Decree No. 2-97-30 of 25 Jumada II 1418 (28 October 1997) issued for the implementation of Law No. 005-71 of 21 Sha'ban 1391 (12 October 1971) on protection against radiation

THE PRIME MINISTER.

With reference to Law No. 005-71 of 21 Sha'ban 1391 (12 October 1971) concerning protection against ionizing radiation, particularly Articles 1 and 5; After review by the Council of Ministers convened on 13 Jumada II 1418 (16 October 1997),

DECREES:

TITLE ONE

SCOPE AND DEFINITIONS

Chapter One

Scope

Article One

This decree establishes the general principles for protection against hazards arising from the use of ionizing radiation and the conditions governing any activity involving exposure to ionizing radiation.

Article 2

Facilities engaged in one or more of the activities covered under Article 1 of the aforementioned Law No. 005-71 are classified into two categories as defined below:

Category 1:

Facilities using the following nuclear installations:

- Particle accelerators with an energy level equal to or greater than 300 million electron volts;

- Cobalt-60 irradiators with a source activity greater than or equal to 100,000 curies (3,700 terabecquerels); -Critical assemblies and nuclear reactors, except those used for transportation purposes; -Any nuclear fuel cycle facility, meaning establishments intended for the preparation, processing, manufacturing, or transformation of radioactive substances, the manufacturing or reprocessing of nuclear fuel, or the storage, packaging, or treatment of radioactive waste.

All land, buildings, and equipment connected or associated with said irradiators, accelerators, assemblies, reactors, or facilities, and located within the nuclear installation site, are considered part of the nuclear installation. ***Category II*** **:** Class 1:

- Facilities using particle accelerators (excluding electron microscopes and X-ray generators) with an energy below 300 million electron-volts; -Facilities where œ a radioactive source is used or held, with a total activity exceeding the values listed in Class 1 of the table annexed to this decree for the source in question, except for those covered under Category 1 of this article.

Class II:

- Facilities where is put into œ operation or holding a radioactive source whose total activity falls within the range of values listed in Class II of the aforementioned table for the source in question; - Facilities using fixed or mobile electro-radiology equipment for medical purposes; - Facilities handling the collection, treatment, packaging, transport, and storage of natural or artificial radioactive waste, except those mentioned in the third paragraph of Category 1 of this article; - Facilities using fixed or mobile X-ray generating devices for non-medical purposes.

Class III:

- Facilities where is put into œ operation or holding a radioactive source whose total activity is below the values listed in Class III of the aforementioned table for the source in question; - Facilities using electron microscopes. The nature of the radionuclides comprising each radiotoxicity group listed in the table annexed to this decree is determined by order of the Minister of Public Health.

Article 3

Category 1 facilities as well as those of Category 1 ^{era} and 2 th class 2 th Category 2 facilities require authorization issued in accordance with the provisions of Title VIII of this decree. Category 3, class 2 facilities are subject to prior declaration under the same Title VIII. Article 4 The Minister of Public Health shall establish by order the exemptions from authorization and declaration, as referred to in Article 3 above, considering the minimal risks that may result from the use of radioactive substances, ionizing radiation sources, or activities involving radiation exposure.

Chapter 2

Definitions

Article 5

For the application of this decree and the orders issued for its implementation, means:

- ***Ionizing radiation: radiation composed of photons or*** particles capable of producing ions directly or indirectly;

- ***Nuclide: atomic species defined by its mass number,*** atomic number, and nuclear energy state;

- ***Radioactivity: the spontaneous transformation of a*** nuclide with the emission of ionizing radiation;

- ***Radionuclide (radioelement): radioactive nuclide;***

- ***(Radioactive) activity*** For a quantity of a radionuclide in a particular energy state at a given time, the activity A is defined by the relation:

$$A = \frac{dN}{dt}$$

where dN is the expected value of the number of spontaneous nuclear transformations from this energy state occurring in the time interval dt. The SI unit of activity is the inverse second, s^{-1}, whose special name is the becquerel (Bq). We also recall activity values in the non-SI unit, the curie:

$$1\ Bq = 1\ s^{-1}$$

$$1\ Bq = 2.7027 \times 10^{-11}\ Ci$$
$$1\ Ci = 3.7 \times 10^{10}\ Bq$$

Specific activity : activity per unit mass. - ***Volume activity*** : activity per unit volume. ***-Radioactive half-life (physical half-life):*** the radioactive half-life is the time after which the activity of a radionuclide has decreased by half. - ***Absorbed dose*** : a physical quantity in dosimetry, defined by the relation:

$$D = \frac{dE}{dm}$$

where D is the absorbed dose, ***dE*** the mean energy imparted by ionizing radiation to matter within a volume element, and ***dm*** the mass contained within this volume element. In the system (***SI)*** the unit of absorbed dose is the gray, defined as the dose absorbed by a mass of one kilogram when ionizing radiation uniformly imparts an average energy of 1 joule:

$$1\ Gy = 1\ J \cdot kg^{-1}$$

We recall the absorbed dose values in the non-system unit, the rad:

$$1\ rad = 10^{-2}\ Gy$$
$$1\ Gy = 100\ rad$$

Linear energy transfer (symbol L^{Δ}) : the quotient of the average energy locally imparted to a medium by a charged particle of given energy along a suitably small segment of its trajectory, divided by the length of that trajectory segment.

