



PRESIDEN
REPUBLIK INDONESIA

COPY

GOVERNMENT REGULATIONS OF THE REPUBLIC OF INDONESIA

NUMBER 58 OF 2015

ABOUT

RADIATION SAFETY AND SECURITY

IN TRANSPORTATION OF RADIOACTIVE SUBSTANCE

BY THE GRACE OF GOD ALMIGHTY

PRESIDENT OF THE REPUBLIC OF INDONESIA,

Considering: a. that in order to reorganize the management of the transportation of radioactive substances, it is necessary to adjust the requirements for radiation safety and security in the transportation of radioactive substances to developments in science and technology as well as the legal needs of society;

b. that Government Regulation Number 26 of 2002 concerning Safety in the Transport of Radioactive Substances has not regulated clearly and strictly the requirements for radiation safety in the transport of radioactive substances and has not regulated the safety requirements in the transport of radioactive substances;

c. that based on the considerations as intended in letters a and b, it is necessary to establish a Government Regulation concerning Radiation Safety and Security in Transporting Radioactive Substances;

Bearing in mind: 1. Article 5 paragraph (2) of the 1945 Constitution of the Republic of Indonesia;

2. Law Number 10 of 1997 concerning Nuclear Energy (State Gazette of the Republic of Indonesia of 1997 Number 23, Supplement to State Gazette of the Republic of Indonesia Number 3676);

DECIDE ...



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DECIDE:

Establish: GOVERNMENT REGULATIONS CONCERNING RADIATION SAFETY AND SECURITY IN THE TRANSPORTATION OF RADIOACTIVE SUBSTANCES.

PIG

GENERAL REQUIREMENTS

article 1

In this Government Regulation what is meant by:

- 1. Radiation Safety in Transporting Radioactive Substances**
is an action taken to protect workers, members of the public, and the environment from the dangers of radiation during the transportation of radioactive substances.
- 2. Security in Transporting Radioactive Substances** is an action taken to prevent attempts at theft, sabotage, illegal transfer and other unlawful acts against radioactive substances during the Transport of Radioactive Substances.
- 3. Transportation of Radioactive Substances** is the transfer of radioactive substances that meet the technical provisions for Radiation Safety in Transporting Radioactive Substances and technical Safety in Transporting Radioactive Substances, from one place to another through the public traffic network, using land, water or air transportation facilities.
- 4. Low Type Activity Radioactive Substances** are radioactive substances which due to their nature have limited type activity or radioactive substances to which the average type activity limit value applies, so that when handling them no radiation shielding is required.
- 5. Surface Contaminated Objects** are solid objects that are not radioactive but contain radioactive substances scattered on the surface in amounts exceeding 0.4 Bq/cm² (zero point four Becquerels per square centimeter) for low toxicity beta, gamma and alpha emitters, or 0.04 Bq/cm² (zero point zero Becquerel's four per square centimeter) for other alpha emitters.

6. Substances ...



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6. **Special Form Radioactive Substances** are solid radioactive substances that cannot spread or encapsulated capsules containing radioactive substances.
7. **Low Spreadability Radioactive Substances** are solid radioactive substances or solid radioactive substances in encapsulated capsules which have limited spreadability and are not in powder form.
8. **Fissile Material** is nuclear material containing fissile nuclides in the form of uranium-233 (U-233), uranium-235 (U-235), plutonium-239 (Pu-239), and/or plutonium-241 (Pu-241) weighing more than 0.25 grams (zero point twenty five grams).
9. The sender is the holder of a permit for the use of sources of ionizing radiation or the use of nuclear materials who sends radioactive substances as stated in the shipping documents and/or who carries out the transportation of the radioactive substances which he will use himself.
10. **Recipient** is the holder of a permit for the use of sources of ionizing radiation or use of nuclear materials, who receives radioactive substances from the Sender and is stated in the shipping documents.
11. **Carrier** is a legal entity in the field of transportation that carries out the transportation of radioactive substances.
12. **Design** is a technical description used to identify Special Forms of Radioactive Substances, Low Spread Power Radioactive Substances, Packages, or wrappers in the implementation of Transporting Radioactive Substances.
13. **Packages** are packaging containing radioactive substances inside which are prepared for the transportation of radioactive substances.
14. **Outer Packaging** is packaging used by 1 (one) Sender to load 1 (one) or several Packages and form 1 (one) unit so as to facilitate handling and storage during Transport of Radioactive Substances.
15. **Containers** are crates or boxes that are permanent and strong as tools or devices for reuse in the transportation of radioactive substances and comply with the standards of the *International Standard Organization*.
16. **Chest...**



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16. **Small Containers** are Containers that have an internal volume smaller than or equal to 3 m³ (three cubic meters).
17. **Large Container** is a Container that has:
 - a. internal volume greater than 3 m³ (three meters cubic);
 - b. length 20 (twenty) feet; or
 - c. measuring 40 (forty) feet long.
18. **A tank** is a portable tank, tank container, tank vehicle, tank carriage, or container used to transport solid, liquid, or gas materials.
19. **The Nuclear Energy Supervisory Agency**, hereinafter referred to as **BAPETEN**, is the supervisory agency as intended in Law Number 10 of 1997 concerning Nuclear Energy.
20. **Transport Index** is a value used as a reference in limiting the level of exposure to radiation originating from packages, outer packaging, containers, radioactive substances with low activity type-I, and surface-contaminated objects-I, for members of the public and transport personnel during the transportation of substances. Radioactivity and storage in transit.
21. **The Critical Safety Index** is a value used as a reference in limiting the level of criticality in the accumulation of packages, outer packaging, or containers containing fissile material and uranium hexafluoride (UF₆).
22. **United Nations Number**, hereinafter referred to as **UN Number**, is the identity of hazardous materials and classes of hazardous materials used in international trade and transportation.
23. **Responding Units** are members of the Indonesian National Police or the Indonesian National Army who are armed and trained to deal with threats of sabotage or illegal transfer of radioactive substances during the Transport of Radioactive Substances.

24. Officer ...



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24. Radiation Protection Officer is an officer appointed by the permit holder for the use of sources of ionizing radiation or use of nuclear materials and declared by BAPETEN to be capable of carrying out work related to radiation protection.

Section 2

Radioactive substances in the Transport of Radioactive Substances which are not regulated in this Government Regulation include:

- a. radioactive substances which are an integral part of transportation equipment;**
- b. radioactive substances in an installation in an area whose transportation fulfills the provisions of laws and regulations in the field of radiation safety and security of radioactive sources as well as safety and security of nuclear installations;**
- c. radioactive substances installed or attached to people or animals for diagnostic or therapeutic purposes;**
- d. consumer goods used by end users;**
- e. *technologically enhanced naturally occurring radioactive materials* whose activity concentration is equal to or below the intervention level in accordance with the provisions of laws and regulations in the field of radiation safety and radioactive source security;**
- f. natural uranium or reduced grade uranium that is not irradiated;**
And
- g. natural uranium or reduced grade uranium that has been irradiated only in non-powered reactors.**

CHAPTER II

TYPES OF RADIOACTIVE SUBSTANCES

Article 3

(1) Types of radioactive substances in the transportation of radioactive substances includes:

a. Substance...



