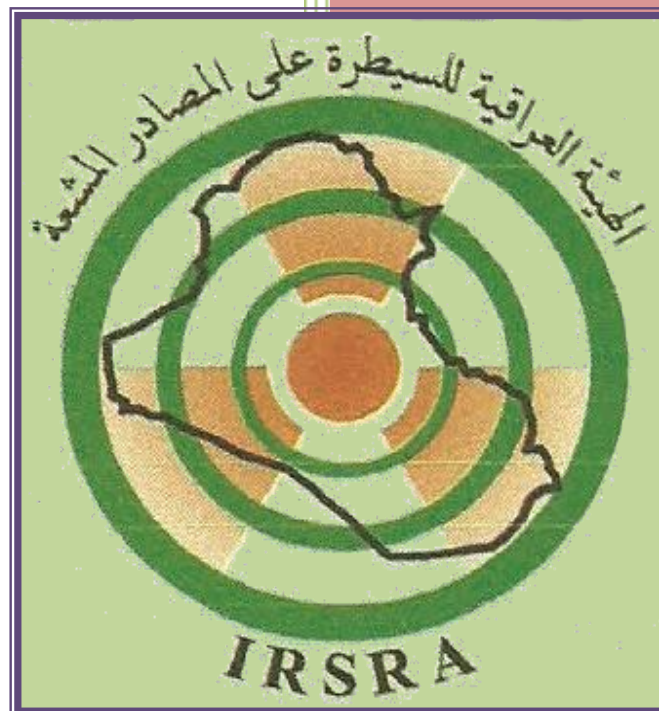


IRSRA-Internal System to control the use
of Radioactive sources N0.(1), 2006.





According to the rules of Sections 2 and 7 of the CPA, (Coalition Provisional Authority, dissolved) Order Number 72 for the year 2004, under the title; (The Iraqi Radioactive Source Regulatory Authority), the following System has been issued:

**Interior System
Number (1) for the year 2006
Regulatory of Radioactivity Sources Uses in Iraq**

**Chapter One
The aims**

Article 1- This Interior System aims to identify the rules and the regulatory measures which IRSRA put into effect to control the radioactivity practices in Iraq including; ownership, usage and handling of radioactive sources for; medical, educational, industrial, researches and any other purposes in a safe and secure manner, and to ensure; the security of society, safety of environment and protection of; workers, individuals, and patients against hazards of exposure to ionization radiation.

Article 2- For the purpose of this System, the scientific terminology mentioned in this System is defined in Annex (1) and is in accordance with international standards.

Article 3- Provisions stated in this Internal System are applicable in the following fields:

1st: Radioactivity practices in Iraq concerning; ownership ,usage and handling of radioactive sources by; state establishments, private sectors and foreign parties (working in Iraq) , covering; design , manufacturing, collection, import , export, lending, renting , storage, transporting and maintenance of radioactive sources. These sources include the following:

- a. Sealed and unsealed radioactive sources.
- b. Generators of ionization radiation.
- c. Instruments and equipments containing radioactive sources.



- 2nd: Radioactivity practices concerning the management of radioactive waste resulted from non nuclear practices.
- 3rd: Cases of radiation emergencies (incidents and accidents).
- 4th: Transportation of radioactive materials in Iraq.
- 5th: Handling sources of natural radioactivity causing an increase in exposure to the workers or to the public exceeding the fixed dose limits as stated in this System.

Article 4- The exposures resulting from the following sources of radioactivity are exempted from the implementation of control measures in this System:

- 1st: Potassium (40) radiation found in human body.
- 2nd: Cosmic radiation on the earth surface.
- 3rd: Radiation resulting from radioactive elements in raw material within their natural concentration which is less than the exemption boundaries mentioned in Article (5) of this System.
- 4th: Any sources or cases specified by IRSRA in accordance with the radiation dose limits mentioned in this System.

Article 5- IRSRA is allowed to grant exemption from the requirements for authorization stated in this System through requests addressed to it or by its own initiative in the following cases:

- 1st: When the radiation hazards resulting from radioactive practices, or sources of radiation to be exempted, are so small to a level that subjecting them to regulatory control is no longer justified. The guidance in this concern is the standards of radiation exposure limits mentioned in this System.
- 2nd: The effective dose expected to be incurred by any member of the public due to the exempted practice or sources should not exceed 10 micro severt in a year.
- 3rd: When the collective effective dose acquired by one year of radioactive practice is no more than 1 man –severt.



- 4th:** Equipments and apparatus containing radioactive material, sources or radiation generators, if the following conditions are available:
- a.** The radioactive material, sealed sources or radiation generators, shall not cause, in normal operating conditions dose equivalent rate exceeding (1) micro Sv/h at a distance of (0.1) m from any accessible surface of the apparatus, and the collective dose limit for the public is (10) micro Severt or less per year.
 - b.** Maximum energy yield from an equipment or apparatus not exceeding (5) KeV.

Chapter Two Practices and Obligations

Article 6-

- 1st:** The radioactivity practices shall be based, in concepts and applied experience on principles aiming at reducing (as low as reasonably achievable) the personal doses, number of individual exposed to them, frequency and likelihood of exposure taking into account socio-economic factors.
- 2nd:** The authorized person for radioactivity practices shall follow and utilize to the fullest all measures and engineered processes which are based on sound and approved practices regarding safety and security of the radioactive sources and the protection from their effects.
- 3rd:** Exposures resulting form medical treatment are excluded from the rules of (1st and 2nd) items of this article.

Article 7-

- 1st:** No practice stated in Article (3) in this System should be authorized unless the practice produces sufficient benefit to the exposed individuals or to society to justify for the radiation harm that it might cause, taking into account socio-economic and other relevant factors.



2nd: The following practices are deemed unjustifiable to issue an authorization for:

- a. Unwise practices involving the frivolous use of radiation or radioactive substances in commodities or products such as kids' toys, personal jewelry or adornments.
- b. Practices that involve adding radioactive substances to food, beverages, cosmetics or any other commodity or product intended for ingestion, inhalation or application to a human being.

Article 8-

1st: The normal exposure of individuals shall be restricted so that neither the total effective dose nor the total equivalent dose to the relevant organs or tissues resulting from the authorized practices surpasses the limits mentioned in Articles (22 and 32) of this System.

2nd: The dose limits mentioned in the (1st) item of this article not applies to medical exposures from authorized practices.

3rd: In special cases, IRSRA can modify the radiation dose limits mentioned in the (1st) item of this article.

Article 9- In addition to IRSRA regulatory responsibility, the parties that assume the responsibility of application of these regulations are:

1st: The main parties that have an authorization to conduct radioactivity practices represented by appointed authorized person mentioned in the authorization certificate in the form of registration or licensing.

2nd: The third parties who shall have subsidiary responsibilities for the application of standards are:

- a. Suppliers.
- b. The workers.
- c. Radiation protection officers.
- d. Medical practitioners.
- e. Health technicians.



- f. qualified experts
- g. Any other party to whom the main party has delegated specific responsibilities like; transportation, storage, disposal and other radioactivity practices.