- Radiation exposure any exposure of individuals to ionizing radiation. ***External exposure:*** exposure resulting from sources located outside the body.

- Internal exposure: exposure resulting from sources inside the body.
Total exposure: sum of external exposure and internal exposure.

- ***Whole-body exposure: exposure of the entire body considered to be*** homogeneous.

- Partial exposure: exposure primarily affecting a part of the body or a specific organ or tissue.

- Planned special exposure: exposure resulting in temporary exceeding of regulatory limits, exceptionally permitted in certain unusual situations when alternative techniques without such exposure cannot be used.

- Emergency exposure: exposure justified by abnormal conditions to provide assistance to persons in danger or to prevent exposure of a large number of people, which may result in a significant exceedance of one of the limits set for planned special exposures.

- Exposure accident : it differs from accidental excessive exposure (unplanned special exposure) by exceeding the established limits by at least tenfold.

- Irradiation: intentional or accidental exposure of radiation to a living organism or material substance.

- Critical group: a group of members of the public whose exposure, for a given radiation source and exposure pathway, is reasonably uniform and representative of individuals receiving the highest effective dose or equivalent dose (as applicable) through this exposure pathway from this source.

Radiation weighting factor: a factor by which the absorbed dose is multiplied to account for the relative health risk of different types of radiation. The values of the radiation weighting factor used for dose assessment are established for different radiation types by order of the Minister of Public Health.

Tissue weighting factor: a factor by which the equivalent dose to an organ or tissue is multiplied to account for differences in the sensitivity of various tissues or organs to the induction of stochastic effects of radiation. The values of the tissue weighting factor used for radiation protection purposes are established by order of the Minister of Public Health.

- Equivalent dose: the product of the absorbed dose in an organ or tissue and the corresponding radiation weighting factor W R:

$$H_{TR} = W_R . D_{T,R}$$

where D TR is the mean absorbed dose to organ or tissue T and W R is the radiation weighting factor for radiation R. When the field consists of radiations with different W R values, the equivalent dose is given by the formula:

$$H_{T\,R} = \Sigma_R . W_R . D_{T.R}$$

The unit of equivalent dose is the joule per kilogram (J/kg), known as ***sievert*** . Note the equivalent dose values in the non-SI unit, the ***rem*** :

$$1\ Sv = 1\ J.k^{-1} = 100\ rems$$

Committed equivalent dose : the committed equivalent dose after a period *T* following the incorporation of radioactive substances is defined by the relation:

$$H_T(T) = \int_{t0}^{to+T} H_T(T)\, dt$$

where *to* is the time of incorporation and $H_t(t)$ the equivalent dose rate at time t in an organ or tissue T. When t is not specified, a period of 50 years shall be adopted for adults and 70 years for incorporations by children.

- ***Effective dose: sum of the products of equivalent doses to*** tissues by their respective tissue weighting factors:

$$E = \Sigma_T W_T . H_T$$

where H T is the equivalent dose to tissue T and W T is the tissue weighting factor for tissue T. The unit of effective dose is the joule per kilogram (J/kg), called the sievert (Sv).

- Committed effective dose: the committed effective dose after a time 't' following the incorporation of radioactive substances is defined by the relation:

$$E(t) = \int_{t_0}^{t_0+t} E(t)\,dt$$

where ***to*** is the time of incorporation and E(t) the effective dose rate at time t. When ***t*** is not specified, a period of 50 years shall be adopted for adults and 70 years for incorporations by children.

- Incorporation: process of introducing radionuclides into the body through inhalation, ingestion, or through the skin. ***-Annual Limit on Intake (ALI)*** : inhalation, ingestion, or absorption through the skin of a given radionuclide over one year that would result in a committed dose equal to the applicable dose limit:

- that which results in a committed equivalent dose equal to the limit set by decree of the Minister of Public Health for the most irradiated organ or tissue.
- the one that results in a value equal to the limit set by ministerial decree by the Minister of Public Health for the sum of committed equivalent doses across various organs or tissues, weighted by appropriate coefficients.

