



UNITED ARAB EMIRATES
Federal Environmental Agency
Radiation Protection & Control Department



The United Arab Emirates

Regulations for

Safe Transport of

Radioactive Materials

[UAE RSTRM (56/2004)]



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Unofficial Translation

The United Arab Emirates Regulations for Safe Transport of Radioactive Materials

Section (1)

GENERAL PROVISIONS

Article (1)

Definitions and Terms Interpretation

- 1- The following words and phrases shall bear the meaning given below, unless the context otherwise stated.
The Competent Authority: the local Competent Authority in the relevant Emirate or relevant Federal Ministry.
The Committee: The Radiation Protection Committee.
The Department: the Radiation Protection and Control Department in the Ministry of Electricity and Water.
The Regulations: the Regulations for Safe Transport of Radioactive Materials.
- 2- The words and terms used in these Regulations shall be interpreted as defined in the glossary in Annex (1) of this decree, and the Committee is responsible for interpretation.

Article (2)

Scope

- 1- These Regulations cover the following types of the packages :
 - (a) Excepted packages
 - (b) Industrial packages
 - (c) Type A packages
 - (d) Type B(U) packages
 - (e) Type B(M) packages
- 2- These Regulations do not cover the transport associated with the nuclear fuel cycle, or material products from the operation of a nuclear reactor, or nuclear waste treatment operations; also do not apply to type (C) packages or packages containing fissile materials.



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3- These Regulations do not apply on the following:

- (a) Radioactive material that is an integral part of the means of transport;
- (b) Radioactive material transported within establishment site licenced for use of radioactive materials;
- (c) Radioactive material implanted or incorporated into a person or living animal for diagnosis, treatment or scientific research;
- (d) Radioactive material in consumer products which have received regulatory approval, after their sale to the end user; and
- (e) Natural material and ores containing naturally occurring radionuclides which are not intended to be processed for use of these radionuclides provided that the activity concentrations of the material do not exceed 10 times the exempt values specified in Article (4) of this decree.

Article (3)

Licence Requirements

No person or organization shall transport radioactive materials except in accordance with a licence issued by the Department according to the Basic Regulations for Protection Against Ionizing Radiation.

Article (4)

Exempt Consignments

Exempt from the requirements of these Regulations are consignments where either the activity concentration of the material or the total activity of the consignment is below the exempt limits specified in Annex (2) (Table 1 or 2) or be derived by calculation for radioactive material containing mixtures of known radionuclides composition in item 1 [paragraph (b)] .

Article (5)

Radioactive Material Characterization

A_1 and A_2 values, as defined in glossary, are the basic for characterizing material to be transported and for specifying activity limits in these Regulations. These value provided in Annex (2) of this decree [(Table 1 or 2), or be derived by calculation for material containing mixtures of known radionuclides composition in item 2 (paragraph (c))].



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Section (2)

PACKAGING OF RADIOACTIVE MATERIALS AND PERMISSIBLE LIMITS

Article (6)

Conditions for Transport of Unpackaged Radioactive Materials

- 1- Radioactive materials shall be not transported unless in appropriate packages satisfy these Regulations, except materials of Low Specific Activity (LSA-I) and Surface Contaminated Objects (SCO-I).
- 2- LSA-I and SCO-I materials could be transported unpackaged under the following conditions:
 - (a) All unpackaged material, other than ores containing only naturally occurring radionuclides, shall be transported in such a manner that under routine conditions of transport there will be no escape of the radioactive contents from the conveyance nor will be any loss of shielding;
 - (b) All material shall be transported under exclusive use; and
 - (c) Exclusive use is not required for transporting unpackaged SCO-I shipments where contamination is not greater than ten times the levels specified in Article (9) (item1) appended to this decree, and where it is suspected that non-fixed contamination exists in excess of this levels, measures shall be taken to ensure that radioactive material is not released into the conveyance.

Article (7)

Type of Packages

- 1- Radioactive material which require packaging for transport shall be in any of the following:
 - (a) Excepted Package
 - (b) Industrial Package (Type IP-1, IP-2 or IP-3)
 - (c) Type A Package
 - (d) Type B(M) Package
 - (e) Type B(U) Package
- 2- Package shall be designed, manufactured, tested, documented, maintained, inspected, and used in accordance with requirements specified by the Department.
- 3- A package shall not contain any other materials or items except what is needed as documents and articles necessary for the radioactive material.



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Article (8)

Radioactivity Limits for Package Contents

Materials to be transported shall be classified, using A_1 or A_2 values, for specifying maximum activity limits for all types of package, and the activity limits of the contents of any package shall not exceed the limits specified in Annex (3) appended to this decree.

Article (9)

Contamination, Radiation Level, and Transport Index Limits

- 1- Non-fixed contamination on the internal and external surfaces of packages, overpacks, freight containers, tanks and intermediate bulk containers shall be kept as low as practicable and shall not exceed the limits specified in Annex (4) (item 1), and fixed contamination levels are limited by radiation level limits for packages and conveyances and by the requirements for decontamination as specified in Article (15) of this decree.
- 2- The radiation level shall not be greater than limits as specify in Annex (4) (item 2) appended to this decree for the following:
 - (a) Instruments or articles to be transported without packaging;
 - (b) Packages or overpacks for consignments under exclusive use and others; and
 - (c) Conveyances.
- 3- For monitoring radiation exposure during transport, a Transport Index (TI), is assigned to (package, overpack or freight container, or for unpackaged LSA-I or SCO-I, or conveyance) based on radiation levels specified in Annex (4) (item 3) appended to this decree.

Article (10)

Packages Category

Packages, overpacks and freight containers shall be assigned to either category I-WHITE, II-YELLOW or III-YELLOW in accordance with the transport index or the radiation level at the external surface and according to the conditions specified in Annex (5) (Table 1) appended to this decree. Packages and overpacks to be transported under special arrangement shall be assigned to the III-YELLOW category.



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Section (3)

DESCRIPTION OF SHIPMENTS AND DISPATCH INSTRUCTIONS

Article (11)

Marking, Labeling and Placarding

Consignor shall put package marking, appropriate Labeling for package category and transport Placarding on vehicles, tanks and freight containers as specified in Annex (6) appended to this decree.

Article (12)

Transport Documents

Consignor shall include transport documentation with the consignment, including particulars of the consignment, a consignor's declaration and information for carriers as specified in Annex (7) appended to this decree.

Article (13)

Segregation, Stowage and Storage During Transport and in Transit

- 1- Packages, overpacks and freight containers shall be segregated during transport and storage in transit from :
 - (a) Other dangerous goods as defined in Annex (8) (Table 1) of this decree, and in compliance with the relevant transport regulations for dangerous materials;
 - (b) Public areas; and
 - (c) Undeveloped photographic film and plates so that the radiation exposure of film due to the transport is limited to 0.1 mSv per consignment.
- 2- Package or overpack stored among packaged general cargo without any special stowage provisions except as may be specifically required by the Department in an applicable approval certificate; or Regulatory Authority in other countries, provided that its average surface heat flux does not exceed 15 W/m^2 and that the package or overpack immediately surrounding cargo is not in sacks or bags.

Article (14)

Carrying Packages in Passengers Compartments

- 1- Category II-YELLOW or III-YELLOW packages or overpacks shall not be carried in compartments occupied by passengers, except those exclusively reserved for couriers especially authorized to accompany such packages or overpacks.
- 2- For transport by road, no persons other than the driver and assistants shall be permitted in vehicles carrying packages, overpacks or freight containers bearing category II-YELLOW or III-YELLOW labels.



Unofficial Translation

Article (15)

Decontamination

- 1- Conveyances and equipment used regularly for the transport of radioactive material shall be periodically checked to determine the level of contamination.
- 2- Conveyances and equipment which show a radiation level in excess of 5 $\mu\text{Sv/h}$ at the surface or above the stated contamination limits in Article (9) (item 1) of this decree, shall be decontaminated, as soon as, possible by a qualified persons and shall not be reused unless the non-fixed contamination is less than the previously stated contamination limits indicated in this clause.

Article (16)

Shipping Empty Packages

Empty packages, which previously contained radioactive material, may be shipped as excepted packages provided that:

- 1- They are in a well maintained condition and securely closed;
- 2- The outer surface of any Uranium or Thorium in its structure is covered with an inactive sheath made of metal or some other substantial material;
- 3- The level of internal non-fixed contamination does not exceed one hundred times the levels specified in Article (9) (item 1) of this decree;
- 4- Any label required for its previous use shall be removed or cover; and
- 5- All other requirements for excepted packages required in this decree shall be met.

Article (17)

Other Provisions Transport of Radioactive Material

- 1- For radioactive material having other non-radioactive risks and for transport of radioactive material with other dangerous goods, the relevant transport regulation for dangerous goods shall apply in addition to these Regulations.
- 2- Consignor and carrier shall establish emergency response provisions, including provisions for deterioration, drop, fire, damaged and radioactive leaking packages, taking into account the instructions of general emergency plane.
- 3- Customs operations involving the inspection of the radioactive contents of a package should be carried out only in a place where adequate means of controlling radiation exposure are provided and in the presence of qualified persons. Any package opened under customs instructions shall, before being forwarded to the consignee, be restored to its original condition.
- 4- Where a consignment is undeliverable, the consignment shall be placed in a safe location and the Department shall be informed as soon as possible and a request made for further instructions.



Unofficial Translation

Article (18)

Additional Requirements Relating to Transport by Air and Post

- 1- For single package of non- combustible solid LSA-II or LSA-III material, if carried by air, shall not contain an activity greater than 3000 A₂.
- 2- Type B(M) packages and consignments under exclusive use shall not be transported on passenger aircraft.
- 3- Transport by air for any package or overpack with the radiation levels on the external surface greater than 2 mSv/h may be allowed only under special arrangement conditions agreed upon by the Department.
- 4- A consignment of excepted packages in which the activity of radioactive contents does not exceed one tenth the limits prescribed in Annex (3) (table 1) appended to this decree, may be accepted for international movement by post and subject to the requirements of the Acts of the Universal Postal Union as prescribed in Annex (8) appended to this decree.
- 5- Any consignment shall not be permitted to be transported by domestic national postal services.



Unofficial Translation

Section (4)
GENERAL PROVISIONS

Article (19)

Approval for Packages Design

- 1- For type B(M) package design shall require approval (multilateral) by the relevant competent authority of each country pass-through or into which the consignment is to be transported and of the country of origin of the design or shipment. Type B(U) packages design shall require approval (unilateral) only from the competent authority of the country of origin.
- 2- The Department's approval shall be required for the calculation of radionuclide values A_1 and A_2 which are not listed in Annex (2) (Table 1 or 2) of this decree.