Article 10-

1st: The authorized parties shall be committed to set up and implement the technical and organizational measures that are needed for ensuring safety and security of the radioactive sources they are authorized for. And they are compelled to apply relevant provisions of this System.

2nd: The authorized parties may employ people for conducting those tasks relevant to their responsibilities but they still held accountable for the application of relevant provisions of this System.

Article 11-

The obligations of the responsible parties mentioned in Article (9) are specified as the follow:

1st: The general responsibilities of main parties are:

- a. To carry out all measures and procedures stated within provisions of this System.
- b. To establish safety and security programme. The complexity of which is proportional with threats and hazards associated with the practice, and is also complying with provision of this System. The programme shall be reviewed and approved by IRSRA.
- c. To refrain from taking any measures to commence a practice unless given an authorization for that practice from IRSRA.
- d. To refrain from dealing with parties not officially and legally authorized by IRSRA in matters related to the authorized practices.
- e. To review and verify periodically precautionary measures and all procedures related to the authorized practice.



- f.** To notify IRSRA by a written request when exceeding the radiation doses limits specified by this System.
- g.** To notify IRSRA about any non-conformance in applying the measure and procedures, and corrective actions taken to rectify it and to prevent reoccurrence.
- h.** Maintaining records with sufficient information on performance of main activities.
- i.** To refrain from amending in part or as a whole any authorized practices without prior approval of IRSRA.

2nd: The subsidiary responsibilities of third parties:

- a.** Suppliers shall comply with relevant requirements within the provisions of this System regarding any activities within the authorized practices they are contracted to do.
- b.** The workers shall comply with regulations and measures for safe and secure use of radioactive sources, apparatus and radiation generators, and to report any situations that may compromise safety to the authorized party.
- c.** The radiation protection officer is committed to take reasonable steps to evaluate and minimize exposure, and to prepare a plan to ensure safety and security under normal operation and emergency conditions.
- d.** Medical practitioners are committed to abide by the guidance levels of medical exposure, and shall inform the authorized parties of any deficiencies or needs regarding compliance with this System in respect to protection and safety of patients.
- e.** The qualified experts shall be prepared to offer technical expertise, consultancy and advise to the authorized parties.



Article 12-

- 1st:** IRSRA shall conduct periodic and sudden inspection on all radioactivity practices to ensure compliance with measures and procedures required for safety and security of radioactive sources.
- 2nd:** The main authorized parties shall facilitate the tasks of IRSRA inspectors to perform their duties on authorized practices and on different sources of radiation. they shall also facilitate document access for IRSRA inspectors and shall be allowed to maintain copies as they saw fit.
- 3rd:** IRSRA shall inspect on buildings and other facilities utilized for radioactivity practices within the responsibilities of the authorized parties which can be affected by radioactivity directly or in directly.
- 4th:** Any actions by the authorized parties that involve; obstruction, prevention, delay, refusal or denial of access to IRSRA inspectors can lead to legal consequence in the form of suspension or total termination of the authorization.
- 5th:** The IRSRA is committed to the confidentiality of data, information, and records which it has access to or takes copies from while inspecting, and not to use them for purposes other than what they are intended for.

Chapter Three General Regulatory Measures

Article 13-

- 1st:** No person or party is allowed to practice any activities listed in Article (3) of this System unless filing a formal notification request to IRSRA before practicing the activity. IRSRA will study the request and notify the applicant its decision and the documents required for authorization.
- 2nd:** A separate notification application is to be submitted to IRSRA for each type of practice independently.



3rd: The specific radioactivity practices (mentioned in the following chapters) are subject to implementing the required regulatory measures specially designed for them.

Article 14 - The notification requirements are as follows:

1st: The notification should be submitted before conducting the practice within (30) thirty days from the date of this System to come into force.

2nd: Concerning the existing practices, before the System came into force; an application for notification should be submitted to IRSRA within (90) ninety days from the System came into force.

3rd: The Notification should be handed to IRSRA according to an Application Form which can be obtained free of charge from IRSRA headquarters or its branches.

4th: All information and documents required are to be attached with the Notification Form.

5th: After the required information is completed, IRSRA within (15) fifteen days from submitting the application, inform the applicant its decision concerning exemption or subjection to the authorization requirement either in the form of registration or licensing.

6th: The applicant shall be committed to inform IRSRA immediately in cases of changing the conditions and terms of exemption stated in (Article-5).

Article 15- The authorization requirements are as of the following:

1st: If the activity does not contain justification for exemption or exclusion mentioned in Articles (4) and (5) of this System then an authorization is needed to be granted by IRSRA before starting the practice.

2nd: IRSRA inform the responsible party, according to information given in the Notification Form of the necessity to obtain an authorization for practice, and specifies the class of authorization required.

3rd: The applicant for authorization should submit all information and data mentioned in the Authorization Form



attached with the information and required documents for the purpose of issuing authorization either in the form of registration or licensing.

Article 16- The requirements and conditions to grant a license are as the followings:

1st: License for radioactivity practices will be issued for one of the following cases

- a. When possessing or using or handling radioactive sources classified as categories (1), (2) and (3), according to the classification of (IAEA) in this respect. TECDOC No.1344.
- b. When the limits of the radiation doses during the radioactivity practices reach levels higher than radiation dose limits mentioned in Articles (22) and (32) of this System.
- c. Any other radioactivity practices that IRSRA identifies as necessary to be subjected to the authorization requirements in the form of licensing.

2nd: Submission of a commitment to fulfill provisions mentioned in this System and in the license forms.

3rd: Authorization by license is subject to periodical and without notice inspection procedures by IRSRA.

4th: Submission of a commitment that only qualified technician should be allowed to be involve in the authorized practice. Experience, scientific qualifications and conduct certificates for them should be presented to IRSRA.

5th: Employment of qualified experts in; safety, security of radioactive sources, conducting maintenance and calibration of equipments and instrument.

6th: Records keeping shall be kept for monitoring results and verification, including records of testing and calibration.

7th: license validation period is determined by IRSRA according to the classification of radioactive source and the nature of the radioactive practices.

Article 17- The requirements and conditions of authorization by registration are as followings:



- 1st:** Authorization to practice in the form of registration will be issued in the following cases:
- a.** When possessing or using or handling radioactive source classified as categories (4) and (5), according to the classification of (IAEA) in this respect. TECDOC No.1344.
 - b.** When the radioactive dose limits resulting from radioactive practices reach levels between release limits and the levels mentioned in the cases of granting authorization by license.
 - c.** Any other radioactivity practices that IRSRA identifies as necessary to be subjected to the authorization requirements in the form of licensing.
- 2nd:** Submission of a commitment to fulfill provisions mentioned in the license forms.
- 3rd:** the authorized party has the right to.
- a.** To determine the number of workers in the specified practice.
 - b.** Employ a radiation protection personnel instead of expert.
- 4th:** the authorization by registration shall be subjected to sudden inspection procedures as IRSRA see fit.
- 5th:** keeping records including detailed information about the practice.