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- a. Low Type Activity Radioactive Substances;
 - b. Surface Contaminated Objects;
 - c. Special Forms of Radioactive Substances;
 - d. Low Spreading Power Radioactive Substances;
 - e. Fissile Material; And
 - f. uranium hexafluoride (UF₆).
- (2) Low Type Activity Radioactive Substances as intended in paragraph (1) letter a consist of:
- a. Radioactive Substances of Low Activity Type-I;
 - b. Low Activity Radioactive Substances Type-II; And
 - c. Low Activity Radioactive Substances Type-III.
- (3) Surface Contaminated Objects as intended in paragraph (1) letter b consist of:
- a. Surface Contaminated Objects-I; And
 - b. Surface Contaminated Objects-II.
- (4) Fissile materials and uranium hexafluoride (UF₆) as referred to in paragraph (1) letters e and f are nuclear materials.

Article 4

Further provisions regarding details of the types of radioactive substances as intended in Article 3 are regulated by BAPETEN Head Regulations.

CHAPTER III

INTERNAL RADIATION SAFETY TECHNIQUES

TRANSPORTATION OF RADIOACTIVE SUBSTANCES

Part One

General

Article 5

Radiation Safety Techniques in Transporting Substances Radioactive includes:

a. substance...



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- a. radioactive substances in transport;
- b. Packaging arrangements;
- c. Radiation Protection and Safety Program in Transporting Radioactive Substances; And
- d. placement of packages during transportation of radioactive substances and storage of packages during transit.

The second part

Radioactive Substances in Transport

Article 6

- (1) Radioactive substances in transportation as intended in Article 5 letter a can be radioactive substances that are tested or not tested.
- (2) Radioactive substances tested include:
 - a. Low Activity Radioactive Substances Type-III;
 - b. Special Forms of Radioactive Substances; And
 - c. Low Spreading Power Radioactive Substances.
- (3) Radioactive substances that are not tested include:
 - a. Radioactive Substances of Low Activity Type-I;
 - b. Low Activity Radioactive Substances Type-II;
 - c. Surface Contaminated Objects;
 - d. Fissile Material; And
 - e. uranium hexafluoride (UF₆).
- (4) In the event that the Radioactive Substances to be transported are Special Form Radioactive Substances as intended in paragraph (2) letter b and Low Spread Power Radioactive Substances as intended in paragraph (2) letter c, the Sender is obliged to ensure that the Special Form Radioactive Substances and Radioactive Substances are Low Spreadability has a certificate of approval for Design of radioactive substances.
- (5) Design approval certificate for radioactive substances as intended in paragraph (4) is issued by:
 - a. Head of BAPETEN for radioactive substances originating from within the country; And
 - b. authority ...



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b. home country supervisory authority for radioactive substances who come from abroad.

(6) Provisions regarding the requirements and procedures for the application and issuance of a certificate of approval for Design of radioactive substances as intended in paragraph (5) letter a are regulated by BAPETEN Head Regulations.

Part Three

Packaging Arrangements

Paragraph 1

General

Article 7

Package Arrangements as referred to in Article 5 letter b include regulations regarding:

- a. use of packaging; b.**
- determining the package category;**
- c. Packaging marking;**
- d. Packaging labeling;**
- e. awarding plaques;**
- f. determination of the Critical Safety Index; And**
- g. inspection of packages for customs purposes.**

Paragraph 2

Use of Packaging

Article 8

(1) The sender in transporting radioactive substances must use packaging.

**(2) The package as intended in paragraph (1) consists of:
on:**

a. Packaging ...



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- a. Industrial packaging;
 - b. Type A packaging;
 - c. Type B(U) packaging;
 - d. Package type B(M); e.
Type C packaging; and f.
Another package.
- (3) Industrial packaging as intended in paragraph (2) letter a consists of:
- a. Industrial packaging-I;
 - b. Industrial packaging-II; And
 - c. Industrial packaging-III.

Article 9

- (1) The sender is obliged to ensure that certain packages have a package design approval certificate.
- (2) Certain packages as intended in paragraph (1) include:
- a. Industrial packages containing more than 0.1 kg (zero point one kilogram) of Fissile Material or uranium hexafluoride (UF₆);
 - b. Type A packages containing more than 0.1 kg (zero point one kilogram) of Fissile Material or uranium hexafluoride (UF₆);
 - c. Type B(U) packaging;
 - d. Package type B(M); And
 - e. Type C packaging.
- (3) The Package Design approval certificate as intended in paragraph (1) is issued by:
- a. Head of BAPETEN for Packages originating from within the country; and b. the
supervisory authority of the country of origin for the Package who come from abroad.

(4) Provisions...



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- (4) Provisions regarding the requirements and procedures for application and issuance of a Package Design approval certificate as referred to in paragraph (3) letter a are regulated by BAPETEN Head Regulations.

Article 10

- (1) Industrial packages as intended in Article 8 paragraph (2) letter a are used to transport Low Type Activity Radioactive Substances and Surface Contaminated Objects.
- (2) The use of industrial packaging as intended in paragraph (1) is carried out in the transportation of radioactive substances using:
- a. transportation equipment or Large Containers exclusively;
And
 - b. non-exclusive means of transportation or Large Containers.
- (3) Details of the use of industrial packages in the transportation of radioactive substances using exclusive and non-exclusive means of transport or large containers as listed in Appendix I which is an inseparable part of this Government Regulation.

Article 11

- (1) Type A packages, type B(U) packages, type B(M) packages, and type C packages as intended in Article 8 paragraph (2) letters b, c, d, and e are used to transport substances Special Forms of Radioactivity, Low Spreading Power Radioactive Substances, Fissile Materials, and uranium hexafluoride (UF₆).
- (2) The use of type A packaging, type B(U) packaging, type B(M) packaging, and type C packaging as intended in paragraph (1) refers to the activity values A1 and A2 taking into account the activity concentration limits of excluded radioactive substances and activity limits for excluded shipments.

(3) Value ...



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(3) The activity values A1 and A2, activity concentration limits for excluded radioactive substances, and activity limits for excluded shipped goods as intended in paragraph (2) are the basic values for radionuclides as listed in Appendix II which is an inseparable part of this Government Regulation .

(4) Provisions regarding the procedures for using type A packages, type B packages, type B packages, and type C packages which refer to the basic value of radionuclides are regulated by BAPETEN Head Regulations.

Article 12

(1) Other packages as intended in Article 8 paragraph (2) letter f can be in the form of:

a. Used empty packaging; b.

Packages containing equipment or goods contaminated or activated by radioactive substances with certain activity limit values;

c. Packages containing equipment or goods made from natural uranium, reduced grade uranium, or natural thorium;

d. Packages containing radioactive substances as intended in Article 3 with certain activity limit values; And

e. Packages containing uranium hexafluoride (UF₆) with a mass of less than 0.1 kg (zero point one kilogram) with certain activity limit values.