Article (20)

Approval of Shipment

- 1- Multilateral approval shall be required for shipments of type B(M) package containing radioactive material with a total activity greater than (3000 A_1) or (3000 A_2), as appropriate, or 1000 TBq, whichever is the lower.
- 2- For each shipment listed below, the consignor shall notify the Department in addition to Regulatory Authority of each country pass-through or into which the consignment is to be transported. This notification shall be handed over to the of each Regulatory Authority at least 7 days prior to the commencement of the shipment:
 - (a) Type B(U) packages containing radioactive material with an activity greater than 3000 A_1 or 3000 A_2 , as appropriate, or 1000 TBq, whichever is the lower;
 - (b) Type B(M) packages; and
 - (c) Shipment under special arrangement.
- 3- The consignment notification shall include:
 - (a) Identification of the package;
 - (b) Information on the date of shipment, the expected date of arrival and proposed routing;
 - (c) The names of the radioactive materials or nuclides;
 - (d) Descriptions of the physical and chemical forms of the radioactive contents; and
 - (e) The maximum activity of the radioactive contents during transport.



Unofficial Translation

ANNEX (1)

GLOSSARY

• **Surface Contaminated Object (SCO)**

Surface Contaminated Object (SCO) shall mean a solid object which is not itself radioactive but which has radioactive material distributed on its surfaces. SCO shall be in one of two groups:

1- SCO-I: A solid object on which:

- (a) The non-fixed contamination on the accessible surface averaged over 300 cm² (or the area of surface if less than 300 cm²) does not exceed 4 Bq/cm² for beta gamma emitters and low toxicity alpha emitters, or 0.4 Bq/cm² for all other alpha emitters;
- (b) The fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 4×10⁴ Bq/cm² for beta gamma emitters and low toxicity alpha emitters, or 4×10³ Bq/cm² for all other alpha emitters; and
- (c) The non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 4×10⁴ Bq/cm² for beta gamma emitters and low toxicity alpha emitters, or 4×10³ Bq/cm² for all other alpha emitters;

2- SCO-II: A solid object on which either the fixed or non-fixed contamination on the surface exceeds the applicable limits specified for SCO-I in item (1) above and on which:

- (a) The non-fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 400 Bq/cm² for beta gamma emitters and low toxicity alpha emitters, or 40 Bq/cm² for all other alpha emitters;
- (b) The fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 8×10⁵ Bq/cm² for beta gamma emitters and low toxicity alpha emitters, or 8×10⁴ Bq/cm² for all other alpha emitters; and
- (c) The non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 8×10⁵ Bq/cm² for beta gamma emitters and low toxicity alpha emitters, or 8×10⁴ Bq/cm² for all other alpha emitters.

• **Exclusive Use**

Exclusive Use shall mean the sole use, by a single consignor, of a conveyance or of a large freight container, in respect of which all initial, intermediate and final loading and unloading is carried out in accordance with the directions of the consignor or consignee.

• **Design of Package**

Design shall mean the description of package which enables such an item to be fully identified. The description may include specifications, engineering drawings, reports demonstrating compliance with regulatory requirements, and other relevant documentation.



Unofficial Translation

• **Packaging**

Packaging shall mean the assembly of components necessary to enclose the radioactive contents completely. It may, in particular, consist of one or more receptacles, absorbent materials, spacing structures, radiation shielding and service equipment for filling, emptying, venting and pressure relief; devices for cooling, absorbing mechanical shocks, handling and tie-down and thermal insulation; and service device integral to the package. The packaging may be a box, drum or similar receptacle, or may also be a freight container, tank or intermediate bulk container.

• **Contamination**

The presence of radioactive substances on a surface in quantities in excess of 0.4 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters, or 0.04 Bq/cm² for all other alpha emitters.

• **Non-fixed Contamination**

Non-fixed Contamination is Contamination that can be removed from a surface during routine conditions of transport.

• **Freight Container**

Freight Container shall mean an article of transport equipment designed to facilitate the transport of goods, either packaged or unpackaged, by one or more modes of transport without intermediate reloading. It shall be of a permanent enclosed character, rigid and strong enough for repeated use, and must be fitted with devices facilitating its handling, particularly in transfer between conveyance and from one mode of transport to another. A small freight container is that which has either any overall outer dimension less than 1.5 m, or an internal volume of not more than 3 m³. Any other freight container considered to be a large freight container.

• **Intermediate Bulk Container (IBC)**

Intermediate Bulk Container (IBC) shall mean a portable packaging that:

- 1- has a capacity of not more than 3 m³;
- 2- is designed for mechanical handling;
- 3- is resistant to the stresses produced in handling and transport, as determined by performance tests; and
- 4- is designed to conform to the standards in the chapter on Recommendations on Intermediate Bulk Containers (IBC's) of the United Nations:

“Recommendations on the Transport of Dangerous Goods, ST/SG/AC. 10/1/Rev.9, UN, New York and Geneva 1996”

• **Licence**

An authorization granted by the Department on the basis of a safety assessment and accompanied by specific requirements and conditions to be complied with by the licensee.

• **Driver**

Any person who directly controls any vehicle.



Unofficial Translation

• **Consignment**

Any package(s), overpack or load of radioactive material presented by a consignor for transport.

• **Legal Person**

Any organization, corporation, partnerships, firm, association, trust, estate, public or private institution, group, political or administrative entity or other persons designated in accordance with national legislation, who or which has responsibility and authority for actions taken under these Regulations.

• **Tank**

Tank shall mean a tank container, a portable tank, a road tank vehicle, a rail tank wagon or a receptacle with a capacity of not less than 450 liters to contain liquids, powders, granules, slurries or solids which are loaded as gas or liquid and subsequently solidified, and of not less than 1000 liters to contain gases. A tank container shall be capable of being carried on land or on sea and of being loaded and discharged without the need of removal of its structural equipment, shall possess stabilizing members and tie-down attachments external to the shell, and shall be capable of being lifted when full.

• **Package**

The packaging with its radioactive contents as presented for transport, (individual box or container contains radioactive materials and do not open during transport).

• **Overpack**

Overpack shall mean an enclosure such as a box or bag which is used by a single consignor to facilitate as a handling unit a consignment of one or more packages for convenience of handling, stowage and carriage.

• **IP-1, IP-2, IP-3 Industrial Packages**

IP-1, IP-2, IP-3 Industrial Packages are to be used for transport of LSA materials and SCO. There are three type of these packages used as specified in Annex (3) (Table 2) appended to this decree. Many of packages used in industry, like steel drums, meet with requirements for these packages.

• **Excepted Packages**

Excepted Packages contain low activity of radioactive materials with insignificant potential risks. There are no tests required for these packages, so the radioactive contents are expected to disperse from package in any accident.

• **Type A Packages**

Type A Packages are the safe and economical for transport of relatively limited quantities of radioactive materials. These packages shall withstand normal conditions of transport like dropping from vehicle, exposure to rainfall, penetration with hemispherical end bar and compressive load with another cargo.



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• **Type B Packages**

Type B Packages shall withstand most external conditions without leakage of radioactive contents or without increase in the radiation levels to hazardous levels for the public or for personnel involved in rescue operations. Design standards shall include the cumulative effects of a set of mechanical and thermal tests, but the package does not require withstanding more than one accident, therefore, it is not necessary to reuse the packages after accident.

Type B packages may have unilateral or multilateral approval and the symbols to be used for them are B(U) or B(M), respectively.

• **Radioactive Material**

Radioactive Material shall mean any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values specified in Annex(2) (Table 1 and Table 2) appended to this decree.

• **Licensee**

The holder of a current licence granted for a practice or source who has recognized rights and duties for the practice or source, particularly in relation to protection and safety.

• **Consignor**

Any person or organization that prepares a consignment of any radioactive materials for transport and send it through conveyance in or out of United Arab Emirates, is named as consignor in the transport documents.

• **Consignee**

Consignee shall mean any person, or organization that receives a consignment.

• **Vessel**

Vessel shall mean any seagoing vessel or inland waterway craft used for carrying cargo.

• **Vehicle**

Vehicle shall mean a road vehicle (including an articulated vehicle, i.e. a tractor and semi-trailer combination) or railroad car or railway wagon.

• **Radiation Level**

Radiation Level shall mean the corresponding dose rate expressed in milliSievert per hour.

• **Low Toxicity Alpha Emitters**

Low Toxicity Alpha Emitters are: natural uranium; depleted uranium, natural thorium; uranium-235 or uranium-238; thorium-232; thorium-228 and thorium-230 when contained in ores or physical and chemical concentrates; or alpha emitters with a half-life of less than 10 days.

• **A₁ Value**

A₁ shall mean the activity value of special form radioactive material to transport in type A package.



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• **A₂ Value**

A₂ shall mean the activity value of radioactive material, other than special form radioactive material to transport in type A package.

• **Low Specific Activity (LSA) Material**

Low Specific Activity (LSA) material shall mean radioactive material which by its nature has a limited specific activity, or radioactive material for which limits of estimated average specific activity apply. External shielding materials surrounding the LSA material shall not be considered in determining the estimated average specific activity.

LSA material shall be in one of the following groups:

1- LSA-I

- (a) Uranium and thorium ores and concentrates of such ores, and other ores containing naturally occurring radionuclides.
- (b) Solid unirradiated natural uranium or depleted uranium or thorium or their solid or liquid compounds or mixtures;
- (c) Radioactive material in which the A₂ value is unlimited; or
- (d) Other radioactive material in which the activity is distributed throughout and the estimated average specific activity does not exceed 30 times the values for activity concentration specified in Article (4) appended to this decree.

2- LSA-II

- (a) Water with tritium concentration up to 0.8 TBq/L; or
- (b) Other material in which the activity is distributed throughout and the estimated average specific activity does not exceed 10⁻⁴ A₂/g for solids and gases, and 10⁻⁵ A₂/g for liquids.

3- LSA-III: Solids, excluding powders, in which :

- (a) The radioactive material is distributed throughout a solid or a collection of solid objects, or is essentially uniformly distributed in a solid compact binding agent (such as concrete, bitumen, ceramic etc.);
- (b) The radioactive material is relatively insoluble, or it is intrinsically contained in a relatively insoluble matrix, so that, even under loss of packaging, the loss of radioactive material per package by leaching when placed in water for seven days would not exceed 0.1 A₂; and
- (c) The estimated average specific activity of the solid, excluding any shielding material, does not exceed 2×10⁻³ A₂/g.