Chapter Four

Regulatory Measures for Radiation Exposures

Article 18- The exposure to ionization radiation emitted from radioactive sources and materials mentioned in this System can fall into three categories; workers exposed to it as a result of authorized radioactivity practices, (which is called occupational exposure) or what the patient exposed to in his diagnosis or treatment, (which is called medical exposure), and under the concept of radiation exposure is also included the general exposure for the public who are exposed to different forms (of



natural or artificial) sources while practicing their daily life (known as the public exposure).

Article 19- The authorized parties shall be committed to apply the following:

- 1st:** Implementing measure, mentioned in this chapter is compulsory for the authorized (registered and licensed) parties, to all practices mentioned in Article (3) of this System and this commitment is part of authorization condition. The authorized parties shall submit this commitment in writing.
- 2nd:** Taking the required measure to reach that minimum level of exposure to radiation received by workers or those who are of relation with the authorized radioactivity practices.
- 3rd:** Provide trained human resources required with sufficient numbers and suitable scientific level in proportion with the nature of the radioactivity practices.
- 4th:** Provide special services for safety like personal dosimetry for workers, and provide medical and health services proportional with the magnitude of potential risks.
- 5th:** Train the workers on using different equipments of the related radioactivity practices both under normal operation or emergency conditions. The training programme must be updated for the new means of protection and safety and should be repeated on intervals.
- 6th:** Provide appropriate supplies for documentation of records of the particular radioactivity practice periodically, and maintain these records in accordance with requirements of this System.
- 7th:** Provide professional and non professional workers with sufficient information about radiation hazards to which they may be exposed, in normal operation or emergency condition and how to protect themselves against them.
- 8th:** Establish emergency plans to face accidents relating to radioactivity practices within the facility and ensure availability of personal protection equipments in case of emergency occurrence, as well as to detect and evaluate the extent of radiological exposures for workers and their



boundaries, which are adopted by (Radiation Protection Center/Ministry of Environment) through dose assessment in the controlled and supervision areas under the condition of radioactivity in the work environment.

- 9th:** Take the necessary measures to ensure that limits of sources radioactivity set by IRSRA are not exceeded.
- 10th:** Take the special measures set by IRSRA regarding the discharge of radioactive waste resulted from the radioactivity practice.
- 11th:** Facilitate the periodical and sudden inspection operations done by IRSRA inspectors and respond to their requirement.
- 12th:** Supply the workers with the needed personal protective equipment (PPE) like protective clothing (vest, gloves and masks) and protective shields. The validity of PPE should be tested periodically.

Article 20- The authorized party shall keep a record of personal doses for every worker subjected to dose assessment in accordance with Article (21) of this System. The authorized party is committed to:

- 1st:** Information regarding workers personal dose record shall be made available to each corresponding worker.
- 2nd:** Allowing IRSRA and medical practitioner, who is responsible for health surveillance, to have access to the dose record of the workers.
- 3rd:** provide the establishment to which the worker is transferred to with a copy of his radiation doses records.
- 4th:** When a worker ceases to work in the radioactivity practices, arrangement shall be taken to keep his personal dose records in Radiation Protection Center (RPC).
- 5th:** Exposure records for each worker shall be preserved during the worker's working life and afterwards at least until the worker reaches the age of 75 years, or for not less than 30 years after the termination of the work involving occupational exposure, whichever is farther.



Article 21- It is meant by occupational exposure for the purpose of this Internal System; the ionized radioactive exposure which the worker suffers during the radioactivity practices that are authorized by IRSRA. The authorized parties are responsible to keep this exposure within the acceptable limits stated in Article (22), as well as the measures listed under Articles (19) and (20), in addition to any additional responsibilities stated in this System.

Article 22- The authorized party is committed not to exceed the following doses limits for the occupational exposure.

1st: An effective dose of (20) mSv per year averaged over five consecutive years. It may be increased to (50) mSv in any single year on condition that active dose for individual should not exceeds (100) mSv for any (5) consecutive years.

2nd: Equivalent dose to the lens of the eye lens of 150 mSv in a year.

3rd: Equivalent dose to the extremities (hands and feet) or the skin of (500) mSv in a year.

4th: Exposure limit for the pregnant woman is (2) mSv during the period of pregnancy if the exposure is external or (1) mSv in a year during the pregnancy if exposure is internal.

Article 23-

1st: Anybody less than (16) sixteen years of age is not permitted to do work including occupational exposure, so is the case with anybody less than (18) eighteen years to work in the controlled areas unless been subjected to direct supervision and for training purposes only.

2nd: Trainees of age between (16-18) years whose training requires the use of radioactive sources, the occupational exposure shall not exceed the following limits:

- a. Effective dose of (6) mSv in a year.
- b. Equivalent dose to the eye lens of (50) mSv in a year.



- c. Equivalent dose to the extremities or skin of (150) mSv in a year.

Article 24 – Areas of work are classified to controlled areas and supervised areas according to the followings:

1st: Controlled areas: These are places occupied permanently or on intervals for the purpose of an authorized radioactivity practice. The expected average radioactive dose is more than (6) mSv in a year. The authorized party is committed to take the following precautionary measures to control the usage of these places for the intended purposes as to secure the safety of the workers:

- a- Delineate controlled areas by physical means using yellow painting to draw lines of width no less than (10) cm.
- b- Restrict access to the areas by means of administrative procedures, such as the use of work permits and by physical barriers which could include locks or inter locks. The degree of restriction being commensurate with the magnitude and likelihood of the expected exposures.
- c- Provide at entrance and exits to controlled areas protective clothing to protect from contamination of personal clothes and exposed body.
- d- Establish occupational protection and safety measures, including local rules and procedures that are appropriate for controlled areas and are stated under Article (19) in this System.
- e- Display warning symbols, such as that recommended by the International Organization for Standardization (ISO) and appropriate instructions at access points and other appropriate locations within controlled areas.
- f- Periodically review conditions to determine the possible need to revise the protection measures or safety provisions or the boundaries of controlled areas.

2nd: Supervised areas: Any area not already designated as a controlled area, where the expected dose limit is less than



(6) mSv in a year and more than (1) mSv in a year. The authorized party needs to take protection measures and safety provisions to control the use of such areas:

- a. Delineate the supervised areas by appropriate means.
- b. Display warning signs at appropriate access points to supervised areas.

Article 25 –

1st: The medical exposure in this System is meant to cover:

- a. Patient exposed to ionizing radiation as a part of diagnostic or therapeutic medical exposure.
- b. The exposure of those who help the patients to provide comfort for them by their own will incurred knowingly. It is called for the purpose of this System as voluntarily medical exposure. It is also subjected to the rules of medical exposure.

2nd: The exposure of doctors or technicians is not included with in the medical exposure. They are subject to the rules of Articles (21), (22) and (23) of this System.

Article 26 – The authorized party is responsible for the safety and security of the voluntarily medical exposure in the practices administered by him – he / she must ensure:

1st: Any person should not get a medical exposure either for diagnosis or therapy unless prescribed by accredited medical practitioner.

2nd: Diagnosis or therapy to the patient by radioactivity should only be administrated by specialized expert in radio-diagnosis physic or nuclear medical physic, or radio-therapy physic according to what the use requires of radioactivity.

3rd: for therapeutic uses of radiation, the calibration, dosimetry and quality assurance requirements are to be conducted by or under the supervision of a qualified expert in radiotherapy physics, in all situations when radiotherapy is used.