(2) The limit values for certain activities as intended in paragraph (1) letter b, letter d, and letter e are as listed in Attachment III which is an inseparable part of this Government Regulation.

(3) Provisions regarding procedures for the use of other packages with certain activity limit values are regulated by BAPETEN Head Regulations.

Article 13 ...



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Article 13

- (1) In the event that the radioactive substance to be transported is a Low Activity Radioactive Substance-I and a Surface Contaminated Object-I, the transportation of the Radioactive Substance can be carried out without using packaging.**
- (2) Transportation without using packaging as intended in paragraph (1) is carried out with the following conditions:**
- a. Radioactive Substances of Low Activity Type-I and Surface Contaminated Objects-I do not exit the transport vehicle during transportation;**
 - b. Radioactive Substances of Low Activity Type-I and Surface Contaminated Objects-I carry out exclusive transportation of Radioactive Substances;**
And
 - c. Type-I Low Activity Radioactive Substances and Surface-I Contaminated Objects are not left in the transport vehicle or do not contaminate the transport vehicle.**
- (3) Exclusive transportation of Radioactive Substances as intended in paragraph (2) letter b is carried out with the following provisions:**
- a. using a single means of transportation or a container Great for radioactive substances;**
 - b. Transportation of Radioactive Substances is carried out to carry out the delivery of Low Activity Type-I Radioactive Substances and Surface Contaminated Objects-I from 1 (one) Sender;**
 - c. the vehicle is equipped with barriers that impede the access of unauthorized persons; and D. no loading and unloading during delivery.**
- (4) In the event that the exclusive transportation of Radioactive Substances as intended in paragraph (3) is carried out by Sender, Sender must:**
- a. fulfill the provisions as referred to in paragraph (3); And**
 - b. own ...**



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Article 15

- (1) Packages are categorized into category I-White if meet the criteria:**
 - a. the Transport Index value is equal to 0 (zero); And**
 - b. the maximum radiation level at any point on the outer surface of the Package does not exceed 0.005 mSv/hour (zero point zero zero five millisieverts per hour).**
- (2) Packages are categorized as category II-Yellow if they meet the following criteria:**
 - a. the Transport Index value is greater than 0 (zero) and less than or equal to 1 (one); And**
 - b. the maximum radiation level at any point on the outer surface of the Package is greater than 0.005 mSv/hour (zero point zero zero five millisieverts per hour) and less than or equal to 0.5 mSv/hour (zero point five millisieverts per hour).**
- (3) Packages are categorized as category III-Yellow if they meet the following criteria: a.**

the Transport Index value is greater than 1 (one) and less than or equal to 10 (ten) and the maximum radiation level at any point on the outer surface of the Package is greater than 0.5 mSv/hour (zero point five millisieverts per hour) and less than or equal to 2 mSv/hour (two millisieverts per hour); And

 - b. Transport Index value is greater than 10 (ten) and the maximum radiation level at any point on the outer surface of the Package is greater than 2 mSv/hour (two millisieverts per hour) and less than or equal to 10 mSv/hour (ten millisieverts per hour).**

Article 16

- (1) In the event that Radioactive Substances are used in Packages with the criteria as intended in Article 15 paragraph (3) letter b, Transport of Radioactive Substances must be carried out exclusively.**

(2) Transport...



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- (2) Exclusive transportation of Radioactive Substances as intended in paragraph (1) is carried out with the following provisions:
- a. Transportation of Radioactive Substances is carried out using a single transport vehicle or Large Container for Radioactive Substances;
 - b. Transportation of Radioactive Substances is carried out to carry out the delivery of radioactive substances from 1 (one) Sender;
 - c. the vehicle is equipped with barriers that impede the access of unauthorized persons; And
 - d. no loading and unloading during delivery.
- (3) In the event that the exclusive transportation of Radioactive Substances as intended in paragraph (1) is carried out by the Sender, the Sender is obliged to:
- a. fulfill the provisions as intended in paragraph (2); And
 - b. have a permit to transport dangerous goods from the ministry that handles government affairs in the field of transportation in accordance with the provisions of statutory regulations.
- (4) In the event that the exclusive transportation of Radioactive Substances as intended in paragraph (1) is carried out by Carrier, Carrier must:
- a. carry out the Sender's instructions;
 - b. have a permit to transport dangerous goods from the ministry that handles government affairs in the field of transportation in accordance with the provisions of statutory regulations; and c. comply with the provisions of the laws and regulations invitation in the field of transportation.
- (5) Further provisions regarding procedures for the exclusive transportation of Radioactive Substances as intended in paragraph (2) are regulated by BAPETEN Head Regulations.

Article 17 ...



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Article 17

- (1) In the case of Transporting Radioactive Substances using Outer Packaging and Containers, the Sender is obliged to determine the category of Outer Packaging and Container.**
- (2) The Outer Packaging and Container Category as intended in paragraph (1) consists of:**
 - a. I-White;**
 - b. II-Yellow; And**
 - c. III-Yellow.**
- (3) Determination of Outer Packaging and Container categories based on:**
 - a. Transport Index; And**
 - b. maximum radiation level at any point on the outer surface of the Outer Packaging and/or Container.**
- (4) Procedures for determining the Transport Index for Outer Packaging and Containers as stated in Attachment IV which is an inseparable part of this Government Regulation.**

Article 18

- (1) Outer Wrapping and Containers are categorized into category I-White if they meet the following criteria:**
 - a. the Transport Index value is equal to 0 (zero); And**
 - b. the maximum radiation level at any point on the outer surface of Outer Packaging and Containers does not exceed 0.005 mSv/hour (zero point zero zero five millisieverts per hour).**
- (2) Outer Wrapping and Containers are categorized into category II-Yellow if they meet the following criteria:**
 - a. the Transport Index value is greater than 0 (zero) and less than or equal to 1 (one); And**
 - b. level ...**



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b. the maximum radiation level at any point on the outer surface of Outer Packaging and Containers is greater than 0.005 mSv/hour (zero point zero zero five millisieverts per hour) and less than or equal to 0.5 mSv/hour (zero point five millisieverts per O'clock).

(3) Outer Wrapping and Containers are categorized into category III-Yellow if they meet the following criteria:

a. the Transport Index value is greater than 1 (one) and less than or equal to 10 (ten) and the maximum radiation level at each point on the outer surface of the Outer Packaging and Container is greater than 0.5 mSv/hour (zero point five millisieverts per hour) and is less than or equal to 2 mSv/hour (two millisieverts per hour); And

b. the Transport Index value is greater than 10 (ten) and the maximum radiation level at each point on the outer surface of Outer Packaging and Containers is greater than 2 mSv/hour (two millisieverts per hour) and less than or equal to 10 mSv/hour (ten millisieverts per hour).

Article 19

(1) In the case of radioactive substances using outer packaging and containers with the criteria as intended in Article 18 paragraph (3) letter b, transportation of radioactive substances is carried out non-exclusively.