• **Special Form Radioactive Material**

Special Form Radioactive Material shall mean either an indispensable solid radioactive material or a sealed capsule containing radioactive material.

• **Low Dispersible Radioactive Material**

Low Dispersible Radioactive Material shall mean either a solid radioactive material or a solid radioactive material in a sealed capsule that has limited dispersibility and is not in powder form.



Unofficial Translation

• **Unilateral Approval**

Unilateral Approval shall mean approval by the competent authority of the country of origin of the design only.

• **Multilateral approval**

Multilateral Approval shall mean approval by the relevant competent authority both of the country of origin of the design or shipment and of each country through or into which the consignment is to be transported. The term “through or into” specifically excludes “over”.

• **Carrier**

Any person or organization undertaking the carriage of radioactive material by any means of transport.

• **Transport**

Transport comprises all operations and conditions associated with and involved in the movement of radioactive material, these include the design, manufacture, maintenance and repair of packaging, and the preparation, consigning, loading, carriage including in-transit storage, unloading and receipt at the final destination of loads of radioactive material and packages, in or out of United Arab Emirates.

• **Conveyance**

Conveyance means:

- (1) Any vehicle moves on road or rail line.
- (2) Any vessel, any hold, compartment, or defined deck area of a vessel especial for storage, and
- (3) Any aircraft.



Unofficial Translation

ANNEX (2)

EXEMPT CONSIGNMENT AND MATERIAL CHARACTERIZATION

1- Exempt Consignments

- (a) Exempt from the requirements of these Regulations are consignments where the activity concentration of the material or its total activity is below limits specified in Table (1) in this Annex.
- (b) For shipment containing mixtures of radionuclides, the activity concentration for exempt material and the activity limit for an exempt consignment X_m may be derived as follows:

$$X_m = \frac{I}{\sum_i \frac{f(i)}{X(i)}}$$

Where:

$f(i)$ is the fraction of activity or activity concentration of radionuclide i in the radioactive mixture;

$X(i)$ is the appropriate value of the activity concentration for exempt material or the activity limit for an exempt consignment as appropriate for the radionuclide i .

- (c) For unknown radionuclides or mixtures the more restrictive values of activity concentration for exempt material or activity limits for exempt consignments specified in Table (2) in this Annex shall be used.

2- Material Characterization

- (a) A_1 and A_2 values are basic activity values which are used for characterizing material to be transported and for specifying activity limits in these Regulations.
- (b) A_1 and A_2 values for individual radionuclides are given in Table (1).
- (c) For material containing mixtures of known radionuclides the A_1 or A_2 value for the material be derived as follows:

$$A_m = \frac{1}{\sum_i \frac{g(i)}{A(i)}}$$

Where:

A_m is the derived value of A_1 or A_2 for the material containing a mixture of radionuclides;

$A(i)$ is the appropriate value of A_1 or A_2 for the radionuclide i ; and

$g(i)$ is the fraction of the activity of radionuclide i in the mixture.

- (d) For unknown radionuclides or mixtures the more restrictive A_1 or A_2 values as specified in this Annex (Table 2) shall be used.



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Table (1)
Basic Radionuclide Values and Limits

RADIONUCLIDE		A ₁	A ₂	Activity concentration for exempt material (Bq/g)	Activity limits for exempt consignments (Bq)
Name (atomic number)	Symbol (mass number)	(TBq)	(TBq)		
Actinium (89)	Ac-225 (a)	8×10^{-1}	6×10^{-3}	1×10^1	1×10^4
	Ac-227 (a)	9×10^{-1}	9×10^{-5}	1×10^{-1}	1×10^3
	Ac-228	6×10^{-1}	5×10^{-1}	1×10^1	1×10^6
Silver (47)	Ag-105	2×10^0	2×10^0	1×10^2	1×10^6
	Ag-108m (a)	7×10^{-1}	7×10^{-1}	1×10^1 (b)	1×10^6 (b)
	Ag-110m (a)	4×10^{-1}	4×10^{-1}	1×10^1	1×10^6
	Ag-111	2×10^0	6×10^{-1}	1×10^3	1×10^6
Aluminium (13)	Al-26	1×10^{-1}	1×10^{-1}	1×10^1	1×10^5
Americium (95)	Am-241	1×10^1	1×10^{-3}	1×10^0	1×10^4
	Am-242m (a)	1×10^1	1×10^{-3}	1×10^0 (b)	1×10^4 (b)
	Am-243 (a)	5×10^0	1×10^{-3}	1×10^0 (b)	1×10^3 (b)
Argon (18)	Ar-37	4×10^1	4×10^1	1×10^6	1×10^8
	Ar-39	4×10^1	2×10^1	1×10^7	1×10^4
	Ar-41	3×10^{-1}	3×10^{-1}	1×10^2	1×10^9
Arsenic (33)	As-72	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
	As-73	4×10^1	4×10^1	1×10^3	1×10^7
	As-74	1×10^0	9×10^{-1}	1×10^1	1×10^6
	As-76	3×10^{-1}	3×10^{-1}	1×10^2	1×10^5
	As-77	2×10^1	7×10^{-1}	1×10^3	1×10^6
Astatine (85)	At-211 (a)	2×10^1	5×10^{-1}	1×10^3	1×10^7
Gold (79)	Au-193	7×10^0	2×10^0	1×10^2	1×10^7
	Au-194	1×10^0	1×10^0	1×10^1	1×10^6
	Au-195	1×10^1	6×10^0	1×10^2	1×10^7
	Au-198	1×10^0	6×10^{-1}	1×10^2	1×10^6
	Au-199	1×10^1	6×10^{-1}	1×10^2	1×10^6
Barium (56)	Ba-131 (a)	2×10^0	2×10^0	1×10^2	1×10^6
	Ba-133	3×10^0	3×10^0	1×10^2	1×10^6
	Ba-133m	2×10^1	6×10^{-1}	1×10^2	1×10^6



Unofficial Translation

RADIONUCLIDE Name (atomic number) Symbol (mass number)		A ₁ (TBq)	A ₂ (TBq)	Activity concentration for exempt material (Bq/g)	Activity limits for exempt consignments (Bq)
	Ba-140 (a)	5×10^{-1}	3×10^{-1}	1×10^1 (b)	1×10^5 (b)
Beryllium (4)	Be-7	2×10^1	2×10^1	1×10^3	1×10^7
	Be-10	4×10^1	6×10^{-1}	1×10^4	1×10^6
Bismuth (83)	Bi-205	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
	Bi-206	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
	Bi-207	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
	Bi-210	1×10^0	6×10^{-1}	1×10^3	1×10^6
	Bi-210m (a)	6×10^{-1}	2×10^{-2}	1×10^1	1×10^5
	Bi-212 (a)	7×10^{-1}	6×10^{-1}	1×10^1 (b)	1×10^5 (b)
Berkelium (97)	Bk-247	8×10^0	8×10^{-4}	1×10^0	1×10^4
	Bk-249 (a)	4×10^1	3×10^{-1}	1×10^3	1×10^6
Bromine (35)	Br-76	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
	Br-77	3×10^0	3×10^0	1×10^2	1×10^6
	Br-82	4×10^{-1}	4×10^{-1}	1×10^1	1×10^6
Carbon (6)	C-11	1×10^0	6×10^{-1}	1×10^1	1×10^6
	C-14	4×10^1	3×10^0	1×10^4	1×10^7
Calcium (20)	Ca-41	Unlimited	Unlimited	1×10^5	1×10^7
	Ca-45	4×10^1	1×10^0	1×10^4	1×10^7
	Ca-47 (a)	3×10^0	3×10^{-1}	1×10^1	1×10^6
Cadmium (48)	Cd-109	3×10^1	2×10^0	1×10^4	1×10^6
	Cd-113m	4×10^1	5×10^{-1}	1×10^3	1×10^6
	Cd-115 (a)	3×10^0	4×10^{-1}	1×10^2	1×10^6
	Cd-115m	5×10^{-1}	5×10^{-1}	1×10^3	1×10^6
Cerium (58)	Ce-139	7×10^0	2×10^0	1×10^2	1×10^6
	Ce-141	2×10^1	6×10^{-1}	1×10^2	1×10^7
	Ce-143	9×10^{-1}	6×10^{-1}	1×10^2	1×10^6
	Ce-144 (a)	2×10^{-1}	2×10^{-1}	1×10^2 (b)	1×10^5 (b)
Californium (98)	Cf-248	4×10^1	6×10^{-3}	1×10^1	1×10^4
	Cf-249	3×10^0	8×10^{-4}	1×10^0	1×10^3
	Cf-250	2×10^1	2×10^{-3}	1×10^1	1×10^4
	Cf-251	7×10^0	7×10^{-4}	1×10^0	1×10^3



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RADIONUCLIDE		A ₁	A ₂	Activity	Activity limits
Name (atomic number)	Symbol (mass number)	(TBq)	(TBq)	concentration for exempt material (Bq/g)	for exempt consignments (Bq)
	Cf-252	5×10^{-2}	3×10^{-3}	1×10^1	1×10^4
	Cf-253 (a)	4×10^1	4×10^{-2}	1×10^2	1×10^5
	Cf-254	1×10^{-3}	1×10^{-3}	1×10^0	1×10^3
Chlorine (17)	Cl-36	1×10^1	6×10^{-1}	1×10^4	1×10^6
	Cl-38	2×10^{-1}	2×10^{-1}	1×10^1	1×10^5
Curium (96)	Cm-240	4×10^1	2×10^{-2}	1×10^2	1×10^5
	Cm-241	2×10^0	1×10^0	1×10^2	1×10^6
	Cm-242	4×10^1	1×10^{-2}	1×10^2	1×10^5
	Cm-243	9×10^0	1×10^{-3}	1×10^0	1×10^4
	Cm-244	2×10^1	2×10^{-3}	1×10^1	1×10^4
	Cm-245	9×10^0	9×10^{-4}	1×10^0	1×10^3
	Cm-246	9×10^0	9×10^{-4}	1×10^0	1×10^3
	Cm-247 (a)	3×10^0	1×10^{-3}	1×10^0	1×10^4
	Cm-248	2×10^{-2}	3×10^{-4}	1×10^0	1×10^3
Cobalt (27)	Co-55	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6
	Co-56	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
	Co-57	1×10^1	1×10^1	1×10^2	1×10^6
	Co-58	1×10^0	1×10^0	1×10^1	1×10^6
	Co-58m	4×10^1	4×10^1	1×10^4	1×10^7
	Co-60	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Chromium (24)	Cr-51	3×10^1	3×10^1	1×10^3	1×10^7
Caesium (55)	Cs-129	4×10^0	4×10^0	1×10^2	1×10^5
	Cs-131	3×10^1	3×10^1	1×10^3	1×10^6
	Cs-132	1×10^0	1×10^0	1×10^1	1×10^5
	Cs-134	7×10^{-1}	7×10^{-1}	1×10^1	1×10^4
	Cs-134m	4×10^1	6×10^{-1}	1×10^3	1×10^5
	Cs-135	4×10^1	1×10^0	1×10^4	1×10^7
	Cs-136	5×10^{-1}	5×10^{-1}	1×10^1	1×10^5
	Cs-137 (a)	2×10^0	6×10^{-1}	1×10^1 (b)	1×10^4 (b)
Copper (29)	Cu-64	6×10^0	1×10^0	1×10^2	1×10^6
	Cu-67	1×10^1	7×10^{-1}	1×10^2	1×10^6