4th: Respond to the wish of the patients as to explain to him/ her the benefit of radiotherapy or diagnosis and its side effects.



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- 5th:** Be certain not to exceed the minimum level of exposure required to achieve the diagnosis aim required.
- 6th:** Take into consideration the relevant information taken from previous examination to prevent doing extra unnecessary examination.
- 7th:** Ensure that the exposure of patients is the minimum necessary to achieve the required diagnostic objective, taking into account norms of acceptable image quality established by appropriate professional bodies and relevant guidance levels for medical exposure.
- 8th:** Avoid administration of radionuclide for therapeutic procedures to the pregnant women or likely to be pregnant unless there are strong clinical indications.
- 9th:** For mothers in lactation, discontinuation of nursing is recommended until the radiopharmaceutical is no longer secreted in an amount estimated to give an unacceptable effective dose to the nursing.

Article 27 –

- 1st:** Medical exposures should be justified by weighing the diagnostic or therapeutic benefits they produce against the radiation detriment they might cause, taking into account the benefits and risks of available alternative techniques that do not involve medical exposure.
- 2nd:** Mass screening of population groups involving medical exposure is deemed to be not justified unless the expected advantages for the individuals examined or for the population as a whole are sufficient to compensate for the economic and social costs, including the radiation detriment. Coordination with IRSRA must be made before such screening or treatment with radiation of population groups.

Article 28 –

- 1st:** Calibration in the medical exposure is done by an authorized person as follows:



- a. The calibration of sources used for medical exposure is traceable to a standards dosimetry laboratory.
- b. A periodic monthly calibration for radiotherapy in terms of equipment radiation quality or energy. And either absorbed dose or absorbed dose rate at a predefined distance under specified conditions.
- c. Unsealed sources for nuclear medicine procedures are calibrated in terms of activity of the radiopharmaceutical to be administered, the activity being determined and recorded at the time of administration.
- d. Recording the important values of dose and calibration values.

2nd: Quality assurance for medical exposure shall include:

- a. Measurement of the physical parameters of the radiation generators, imaging device and irradiation installations at the time of commissioning and periodically thereafter.
- b. Verification of the appropriate physical and clinical factors in patient diagnosis or treatment.
- c. Create records of the relevant results and procedures.
- d. Verification of the appropriate calibration and conditions of operation of dosimetry and monitoring equipment.
- e. As for as possible, regular and independent quality audit reviews of the quality assurance programme for radiotherapy procedure.

Article 29 –

IRSRA with the sides concerned shall specify the dose required to be applied on each case separately to reach the ideal level to protect people subject to exposure while undergoing medical diagnosis or therapy if that medical exposure does not achieve any direct interest to the exposed individual.



Article 30 – What is meant by the public exposure for the purpose of this System is the exposure which can be encountered by any individual of the public , the concept of occupational exposure does not apply nor does the medical exposure mentioned in this System; if includes every exposure form under regulatory control . It doesn't include exposure from background level of natural activity.

Article 31– The general responsibilities to protect the public from exposure delivered by a practice or source:

1st: The authorized party must abide by:

- a. Take measures to guarantee the safety and security of the sources as not to endanger the public from exposure from sources beyond authorized control.
- b. Ensure that the premises and equipment are suitable to protect the public from exposure resulting from the practice.
- c. Suitable training on protection and security for the worker in charged of functions connected to the safety of the public.
- d. Make public information and warning procedures in work area to inform the public about the areas of hazard surrounding them.

2nd: Radiation Protection Center has the following obligations:

- a. Carry out environmental surveys to the Iraqi territories to ensure the safety of the environment and the public from exposure to radioactivity.
- b. Accomplish general informative guidance with the help and coordination with other specialized media centers in Iraq about the hazards of radioactivity and the way to prevent its effect.
- c. Control the areas of authorized practices by IRSRA to ensure the effectiveness of measures to protect workers and public.

3rd: IRSRA has to do the following:



- a. The necessary and effective measures to spread mass education among people about radioactivity and the ways to protect its hazards.
- b. Coordinate with the Radiation Protection Center or any other side that deals with radioactivity to assist in ensuring the safety of the environment from radioactivity in Iraq.

Article 32 – The dose limit for the public to be as follows:

- 1st: The maximum limit for the active yearly dose for the public is (1) mSv in a year. The limit may increase to more than (1) mSv in a year on condition it should not exceed for five consecutive years (5) mSv in a year.
- 2nd: The maximum limit for the equivalent yearly dose to the eye lens is (15) mSv in a year.
- 3rd: The maximum equivalent yearly dose for the skin is (50) mSv in a year .

Article 33 – To protect the visitors, the authorized party should do the following:

- 1st: Ensure that visitors be accompanied in any controlled area by a person knowledgeable about the protection and safety measures for that area.
- 2nd: Provide adequate information and instruction to visitors before they enter a controlled area so as to ensure appropriate protection of the visitors and of other individuals who could be affected by their action.
- 3rd: Ensure that adequate control over entry of visitors to a supervised area be mentioned and that appropriate signs be posted in such areas.

Article 34 –

- 1st: It is not permitted to manufacture or import consumptive products that cause the public to exposure higher than the limits mentioned in Article (32) of this System.
- 2nd: In case of maximum necessity to use radioactive material in manufacturing consumptive product then it should be



subjected to the exemption measures mentioned in Article (5) of this System.

3rd: Supplier of consumer products that exemption terms stated in Article (5) of this System do not apply on their product, shall ensure that such products comply with the requirements of this System before the request to IRSRA for exempting these products. They should ensure in particular that these aspects of their design and construction that affect the exposure of people during normal handling and uses as well as in the events of mishandling, misuse accident or disposal.

4th: The importers of consumptive products included in division (3rd) of this Article should be certain of:

a. Fixing readable label firmly to a visible surface of each consumer product stating that:

- 1.** The product contains radioactive materials.
- 2.** IRSRA authorize selling the product to the public.

b. Display the information in plain written Arabic on every box containing any radioactive product meant to be imported.

Article (35)-

1st: The authorized par part ty ensures making an emergency plan approved by IRSRA in case radioactive sources undergo any accident.

2nd: The authorized part is to notify IRSRA when an accident occur, or may occur which requires immediate protective measures.



Chapter Five

The Regulatory Measures of Management Radioactive Waste

Article (36)- The regulatory measures of managing radioactive waste apply on all procedures and works involved with managing radioactive waste like: collecting, separating, classifying, dealing with, adjusting, storage, transporting, disposal of the waste resulting from medical, agricultural, industrial or purpose of scientific researches.

Article (37)-

1st: The radioactive waste in this System meant to be, material not to be used, containing radionuclide or contaminated by radionuclide to extent exceeding the release level with exposure above (10) mSv in a year.

2nd: The radioactive waste of radioactivity less than the minimum dose mentioned in division (1st) of this article or which represents the release limit according to the rules of this System.

3rd: The radioactive waste resulting from the nuclear fuel cycle is not subjected to the rules of this System.