- Derived Air Concentration Limit of a radionuclide (DACL) : annual average concentration in inhaled air, expressed in activity units per volume unit which, for 2000 working hours per year, results in an intake equal to the annual limit of intake by inhalation. ***-Primary equivalent dose limits:*** refer to equivalent dose, effective dose, committed equivalent dose, or to

committed effective dose according to irradiation conditions. They apply to an individual or, in cases of public radiation exposure, to the critical group. - ***Secondary limits:*** They are necessary when primary limits cannot be directly applied. In the case of external irradiation, secondary limits may be expressed in terms of equivalent dose or effective dose. For internal irradiation, secondary limits may be expressed as annual intake limits.

Derived limits: These are limits related to primary limits through a defined model, such that if derived limits are adhered to, it is likely that primary limits will also be met.

Radioactive contamination: the unwanted presence, at a level significant for hygiene, of radioactive substances on the surface or within any medium. ***Radiotoxicity*** : toxicity due to ionizing radiation emitted by an incorporated radionuclide and its decay products. Radiotoxicity is not only related to the radioactive characteristics of the nuclide, but also to its chemical and physical state, as well as the metabolism of this element in the body or in organs. ***Radiation source*** : a device, part of a device, or substance capable of emitting ionizing radiation. ***- Sealed source:*** a source consisting of radioactive substances firmly incorporated into solid materials and effectively inactive, or sealed in an inactive casing of sufficient strength to prevent, under normal conditions of use, any dispersion of radioactive substances. ***Unsealed source:*** a source whose form and normal conditions of use do not prevent the dispersion of radioactive substances.

Radioactive substance : any substance containing one or more radionuclides whose activity or concentration cannot be disregarded from a radiation protection standpoint. ***Practices:***

- the production of sources and use of radiation or radioactive substances for medical, industrial, veterinary, or agricultural purposes, or for teaching, training, or research, including any activity related to such use that results or could result in exposure to radiation or radioactive substances;

- nuclear energy production, including any activity in the nuclear fuel cycle that results or could result in exposure to radiation or radioactive substances;

- practices resulting in exposure to sources natural sources or any other practice that the Minister of Health specifies must be regulated.

TITLE II

GENERAL PROVISIONS

Chapter One

Radiation Exposure Conditions

Article 6

For radiation protection purposes, two distinct circumstances of exposure to ionizing radiation are defined: *a)* Circumstances where radiation exposure is anticipated and can be limited by controlling the source itself, through the application of the dose limitation system defined in Chapter 2 of this title, and by any other radiation protection measures. Such circumstances constitute normal conditions of radiation exposure to which the provisions of this title and Title III of this decree apply. *b)* Circumstances where radiation exposure is beyond control and can only be limited by corrective measures. Such circumstances constitute abnormal conditions of radiation exposure to which the provisions of Title IV apply.

Chapter 2

Dose Limitation System

Article 7

Exposure doses from sources or practices involving exposure to ionizing radiation shall be subject to a limitation system that must include the principles of justification and optimization defined in Articles 8, 9, and 10 below.

Article 8

The justification principle requires that no practice involving exposure to ionizing radiation may be authorized unless its application produces a net positive benefit.

Article 9

The optimization principle entails that radiation exposure to individuals and the number of people exposed to ionizing radiation must be kept as low as reasonably achievable.

Article 10

In all cases, the received exposure doses must remain below the limits specified in Title III of this decree.

TITLE III

ANNUAL EQUIVALENT DOSE LIMITS FOR CONTROLLABLE RADIATION EXPOSURES

Article 11

Subject to the provisions of Title VII of this decree, the equivalent dose limits defined below shall not apply to doses resulting from medical radiation exposure or natural background radiation.

Article 12

Three categories of radiation exposure limits are defined:

a) *primary dose limits;*
b) *secondary limits;*
c) *derived limits.*

Secondary and derived limits shall be established by order of the Minister of Public Health publique.

When primary dose limits are expressed in effective dose, they shall apply to the sum of effective doses resulting from external radiation exposure during one year and the committed effective doses resulting from the intake of radionuclides during that year. For workers, the reference period for this assessment shall be 50 years.

Chapter One
Exposed Workers

Article 13

No worker under the age of 18 may be assigned to a position that exposes them to ionizing radiation.

Article 14

The occupational exposure of any worker must not exceed the following limits: below:

a) *an effective dose of 20 mSv per year averaged over five consecutive years;* consecutive;

b) *an effective dose of 50 mSv in any single year;*

lens equivalent dose of 150 mSv in a single year; *d)* equivalent dose to the extremities (hands, feet) or skin of 500 mSv

per year.