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Name (atomic number)	Symbol (mass number)	(TBq)	(TBq)	concentration for exempt material (Bq/g)	for exempt consignments (Bq)
Dysprosium (66)	Dy-159	2×10^1	2×10^1	1×10^3	1×10^7
	Dy-165	9×10^{-1}	6×10^{-1}	1×10^3	1×10^6
	Dy-166 (a)	9×10^{-1}	3×10^{-1}	1×10^3	1×10^6
Erbium (68)	Er-169	4×10^1	1×10^0	1×10^4	1×10^7
	Er-171	8×10^{-1}	5×10^{-1}	1×10^2	1×10^6
Europium (63)	Eu-147	2×10^0	2×10^0	1×10^2	1×10^6
	Eu-148	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6
	Eu-149	2×10^1	2×10^1	1×10^2	1×10^7
	Eu-150(short lived)	2×10^0	7×10^{-1}	1×10^3	1×10^6
	Eu-150(long lived)	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
	Eu-152	1×10^0	1×10^0	1×10^1	1×10^6
	Eu-152m	8×10^{-1}	8×10^{-1}	1×10^2	1×10^6
	Eu-154	9×10^{-1}	6×10^{-1}	1×10^1	1×10^6
	Eu-155	2×10^1	3×10^0	1×10^2	1×10^7
	Eu-156	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
Fluorine (9)	F-18	1×10^0	6×10^{-1}	1×10^1	1×10^6
Iron (26)	Fe-52 (a)	3×10^{-1}	3×10^{-1}	1×10^1	1×10^6
	Fe-55	4×10^1	4×10^1	1×10^4	1×10^6
	Fe-59	9×10^{-1}	9×10^{-1}	1×10^1	1×10^6
	Fe-60 (a)	4×10^1	2×10^{-1}	1×10^2	1×10^5
Gallium (31)	Ga-67	7×10^0	3×10^0	1×10^2	1×10^6
	Ga-68	5×10^{-1}	5×10^{-1}	1×10^1	1×10^5
	Ga-72	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Gadolinium (64)	Gd-146 (a)	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6
	Gd-148	2×10^1	2×10^{-3}	1×10^1	1×10^4
	Gd-153	1×10^1	9×10^0	1×10^2	1×10^7
	Gd-159	3×10^0	6×10^{-1}	1×10^3	1×10^6
Germanium (32)	Ge-68 (a)	5×10^{-1}	5×10^{-1}	1×10^1	1×10^5
	Ge-71	4×10^1	4×10^1	1×10^4	1×10^8
	Ge-77	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Hafnium (72)	Hf-172 (a)	6×10^{-1}	6×10^{-1}	1×10^1	1×10^6



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	Hf-175	3×10^0	3×10^0	1×10^2	1×10^6
	Hf-181	2×10^0	5×10^{-1}	1×10^1	1×10^6
	Hf-182	Unlimited	Unlimited	1×10^2	1×10^6
Mercury (80)	Hg-194 (a)	1×10^0	1×10^0	1×10^1	1×10^6
	Hg-195m (a)	3×10^0	7×10^{-1}	1×10^2	1×10^6
	Hg-197	2×10^1	1×10^1	1×10^2	1×10^7
	Hg-197m	1×10^1	4×10^{-1}	1×10^2	1×10^6
	Hg-203	5×10^0	1×10^0	1×10^2	1×10^5
Holmium (67)	Ho-166	4×10^{-1}	4×10^{-1}	1×10^3	1×10^5
	Ho-166m	6×10^{-1}	5×10^{-1}	1×10^1	1×10^6
Iodine (53)	I-123	6×10^0	3×10^0	1×10^2	1×10^7
	I-124	1×10^0	1×10^0	1×10^1	1×10^6
	I-125	2×10^1	3×10^0	1×10^3	1×10^6
	I-126	2×10^0	1×10^0	1×10^2	1×10^6
	I-129	Unlimited	Unlimited	1×10^2	1×10^5
	I-131	3×10^0	7×10^{-1}	1×10^2	1×10^6
	I-132	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
	I-133	7×10^{-1}	6×10^{-1}	1×10^1	1×10^6
	I-134	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
	I-135 (a)	6×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Indium (49)	In-111	3×10^0	3×10^0	1×10^2	1×10^6
	In-113m	4×10^0	2×10^0	1×10^2	1×10^6
	In-114m (a)	1×10^1	5×10^{-1}	1×10^2	1×10^6
	In-115m	7×10^0	1×10^0	1×10^2	1×10^6
Iridium (77)	Ir-189 (a)	1×10^1	1×10^1	1×10^2	1×10^7
	Ir-190	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
	Ir-192	1×10^0 (c)	6×10^{-1}	1×10^1	1×10^4
	Ir-194	3×10^{-1}	3×10^{-1}	1×10^2	1×10^5
Potassium (19)	K-40	9×10^{-1}	9×10^{-1}	1×10^2	1×10^6
	K-42	2×10^{-1}	2×10^{-1}	1×10^2	1×10^6
	K-43	7×10^{-1}	6×10^{-1}	1×10^1	1×10^6



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Krypton (36)	Kr-81	4×10^1	4×10^1	1×10^4	1×10^7
	Kr-85	1×10^1	1×10^1	1×10^5	1×10^4
	Kr-85m	8×10^0	3×10^0	1×10^3	1×10^{10}
	Kr-87	2×10^{-1}	2×10^{-1}	1×10^2	1×10^9
Lanthanum (57)	La-137	3×10^1	6×10^0	1×10^3	1×10^7
	La-140	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Lutetium (71)	Lu-172	6×10^{-1}	6×10^{-1}	1×10^1	1×10^6
	Lu-173	8×10^0	8×10^0	1×10^2	1×10^7
	Lu-174	9×10^0	9×10^0	1×10^2	1×10^7
	Lu-174m	2×10^1	1×10^1	1×10^2	1×10^7
	Lu-177	3×10^1	7×10^{-1}	1×10^3	1×10^7
Magnesium (12)	Mg-28 (a)	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Manganese (25)	Mn-52	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
	Mn-53	Unlimited	Unlimited	1×10^4	1×10^9
	Mn-54	1×10^0	1×10^0	1×10^1	1×10^6
	Mn-56	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Molybdenum (42)	Mo-93	4×10^1	2×10^1	1×10^3	1×10^8
	Mo-99 (a)	1×10^0	6×10^{-1}	1×10^2	1×10^6
Nitrogen (7)	N-13	9×10^{-1}	6×10^{-1}	1×10^2	1×10^9
Sodium (11)	Na-22	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6
	Na-24	2×10^{-1}	2×10^{-1}	1×10^1	1×10^5
Niobium (41)	Nb-93m	4×10^1	3×10^1	1×10^4	1×10^7
	Nb-94	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
	Nb-95	1×10^0	1×10^0	1×10^1	1×10^6
	Nb-97	9×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Neodymium (60)	Nd-147	6×10^0	6×10^{-1}	1×10^2	1×10^6
	Nd-149	6×10^{-1}	5×10^{-1}	1×10^2	1×10^6
Nickel (28)	Ni-59	Unlimited	Unlimited	1×10^4	1×10^8
	Ni-63	4×10^1	3×10^1	1×10^5	1×10^8
	Ni-65	4×10^{-1}	4×10^{-1}	1×10^1	1×10^6
Neptunium (93)	Np-235	4×10^1	4×10^1	1×10^3	1×10^7



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	Np-236(short-lived)	2×10^1	2×10^0	1×10^3	1×10^7
	Np-236(long-lived)	9×10^0	2×10^{-2}	1×10^2	1×10^5
	Np-237	2×10^1	2×10^{-3}	1×10^0 (b)	1×10^3 (b)
	Np-239	7×10^0	4×10^{-1}	1×10^2	1×10^7
Osmium (76)	Os-185	1×10^0	1×10^0	1×10^1	1×10^6
	Os-191	1×10^1	2×10^0	1×10^2	1×10^7
	Os-191m	4×10^1	3×10^1	1×10^3	1×10^7
	Os-193	2×10^0	6×10^{-1}	1×10^2	1×10^6
	Os-194 (a)	3×10^{-1}	3×10^{-1}	1×10^2	1×10^5
Phosphorus (15)	P-32	5×10^{-1}	5×10^{-1}	1×10^3	1×10^5
	P-33	4×10^1	1×10^0	1×10^5	1×10^8
Protactinium (91)	Pa-230 (a)	2×10^0	7×10^{-2}	1×10^1	1×10^6
	Pa-231	4×10^0	4×10^{-4}	1×10^0	1×10^3
	Pa-233	5×10^0	7×10^{-1}	1×10^2	1×10^7
Lead (82)	Pb-201	1×10^0	1×10^0	1×10^1	1×10^6
	Pb-202	4×10^1	2×10^1	1×10^3	1×10^6
	Pb-203	4×10^0	3×10^0	1×10^2	1×10^6
	Pb-205	Unlimited	Unlimited	1×10^4	1×10^7
	Pb-210 (a)	1×10^0	5×10^{-2}	1×10^1 (b)	1×10^4 (b)
	Pb-212 (a)	7×10^{-1}	2×10^{-1}	1×10^1 (b)	1×10^5 (b)
Palladium (46)	Pd-103 (a)	4×10^1	4×10^1	1×10^3	1×10^8
	Pd-107	Unlimited	Unlimited	1×10^5	1×10^8
	Pd-109	2×10^0	5×10^{-1}	1×10^3	1×10^6
Promethium (61)	Pm-143	3×10^0	3×10^0	1×10^2	1×10^6
	Pm-144	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
	Pm-145	3×10^1	1×10^1	1×10^3	1×10^7
	Pm-147	4×10^1	2×10^0	1×10^4	1×10^7
	Pm-148m (a)	8×10^{-1}	7×10^{-1}	1×10^1	1×10^6
	Pm-149	2×10^0	6×10^{-1}	1×10^3	1×10^6
	Pm-151	2×10^0	6×10^{-1}	1×10^2	1×10^6
Polonium (84)	Po-210	4×10^1	2×10^{-2}	1×10^1	1×10^4