Article (38)- The authorized party is considered responsible for the secure management of radioactive waste resulting from authorized practices to take all necessary steps for this purpose including:

1st: Endeavor to make the size of radioactive waste resulting and its concentration to the minimum limit that can be reached in a practical suitable way.

2nd: Ensure disposal of radioactive waste without unnecessary delay.

3rd: Submit reports to IRSRA with required information.

Article (39)- No one or any party is permitted to originate radioactive waste, keep or deal with it unless having a license issued by IRSRA.



Article (40)- The authorized party is to be sure that the radioactive waste is collected, classified and characterized in its originating place and complies with the followings:

- 1st:** Isolate and separate the waste into groups that help to apply the available options for treatment, conditioning, storing and disposal. Every group of separated waste shall be placed into separate containers.
- 2nd:** The waste containers should be durable, easy to load and easy to empty with safety.
- 3rd:** The information about each waste container having radioactive waste should be in Arabic.
- 4th:** Taking precaution measures to prevent the radioactive environmental pollution while handling, storing or disposal.

Article (41)- The authorized party is to guarantee that radioactive waste generated from authorized procedure is not release out to the environment unless the followings are available:

- 1st:** The release should be within the limits mentioned in Article (32) of this System and done in controllable way using authorized means.
- 2nd:** The radioactive waste released should be less than the released limits.
- 3rd:** Supervising and recording the radionuclide released in suitable details and with required accuracy.
- 4th:** Notify IRSRA of releases in intervals as stated in the authorization.

Article (42)- The authorized party is to be sure that the radioactive waste is properly prepared for transportation to the storage or disposal area.

Article (43)-

- 1st:** The waste is to be stored in a way that secures the protection of human health and environment.



2nd: The storage facilities shall be supplied with:

- a. Sufficient place to contain the waste before release, treatment and transport.
- b. Taking precautionary measures to prevent environmental pollution during handling and storage.

Article (44)-

1st: Not to discharge radioactive waste, that is unsuitable to be released into the environment due to the insufficient decay reached below the exemption level in reasonable time.

2nd: Approval of IRSRA shall be obtained to dispose of the waste mentioned in division (1st) of this article in a national disposal facility according to IRSRA approved and designated criteria.

Article (45)- The site selection process for the national disposal facility is to be conducted according to IAEA requirements and designated criteria approved by IRSRA.

Article (46)-

1st: The authorized party is responsible to ensure that preparation, maintenance and sufficient monitoring are adequate to measure radioactive releases into different environment media related to the burial site during the function of the disposal facility.

2nd: The authorized is to apply a suitable monitoring programme after closing the disposal facility. This programme has to be approved by IRSRA.

Article (47)-

1st: The authorized party is to keep information in records subject to review and inspection by IRSRA. The record should include the following information:

- a. The quantity and nature of the existing radioactive waste.
- b. The quantity of radioactive waste authorized to be released to the environment.



c. The actual radioactive waste released to the environment.

2nd: In case of loss, theft or fail to spot the radioactive waste the authorized party must inform IRSRA immediately and a written report must be submitted including the missing waste and the measures taken within (30) thirty days.

3rd: In case of releasing a radioactive waste to the environment exceeding the level of release according to IRSRA release criteria or the quantity of waste released to the environment exceed the level allowed according to the authorization issued by IRSRA, the authorized party shall inform IRSRA at once. A written report should be submitted including measures taken about the subject within (30) thirty days.

4th: The authorized party is to send reports to IRSRA at the end of each year including the disposal site activity and waste management and conditioning units.

Article (48)-

1st: The authorized party for any practice connected with management of radioactive waste is to establish and operate a comprehensive programme for quality assurance for all authorized practices for storage and disposal of radioactive waste. The programme shall also include site selection, design, commissioning and maintenance, in addition to the services of exempted radioactive waste release.

2nd: The quality assurance programme shall be designed to emphasize; the safety of waste disposal, the waste facility maintained, and the records and information like tags and labeling marks on the pack of the waste containers have been affixed.

Article (49)- Every authorized party has to appoint a person technically qualified with suitable authorities to be in charge of management of radioactive waste and to assist the authorized party in safe and adequate management of radioactive waste.



- Article (50)-** The authorized party is abided by:
- 1st:** Taking into consideration the possibility of using radioactive material by him or by others before regarding it as radioactive waste.
 - 2nd:** Acquire IRSRA authorization when radioactive material is transported and make sure that the material is transported to an authorized body

Article (51)- When purchasing sealed sources, the authorized party is to set contractual arrangements with the manufacturer or importer of the radioactive source to return them back after terminating their use.

Chapter Six

Regulatory Measures of Trading Radioactive Sources

Article (52)- The regulatory measures mentioned in this System apply on all radioactive materials, sources, and accompanied equipments when trading for the following purposes:

- 1st:** Import and export radioactive materials, sources, and equipment containing radioactive sources.
- 2nd:** Commercial distribution of radioactive materials, sources, or equipment containing radioactivity sources.
- 3rd:** Manufacturing materials or equipment containing radioactivity sources.

Article (53)- The responsible parties of import and export shall comply with:

- 1st:** Execute the requirements mentioned in this system, abide by and fulfill the regulatory requirements and obligations on trading activities mentioned in Article (52) of this System in all trading stages.



- 2nd:** Store the sources for marketing purposes for a period not exceeding (30) thirty days according to approved storage procedures.
- 3rd:** Take the necessary measures to ensure the security of the sources according to the category to which the radioactive sources belong.
- 4th:** Notify IRSRA immediately of emergency events like theft, loss or damage of radioactive materials, sources, or equipment.
- 5th:** Obtain approved certificate from regulatory authority or any other competent authority in the country of origin, stating that the imported equipment that contain radioactive sources are in use in country of origin. The certificate should also include confirmation that this equipment meets the requirements of radiation protection measures and within the permissible dose limits in normal working condition.
- 6th:** Deliver the radioactive sources, materials and equipments to the demanding side exclusively.

Article (54)- The following regulatory measures are applicable on commercial trading activities of radioactive sources:

- 1st:** Notify IRSRA about the required commercial transaction to get an authorization to trade with radioactive sources in fields mentioned in article (52) of this system.
- 2nd:** Submission of the required information and documents mentioned in the special forms issued by IRSRA which include:
 - a.** Information about the type and quantity of the radioactive sources and materials.
 - b.** Technical description for any equipment accompanies the radioactive sources.
 - c.** Information about the storage site and suitability of the site condition to store radioactive sources.



- d.** The identification documents of people responsible for safety and security of radioactive sources and materials.
- 3rd:** The authorized parties are to follow up and update the records of delivery, transporting, storing and disposal of the radioactivity sources. The records should include the type of isotopes, activity, manufacturing date, serial number, physical and chemical state, and any other relevant accompanying equipment.
- 4th:** The authorized party who wants to export, import, or supply radioactive materials or sources should notify IRSRA about the specified consignments to obtain the authorization.
- 5th:** Obtain the state approval from the importing country to export the radioactivity sources before exporting are permitted, and so the countries that the materials and the sources are transit over their lands.
- 6th:** Not to supply radioactive materials or sources to any party unless that party is having an authorization to be supplied.
- 7th:** IRSRA approval for exporting or importing is not an authorization for any other practice.
- 8th:** Returning back immediately the decayed radioactive materials or sources to the supplier for disposal. This should be written in the contract terms with the supplier.
- 9th:** If it is impossible to return the depleted radioactive materials or sources to the supplier then, it must be kept in an interim storage which must be secured and safe until they are transferred to an authorized disposal facility for disposal, the secured storage and safe disposal should be ensured.
- 10th:** Ensure financial capability connected with disposal, storage and return back the radioactive materials and sources.
- 11th:** Implementation security system requirements to ensure the necessary measures of security.
- 12th:** Perform periodical inventory check of the radioactive materials by the authorized party to ensure that materials are in their fixed, secure places.