Article 15

For women of childbearing age, any radiation exposure must be distributed as evenly as possible over time. No breastfeeding woman may be assigned or retained in a position involving a risk of incorporation of radionuclides. No pregnant woman may work under the working conditions A as defined in Article 31 below. The exposure of a pregnant woman in the course of her employment must be kept as low as reasonably achievable.

Article 16

Compliance with the annual limits on effective dose and equivalent dose set forth in Article 14 above and in Chapter 3 of this title may be verified by reference to the annual limits on radionuclide incorporation and the derived limits established by order of the Minister of Public Health.

Chapter 2

Dose limits for students and apprentices

Article 17

For students undergoing specialized training related to ionizing radiation and its applications, dose limits shall equal those established for occupational exposure under Chapter I of this title. Students and apprentices aged 16 to 18 may be exposed under working condition B as defined in Article 31 below. Only those over 18 may be exposed under working condition A as specified in said article.

Article 18

The protection of students and apprentices referred to in ' Article 17 must be ensured in the same manner as for workers subject to occupational radiation exposure. Additionally, radiological monitoring in accordance with radiation protection standards and individual medical surveillance must be implemented in all cases.

Chapter 3

Planned exceptional radiation exposure

Article 19

The exceptional concerted radiation exposure is subject to the following restrictions: following:

a) *Only workers who have given their consent and belong to*
Category A as defined in Article 31 below may be subjected to exceptional concerted radiation exposure.

b) *Any exceptional concerted radiation exposure must be subject*
to exceptional authorization under normal working conditions, and only when such exposure cannot be avoided through alternative measures. The terms for authorizing exceptional concerted exposure shall be determined by the facility manager in consultation with the occupational physician. These terms must be approved by the Minister of Public Health.

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c) *Doses resulting from exceptional concerted radiation exposure* must not exceed:

- at one time, twice one of the annual limits set forth in Article 14 above;
- over a lifetime, five times the annual limits set forth in the aforementioned Article 14;

d) *Workers involved must be informed in advance of the* risks and precautions to be taken to keep radiation exposure as low as possible during the planned operation;

e) *Exceptional coordinated radiation exposures cannot* apply to:

- women of childbearing age;
- workers medically unfit for the proposed operation;
- workers previously exposed to abnormal radiation levels resulting in doses exceeding five times the annual limits specified in Article 14 above;
- workers who, within the twelve months prior, were exposed to radiation resulting in an exposure exceeding one of the annual limits referred to in Article 14 above;

Any worker subjected to exceptional planned radiation exposure must be informed by their workplace physician of the doses they have received.

Article 20

Participation in a planned special exposure to radiation shall be considered as meeting the working conditions A defined in Article 31 below. Doses resulting from a planned special exposure must be recorded alongside those from annual radiation exposures. However, exceeding the limits referred to in Article 14 above shall not constitute sufficient grounds to exclude a worker from their usual occupation.

Chapter 4

Dose limits for public exposure

Article 21.

Public exposure attributable to practices shall not exceed the limits applicable to the estimated average doses for the critical group. These limits are:

an effective dose of 1 mSv in one year; *b)* under special circumstances, an effective dose of up to 5 mSv

in a single year provided that the average dose over 5 consecutive years does not exceed 1 mSv per year;

equivalent dose to the lens of the eye of 15 mSv in one year; *d)* equivalent dose to the skin of 50 mSv in one year.

Article 22

If it appears that members of the public could be exposed for prolonged periods over several years to annual doses approaching or reaching the annual limit referred to in Article 21, measures must be taken to limit lifetime doses to a value corresponding to an annual average as set by order of the Minister of Public Health.

Article 23

a) *For calculating doses resulting from the incorporation of radionuclides,*
account shall be taken of the biological and metabolic parameters of members of the public, as well as dietary habits, geographical distribution, and land use characterizing the critical group;

b) *When the critical group consists solely of adults, the limits*
annual incorporation limits must comply with those specified in Articles 21 and 22 above;

c) *When the critical group includes children, the annual limits*
for incorporation are set at one hundredth of the values specified in Article 14 above for exposed workers.

TITLE IV

ACCIDENTAL OR EMERGENCY SITUATION RADIATION EXPOSURE

Article 24

The Minister of Public Health, along with the ministers responsible for interior affairs, energy, and employment, shall establish by joint decree an intervention plan for any activity that may lead to accidental radiation exposure of workers or members of the public, or to a radiological emergency situation. This plan shall be periodically updated and tested from time to time to verify its effectiveness.