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Praseodymium (59)	Pr-142	4×10^{-1}	4×10^{-1}	1×10^2	1×10^5
	Pr-143	3×10^0	6×10^{-1}	1×10^4	1×10^6
Platinum (78)	Pt-188 (a)	1×10^0	8×10^{-1}	1×10^1	1×10^6
	Pt-191	4×10^0	3×10^0	1×10^2	1×10^6
	Pt-193	4×10^1	4×10^1	1×10^4	1×10^7
	Pt-193m	4×10^1	5×10^{-1}	1×10^3	1×10^7
	Pt-195m	1×10^1	5×10^{-1}	1×10^2	1×10^6
	Pt-197	2×10^1	6×10^{-1}	1×10^3	1×10^6
	Pt-197m	1×10^1	6×10^{-1}	1×10^2	1×10^6
Plutonium (94)	Pu-236	3×10^1	3×10^{-3}	1×10^1	1×10^4
	Pu-237	2×10^1	2×10^1	1×10^3	1×10^7
	Pu-238	1×10^1	1×10^{-3}	1×10^0	1×10^4
	Pu-239	1×10^1	1×10^{-3}	1×10^0	1×10^4
	Pu-240	1×10^1	1×10^{-3}	1×10^0	1×10^3
	Pu-241 (a)	4×10^1	6×10^{-2}	1×10^2	1×10^5
	Pu-242	1×10^1	1×10^{-3}	1×10^0	1×10^4
	Pu-244 (a)	4×10^{-1}	1×10^{-3}	1×10^0	1×10^4
Radium (88)	Ra-223 (a)	4×10^{-1}	7×10^{-3}	1×10^2 (b)	1×10^5 (b)
	Ra-224 (a)	4×10^{-1}	2×10^{-2}	1×10^1 (b)	1×10^5 (b)
	Ra-225 (a)	2×10^{-1}	4×10^{-3}	1×10^2	1×10^5
	Ra-226 (a)	2×10^{-1}	3×10^{-3}	1×10^1 (b)	1×10^4 (b)
	Ra-228 (a)	6×10^{-1}	2×10^{-2}	1×10^1 (b)	1×10^5 (b)
Rubidium (37)	Rb-81	2×10^0	8×10^{-1}	1×10^1	1×10^6
	Rb-83 (a)	2×10^0	2×10^0	1×10^2	1×10^6
	Rb-84	1×10^0	1×10^0	1×10^1	1×10^6
	Rb-86	5×10^{-1}	5×10^{-1}	1×10^2	1×10^5
	Rb-87	Unlimited	Unlimited	1×10^4	1×10^7
	Rb(nat)	Unlimited	Unlimited	1×10^4	1×10^7
Rhenium (75)	Re-184	1×10^0	1×10^0	1×10^1	1×10^6
	Re-184m	3×10^0	1×10^0	1×10^2	1×10^6



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	Re-186	2×10^0	6×10^{-1}	1×10^3	1×10^6
	Re-187	Unlimited	Unlimited	1×10^6	1×10^9
	Re-188	4×10^{-1}	4×10^{-1}	1×10^2	1×10^5
	Re-189 (a)	3×10^0	6×10^{-1}	1×10^2	1×10^6
	Re(nat)	Unlimited	Unlimited	1×10^6	1×10^9
Rhodium (45)	Rh-99	2×10^0	2×10^0	1×10^1	1×10^6
	Rh-101	4×10^0	3×10^0	1×10^2	1×10^7
	Rh-102	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6
	Rh-102m	2×10^0	2×10^0	1×10^2	1×10^6
	Rh-103m	4×10^1	4×10^1	1×10^4	1×10^8
	Rh-105	1×10^1	8×10^{-1}	1×10^2	1×10^7
Radon (86)	Rn-222 (a)	3×10^{-1}	4×10^{-3}	1×10^1 (b)	1×10^8 (b)
Ruthenium (44)	Ru-97	5×10^0	5×10^0	1×10^2	1×10^7
	Ru-103 (a)	2×10^0	2×10^0	1×10^2	1×10^6
	Ru-105	1×10^0	6×10^{-1}	1×10^1	1×10^6
	Ru-106 (a)	2×10^{-1}	2×10^{-1}	1×10^2 (b)	1×10^5 (b)
Sulphur (16)	S-35	4×10^1	3×10^0	1×10^5	1×10^8
Antimony (51)	Sb-122	4×10^{-1}	4×10^{-1}	1×10^2	1×10^4
	Sb-124	6×10^{-1}	6×10^{-1}	1×10^1	1×10^6
	Sb-125	2×10^0	1×10^0	1×10^2	1×10^6
	Sb-126	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Scandium (21)	Sc-44	5×10^{-1}	5×10^{-1}	1×10^1	1×10^5
	Sc-46	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6
	Sc-47	1×10^1	7×10^{-1}	1×10^2	1×10^6
	Sc-48	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Selenium (34)	Se-75	3×10^0	3×10^0	1×10^2	1×10^6
	Se-79	4×10^1	2×10^0	1×10^4	1×10^7
Silicon (14)	Si-31	6×10^{-1}	6×10^{-1}	1×10^3	1×10^6
	Si-32	4×10^1	5×10^{-1}	1×10^3	1×10^6
Samarium (62)	Sm-145	1×10^1	1×10^1	1×10^2	1×10^7
	Sm-147	Unlimited	Unlimited	1×10^1	1×10^4



Unofficial Translation

RADIONUCLIDE		A ₁	A ₂	Activity	Activity limits
Name (atomic number)	Symbol (mass number)	(TBq)	(TBq)	concentration for exempt material (Bq/g)	for exempt consignments (Bq)
Tin (50)	Sm-151	4×10^1	1×10^1	1×10^4	1×10^8
	Sm-153	9×10^0	6×10^{-1}	1×10^2	1×10^6
	Sn-113 (a)	4×10^0	2×10^0	1×10^3	1×10^7
	Sn-117m	7×10^0	4×10^{-1}	1×10^2	1×10^6
	Sn-119m	4×10^1	3×10^1	1×10^3	1×10^7
	Sn-121m (a)	4×10^1	9×10^{-1}	1×10^3	1×10^7
	Sn-123	8×10^{-1}	6×10^{-1}	1×10^3	1×10^6
	Sn-125	4×10^{-1}	4×10^{-1}	1×10^2	1×10^5
Strontium (38)	Sn-126 (a)	6×10^{-1}	4×10^{-1}	1×10^1	1×10^5
	Sr-82 (a)	2×10^{-1}	2×10^{-1}	1×10^1	1×10^5
	Sr-85	2×10^0	2×10^0	1×10^2	1×10^6
	Sr-85m	5×10^0	5×10^0	1×10^2	1×10^7
	Sr-87m	3×10^0	3×10^0	1×10^2	1×10^6
	Sr-89	6×10^{-1}	6×10^{-1}	1×10^3	1×10^6
	Sr-90 (a)	3×10^{-1}	3×10^{-1}	1×10^2 (b)	1×10^4 (b)
	Sr-91 (a)	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Tritium (1)	Sr-92 (a)	1×10^0	3×10^{-1}	1×10^1	1×10^6
	T(H-3)	4×10^1	4×10^1	1×10^6	1×10^9
Tantalum (73)	Ta-178(long-lived)	1×10^0	8×10^{-1}	1×10^1	1×10^6
	Ta-179	3×10^1	3×10^1	1×10^3	1×10^7
	Ta-182	9×10^{-1}	5×10^{-1}	1×10^1	1×10^4
Terbium (65)	Tb-157	4×10^1	4×10^1	1×10^4	1×10^7
	Tb-158	1×10^0	1×10^0	1×10^1	1×10^6
	Tb-160	1×10^0	6×10^{-1}	1×10^1	1×10^6
Technetium (43)	Tc-95m (a)	2×10^0	2×10^0	1×10^1	1×10^6
	Tc-96	4×10^{-1}	4×10^{-1}	1×10^1	1×10^6
	Tc-96m (a)	4×10^{-1}	4×10^{-1}	1×10^3	1×10^7
	Tc-97	Unlimited	Unlimited	1×10^3	1×10^8
	Tc-97m	4×10^1	1×10^0	1×10^3	1×10^7
	Tc-98	8×10^{-1}	7×10^{-1}	1×10^1	1×10^6
	Tc-99	4×10^1	9×10^{-1}	1×10^4	1×10^7



Unofficial Translation

RADIONUCLIDE Name (atomic number) Symbol (mass number)		A ₁ (TBq)	A ₂ (TBq)	Activity concentration for exempt material (Bq/g)	Activity limits for exempt consignments (Bq)
Tellurium (52)	Tc-99m	1×10^1	4×10^0	1×10^2	1×10^7
	Te-121	2×10^0	2×10^0	1×10^1	1×10^6
	Te-121m	5×10^0	3×10^0	1×10^2	1×10^5
	Te-123m	8×10^0	1×10^0	1×10^2	1×10^7
	Te-125m	2×10^1	9×10^{-1}	1×10^3	1×10^7
	Te-127	2×10^1	7×10^{-1}	1×10^3	1×10^6
	Te-127m (a)	2×10^1	5×10^{-1}	1×10^3	1×10^7
	Te-129	7×10^{-1}	6×10^{-1}	1×10^2	1×10^6
	Te-129m (a)	8×10^{-1}	4×10^{-1}	1×10^3	1×10^6
	Te-131m (a)	7×10^{-1}	5×10^{-1}	1×10^1	1×10^6
	Te-132 (a)	5×10^{-1}	4×10^{-1}	1×10^2	1×10^7
Thorium (90)	Th-227	1×10^1	5×10^{-3}	1×10^1	1×10^4
	Th-228 (a)	5×10^{-1}	1×10^{-3}	1×10^0 (b)	1×10^4 (b)
	Th-229	5×10^0	5×10^{-4}	1×10^0 (b)	1×10^3 (b)
	Th-230	1×10^1	1×10^{-3}	1×10^0	1×10^4
	Th-231	4×10^1	2×10^{-2}	1×10^3	1×10^7
	Th-232	Unlimited	Unlimited	1×10^1	1×10^4
	Th-234 (a)	3×10^{-1}	3×10^{-1}	1×10^3 (b)	1×10^5 (b)
	Th(nat)	Unlimited	Unlimited	1×10^0 (b)	1×10^3 (b)
Titanium (22)	Ti-44 (a)	5×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Thallium (81)	Tl-200	9×10^{-1}	9×10^{-1}	1×10^1	1×10^6
	Tl-201	1×10^1	4×10^0	1×10^2	1×10^6
	Tl-202	2×10^0	2×10^0	1×10^2	1×10^6
	Tl-204	1×10^1	7×10^{-1}	1×10^4	1×10^4
Thulium (69)	Tm-167	7×10^0	8×10^{-1}	1×10^2	1×10^6
	Tm-170	3×10^0	6×10^{-1}	1×10^3	1×10^6
	Tm-171	4×10^1	4×10^1	1×10^4	1×10^8
Uranium (92)	U-230 FLA (a)(d)	4×10^1	1×10^{-1}	1×10^1 (b)	1×10^5 (b)
	U-230 (MLA)(a)(e)	4×10^1	4×10^{-3}	1×10^1	1×10^4
	U-230 SLA(a)(f)	3×10^1	3×10^{-3}	1×10^1	1×10^4
	U-232 (FLA)(d)	4×10^1	1×10^2	1×10^0 (b)	1×10^3 (b)