13th: Notify IRSRA in cases of loss of control over radioactive materials resulting from lose or confiscating. The notification should include the description of the materials and any accompanied equipment. In addition to the last location known, the condition encircles the loose or rubbery, the notification should be immediately to ensure quick response.

14th: The custom authority, the police, and other law enforcing authorities should notify IRSRA about any special information like in case of cease and confiscate the radioactive materials or sources.

Article (55)- Store of sufficient capacity should be available with suitable design approved by IRSRA to ensure safety and security of the imported radioactive materials and sources for the following purposes:

1st: Direct storage of radioactive sources on receipt by the authorized importer and to be kept till they are distributed.

2nd: Storing the unwanted radioactive sources intended to send back to the supplier till all requirements are completed taking into account the following consideration:

- a. The storage duration should not exceed in any case (30) thirty days. IRSRA should be notified and agreed if the duration exceeds that period.
- b. The security requirements of radioactive sources should be ensured, according to their category, to conform to the storage requirements.

Article (56)- When violating the regulatory measures mentioned in this System and in case of importing radioactive materials, sources and accompanied equipment without authorization, IRSRA takes suitable precautionary measures on the expense of the offender and take legal action against this misconduct.

Article (57)- IRSRA cooperates and coordinates with the Ministry of Trade, Ministry of Interior and Custom Authority to



exchange information regularly to consolidate safety and security and prevent loss of control on radioactive sources as to increase the capacity, vigilance and efficiency and to prevent duplication of efforts through memorandums of understanding between IRSRA and these mentioned sides.

Article (58)- Importing radioactive waste and sources to dispose of in Iraqi land and territorial water is totally forbidden.

Chapter Seven

Regulatory Measures for the Security of Radiation Sources

Article (59)- The responsibility of implementing the regulatory measures set forth in this System is limited to the parties referred to in Article (9) of this System.

Article (60)- The responsible parties must comply with the general regulatory requirements mentioned in Article (11) from this System in addition to the following obligations:

- 1st:** Unused sources must immediately be stored in a way authorized by IRSRA, and in accordance with the security measures of the category to which the source belongs.
- 2nd:** Documenting the occurrences whenever radioactive sources are transferred ownership or handling conditions are changed.
- 3rd:** Ensure the financial capability to fulfill the regulatory requirements and obligations for secure management of the radioactive sources.
- 4th:** Transportation and delivery of radioactive sources in accordance with the regulatory security requirements.
- 5th:** Offer all kind of assistance to the official authorities and local law enforcement authorities in recovering any lost or theft radioactive sources.
- 6th:** Updating records of the radioactive sources through regular inventory check and during changing occurrences.



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- 7th:** Follow up the sources movement by recording the details of all occurrence of the source into or out of the storage area.
- 8th:** The immediate reporting to IRSRA the unusual incidents that could affect the security of the sources.
- 9th:** Take the necessary measures, in accordance with the nature and size of the radioactivity practice, to maintain the confidentiality of the source's information, and to ensure that access to these information is limited by obtaining prior approval from IRSRA.
- 10th:** Measures must be taken to ensure the trustworthiness of individuals engaged in the management of the radioactive sources. The level of these measures will be increased when dealing with sources of groups (A) and (B).
- 11th:** Upon dealing with security of sources in groups (A) and (B), information and documents relating to the location of sources, security plans, emergency plans and the time table of occurrences of the sources should be controlled.

Article (61)- The authorized parties take the necessary measures to achieve the required level of security to prevent unauthorized personnel to access the radioactive sources. Administrative and technical measures determined by IRSRA must be followed within this regard.

Article (62)- For the purpose of this System it is meant by the administrative measures, the use of policies and methodologies to direct individuals to a secured management of sources, which the authorized parties shall pursue in accordance with the followings:

- 1st:** Controlling measures on entry to the area of the sources, these are:
- a-** Carrying ID card for entry to the area of the sources.
 - b-** Keeping records concerning sources, under control of principal personnel in charge solely, contain the following:
 - 1- Location of source.



- 2- Radionuclide.
- 3- The radioactivity on a specified date.
- 4- Serial number.
- 5- Chemical and physical state.
- 6- Date of use.
- 7- Date of receipt or transfer or disposal of the source.

2nd: A record shall be kept of all persons having access to or possession of keys to the locks stated on in Article (64) 3rd division in this System.

3rd: extending a security culture amongst the employees with training course on security at least once and repeating it upon the needs.

4th: Complying with the scheduled and unscheduled inspections carried out by IRSRA to ensure the implementations of security measures.

Article (63)- It is meant by the technical measures for the purpose of this System, a group of physical barrier built in order to separate the sources, devices or facilities from unauthorized persons and to deter unauthorized access to, or removal of, a radioactive source and include the followings:

1st: Fences.

2nd: Walls.

3rd: Armored locks and locks connected to the doors (internal locks equipped with electronic circuits for alarm). These keys entrusted only to the principal employer or his backup in responsibility.

Article (64)- The radioactive sources and radiation materials are categorized into four security groups depending on the ratio between the instant radiation activity to the dangerous radiation value of the source this is called the (Ratio), when they are used in specified practice, these groups are:

1st: Group A: include the following:

- a. Sealed sources with ratio values equal to or above (1000).



b. Open radioactive sources or material dispersible, in the form of solid, liquid or gasses, regardless of their ratio values.

2nd: Group B: include sealed sources with ratio values less than (1000) and equal to or greater than one.

3rd: Group C: include sealed sources with ratio values less than one and more than or equal to (0.01).

4th: Group D: include sealed sources with ratio values less than (0.01) and greater than or equal to the exempted limits from regulatory control.

Article (65)- In addition to the administrative and technical measures mentioned in Articles (62) and (63) in this System, the following measures to be implemented to ensure the security of radioactive sources of Group (A), these are:

1st: Prepare records concerning the sources, and its confidentiality kept by the principle party solely.

2nd: Implementing the requirements of the security plan to secure the sources in accordance with the terms approved by IRSRA and carrying out training on application with improvement if required.

3rd: Keeping the keys of the locks in the possession of the principal employer solely and ensure induplication.

4th: Changing of combination settings at suitable intervals.

5th: Accounting for sources daily and their associated equipments for security.

6th: Establish means to prevent or obstruct unauthorized persons from access to the sources.

7th: Establish mechanism to discover the time of entry to the site of sources by the unauthorized persons.

8th: Establish of specific emergency plan that ensures swift response.

9th: Periodic security plan review with each change of work shift with the surveillance personnel in charge.