Article 25

Any dose or incorporation of radionuclides resulting from a situation that is abnormal or accidental must:

be recorded and clearly distinguished from normal radiation exposure; • undergo a special investigation, the results of which shall be communicated by the

Ministry of Public Health to the operator of the facility in question. If this dose or incorporation exceeds twice the annual limits specified in Article 14 above for exposed workers, these workers shall undergo an appropriate medical examination.

TITLE V

FUNDAMENTAL PRINCIPLES OF MONITORING WORKER HEALTH

Chapter One

Administrative Measures

Article 26

The facility operator is responsible for ensuring protection against radiation ionizing of persons working à the inside of the establishment, as well as those who may enter it under any capacity whatsoever.

It is also their responsibility to take all necessary measures to ensure that members of the public outside the establishment do not receive, as a result of the establishment's normal operations, doses exceeding those specified in Articles 21 and 22 above. The operator or the person designated by them for this purpose must demonstrate qualifications in this field.

Article 27

The operator must have the necessary equipment and qualified personnel for radiation protection. They are also required, depending on the level of risk, to provide radiation protection training to staff and to take all measures to limit radiation exposure in accordance with the dose limitation standards set forth in this decree and its implementing orders, as well as to ensure physical and medical monitoring and the implementation of a system for recording results.

Article 28

Any worker likely to be exposed to ionizing radiation must receive training appropriate to the nature of the risk. The nature and frequency of training for different types of operations must be approved by the Minister of Public Health.

Article 29

The operator is required to establish an internal protection regulation applicable to their facility. This regulation includes reference levels, authorized dose limits as set forth in this decree, and the orders issued for its implementation.

Chapter 2

Technical measures

Article 30

Health monitoring of workers exposed to ionizing radiation
is based on the following principles:

Classification of workplaces into different zones; *b)* Classification of workers into different categories; *c)* Implementation of œ the relevant control provisions and measures pertaining to

different work zones and according to the various worker categories.

Article 31

For radiation protection purposes, working conditions are defined as follows: for worker classification:

a) *Working conditions A in which annual radiation exposure* under normal working conditions could exceed three-tenths of the dose limits set in Article 14 above. Workers routinely assigned to working conditions A are classified as Category A exposed workers. These workers must undergo special medical monitoring and individual dose assessment. This assessment must be based on individual monitoring of external exposure and internal contamination, but may also be conducted through indirect measurements, such as collective monitoring.

b) *Working conditions B, in which, under normal* working conditions, annual radiation exposure is unlikely to exceed three-tenths of the dose limits set in Article 14 above. Workers routinely assigned to working conditions B are classified as Category B exposed workers.

Article 32

Workplaces where ionizing radiation is œ used must be identified and classified according to potential exposure risk. Precautionary and control measures, along with their scope, must be tailored to the nature and magnitude of the risk involved. a) ***Controlled area:*** is considered a controlled area where three-tenths of the annual exposure limits specified in Article 14 are likely to be exceeded under normal working conditions. Controlled areas must be clearly demarcated and labeled; b) ***Supervised area :*** is considered a supervised area any zone where one-tenth of the annual exposure limits specified in Article 14 is likely to be exceeded under normal working conditions, and which is not classified as a controlled area. In controlled and supervised areas, given the nature and extent of radiological risks, the operator is required:

- to implement monitoring of radiological hazards in the environment, including, as applicable, measuring activity levels, doses, and dose rates, as well as recording the results;

- to establish work procedures tailored to radiological risks and appropriate hygiene measures;

• to report the risks inherent to sources of ionizing radiation.

The demarcation and specific signage of the aforementioned zones are established by order of the Minister of Public Health. c) In work areas where radiation exposure is unlikely to exceed one-tenth of the annual limits specified in Article 14, no special provisions for radiation protection are required.

Article 33

The operator is required to implement physical monitoring capable of determining the nature of precautions needed to ensure compliance with the dose limitation system outlined in Titles II and III of this decree. Control and monitoring programs must be periodically reassessed to account for acquired experience or following any modification to one of the facilities referred to in Article 2 of this decree. The nature and extent of radiation protection measures must be adapted to the nature of potential risks.

Chapter 3

Medical Measures

Article 34

The operator is required to ensure medical monitoring of exposed workers. This monitoring is based on the general principles applicable to occupational medicine and must account for past or existing exposure conditions to other toxic chemical substances or other physical conditions involving potential risks.

Article 35

No worker may be exposed to ionizing radiation without the opinion of a qualified occupational physician certifying that the worker has no medical contraindication to such exposure.

Article 36

The purpose of medical surveillance is:

to monitor workers' health; *b)* to help ensure initial and ongoing compatibility

between the worker's health status and their job;

c) *to provide baseline information useful in cases of radiation exposure*
accidental or occupational illness.