Unofficial Translation

RADIONUCLIDE Name (atomic number)	Symbol (mass number)	A ₁ (TBq)	A ₂ (TBq)	Activity concentration for exempt material (Bq/g)	Activity limits for exempt consignments (Bq)
U-232 (MLA) (e)		4×10^1	7×10^{-3}	1×10^1	1×10^4
U-232 (SLA) (f)		1×10^1	1×10^{-3}	1×10^1	1×10^4
U-233 (FLA) (d)		4×10^1	9×10^{-2}	1×10^1	1×10^4
U-233 (MLA) (e)		4×10^1	2×10^{-2}	1×10^2	1×10^5
U-233 (SLA) (f)		4×10^1	6×10^{-3}	1×10^1	1×10^5
U-234 (FLA) (d)		4×10^1	9×10^{-2}	1×10^1	1×10^4
U-234 (MLA) (e)		4×10^1	2×10^{-2}	1×10^2	1×10^5
U-234 (SLA) (f)		4×10^1	6×10^{-3}	1×10^1	1×10^5
U-235 (a),(d),(e),(f)		Unlimited	Unlimited	1×10^1 (b)	1×10^4 (b)
U-236 (FLA) (d)		Unlimited	Unlimited	1×10^1	1×10^4
U-236 (MLA) (e)		4×10^1	2×10^{-2}	1×10^2	1×10^5
U-236 (SLA) (f)		4×10^1	6×10^{-3}	1×10^1	1×10^4
U-238 (d),(e),(f)		Unlimited	Unlimited	1×10^1 (b)	1×10^4 (b)
U (nat)		Unlimited	Unlimited	1×10^0 (b)	1×10^3 (b)
U ($\leq 20\%$ enrich.) (g)		Unlimited	Unlimited	1×10^0	1×10^3
U (dep)		Unlimited	Unlimited	1×10^0	1×10^3
Vanadium (23)	V-48	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
	V-49	4×10^1	4×10^1	1×10^4	1×10^7
Tungsten (74)	W-178 (a)	9×10^0	5×10^0	1×10^1	1×10^6
	W-181	3×10^1	3×10^1	1×10^3	1×10^7
	W-185	4×10^1	8×10^{-1}	1×10^4	1×10^7
	W-187	2×10^0	6×10^{-1}	1×10^2	1×10^6
	W-188 (a)	4×10^{-1}	3×10^{-1}	1×10^2	1×10^5
Xenon (54)	Xe-122 (a)	4×10^{-1}	4×10^{-1}	1×10^2	1×10^9
	Xe-123	2×10^0	7×10^{-1}	1×10^2	1×10^9
	Xe-127	4×10^0	2×10^0	1×10^3	1×10^5
	Xe-131m	4×10^1	4×10^1	1×10^4	1×10^4
	Xe-133	2×10^1	1×10^1	1×10^3	1×10^4
	Xe-135	3×10^0	2×10^0	1×10^3	1×10^{10}
Yttrium (39)	Y-87 (a)	1×10^0	1×10^0	1×10^1	1×10^6



Unofficial Translation

RADIONUCLIDE		A ₁	A ₂	Activity concentration for exempt material (Bq/g)	Activity limits for exempt consignments (Bq)
Name (atomic number)	Symbol (mass number)	(TBq)	(TBq)		
	Y-88	4×10^{-1}	4×10^{-1}	1×10^1	1×10^6
	Y-90	3×10^{-1}	3×10^{-1}	1×10^3	1×10^5
	Y-91	6×10^{-1}	6×10^{-1}	1×10^3	1×10^6
	Y-91m	2×10^0	2×10^0	1×10^2	1×10^6
	Y-92	2×10^{-1}	2×10^{-1}	1×10^2	1×10^5
	Y-93	3×10^{-1}	3×10^{-1}	1×10^2	1×10^5
Ytterbium (79)	Yb-169	4×10^0	1×10^0	1×10^2	1×10^7
	Yb-175	3×10^1	9×10^{-1}	1×10^3	1×10^7
Zinc (30)	Zn-65	2×10^0	2×10^0	1×10^1	1×10^6
	Zn-69	3×10^0	6×10^{-1}	1×10^4	1×10^6
	Zn-69m (a)	3×10^0	6×10^{-1}	1×10^2	1×10^6
Zirconium (40)	Zr-88	3×10^0	3×10^0	1×10^2	1×10^6
	Zr-93	Unlimited	Unlimited	1×10^3 (b)	1×10^7 (b)
	Zr-95 (a)	2×10^0	8×10^{-1}	1×10^1	1×10^6
	Zr-97 (a)	4×10^{-1}	4×10^{-1}	1×10^1 (b)	1×10^5 (b)

Footnotes in this table are as the following:

(a) A₁ and/or A₂ values include contributions from daughter nuclides with half-lives than 10 days

(b) Parent nuclides and their progeny included in secular equilibrium are listed in the following:

Sr-90	Y-90
Zr-93	Nb-93m
Zr-97	Nb-97
Ru-106	Rh-106
Cs-137	Ba-137m
Ce-134	La-134
Ce-144	Pr-144
Ba-140	La-140
Bi-212	Tl-208 (0.36), Po-212 (0.64)
Pb-210	Bi-210, Po-210
Pb-212	Bi-212, Tl-208 (0.36), Po-212 (0.64)
Rn-220	Po-216
Rn-222	Po-218, Pb-214, Bi-214, Po-214
Ra-223	Rn-219, Po-215, Pb-211, Bi-211, Tl-207



Unofficial Translation

Ra-224	Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
Ra-226	Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
Ra-228	Ac-228
Th-226	Ra-222, Rn-218, Po-214
Th-228	Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
Th-229	Ra-225, Ac-225, Fr-221, At-217, Bi-213, Po-213, Pb-209
Th-nat	Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
Th-234	Pa-234m
U-230	Th-226, Ra-222, Rn-218, Po-214
U-232	Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
U-235	Th-231
U-238	Th-234, Pa-234m
U-nat	Th-234, Pa-234m, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
U-240	Np-240m
Np-237	Pa-233
Am-242m	Am-242
Am-243	Np-239

- (c) The quantity may be determined from a measurement of the rate of decay or a measurement of the radiation level at a prescribed distance from the source.
- (d) These values apply only to compounds of uranium that take the chemical form of UF_6 , UO_2F_2 and $UO_2(NO_3)_2$ in both normal and accident conditions of transport.
- (e) These values apply only to compounds of uranium that take the chemical form of UO_3 , UF_4 , UCl_4 and hexavalent of compounds in both normal and accident conditions of transport.
- (f) These values apply to all compounds of uranium other than those specified in (d) and (e) above.
- (g) These values apply to unirradiated uranium only.

Table (2)

Basic Radionuclide Values for Unknown Radionuclides or Mixtures

Radioactive contents	A ₁ (TBq)	A ₂ (TBq)	Activity concentration for exempt material (Bq/g)	Activity limits for exempt consignments (Bq)
Only beta or gamma emitting nuclides are known to be present	0.1	0.02	1×10^1	1×10^4
Only alpha emitting nuclides are known to be present	0.2	9×10^{-5}	1×10^{-1}	1×10^3
No relevant data are available	0.001	9×10^{-5}	1×10^{-1}	1×10^3



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ANNEX (3)

ACTIVITY LIMITS FOR THE TRANSPORT MATERIAL IN PACKAGE

1- Excepted Package

Used for the transport of radioactive materials, contaminated instruments, articles or which containing radionuclides with activity limits specified in Table (1) in this Annex.

2- Industrial Packages (IP-1, IP-2 or IP-3)

- (a) Used for the transport of Low Specific Activity material LSA-I, LSA-II or LSA-III or surface contaminated objects SCO-I or SCO-II as specified in Table (2) in this Annex, provided that the external radiation level at 3 m from the unshielded material or object or objects does not exceed 10 mSv/h.
- (b) The total activity in a single conveyance, for carriage of LSA material or SCO in industrial packages or unpacked, shall not exceed limits shown in Table (3) in this Annex.

3- Type A Package

Used for the transport radioactive materials which its activities does not exceed the A_1 or A_2 values as specify in Annex (2) (Tables 1 or 2) or the A_1 or A_2 values as derived for material containing a mixture of known radionuclides.

4- Type B Package

Used for the transport radioactive materials which its activities exceed the limits for a Type A package but not any limit specified in design requirement of the competent authority in country design.