10th: Review the information of the sources and cross check it with the record in the beginning of each working shift.



- 11th:** Changing the locks, keys or combinations whenever there is evidence or suspicion or in case of changing authorized individuals of accessing the sources or hindering his access to the site of the sources.
- 12th:** Raise the level of security measures upon increased security threats.
- 13th:** Respond quickly to the alarm.
- 14th:** Take compensatory measures to respond quickly to hinder or prevent unauthorized person to access the radioactive sources when the security measures become ineffective.
- 15th:** Hold a record to include information about the authorized persons and the times they enter and leave the locations of the sources.
- 16th:** Provide reliable alarm system and a video monitoring system for personal monitoring.
- 17th:** Require authorized parties to prepare a security plan and an emergency plan suitable for confronting breaches, including swift respond to emergencies and to inform principal employer in charge and IRSRA and any other agencies concerned with emergencies when there is a loss of control of the sources, or in case of accident to those sources.

Article (66)- The measures to ensure security of radioactive sources for group (B) are the same for that of group (A) stated in Article (65) of this System with the following considerations:

- 1st:** Weekly monitors to verify the numbers and safety of sources and their associated equipments.
- 2nd:** Install a single locking mechanism with two unlocking procedures to prevent or hinder unauthorized persons from having access to the sources.

Article (67)- The measures to ensure security of radioactive sources for group (C) as stated in Article (62) of this System with the following considerations:



- 1st:** Monitor the sources and associated equipments semiannually.
- 2nd:** Control access to the entry of the location of the sources.
- 3rd:** Install a single locking mechanism with single unlocking procedures.
- 4th:** Prepare general emergency plan for confronting any incident concerning these sources.

Article (68)- The measures to ensure security of radioactive sources for group (D) as stated in Article (62) of this System with the following considerations:

- 1st:** Monitor the sources and associated equipments annually.
- 2nd:** Monitor the general regulatory measures to ensure the safe use of the sources and their security.

Article (69)- The measures to ensure security of sources in transportation in accordance to the followings:

- 1st:** Sources of group (A):
 - a-** Background checks on trustworthiness and honesty of the transport organization and its operators.
 - b-** Make sure that the transport packages are locked and sealed and in a dedicated closed transport unit, which is locked.
 - c-** Use a reliable radio communication between the personnel in the vehicle and the security office of the authorized agency or with the transport organization or with both of them.
 - d-** Employ well trained operators on procedures of secure transportation.
 - e-** establish an emergency plan with additional measures in case of escalating security threats.
- 2nd:** Sources of groups (B), (C) and (D):

The measures of secure transport of these sources groups must be in conformity with international and national standards for secure transport and their amendments.



Article (70)-

1st: Authorized parties shall submit to IRSRA two types of reports and as follow:

a- A monthly report includes inventory of sources and their occurrences.

b- Incidents reports includes information in case of unusual events such as:

- 1- Loss of radioactive source.
- 2- Loss of control over a radioactive source.
- 3- Unauthorized access to, or unauthorized use of, a source.
- 4- Failures of equipment containing sources, which may have security implications.
- 5- Discovery of any unaccounted for sources.
- 6- Receipt of malicious threats.
- 7- A real, or attempted; theft or sabotage for radioactive sources.

2nd: Violation of regulations must be reported to IRSRA within 24 hours. Reports must include information concerning these violations.

3rd: Violation of security measures for sources from groups (A) and (B) must be reported to IRSRA within one hour from incident, and should be followed up by written reports within 48 hours.

Article (71)-

1st: The supplier shall be sure of the following:

a. The buyer shall be authorized by IRSRA to purchase the required source.

b. For sources in security groups (A) and (B), the magnitudes, radionuclide types of sources are consistent with the buyer business history and previous radioactive source purchases.

2nd: When purchasing sealed sources, licensee shall make contractual arrangements for the return of the spent sources to the manufacturer or suppliers. This contract is subject to approval by IRSRA.



Article (72)- The security plan of the sources shall include the followings:

- 1st:** Descriptions and application of the source.
- 2nd:** Description of the place where the source is used and the means of its uses and storage.
- 3rd:** Locate the place where the source is being used, the means of uses, the place of storage, in relation to the places of the public.
- 4th:** Preparation of a security plan for confronting specific risks to the sources including the following:
 - a. Determine the type of threat, theft, damage or malicious act.
 - b. Determine the type of control required to avoid the consequences when the inevitable happens, and what type of support equipment required.
 - c. Equipments and places that are intended to be protected.
- 5th:** The security measures must include the followings:
 - a. Security measures such as provide monitoring, supervision, detection, hindering, response and communication.
 - b. Specifications of the design to evaluate the quality of measures against the assumed threat.
- 6th:** The administrative and technical measures applied must include the following:
 - a. The role and responsibility of the various individuals and groups.
 - b. Routine and non-routine operations.
 - c. Maintenance.
 - d. Determine reliability and trustworthiness of individuals.
 - e. Applying security information.
 - f. Ways for the authorized person to access the sources.
 - g. Emergency plan.
 - h. Training of the employees.



- i. Determination of references of the regulations and standards.

Article (73)- The authorized parties shall comply with the following:

1st: a. Prepare an emergency plan for sources from groups (A) and (B) and their associated equipments and activities used in it.

b. The emergency plan for groups (C) and (D) included in the general emergency plan stated in Article (62) of this System.

2nd: Emergency plans must be compatible with the type of sources, their radioactivity, and their quality and includes the followings:

a. Inform IRSRA of loss or theft accidents directly, in accordance with Article (62) of this System.

b. Initial measures for inspection on the orphan or stolen sources.

c. Urgent security measures such as:

1- Matching the number of the sources with the original recorded number.

2- Determine the orphan or stolen sources, which were reported.

d. Respond to specific or escalated security threats.

e. Print the edited measures and place a copy of them in a place that can be easily reached for reading.

3rd: The emergency plans and measures must be tested and evaluated, and updated.



Chapter Eight

Secure Transport of Radioactive Materials

Article (74)- It is not permitted to transport any radioactive sources or materials for any purpose within the territories of Iraq without an authorization obtained from IRSRA according to the provisions of this System.

Article (75)- With consideration of the contents of Article (76) in this System, transportation of the following sources and materials are exempted:

- 1st:** Radioactive materials which form as an integrated part of the transportation media.
- 2nd:** Radioactive materials transported within restricted vicinity subjected to suitable safety measures, transport should not use public roads or railways.
- 3rd:** Radioactive materials implanted within living being for the purposes of diagnosis or therapy.
- 4th:** Radioactive materials existing in a consumable product, with IRSRA approval, after selling it to the end user.
- 5th:** Materials and raw materials containing radioactive isotopes of natural occurrences which are not intended to be processed to use these isotopes.
- 6th:** Consignments with radioactivity intensity within the exempted limits stated in Article (5) of this System.

Article (76)- IRSRA will issue detailed technical instructions for radioactive material transport within the territories of the Republic of Iraq.



Chapter Nine Execution Acts

Article (77)- The execution acts aim to prevent disobeying to apply this System by any side that has relation with using, owning, importing, transporting, or any other relevant act which deal with radioactive sources.