(2) Non-exclusive transportation of Radioactive Substances as intended in paragraph (1) is carried out with the following provisions:

a. the Transport Index value is not greater than 50 (fifty) for containers, land transport vehicles, passenger planes and cargo planes, and river and ferry transport vessels;

b. the Transport Index value is not greater than 200 (two hundred) for Small Containers in certain holds, compartments or deck areas on ships;

c. mark ...



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- c. the Transport Index value is not greater than 200 (two hundred) for Small Containers on sea vessels; And
 - d. Transport Index values are not limited to Crates Pack Big on ships.
- (3) In the event that non-exclusive transportation of Radioactive Substances as intended in paragraph (1) is carried out by the Sender, the Sender is obliged to fulfill the provisions as intended in paragraph (2).
- (4) In the event that non-exclusive transportation of Radioactive Substances as intended in paragraph (1) is carried out by the Carrier, the Carrier is obliged to:
- a. carry out the Sender's instructions; And
 - b. comply with the provisions of laws and regulations in the field of transportation.
- (5) Further provisions regarding procedures for non-exclusive transportation of radioactive substances as intended in paragraph (2) are regulated by BAPETEN Head Regulations.

Paragraph 4 Packaging Marking

Article 20

- (1) The sender is required to mark the package.
- (2) Marking of packages as intended in paragraph (1) is carried out by attaching a sign to the outside of the package.

Article 21

- (1) The sign as intended in Article 20 paragraph (2) contains at least information regarding:
 - a. identity of the Sender and/or Recipient;
 - b. PBB number and packaging type; And
 - c. information regarding mass, if it exceeds 50 kg (fifty kilograms).

(2) In...



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- (2) In the case of industrial packages containing more than 0.1 kg (zero point one kilogram) of fissile material or uranium hexafluoride (UF6) and type A packages containing Fissile material or uranium hexafluoride (UF6) in excess of 0.1 kg (zero point one kilogram), apart from including the information as intended in paragraph (1), the sender must include:
- a. Package identification code; And
 - b. Packaging design serial number.
- (3) In the case of type B(U), type B(M) or type C packages, apart from including the information as intended in paragraph (1), the Sender is obliged to include:
- a. Package identification code;
 - b. Packaging design serial number; And
 - c. radiation sign.
- (4) The radiation sign as intended in paragraph (3) letter c is as listed in Appendix V which is an inseparable part of this Government Regulation.

Article 22

- (1) In the case of Transporting Radioactive Substances using Outer Packaging, marking is done by attaching a sign to the outside of the Outer Packaging.
- (2) The sign on the outer packaging as intended in paragraph (1) contains at least information regarding:
- a. UN Number; And
 - b. writing that says "OUTER WRAPPER" or "OVERPACK".

Article 23

- (1) In the event that the Transport of Type-I Low Activity Radioactive Substances and Surface-I Contaminated Objects does not use packaging, marking is carried out by attaching a sign to the surface of the outer cover of Type-I Low Activity Radioactive Substances and Surface-I Contaminated Objects.

(2) Sign...



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(2) The sign as intended in paragraph (1) is in the form of writing that reads:

- a. "RADIOACTIVE AJR-I" or "RADIOACTIVE LSA-I";
or
- b. "RADIOACTIVE BTP-I" or "RADIOACTIVE SCO-I".

Article 24

(1) List of PBB Numbers as intended in Article 21 paragraph (1) letter b and Article 22 paragraph (2) letter a as listed in Appendix VI which is an inseparable part of this Government Regulation.

(2) Changes to the list of PBB Numbers as intended in paragraph (1) are determined by BAPETEN Head Regulation.

Article 25

Further provisions regarding the procedures for marking on packages, outer packaging and the outer surface of coverings for Low-Activity Radioactive Substances Type-I or Surface-I Contaminated Objects that are transported without packaging are regulated by the Head of BAPETEN Regulations.

Paragraph 5

Package Labeling

Article 26

- (1) The sender is obliged to label the package.
- (2) Labeling of packages as intended in paragraph (1) is carried out by attaching labels to two opposite outer sides of the package.
- (3) The label on the package as intended in paragraph (2) contains information regarding:
 - a. radiation sign;

b. writing ...



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b. writing that reads "RADIOACTIVE" or "RADIOACTIVE";

c. Package category;

d. Package contents or radionuclides;

e. radionuclide activity;

f. Transport Index; and g.

Hazardous material class for radioactive substances viz
7th grade.

(4) In the case of category I-White Packages, the label on the Package is permitted not to contain information regarding the Transport Index.

Article 27

(1) In the case of Transporting Radioactive Substances using Outer Packaging and/or Containers, labeling is carried out by attaching labels to: a. the two opposite outer sides of the Outer Wrapping; or

b. four outer sides of the container.

(2) The label as intended in paragraph (1) contains information regarding:

a. radiation sign;

b. writing that says "RADIOACTIVE" or "RADIOACTIVE";

c. Outer Packaging and Container category;

d. contents or radionuclides of each Package;

e. radionuclide activity;

f. Transport Index; and g.

Hazardous material class for radioactive substances viz
7th grade.

(3) In the case of Category I-White Outer Packaging and/or Containers, the label on the Outer Packaging and/or Container is permitted not to contain information regarding the Transport Index.

Article 28...



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Article 28

In the event that the Packaging or Outer Wrapping and/or Container contains Fissile Material or uranium hexafluoride (UF₆), apart from fulfilling the provisions as intended in Article 26 or Article 27, the Packaging or Outer Wrapping and/or Container must be affixed to a label that includes at least information regarding the writing that reads "FISIL" or "FISSILE" and the Critical Safety Index.

Article 29

Label images as referred to in Articles 26 to 28 are listed in Appendix V which is an inseparable part of this Government Regulation.

Paragraph 6

Plaque Presentation

Article 30

- (1) In the case of Transporting Radioactive Substances using Containers or Tanks, the Sender is obliged to provide a placard.
- (2) Plaques as intended in paragraph (1) are given by attaching the plaque to the outside of the Container or Tank.
- (3) The plaque as intended in paragraph (2) contains information regarding:
 - a. radiation sign;
 - b. writing that reads "RADIOACTIVE" or "RADIOACTIVE"; And
 - c. Hazardous material class for radioactive substances viz 7th grade.

Article 31...



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Article 31

In addition to including the information as intended in Article 30, the sender must include the information

UN number, if:

- a. Type-I Low Activity Radioactive Substances or Surface-I Contaminated Objects are transported without using packaging; And
- b. Transportation of Radioactive Substances is carried out exclusively using a single UN Number.

Article 32

Plaques as referred to in Article 30 and Article 31 are as stated in Appendix V which is an inseparable part of this Government Regulation.

Paragraph 7

Determination of the Safety Criticality Index

Article 33

- (1) The sender is obliged to determine the Critical Safety Index for Packages, Outer Packaging, Containers and Tanks used to transport Fissile Material or uranium hexafluoride (UF₆).
- (2) Provisions regarding procedures for determining the Critical Safety Index are regulated by BAPETEN Chairman's Regulations.