Table (1)
Activity Limits for Excepted Packages

Physical state of contents	Instrument or article		Materials package limits
	Item limits	package limits	
Solids:			
-Special form	$10^{-2} A_1$	A_1	$10^{-3} A_1$
-Other form	$10^{-2} A_2$	A_2	$10^{-3} A_2$
Liquids	$10^{-3} A_2$	$10^{-1} A_2$	$10^{-4} A_2$
Gases	$2 \times 10^{-2} A_2$	$2 \times 10^{-1} A_2$	$2 \times 10^{-2} A_2$
-Tritium	$10^{-3} A_1$	$10^{-2} A_1$	$10^{-3} A_1$
-Special form	$10^{-3} A_2$	$10^{-2} A_2$	$10^{-3} A_2$
-Other forms			



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Table 2
Industrial Requirements for LAS Material and SCO

Radioactive contents	Industrial package type	
	Exclusive use	Not under exclusive use
LSA-I Solid ⁽¹⁾ Liquid	IP-1 IP-1	IP-1 IP-2
LSA-II Solid Liquid and gas	IP-2 IP-2	IP-2 IP-3
LSA-III	IP-2	IP-3
SCO-I ⁽¹⁾	IP-1	IP-1
SCO-II	IP-2	IP-2

⁽¹⁾ Under the conditions specified in Article (6) (item 2), LSA-I material and SCO-I may be transported unpackaged.

TABLE (3)
Conveyance Activity Limits for LSA Material and SCO
in Industrial Packages or Unpackaged

Nature of material	Activity limit for conveyances
LSA-I	No limit
LSA-II و LSA-III Non-combustible solids Other than that	No limit 100 A ₂
SCO	100 A ₂



Unofficial Translation

ANNEX (4)

CONTAMINATION, RADIATION LEVELS AND TRANSPORT INDEX LIMITS

1- Permissible Contamination Limits on the Packages, Overpacks, Freight Containers, Tanks and Intermediate Bulk Containers:

- (a) Non-fixed contamination on the external surfaces of packages and on the internal and external surfaces of overpacks, freight containers, tanks and intermediate bulk containers shall be kept, as low as, practicable and shall not exceed the following limits:
- 4 Bq/cm² for beta, gamma and low toxicity alpha emitters.
 - 0.4 Bq/cm² for all other alpha emitters.
- (b) Fixed contamination levels are limited by radiation level limits for packages and conveyances and by requirements for decontamination as specified in Article (15) in this decree.

2- Permissible Limits of Radiation Levels for Package and Unpackaged Materials for Transport:

- (a) Radiation level limits apply to the items and materials to be unpackaged for transport:
The radiation level at 10 cm from any point on the external surface of any unpackaged instrument or article which has activity levels below the limits for an excepted packages, shall not be greater than 0.1 mSv/h.
- (b) Radiation level limits apply to packages or overpacks as follows:
The radiation level limit shall not exceed :
- (1) 5 µSv/h for excepted packages at the surface of the package.
 - (2) 2 mSv/h for all other packages and overpacks, except for consignments under exclusive use, at any point on any external surface of the package or overpack and, in addition, shall not exceed 0.1 mSv/h at 1 m from the external surfaces of the package or overpack.
- (c) Radiation levels for conveyances are limited as follows:
Loading of freight containers and the accumulation of packages, overpacks and freight containers aboard a single conveyance shall be such that the radiation level under routine conditions of transport shall not exceed 2 mSv/h at any point on, and 0.1 mSv/h at 2 m from the external surface of the conveyance.
- (d) For consignments to be transported by road or rail under exclusive use:
The radiation levels on the external surface of any shipment shall not exceed 10 mSv/h and may only exceed 2 mSv/h provided that specific vehicle and shipment conditions are met :
- The vehicle is equipped with an enclosure which, during routine conditions of transport, prevents the access of unauthorized persons to the interior of the enclosure.



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- Provisions are made to secure the package or overpack so that its position within the vehicle remains fixed during routine conditions of transport.
- There is no loading or unloading during the shipment.

3 - Transport Index limits

- (a) Transport Index (TI) is assigned to package, overpack or freight container or to unpackaged LSA-I or SCO-I as follows:
- (1) The maximum radiation level at a distance of 1 m from the external surfaces. [in units of milliSieverts per hour (mSv/h)], shall be multiplied by 100, the value obtained in steps above shall be rounded up to the first decimal place (e.g. 1.13 becomes 1.2),
Note: For uranium and thorium ores and their concentrates, the maximum radiation level at any point 1 m from the external surface of the load may be taken as follows:
 - 0.4 mSv/h for ores and physical concentrates of uranium and thorium;
 - 0.3 mSv/h for chemical concentrates of thorium;
 - 0.02 mSv/h for chemical concentrates of uranium, other than uranium hexafluoride.
 - (2) For tanks, freight containers and unpackaged LSA-I and SCO-I, the value determined in step (1) above shall be multiplied by the appropriate factor from Table (1) in this Annex.
 - (3) If the resulting number is a value of 0.05 or less, transport index may be considered as zero.
- (b) The transport index for each overpack, freight container or conveyance shall be determined as either the sum of the TIs of all the packages contained, or by direct measurement of radiation level, except in the case of non-rigid overpacks for which the transport index shall be determined only as the sum of the TIs of all the packages.
- (c) Any package or overpack having a TI greater than 10 shall be transported only under exclusive use.
- (d) The TI limits for freight containers and conveyances not under exclusive use are provided in Table (2) in this Annex.
- (e) There is no limit on the sum of transport indexes for consignments of LSA-I material.
- (f) Where a consignment is transported under exclusive use, there is no limit on the sum of the transport indexes aboard a single conveyance.



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Table (1)
Multiplication Factors for Large Dimension Loads

Size of load	Multiplication factor
Size of load $\leq 1 \text{ m}^2$	1
$1 \text{ m}^2 < \text{Size of load} \leq 5 \text{ m}^2$	2
$5 \text{ m}^2 < \text{Size of load} \leq 20 \text{ m}^2$	3
$20 \text{ m}^2 < \text{Size of load}$	10

Table (2)
Limits for Freight Containers and Conveyances not Exclusive Use

Limit on total sum of transport indexes	Limit on total sum of transport indexes
Freight container- Small	50
Freight container- Large	50
Vehicle	50
Aircraft	
(1) Passenger	50
(2) Cargo	200
Seagoing vessel	
(1) Hold, compartment or defined deck area.	
Packages, overpacks, or small freight containers	50
Large freight Containers	200
(2) Total vessel	
Packages, overpacks, or small freight containers	200
Large freight containers	No limit



Unofficial Translation

ANNEX (5)
CATEGORIES OF PACKAGES

Table (1)
Categories of Packages and Overpacks

Conditions		Category
Transport index	Maximum radiation level at any point on external surface mSv/h	
0*	Not more than 0.005 mSv/h	I-WHITE
More than 0 but not more than 1	More than 0.005 mSv/h but not more than 0.5 mSv/h	II-YELLOW
More than 1 but not more than 10	More than 0.05 mSv/h but not more than 2 mSv/h	III-YELLOW
More than 10 (be transported under exclusive use)	More than 2 mSv/h but not more than 10 mSv/h	III-YELLOW

* If the measured TI is not greater than 0.05, the value quoted may be zero in accordance with Annex (4) (item 3).



Unofficial Translation

ANNEX (6)
PACKAGES MARKING, LABELLING AND TRANSPORT PLACARDING

1 - Packages Marking

- (a) All packages shall be legibly and durably marked on the outside of the any packaging contain radioactive materials.
- (1) Identification of either the consignor or consignee, or both.
 - (2) United Nations number from Annex (8) (Table 2) preceded by the letters "UN".
 - (3) The proper shipping name as identified in Annex (8) (Table 2),(For each package other than excepted packages).
 - (4) For each package, other than excepted packages, shall be marked with "Type X", where X the type of package as specified in Article (7) (item 1) in this decree.
- (b) In the case of a Type B(U), or Type B(M) packages shall be marked , in addition to above paragraph (a), on the outside of the packaging with:
- (1) The identification mark allocated by the Regulatory Authority to the design of that package;
 - (2) A serial number to each packaging; and
 - (3) The trefoil symbol for radioactive material shown in (Figure 1) affixed on the outside of the outermost receptacle which is resistant to the effects of fire and water plainly marked by embossing, stamping or other means resistant to the effects of fire and water.
- (c) Each package of gross mass exceeding 50 kg shall have its permissible gross mass legibly and durably marked on the outside of the packaging.
- (d) Where unpackaged LSA-I or SCO-I material is contained in receptacles or packing material and shipped under exclusive use conditions specified in Article (6) (item 2) of this decree, the outer surface of these receptacles or wrapping materials may bear the marking "RADIOACTIVE LSA-I" or "RADIOACTIVE SCO-I" as appropriate.

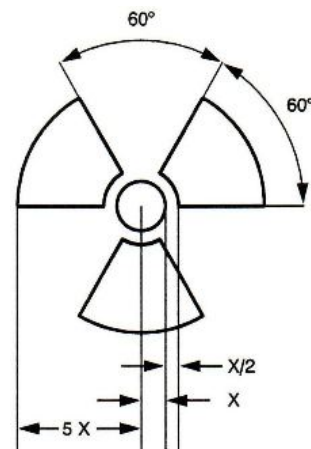


FIGURE 1. Basic trefoil symbol with proportions based on a central circle of radius X. The minimum allowable size of X shall be 4 mm.



Unofficial Translation

2 - Labelling

- (a) Excepted packages do not require any labelling. All other packages, overpacks and freight containers shall bear labels which conform to the models in Figures 2, 3 or 4 in this Annex as follows:
- (1) These labels shall be affixed to two opposite sides of the outside of a package or overpack or on the outside of all four sides of a freight container or tank.
 - (2) On large freight containers and tanks enlarged labels may be used, in which case no placarding will be required as in item (3) below in this Annex.

FIGURE 2. Category I-WHITE label. The background colour of the label shall be white, the colour of the trefoil and the printing shall be black, and the colour of the category bar shall be red.

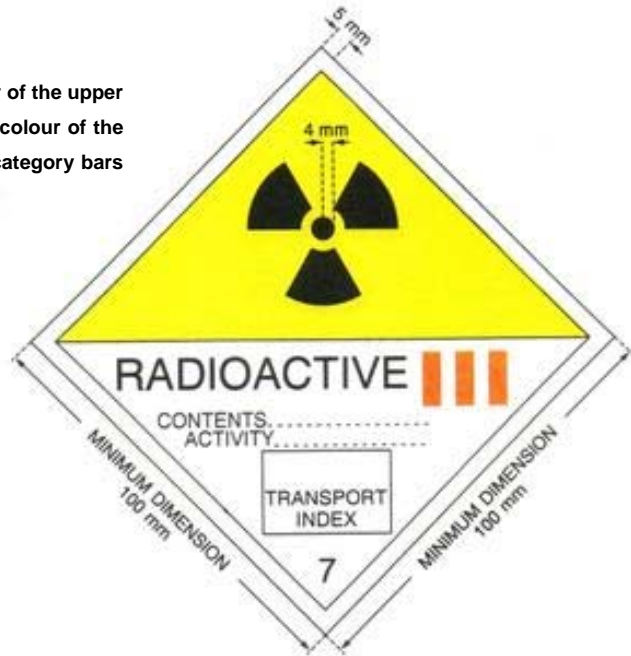


FIGURE 3. Category II-YELLOW label. The background colour of the upper half of the label shall be yellow and the lower half white, the colour of the trefoil and the printing shall be black, and the colour of the category bars shall be red.