Article 37

The employer is required to ensure that the medical examinations mandated by occupational health regulations are effectively conducted upon hiring, periodically during employment, and upon termination.

Article 38

Workers exposed to the Category A working conditions specified in Article 31 above shall undergo specialized medical monitoring, the procedures for which shall be established by joint decree of the Minister of Public Health and the government authority responsible for employment. This monitoring does not exempt from the physical surveillance required under Article 33 above. The aforementioned decree shall also specify the nature of examinations to be conducted every six months for Category A workers and annually for Category B workers.

Chapter 4

Recording of Results

Article 39

The Minister of Public Health shall implement all necessary measures to ensure that the National Radiation Protection Center under the Ministry of Public Health records and archives the following documents for at least 20 years after the cessation of employment:

a) *Documents pertaining to radiation exposure conditions*
ionizing radiation;

b) *The results of collective monitoring measurements insofar as*
they were used to establish individual doses;

c) *Personal exposure records containing documents related to*
individual dose assessment;

d) *Where applicable, reports concerning the circumstances and measures*
taken in response to potential accidental radiation exposure or
a radiological emergency situation.

Article 40

When a worker is likely to be exposed to ionizing radiation in different facilities, a dose recording system must be implemented to track the doses received from work performed at each facility. Every operator is required to use and comply with the national dose recording system established by the Minister of Public Health. The procedures for using individual dosimeters are determined by order of the Minister of Public Health.

Article 41

Medical monitoring must be supported by an appropriate system for recording results. The worker must be informed of the conclusions of their medical examination and their radiation exposure status.

TITLE VI

FUNDAMENTAL PRINCIPLES OF PUBLIC HEALTH MONITORING

Article 42

Activities that may expose members of the public to ionizing radiation must comply with the dose limitation system prescribed in Titles II and III of this decree.

Article 43

Any release of radioactive substances into the environment at levels exceeding exemption limits—to be set by joint order of the Minister of Public Health and the government authorities responsible for energy, agriculture, infrastructure, and the environment—requires prior authorization. This authorization is issued by joint order of the Minister of Public Health and the ministers responsible for energy, agriculture, infrastructure, and the environment. Regarding the release of radioactive substances into the environment, the operator of the facility in question must conduct studies to identify the critical group and critical exposure pathways.

Article 44

Any release of radioactive substances into the environment must be monitored at the point of emission by the operator of the relevant facility. An environmental radiological monitoring program tailored to the nature of operations must be conducted by said operator. Measurements of ambient radioactivity levels must be recorded and kept up to date under their responsibility. The recorded results must be reported to the aforementioned national radioprotection center.

Article 45

Documents pertaining to external irradiation and internal contamination measurements, as well as results from dose assessments for members of the public and environmental monitoring, must be submitted to the aforementioned national radioprotection center.

TITLE VII

MEDICAL IRRADIATION

Article 46

Medical irradiation is subject to the principles of justification and optimization outlined in Articles 7, 8, and 9 above. The dose limits specified in Title III do not apply to patients. However, the Minister of Public Health may establish dose limits for cases involving the use of ionizing radiation sources or radioactive substances for medical research purposes when the exposed individual does not derive direct benefit from the irradiation.

Article 47

The use of radiological techniques must be such that the radiation exposure of the embryo or the f œ is kept to the minimum necessary for the examination being undertaken.

TITLE VIII

ON AUTHORIZATION AND DECLARATION

Chapter One

On Authorization

Article 48

The import, export, acquisition, manufacture, processing, possession, use, and sale of radioactive substances or sources of ionizing radiation that result in the classification of the establishment holding such substances or sources under either of the two categories provided for in Article 2 are subject to authorization, except for establishments of the 3 rd class of the 2 th category. When radioactive substances or sources of ionizing radiation in transit through national territory are unloaded or transshipped, they must be subject to ' a prior declaration to the Ministry of Public Health specifying the nature and quantity of radioactive substances transported by land, air, sea, or inland waterway. They must be stored and handled according to the directives of said ministry and may only be moved with its authorization.

Article 49

First-category establishments are subject to the authorization regime established by Decree No. 2-94-666 of Rajab 1415 (December 7, 1994) concerning the authorization and control of nuclear facilities.

Article 50

Authorizations concerning first- and second-class establishments of the second category are issued by the Minister of Public Health.