Paragraph 8

Inspection of Packages for
Customs Purposes

Article 34

Package inspection for customs purposes is carried out in accordance with the provisions of laws and regulations in the customs sector.

Article 35...



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Article 35

- (1) If necessary, inspection of the package for customs purposes can be carried out by opening the package.**
- (2) Inspection as intended in paragraph (1) carried out with the following conditions:**
 - a. carried out in places that are not easily accessible by the public or equipped with barriers;**
 - b. radiation protection equipment available; And**
 - c. attended by the Sending Radiation Protection Officer or Recipient.**
- (3) Packages that have been opened must be returned to their original condition by the Radiation Protection Officer of the Sender or Recipient, before being handed over to the Recipient.**

Part Four

Internal Radiation Protection and Safety Program

Transport of Radioactive Substances

Article 36

- (1) The sender must prepare a radiation protection and safety program in transporting radioactive substances.**
- (2) In preparing a Radiation Protection and Safety program in Transporting Radioactive Substances as referred to in paragraph (1), the Sender is obliged to carry out a dose study of work-related radiation exposure.**
- (3) The radiation protection and safety program in the transportation of radioactive substances can be prepared separately or as a single unit with the radiation protection and safety program for the use of ionizing radiation sources or the use of nuclear materials.**

Article 37...



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Article 37

**Internal Radiation Protection and Safety Program
Transportation of Radioactive Substances as referred to in
Article 36 contains at least:**

- a. scope;
- b. responsibilities of the Sender, Recipient and Carrier; c.
dosage study results;
- d. work area monitoring and/or individual dose monitoring;
- e. radiation exposure and surface contamination of the Package,
Transport Index, and Critical Safety Index if the radioactive
substance being transported is in the form of Fissile Material
or uranium hexafluoride (UF₆);
- f. separation of packages and other protective measures;
- g. procedures for loading, placing, transporting, handling and
unloading packages;
- h. emergency management procedures; i.
training; and J.

**Internal Radiation Safety management system
Transport of Radioactive Substances.**

Article 38

- (1) In the event that the dose study of occupational radiation exposure as intended in Article 36 paragraph (2) shows that the effective dose has the potential to exceed 6 mSv (six millisieverts) within a period of 1 (one) year, the sender is obliged to monitor the work area and monitor the dose individual.
- (2) In the event that the dose study for occupational radiation exposure as intended in Article 36 paragraph (2) shows an effective dose of between 1 mSv (one millisievert) and 6 mSv (six millisieverts) within a period of 1 (one) year, the sender is obliged to carry out monitoring of the work area or dose monitoring individual.

(3) Monitoring...



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(3) Monitoring of occupational radiation exposure doses as intended in paragraph (1) and paragraph (2) applies to:

- a. Sender personnel who carry out continuous preparations for the Transport of Radioactive Substances; b. Sender personnel who make preparations for the Transport of Radioactive Substances at any time;**
- c. Carrier personnel who make preparations for Transporting Radioactive Substances at the Sender's facilities; And**
- d. Transport personnel carrying out the Transport of Radioactive Substances.**

Article 39

Further provisions regarding the preparation and implementation of Radiation Protection and Safety programs in the Transport of Radioactive Substances are regulated by BAPETEN Head Regulations.

Part Five

Placement of Packages during Transport of Radioactive Substances and Storage of Packages during Transit

Article 40

- (1) The sender is obliged to ensure that the placement of the package during the transportation of radioactive substances is carried out by considering:**
- a. type of transportation mode used;**
 - b. type of transportation;**
 - c. radiation exposure to the outer surface of the vehicle transport;**
 - d. Transport Index; And**
 - e. Safety Criticality Index.**

(2) In...



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- (2) In the event that transit is required during the Transportation of Substances Radioactive The sender must:
- a. placing the package in a place that is not easily accessible to members of the public and is equipped with a barrier, if the transport of radioactive substances is carried out by the sender; or
 - b. provide instructions to the Carrier to place the Package in a place that is not easily accessible to members of the public and is equipped with barriers, if the Transport of Radioactive Substances is carried out by the Carrier.
- (3) Placement during transit as intended in paragraph (2) is carried out by considering:
- a. Transport Index; And
 - b. Safety Criticality Index.

Article 41

- (1) In the case of Transporting Radioactive Substances using Outer Packaging and/or Container, the Sender is obliged to ensure the placement of the Outer Packaging and/or Container taking into account:
- a. type of transportation mode used;
 - b. type of transportation;
 - c. radiation exposure to the outer surface of the vehicle transport;
 - d. Transport Index; And
 - e. Safety Criticality Index.
- (2) In the event that transit is required during the Transportation of Substances Radioactive, Sender must:
- a. placing the outer packaging and/or container in a place that is not easily accessible to members of the public and equipped with barriers, if the transport of radioactive substances is carried out by the sender; or

b. give ...



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b. provide instructions to the Carrier to place the Outer Packaging and/or Container in a place that is not easily accessible to members of the public and is equipped with barriers, if the Transport of Radioactive Substances is carried out by the Carrier.

(3) Placement during transit as intended in paragraph (2) is carried out by considering:

- a. Transport Index; And
- b. Safety Criticality Index.

Article 42

Further provisions regarding the procedures for placing packages and outer packaging and/or containers during the transportation of radioactive substances and storing packages and outer packaging and/or containers during transit are regulated by BAPETEN Head Regulations.

CHAPTER IV

TECHNICAL SECURITY IN TRANSPORTATION

RADIOACTIVE SUBSTANCES

Part One

General

Article 43

Security Techniques in Transporting Radioactive Substances apply to:

- a. Special Form Radioactive Substances as intended in Article 3 paragraph (1) letter c and Low Spread Power Radioactive Substances as intended in Article 3 paragraph (1) letter d; and
- b. Fissile material and

uranium hexafluoride (UF₆) which are nuclear materials as intended in Article 3 paragraph (4).

Part ...



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The second part

**Security Techniques in Transporting Radioactive Substances
Special Forms and Low Spreading Power Radioactive Substances**

Paragraph 1

General

Article 44

**Technical security in transporting Radioactive Substances
Special Forms and Low Dispersal Radioactive Substances include:**

- a. determination of Special Form Radioactive Substances and Low Dispersion Radioactive Substances into the radioactive source category prior to transportation;**
- b. determining source security level classification radioactive; And**
- c. preparation and updating of radioactive source security plans for the transportation of Special Forms of Radioactive Substances and Low Dispersion Radioactive Substances.**

Paragraph 2

**Determination of Special Forms of Radioactive Substances and Radioactive Substances
Low Spreadability into the Radioactive Source Category before
Transport**

Article 45

- (1) The sender is obliged to determine Special Form Radioactive Substances and Low Dispersion Radioactive Substances into the radioactive source category before carrying out transportation.**
- (2) Determination of Special Form Radioactive Substances and Low Dispersion Radioactive Substances to be transported to in the radioactive source category as intended in paragraph (1) is carried out based on: a. radioactivity threshold; And**

b. type ...