Unofficial Translation

FIGURE 4. Category III-YELLOW label. The background colour of the upper half of the label shall be yellow and the lower half white, the colour of the trefoil and the printing shall be black, and the colour of the category bars shall be red.



(b) Labels shall be completed with the following information:

(1) Contents:

- For individual of radionuclides the name(s) of the radionuclide(s) as taken from Annex (2) (Table 1), using the symbols prescribed therein.
- For mixtures of radionuclides, the most restrictive nuclides must be listed to the extent the space on the line permits.
- Except for LSA-I material, The group of LSA or SCO shall be shown following the name(s) of the radionuclide(s). The terms "LSA-II", "LSA-III", "SCO-I" and "SCO-II" shall be used for this purpose.
- For LSA-I material, the name of the radionuclide is not necessary.

(2) Activity:

The maximum activity of the radioactive contents during transport expressed in units of Becquerel's (Bq) with the appropriate SI prefix.

(3) Transport index:

No transport index entry is required for category I-WHITE. [see Annex (4) item (3) appended to this decree]

(4) For overpacks and freight containers:

The "activity" entries on the label shall bear the totaled value together for the entire contents of the overpack or freight container except that on labels for overpacks or freight containers containing mixed loads of packages containing different radionuclides, such entries may read "See Transport Documents".

(5) For all packages, any labels which do not relate to the contents shall be removed or covered.



Unofficial Translation

3 - Placards

(a) Display the placard on the large freight container and tank:

- (1) Large freight containers carrying packages other than excepted packages, and tanks shall bear four placards which conform with the model given in Figure (5). The placards shall be affixed in a vertical orientation to each side wall and each end wall of the large freight container or tank.
- (2) Any placards which do not relate to the contents shall be removed or covered.
- (3) Instead of using both labels and placards, it is permitted as an alternative to use enlarged labels only, as shown in Figures 2,3 and 4 where appropriate, with dimensions of the minimum size shown in Figure (5).

(b) Display the placard on vehicles:

- (1) Rail and road vehicles carrying packages, overpacks or freight containers labeled with any of the labels shown in Figures 2, 3 or 4, or carrying consignments under exclusive use, shall display the placard shown in Figure (5) on each of the two external lateral walls in the case of a rail vehicle; and The two external lateral walls and the external rear wall in the case of a road vehicle.
- (2) In the case of a vehicle without sides the placards may be affixed directly on the cargo-carrying unit provided that they are readily visible.
- (3) In the case of physically large tanks or freight containers, the placards on the tanks or freight containers shall suffice.



FIGURE 5. Placard. The number “7” shall not be less than 25 mm high. The background colour of the upper half of the placard shall be yellow and of the lower half white, the colour of the trefoil and the printing shall be black.



Unofficial Translation

- (4) In the case of vehicles which have insufficient area to allow the fixing of larger placards, the dimensions of the placard as described in Figure (5) of this Annex may be reduced to 100 mm.
- (5) Any placards which do not relate to the contents shall be removed or covered.
- (c) Where the consignment in or on the vehicle is unpackaged LSA-I material or SCO-I or where an exclusive use consignment is packaged radioactive material with a single United Nations number, the appropriate United Nations number shall also be displayed, in black digits not less than 65 mm high, either:
- (1) In the lower half of the placard shown Figure (5), preceded by the letters "UN" and against the white background, or
 - (2) On the placard shown in Figure (6). The subsidiary placard shall be affixed immediately adjacent to the main placard, either on the two external lateral walls in the case of a rail vehicle or the two external lateral walls and the external rear wall in the case of a road vehicle.

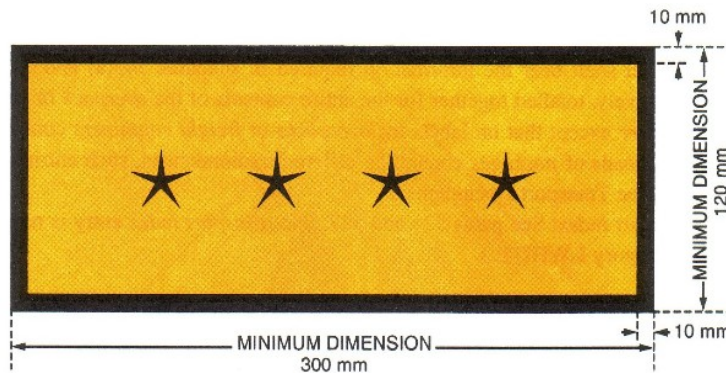


FIGURE 6. Placard for separate display of United Nations number. The background colour of the placard shall be orange and the border and the United Nations number shall be black. The symbol “****” denotes the space in which the appropriate United Nations number.



Unofficial Translation

ANNEX (7)
TRANSPORT DOCUMENTS

The consignor shall include with the consignment the transport documentation, , including the following:

1- Details of Consignment:

Transport documents with each consignment shall include in the following information, as in the following order:

- (a) The proper shipping name, as specified in Annex (8) (Table 2) appended to this decree;
- (b) The United Nations Class number "7"; for radioactive material as specified in dangerous materials list [see Table (1) in Annex (8)] ;
- (c) The United Nations number assigned to the material as specified in Annex (8)(Table2) appended to this decree, preceded by the letters "UN";
- (d) The name or symbol of radionuclide(s) or, for mixtures of radionuclides, an appropriate general description;
- (e) A description of the physical and chemical form of the material, or a notation that the material is special form radioactive material;
- (f) The maximum activity of the radioactive contents expressed in units of Becquerel's (Bq) with an appropriate SI prefix;
- (g) The category of the package, i.e. I-WHITE, II-YELLOW, III-YELLOW; as specified in Annex (5) (Table 1) appended to this decree;
- (h) The transport index (categories II-YELLOW and III-YELLOW only);
- (i) Blank field for the criticality safety index; where appropriate;
- (j) The identification mark for Department or competent authorities approval certificate;
- (k) For consignments of packages in an overpack or freight container, a detailed statement of the contents of each package within the overpack or freight container, If packages are to be removed from the overpack or freight container at a point of intermediate unloading, appropriate transport documents shall be made available;
- (l) Where a consignment is required to be shipped under exclusive use, the statement "EXCLUSIVE USE "; and
- (m) For LSA-II, LSA-III, SCO-I and SCO-II, the total activity of the consignment as a multiple of A_2 .

2- Consignor's Declaration

The consignor shall include in the transport documents a declaration in the following terms:

"I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by insert mode(s) of transport involved) according to the applicable international and United Arab Emirates regulations".



Unofficial Translation

3- Information for Carriers

- (a) The consignor shall provide in the transport documents a statement regarding actions, if any, that are required to be taken by the carrier. The statement shall be in the languages deemed necessary by the carrier or the authorities concerned, and shall include at least the following points:
- (1) Supplementary requirements for loading, stowage, carriage, handling and unloading of the package, overpack or freight container including any special stowage provisions for the safe dissipation of heat;
 - (2) Restrictions on the mode of transport or conveyance and any necessary routing instructions; and
 - (3) Emergency arrangements appropriate to the consignment.
- (b) The certificates of Department or Regulatory Authority in other relevant country need not necessarily accompany the consignment. The consignor shall make them available to the carrier(s) before loading and unloading.



Unofficial Translation

ANNEX (8)

1- INTERNATIONAL CLASSIFICATION FOR HAZARDOUS MATERIALS

Table (1): International Hazardous Material Classification

Hazard material	
1	Explosives
2	Compressed gases/liquid, liquefied Gases under high pressure or very low temperature
3	Flammable liquids
4	Flammable solids; spontaneously combustible materials; and Dangerous when wet materials
5	Oxidizers and Organic peroxides
6	Toxic materials and infectious substances
7	Radioactive materials
8	Corrosive materials
9	Miscellaneous dangerous goods

2- UNITED NATIONS NUMBERS, AND PROPER SHIPPING NAMES

Table (2): United Nations Numbers, Proper Shipping Names

PROPER SHIPPING NAME ⁽¹⁾ AND DESCRIPTIONS	UN number
RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - LIMITED QUANTITY OF MATERIAL	2910
RADIOACTIVE MATERIAL, EXCEPTED PACKAGE – INSTRUMENTS or ARTICLES	2911
RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - ARTICLES MANUFACTURED FROM NATURAL URANIUM or DEPLETED URANIUM or NATURAL THORIUM	2909
RADIOACTIVE MATERIAL, EXCEPTED PACKAGE – EMPTY PACKAGING	2908
RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-I)	2912
RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-II)	3321
RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-III)	3322
RADIOACTIVE MATERIAL, SURFACE CONTAMINATED OBJECTS (SCO-I or SCO-II)	2913
RADIOACTIVE MATERIAL, TYPE A PACKAGE	2915
RADIOACTIVE MATERIAL, TYPE B(U) PACKAGE	2916
RADIOACTIVE MATERIAL, TYPE B(M) PACKAGE	2917

⁽¹⁾The “PROPER SHIPPING NAME” is found in the column “PROPER SHIPPING NAME and description”. In the case of UN 2909 and UN 2911 where alternative PROPER SHIPPING NAMES are separated by the word “or”, only the relevant PROPER SHIPPING NAME shall be used.



Unofficial Translation

3- REQUIREMENTS OF THE ACTS OF THE UNIVERSAL POSTAL UNION

- a- It shall be deposited with the postal service only by consigners authorized by the national authority.
- b- It shall be dispatched by the quickest route,
- c- It shall be plainly and durably marked on the outside with the words:
"RADIOACTIVE MATERIAL – QUANTITIES PERMITTED FOR MOVEMENT BY POST";
- d- It shall bear on the outside the name and address of the consignor with the request that the consignment be returned in the case of non- delivery; and
- e- The name and address of the consignor and the contents of the consignment shall be indicated on the internal packaging.

* * * * *

IMPORTANT NOTE

THIS IS AN ENGLISH TRANSLATION OF THE ORIGINAL ARABIC TEXT OF THE REGULATIONS. IN CASE OF ANY DISCREPANCY, THE ARABIC VERSION SHALL APREVAIL.

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