Chapter 2

Conditions for Granting Authorization

Article 51

The authorizations provided for in Article 50 above must be the ' subject of an application addressed to the Minister of Public Health, accompanied by a file containing the information and documents relating to:

- legal status of the establishment;

qualifications of the applicant; • experience and competence of the user staff; • proposed operations; • the technical specifications of the premises or spaces intended for

the use of equipment, their indoor environment and, if necessary, outdoor environment; the technical specifications of radioactive substances or irradiation devices;

the technical specifications of protective equipment; • the measures ensuring, during these operations, compliance with the rules

of safety and, in particular, those of radiation protection;

- where applicable, the measures taken to ensure compliance with the regulations regarding the disposal of radioactive waste.

The Minister of Public Health may require any other document or information deemed necessary.

Article 52

Authorization requests must be submitted using forms provided to users by the Ministry of Public Health.

Article 53

Authorizations are granted to facilities that meet the required radiation protection conditions regarding:

- the qualifications of responsible users;
- premises designated for the storage and use of ionizing radiation sources;

to protective equipment for exposed workers; • to equipment for detecting and measuring ionizing radiation; • to worker safety; • to medical monitoring;

- to dosimetric monitoring;
- to transportation means.

Article 54

The authorization specifies the nature, quantity, technical characteristics, and conditions of use for ionizing radiation sources, equipment, or radioactive substances, as well as the country of origin and the

supplier. It also outlines the operating conditions for the facility.

Article 55

Any authorization may be limited to a specific substance or ionizing radiation source, or restricted regarding the nature and purpose of the authorized activity. An authorization may also have limitations on its validity and can be renewed under the same conditions and procedures as those required for its initial issuance.

In addition to the conditions prescribed by this decree, any authorization may be subject to specific conditions deemed necessary by the Minister of Public Health. These conditions may be modified, supplemented, or removed. No one may use a radioactive substance or ionizing radiation source for purposes other than those specified in the authorization granted to them.

Article 56

The Minister of Public Health shall process the authorization request within two months from the date of receipt of the complete application.

Article 57

Authorizations may be suspended or revoked at any time following the same procedure used for their issuance. The decision must be justified. An authorization may only be withdrawn in the interest of worker protection or public health, or in cases of serious violations of this decree or its implementing regulations.

Article 58

The Minister of Public Health may, on urgent grounds, suspend an authorization for a period deemed necessary if its holder:

obtained it through fraudulent or inaccurate declarations; *b)* has committed a serious violation of this decree or

its implementing regulations, or of the specific conditions set forth in the authorization;

c) *is prevented from carrying out the authorized activity due to incapacity or* for any other reason;

d) *for any reason, is no longer qualified to be entitled to* the granted authorization.

Article 59

The application for renewal of an expiring authorization must be submitted no later than three months before its expiration date. The renewal may be granted in advance and, unless previously invalidated, takes effect on the expiration date of the current authorization. When a renewal application is duly submitted in accordance with this article and no decision has been made before the authorization's expiration date, it remains valid until the application has been decided by the Minister of Public Health.

Chapter 3

On the Declaration

Article 60

The import, export, acquisition, possession, use, transformation, sale, transport, storage, transfer, and disposal of radioactive substances or sources of ionizing radiation by a third-class establishment of the second category must be declared to the Minister of Public Health. This declaration specifies, in particular, the nature and geographical location of the establishment, the available premises, the characteristics of the radioactive substances or sources of ionizing radiation and their compatibility, the characteristics of the equipment used, as well as the specialization of the personnel using it. It shall be accompanied by all relevant documents. A certificate is issued to the declarant by the Minister of Public Health or the person delegated by him for this purpose.

Article 61

Any modification to the conditions of possession or use of radioactive substances or sources of ionizing radiation must be subject to a new declaration in accordance with the provisions of Article 60 above. In the event of permanent cessation of possession or use of said substances or sources, a declaration must also be made under the same conditions.

TITLE IX
ON MONITORING AND INSPECTION

Article 62

Under the authority of the Minister of Public Health, the National Radiation Protection Center is responsible for establishing and maintaining an up-to-date register of authorizations and a register of declarations as provided for in Title VIII of this decree. All information relating to the establishments and practices concerned, which may facilitate regulatory oversight, must be recorded in these registers.

Article 63

Pursuant to the provisions of Article 4 of the aforementioned Law No. 005-71 and without prejudice to inspections that may be carried out by other agents referred to in said article, the agents specifically designated by decision of the Minister of Public Health are authorized, for monitoring purposes, to enter premises, vehicles, ships, or aircraft if it is found that radioactive substances or sources of ionizing radiation are present therein. These agents may, if necessary and upon presentation of proof of their designation, request the assistance of law enforcement officers and any other person likely to assist them in the exercise of their inspection and monitoring duties. They may, where appropriate, conduct inspections of facilities containing nuclear materials or sources of ionizing radiation. For this purpose, these agents may:

- take, from any radioactive or presumed radioactive substance, the samples necessary for the examination of said substance;
- inspect and calibrate any device containing or presumed to contain an ionizing radiation source;
- inspect premises where radioactive substances or sources of ionizing radiation are stored;

review logs, records, and other relevant documents; • in emergency situations, temporarily seal or seize radioactive substances,

devices containing ionizing radiation sources, or records and documents, provided that official reports are drawn up immediately and promptly submitted to the Minister of Public Health and, where applicable, the minister responsible for the relevant industry sector.