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- (2) The classification of the security level of radioactive sources as intended in paragraph (1) includes:
- a. basic security level; b.
 - advanced level of security; and c.
 - advanced level of security tightened.

Article 48

- (1) The basic level of security as intended in Article 47 paragraph (2) letter a applies to the transportation of Special Form Radioactive Substances and Low Dispersion Radioactive Substances which are categorized as category 3 radioactive sources.
- (2) The advanced level of security as intended in Article 47 paragraph (2) letter b applies to the transportation of Special Form Radioactive Substances and Low Dispersion Radioactive Substances which are categorized as category 2 radioactive sources.
- (3) The further tightened level of security as intended in Article 47 paragraph (2) letter c applies to the transportation of Special Form Radioactive Substances and Low Dispersion Radioactive Substances which are categorized as category 1 radioactive sources.
- (4) Special Form Radioactive Substances and Low Dispersion Radioactive Substances which are categorized as category 4 and category 5 radioactive sources are excluded from the classification of security level of radioactive sources as intended in Article 47 paragraph (2).

Article 49

Basic security level as referred to in Article 48 paragraph (1) includes actions:

- a. preliminary notification to Recipients;
- b. selection of transportation mode;
- c. determining stopping and transit places;
- d. identification of Carrier personnel;
- e. inspection ...



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- e. inspection of transport vehicles;
- f. use of locks and seals;
- g. measures to overcome security emergencies in the transportation of Special Forms of Radioactive Substances and Low Dispersion Radioactive Substances in accordance with the radioactive source category; And
- h. reporting in routine conditions and emergency conditions.

Article 50

Advanced level of security as referred to in Article 48 paragraph (2) includes:

- a. actions at the basic security level as intended in Article 49;
- b. preliminary notification to the Head of BAPETEN;
- c. use of security communication systems;
- d. determining transportation routes;
- e. implementation of transfer or assignment;
- f. determination of radioactive source security officers; And
- g. use of tracking equipment.

Article 51

The level of further tightened security as intended in Article 48 paragraph (3) includes:

- a. actions at the basic security level as intended in Article 49;
- b. measures at advanced security levels as referred to in Article 50; And
- c. coordination with the Response and activation Unit Response Unit.

Article 52...



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Article 52

Further provisions regarding the details of implementing security measures in accordance with the classification of security levels of radioactive sources are regulated by BAPETEN Chairman's Regulations.

Paragraph 4

Preparation and Updating of Radioactive Source Security Plans for Transporting Special Forms of Radioactive Substances and Low Spreading Radioactive Substances

Article 53

- (1) The sender is obliged to prepare a radioactive source security plan for the transportation of Special Form Radioactive Substances and Low Dispersion Radioactive Substances before carrying out the transportation.
- (2) The radioactive source security plan for the transportation of Special Forms of Radioactive Substances and Low Dispersion Radioactive Substances as referred to in paragraph (1) must at least contain information regarding:
 - a. scope;
 - b. reference to statutory regulations, standards and/or policies;
 - c. categories of radioactive sources, descriptions of radioactive substances, Packaging and mode of transportation;
 - d. organizational structure and responsibilities of each personnel;
 - e. personnel training; f. information security management; g. security measures tailored to the security level;
 - h. loading, transit, temporary storage, transfer, unloading and reporting procedures under routine conditions;
 - i. plan ...



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- i. security emergency response plan; And
- j. inventory and recording of the results of the inventory of transported radioactive sources.

(3) The contents of the radioactive source security plan for the transportation of Special Forms of Radioactive Substances and Low Dispersion Radioactive Substances as intended in paragraph (2) are adjusted to the category of radioactive sources as intended in Article 45 paragraph (3).

(4) Radioactive source security plan for the transportation of Special Forms of Radioactive Substances and Substances Low Spread Power Radioactive as referred to in paragraph (3) can be arranged:

- a. become a radioactive source security plan document for the transportation of Special Forms of Radioactive Substances and Low Dispersion Radioactive Substances; or
- b. be an integral part of the radioactive source security plan document for the utilization of ionizing radiation sources.

Article 54

The sender is obliged to update the radioactive source security plan for the transportation of Special Form Radioactive Substances and Low Dispersion Radioactive Substances at least 1 (one) time within a period of 3 (three) years.

Article 55...



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Article 55

Further provisions regarding details of cargo and procedures for preparing and updating radioactive source security plans for the transportation of Special Forms of Radioactive Substances and Low Dispersion Radioactive Substances are regulated by BAPETEN Head Regulations.

Part Three

Security Techniques in Transporting Fissile Materials and Uranium Hexafluoride (UF₆) which is a Nuclear Material

Article 56

Security techniques in the transport of fissile material and uranium hexafluoride (UF₆), which are nuclear materials, include:

- a. determination of Fissile Material and uranium hexafluoride (UF₆) which are nuclear materials into the classification of nuclear materials; And
- b. preparing and updating physical protection plans for the transportation of Fissile Material and uranium hexafluoride (UF₆) which are nuclear materials.

Article 57

- (1) The sender is obliged to determine Fissile Material and uranium hexafluoride (UF₆) which are nuclear materials into the classification of nuclear materials before carrying out transportation.
- (2) The determination of Fissile Material and uranium hexafluoride (UF₆) which are nuclear materials into the nuclear material classification as intended in paragraph (1) is carried out based on:
 - a. the presence of the elements uranium, plutonium, or thorium;
 - b. description of the elements uranium or plutonium in irradiated or non-irradiated conditions; And

c. mass...



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c. mass of nuclear material.

(3) The classification of nuclear materials as intended in paragraph (2) includes:

a. class I nuclear material;

b. class II nuclear material;

c. class III nuclear material; And

d. class IV nuclear material.

(4) Details regarding the presence of uranium, plutonium or thorium elements, descriptions of uranium or plutonium elements in irradiated or non-irradiated conditions, and the mass of nuclear material as intended in paragraph (2) as listed in Appendix VII which is an inseparable part of the Regulations this government.

Article 58

(1) The sender is obliged to prepare a physical protection plan for the transportation of Fissile Material and uranium hexafluoride (UF₆) which are nuclear materials before carrying out transportation.

(2) The physical protection plan for the transportation of Fissile Material and uranium hexafluoride (UF₆) which is nuclear material as intended in paragraph (1) must at least contain:

a. preliminary notification to Recipients;

b. selection of transportation mode;

c. transport routes;

d. stopping and transit places; e.

provisions regarding transfer; f. identification of Carrier personnel;

g. inspection of transport vehicles;

h. security communication system;

i. guards or security officers;

j. equipment ...