Article (78)-

1st: In case of overstepping which dose not lead to extensive damage to the safety or security of radioactive sources, IRSRA warns the authorized party in writing and stressing the necessity of abiding by the rules of this System.

2nd: In case of repeating the violation, IRSRA is to take legal actions against the authorized party according to IRSRA law.

3rd: In case of non-compliance by the authorized party, and not responding to IRSRA warnings, IRSRA shall cancel the authorization and terminate the radioactivity practice.

4th: In case of the authorized party violation to the provisions of this System and causing sever damage to the safety and security of the radioactive sources, IRSRA notify the violator of this misconduct. Then the authorized party must carry out the following:

- a. Notify IRSRA about the breach to the rules as quickly as possible. The notification should be immediate if an emergency case appears or in its way to appear.
- b. Investigate the reasons behind this breach, the conditions and results are investigated too.
- c. Taking suitable measures to rectify the conditions that lead to this violation to ensure not repeating similar cases.
- d. Notify IRSRA about the reasons, condition and resulted consequences, rectification measures, preventative measures taken or to be taken according to the programme prepared for similar cases. These



actions are to be done within a period of (21) days at most from the notification date.

Article (79)- IRSRA has the authority to cancel the license in the following cases:

- 1st:** If the authorized party breaks one of the authorization conditions and does not take the necessary action within a fixed period specified by IRSRA to correct the situation.
- 2nd:** If the conditions and rules under which the authorization giving are not fulfilled.
- 3rd:** If the authorized party appears to submit false information or took illegitimate ways to acquire the information.
- 4th:** If the authorization is not used within (6) six months from the date of issuance.
- 5th:** If circumstances emerged that may endanger workers or public.
- 6th:** The death of the authorized person or inability to work in this field.

Article (80)-

- 1st:** IRSRA, when authorized party fail to implement preventative measures stated in this System, can change, suspend or withdraw any license it granted.
- 2nd:** The authorized party is to be notified by IRSRA's decision concerning cancelation, amending, withdrawal or suspension of the authorization. He can object within (10) ten days from the date of his notification. IRSRA is to look into his objection within (21) twenty one days from the date of notification. IRSRA decision can be appealed before a court.



Chapter Ten Final Acts

Article (81)- If it appears to the IRSRA that deliberate violations or cases of overstepping the provisions, rules or measures concerning the radioactive sources, then IRSRA has the right to take legal actions against violators according to law.

Article (82)- This System comes into force the date it is published in the official gazette.

Annex (1) Scientific terms of relation to the Regulatory System for radioactive sources practices according to international standers

- 1- Radioactive sources:** Materials containing elements or radioactive isotopes or their compound in solid, liquid, or gas states or equipment emits ionized radiation that may lead to radioactive exposure.
- 2- Radioactive practices:** Any activity dealing with radioactive sources to any purpose like: ownership, storage, transportation, trading, destroying, disposal and some other purposes.
- 3- Sealed radioactive sources:** Radioactive material either sealed, permanently inside capsule or firmly closed in solid state: the capsule, or the source material are closed in a degree of firmness enough to prevent its leak in ordinary usage designed for and in case of expected events.
- 4- Radioactive unsealed source:** Any radioactive sources that the definitions of sealed source dose not apply on.
- 5- Ionized radiation generators:** Instruments able to generate radiation like x-ray, neutron, electron or any other charge particals it could be used in scientific, industrial, medical or any other field.
- 6- Radioactive events:** Any untended act including operational error, damage instruments or other cases that cannot pass without regarding the real or expected



consequences from the angle of protection or security.

7- Natural radioactive sources: Radioactive sources in nature like the cosmic rays, earth radioactive sources resulting from natural concentration of radioactive elements.

8- Dose limit: The value of active or equivalent dose which the individual takes in practices subject to regulation and cannot be exceeded.

9- Authorization: permission given by IRSRA, as document, to a lawful entity submitting application to conduct radioactive practices. It can take the form of registration or license.

10- Active dose: The result of multiplication of the human equivalent dose to the human tissues or organs against the weight factors to these organs or tissues. It is measured by Sievert (Sve).

11- Active accumulating dose: It is the multiplication of the mean active dose to an individual by group number. It is an expression of the total radioactive exposure in group of people.

12- Accumulative dose: The total radioactive dose in sector of people. It means the multiplication of the number of people subject exposure source by the mean radioactive dose they exposed to. It is expressed by Sev /person.

13- Radioactive source security: The measures taken to prevent reaching the radioactive sources, in not authorized way, which may lead to damage, lose or transfer it from places of their origin or usage.

14- The radioactive safety: The measures taken to lessen the probability of accidents that may lead to radioactive exposure or minimize the consequences of this accident would be happened.

15- Radioactive damage: The total damage that may happen at last to a group subjected exposure , or it's descend, as result of radioactivity exposure from a source.

16- Ordinary exposure: The expected exposure to get while ordinary operating conditions to facility or sources. It includes minor incidents that may occur but can be controlled.

17- Equivalent dose: The equivalent dose in an organ or tissue is the result of multiplication of the absorbed dose that organ takes by modulus recommending the suitable. It is measured by Sievert.

18- Registration: A form of authorization to involving minor risk. Safety measures and the condition of practices may the radioactive practices should of less acute than authorization demands by license.

19- Qualified expert: Known person according certificate issued by councils or specialized societies, or professional license, or scientific qualification, or experienced in field of concern like



medical physics, radiation protection , health profession , fire safety, quality assurance , or any other field of concern to engineering.

20- Notification: A document submitted to IRSRA by an lawful entity to notify intention of practicing activity mention in the general obligation chapter of the Regulation System.

21- Radioactive waste: Any material containing radioactive isotopes, or polluted by them with levels of radioactivity concentration exceed levels excluded according to IRSRA.

22- Dose restriction: Expected restriction related to the source and is imposed on the individual dose received by that source. It is used for optimization limit to sources safety and security.

23- Consumption products: An instrument like smoke detector or blinking indicator, or tube to generate ions which contains very small quantity of radioactive materials.

24- The authorized person : Any organization , corporation, company ,establishment ,federation, real estate company , public or private firms , political or administrable entity , or any other persons appointed according to the national law to carry duties or take action according the authority they hold .

25- Regulatory System: A system to control the use of radioactive sources.

26- The exemption: a release from the requirements of Regulatory System and should not exceed limits of radioactivity appointed by IRSRA.

27- Radioactive exposure : The exposure to radioactivity from radioactive sources which results in irradiating individuals or materials with ionized radiation in the course of practices the radiated externally through sources exist outside the body or internally through sources exists inside the human body. The exposures can be divided into occupational, medical and public exposure .It could be temporary or permanent.

28- Interference: Any action meant by it avoiding or reducing the probability to exposure to radioactivity from control failure due to an accident.

29-Emergency plan: a group of steps and measures to be implemented in case of an accident related to radioactive sources.

30- Cosmic radiation: Particles electrically charged with high energy its original from the outer spaces.

31- Standardization: The operation done to specify the characteristics of the radioactive sources, the equipment accompanied with it by using standard sources and measures equipment recognized officially.