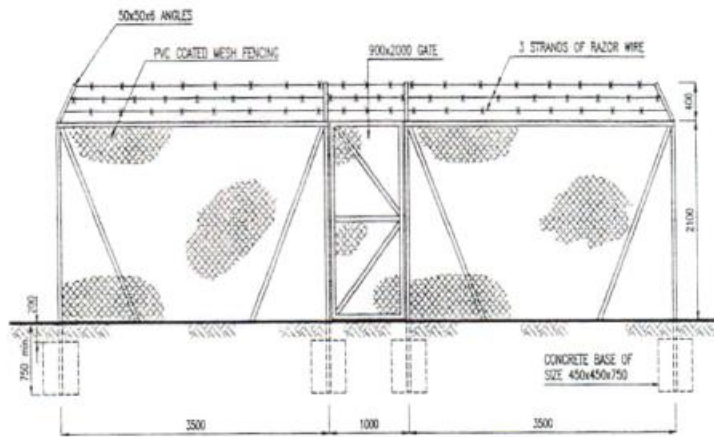


B- Storage Pit:

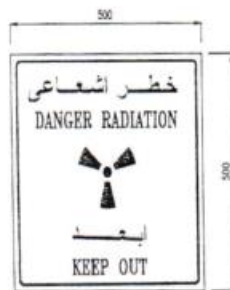




C- Fencing and Labeling:



ELEVATION OF FENCE AND GATE
SCALE 1:50





Clarifications of some technical requirements for radioactive material storage facility design:

- The storage facility area must not be less than (4×4) square meters.
- The distance from the center of the pit and the wall of the storage facility should not be less than 2 meters from all directions.
- The diameter of the storage pit should not be more than 1 meter.
- The depth of the storage pit should not be less than 1.5 meters.
- The storage pit should be lined with a layer of solid iron and concrete all around.
- The cover of the pit should be made of lead or solid iron with a thickness not less than that than (2) centimeters and should be closed with a lock.
- In the case that there is more than one pit, the distance between one pit and another should not be less than (1) meter.
- The storage facility door should have a lock.
- The storage facility must be connected with electrical current and has internal and external lighting.
- The facility should have a concrete roof.
- The facility should have an external fence according to the specifications mentioned above in the design structure and it has a door and a lock.
- The distance between the wall of the storage facility and the outer fence should not be less than 2 meters from all directions.
- The storage facility should have emergency contact numbers board in the outer door with radiation labeling.