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- j. tracking equipment;**
- k. terms of use of locks and seals;**
- l. actions after delivery;**
- m. transportation contingency plans;**
- n. coordination with the Response Unit; and/or o. reporting procedures both in routine and emergency conditions.**

(3) The physical protection plan load for the transportation of Fissile Material and uranium hexafluoride (UF₆) which is nuclear material as intended in paragraph (2) is adjusted to the classification of nuclear material as intended in Article 57 paragraph (3).

(4) A physical protection plan for the transportation of Fissile Material and uranium hexafluoride (UF₆) which is nuclear material as intended in paragraph (3) can be prepared:

- a. be a physical protection plan document for the transport of Fissile Material and uranium hexafluoride (UF₆) which is a separate nuclear material; or**
- b. become an integral part of the physical protection plan document for nuclear installations and nuclear materials for the utilization of nuclear installations and nuclear materials.**

Article 59

The sender is required to update the physical protection plan for the transportation of Fissile Material and uranium hexafluoride (UF₆), which is a nuclear material.

Article 60

Further provisions regarding cargo details and procedures for preparing and updating physical protection plans for the transportation of Fissile Material and uranium hexafluoride (UF₆) which are nuclear materials are regulated by BAPETEN Head Regulations.



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CHAPTER V

INTERNAL RADIATION SAFETY MANAGEMENT

TRANSPORTATION OF RADIOACTIVE SUBSTANCES AND INTERNAL SAFETY

TRANSPORTATION OF RADIOACTIVE SUBSTANCES

Part One

General

Article 61

Radiation Safety Management in Transporting Substances

Radioactivity and Safety in Transporting Substances

Radioactive includes:

- a. obligations of the Sender, Recipient and Carrier; And**
- b. management system.**

The second part

Obligations of Sender, Recipient, and Carrier

Article 62

(1) The sender is obliged to:

- a. have a permit to utilize sources of ionizing radiation or a permit to utilize nuclear materials in accordance with statutory provisions;**
- b. ensure Carrier has fulfilled provisions of laws and regulations in the field of transportation;**
- c. ensure that the Carrier has a permit to transport dangerous goods from the ministry that handles government affairs in the field of transportation in accordance with the provisions of statutory regulations in the event that Radioactive Substances are transported exclusively;**
- d. carry out ...**



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d. implement technical provisions on Radiation Safety

In Transporting Radioactive Substances and technical provisions for Security in Transporting Substances Radioactive;

e. prepare shipping documents and submit a copy thereof to the Carrier;

f. ensure that the Carrier used has competence in Transporting Radioactive Substances and/or transporting dangerous goods;

g. carry out periodic evaluations, monitoring and audits of matters relating to the implementation of the Transport of Radioactive Substances;

h. compensate for all losses suffered by the Carrier and/or other parties as a result of failure to fulfill the requirements for Radiation Safety in Transporting Radioactive Substances and Security in Transporting Radioactive Substances; and/or

i. send back radioactive substances or packages that do not meet the technical provisions for Radiation Safety in Transporting Radioactive Substances and the technical provisions for Safety in Transporting Radioactive Substances to the sending party in the country of origin of the Transport of Radioactive Substances.

(2) Delivery documents as intended in paragraph (1) letter e include:

a. delivery approval from the Head of BAPETEN; b. completeness of permits from relevant agencies;

c. procedures for loading, placing, transporting, handling and unloading packages;

d. emergency management procedures; And

e. plan ...



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- e. radioactive source security plan for transporting Special Forms of Radioactive Substances and Low Spreading Power Radioactive Substances if the radioactive substances being transported are Special Forms of Radioactive Substances and Low Spreading Power Radioactive Substances or a physical protection plan if the radioactive substances being transported are Fissile Materials and uranium hexafluoride (UF₆) .

Article 63

Recipients must:

- a. have a permit to utilize sources of ionizing radiation or a permit to utilize nuclear materials in accordance with statutory provisions;
- b. ensure and check the Package received from the Carrier in accordance with the shipping documents;
- c. carry out inspection of the package for possible reasons occurrence of damage or leakage;
- d. measure the level of radiation exposure and/or contamination of the Package in the event that the results of the inspection of the Package as intended in letter c indicate damage or leakage to the Package;
- e. take measures to protect the package in accordance with the procedures stated in the shipping document in the event that the results of measuring the level of radiation exposure and/or contamination as intended in letter d can cause radiation and/or contamination hazards;
- f. report the results of measuring the level of radiation exposure of the Package as intended in letter d and the security measures for the Package as intended in letter e to the Head of BAPETEN and the Sender no later than 5 (five) days after measuring the level of radiation exposure and security measures for the Package; And

g. return ...



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- g. return radioactive substances or packages that do not meet the technical provisions for Radiation Safety and technical Security in Transporting Radioactive Substances to the Sender.

Article 64

(1) The carrier is obliged to:

- a. fulfill the provisions of laws and regulations in the field of transportation;
- b. have a permit to transport dangerous goods from the ministry that handles government affairs in the field of transportation in accordance with the provisions of statutory regulations in the event that Radioactive Substances are transported exclusively;
- c. bring shipping documents;
- d. ensure that the consignment is received by the Recipient;
- e. carry out the Sender's instructions; And
- f. carry out the transportation of radioactive substances in accordance with the procedures contained in the shipping documents as intended in Article 62 paragraph (2).

(2) In the event that the package cannot be delivered or delivered to the Recipient, the Carrier is obliged to:

- a. placing the package in a temporary location that is supervised and fulfills the provisions for placing the package during the transportation of radioactive substances and storage during transit as intended in Article 40 to Article 42;
- b. inform the Sender, Recipient and Head of BAPETEN within a minimum of 2 (two) days from the time it becomes known that the Package cannot be sent or delivered to the Recipient.

Part ...



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Part Three
Management system

Article 65

- (1) The sender is obliged to establish and implement a management system as intended in Article 61 letter b in the Transport of Radioactive Substances.**
- (2) Management system as intended in paragraph (1) includes:**
 - a. organization related activities**
Transport of Radioactive Substances;
 - b. maintenance and control of records relating to the Transport of Radioactive Substances; And**
 - c. technical implementation of Radiation Safety in Transporting Radioactive Substances and technical Safety in Transporting Radioactive Substances.**
- (3) The sender is obliged to evaluate the management system as intended in paragraph (2) periodically at least 1 (one) time in 3 (three) years.**

Article 66

Further provisions regarding procedures for implementing the management system in the Transport of Radioactive Substances are regulated by BAPETEN Head Regulations.

CHAPTER VI ...



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CHAPTER VI

**EMERGENCY PREPAREDNESS AND MANAGEMENT SYSTEM
IN TRANSPORTATION OF RADIOACTIVE SUBSTANCE**

**Part One
General**

Article 67

- (1) The sender is required to have a preparedness and emergency management system in the transportation of radioactive substances.
- (2) The emergency preparedness and management system as intended in paragraph (1) includes: determining a. preparation of emergency
And management; **procedure**
b. emergency training and rehearsals; and c.
emergency management.