TITLE X

OF THE NATIONAL COMMISSION FOR RADIOLOGICAL PROTECTION

Article 64

A national commission is hereby established under the Minister of Public Health, consisting of radiological protection members including:

two representatives from the Ministry of Public Health, one of whom shall serve as chair; • one representative from the Ministry of the Interior; • one representative from the Ministry of Agriculture; • a representative of the minister responsible for infrastructure; • a representative of the minister responsible for commerce and industry; • a representative of the minister responsible for energy and mining; • a representative of the minister of higher education, vocational training,

executives, and scientific research;

a representative of the minister responsible for transport; • a representative of the minister responsible for employment; • a representative of the minister responsible for the environment; • a representative of the minister responsible for housing; • a representative of the national defense administration; • a representative of the National Center for Energy, Sciences, and Technology

nuclear.

The commission may enlist any person whose qualifications are technically and scientifically capable of enhancing its work.

Article 65

The commission is authorized to provide opinions on all matters relating to radiological protection.

In particular, it is responsible for providing opinions on all regulatory projects concerning the use of ionizing radiation sources.

Additionally, the commission is informed of major authorizations issued by the Ministry of Public Health to the establishments referred to in Article 2 of this decree.

Article 66

Meetings of the National Commission for Radiological Protection are convened at the initiative of its chairperson, the minister responsible for a relevant sector, or at least 4 of its members.

It convenes at the call of its chairperson at least once a year and whenever necessary, particularly in emergency situations or when there is a risk of accidents with potential radiological consequences.

Article 67

The commission's secretariat is managed by the National Radiation Protection Center under the Ministry of Public Health.

TITLE XI

FINAL PROVISIONS

Article 68

Within six months of the publication of this decree in the *Official Gazette,* any holder of radioactive substances or sources of ionizing radiation must declare them to the Minister of Public Health and, where applicable, request one of the authorizations referred to in Articles 48, 49, and 50 of this decree.

Article 69

The Minister of State for the Interior, the Minister of Higher Education, Scientific Research, and Culture, the Minister of Agriculture, Infrastructure, and Environment, the Minister of Social Affairs, the Minister of Transport, Merchant Navy, Tourism, Energy, and Mines, and the Minister of Housing, Employment, and Vocational Training are each responsible, within their respective domains, for the implementation of this decree, which shall be published in the *Official Gazette*.

Done in Rabat, on the 25th of Jumada II 1418 (October 28, 1997).

ABDELLATIF FILALI.

Limitation of activities based on the establishment's class, the radiotoxicity of held sources implemented and their presentation (Sealed or unsealed sources)

Beoquerd: Ba

Millicurie:
Microcurie:

RADIOTOXICITY	UNSEALED SOURCES			SEALED SOURCES		
	Class I	Class II	Class III	Class I	Class II	Class II
Group A trts	37. Greater 10' (100	37. Between 10^2 and 37.10 (0.1 Ci and 100	37. less than 10^2 (0.1	37. Greater 10 (100	37. Between 10 and 37.10 (0.1 mCi and 100	37. less than 10^2 (0.1
Group B lifte	37. Superieure 10	37. Between 10^2 and 37.10 (1 Ci and 1	37. less than 10' Bq	37. Greater 10 (1000	37. Between 10 and 37.10^2 (1 mCi and 1000	37. less than 10 (1
Group C moderat	37. Greater 10^2	37. Between 10' and 37.10 (10Ci and 10	37. less than 10'	37. Superior 10 (10,000 C)	37. Between 10 and 37.10 (10 mCi and 10,000	37. less than 10'B (10
Group D low	37. Greater 10 Bq	37. Between 10' at 37.10 Bq (100Ci and 100	37. less than h 10 (100µC	37. Greater than 10 (100,000.C)	37. Between 10' and 37.10' (100 mCi and 100,000 C)	37. less than 10 Bg (100

In the case of holding sources belonging to different radiotoxicity groups, the sum of the ratios... the activity held for each source and the upper limit specified in the table above for that source, its presentation and the proposed class determines the classification of the

If the sum of these ratios is less than one, the establishment belongs to the proposed class.
+ If the sum of these ratios is greater than one, the establishment belongs to the immediately higher class.