**The second part
Preparation and Determination
Emergency Management Procedures**

Article 68

- (1) The sender is obliged to prepare and determine emergency management procedures in the transportation of radioactive substances.
- (2) Emergency management procedures as intended in paragraph (1) at least include: a. first aid and rescue of victims;
b. notification to the Sender and/or Recipient, the Head of BAPETEN, the minister who administers government affairs in the field of transportation, and other agencies related to emergency management;
c. identification...



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- c. identification of the dangers of transported radioactive substances;
 - d. handling radiation hazards and preventing the spread of radioactive contamination;
 - e. decontamination of contaminated personnel, facilities and infrastructure;
 - f. recovery; and/or
 - g. reporting.
- (3) Emergency management procedures as intended in paragraph (2) must be updated periodically at least 1 (one) time in 2 (two) years.
- (4) Emergency management procedures as follows referred to in paragraph (3) can be arranged:
- a. become a separate emergency management procedure document for the Transport of Radioactive Substances; or
 - b. become an integral part of the Radiation Protection and Safety program in Transporting Radioactive Substances as intended in Article 37.

Part Three

Emergency Training and Rehearsals

Article 69

- (1) The sender is obliged to organize emergency training and rehearsals in the Transport of Radioactive Substances to ensure that emergency management procedures can be implemented.
- (2) Emergency training and rehearsals are adjusted to the potential dangers of radiation and contamination of radioactive substances being transported.
- (3) Emergency training and rehearsals as referred to in paragraph (1) are held at least 1 (one) time in 4 (four) years.

(4) Provisions...



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Part Four
Emergency Management

Article 73

Emergency Management in the Transportation of Substances Radioactivity includes activities:

- a. first aid and rescue of victims;**
- b. notification to the Sender and/or Recipient, the Head of BAPETEN, the minister who administers government affairs in the field of transportation, and other agencies related to emergency management.**
- c. identification of emergencies;**
- d. prevention of leaks or damage to packaging;**
- e. overcoming radiological and non-radiological impacts due to pollution and/or contamination of radioactive substances in transportation on the environment;**
- f. Packaging recovery; and/or**
- g. restoration of environmental functions.**

Article 74

Emergency management as intended in Article 73 is carried out in accordance with emergency management procedures in the Transport of Radioactive Substances as intended in Article 68.

Article 75

(1) In the event of an emergency, the Carrier is obliged to notify as soon as possible to:

- a. Sender and/or Recipient;**
- b. Head of Bapeten;**

c. minister...



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**c. minister who administers government affairs
in the field of transportation; And**

d. other related agencies.

(2) Based on the notification as intended in paragraph (1), the Sender and/or Recipient assigns a Radiation Protection Officer to the location where the emergency occurs.

(3) Radiation Protection Officers as intended in paragraph (2) are required to carry out emergency response in the Transport of Radioactive Substances as intended in Article 73.

Article 76

(1) The Sender and/or Recipient is obliged to notify the implementation of emergency response and developments as intended in Article 75 to the Head of BAPETEN.

(2) Based on the notification as intended in paragraph (1), the Head of BAPETEN carries out:

- a. emergency identification;**
- b. determining emergency status;**
- c. level of response; and/or**
- d. activation of the BAPETEN emergency response unit.**

Article 77

(1) The sender and/or recipient is required to submit a written report to the Head of BAPETEN after the emergency response has been completed.

(2) The written report as intended in paragraph (1) must contain at least:

- a. cause of emergency;**
- b. chronology;**

c. impact ...



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c. radiological and non-radiological impacts;

And

d. results of measurements of radiation exposure and contamination.

(3) Submission of the report as intended in paragraph (2) is carried out no later than 1 (one) month after the emergency response has been completed.

Article 78

Further provisions regarding emergency management in the Transport of Radioactive Substances are regulated by BAPETEN Head Regulations.

CHAPTER VII

MANAGEMENT OF TRANSPORTATION OF RADIOACTIVE SUBSTANCE

Part One

General

Article 79

Management of Transporting Radioactive Substances includes:

- a. approval for sending radioactive substances;**
- b. notification of implementation of Transport of Radioactive Substances;**
- c. validation of substance Design approval certificate radioactive;**
- d. validation of the Package Design approval certificate; And**
- e. validation of the approval for sending radioactive substances issued by the supervisory authority of the country of origin of the Transport of Radioactive Substances.**

Part ...



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The second part

Approval of Delivery of Radioactive Substances

Article 80

- (1) The sender is required to have approval for sending radioactive substances before the transportation of radioactive substances is carried out.
- (2) The sender to obtain approval for sending radioactive substances as intended in paragraph (1) must submit a written application to the Head of BAPETEN and attach requirements which include:
- a. identity of Sender and Recipient;
 - b. description and technical specifications of radioactive substances and Packaging;
 - c. certificate of approval for design of radioactive substances, if the radioactive substances to be transported are Special Form Radioactive Substances as intended in Article 6 paragraph (2) letter b or Low Spread Power Radioactive Substances as intended in Article 6 paragraph (2) letter c;
 - d. Package Design approval certificate, if the Transport of Radioactive Substances uses certain Packages as intended in Article 9 paragraph (2);
 - e. Internal Radiation Protection and Safety program Transport of Radioactive Substances;
 - f. emergency management procedures, if prepared into a separate document separate from the Radiation Protection and Safety program in Transporting Radioactive Substances;
And
 - g. plan ...



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g. radioactive source security plan for the transportation of special forms of radioactive substances and low dispersion radioactive substances or physical protection plan for the transportation of fissile material and uranium hexafluoride (UF₆) which are nuclear materials.

(3) In the event that Radioactive Substances will be transported exclusively as intended in Article 10 paragraph (2), Article 16 paragraph (1), and Article 31 letter b, The sender must submit a written application to the Head of BAPETEN and attach requirements which include:

a. requirements as intended in paragraph (2);

And

b. a copy of the dangerous goods transportation permit issued by the ministry that handles government affairs in the field of transportation.

(4) In the case of radioactive substances to be transported in the form of Fissile Material or uranium hexafluoride (UF₆), the sender must submit a written request to Head of BAPETEN and attach requirements which include:

a. requirements as intended in paragraph (2);

And

b. safeguards system document .

Article 81

(1) After receiving the application for approval for the delivery of radioactive substances as intended in Article 80, the Head of BAPETEN shall carry out an assessment no later than 3 (three) working days after the application is received.

(2) In...



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(2) In the event that the assessment results show:

- a. the application for approval to send radioactive substances meets the requirements, the Head of BAPETEN issues approval for sending radioactive substances no later than 1 (one) working day after the results of the assessment are known; or
- b. the application for approval to send radioactive substances does not meet the requirements, the Head of BAPETEN rejects the application for approval to send radioactive substances accompanied by reasons for rejection.

(3) Approval for sending radioactive substances as intended in paragraph (2) letter a must contain at least:

- a. identity of Sender and Recipient;
- b. specifications for radioactive substances and packaging;
- c. Radioactive Substance Transport routes;
- d. mode of transportation;
- e. transport vehicles;
- f. validity period of delivery approval; And
- g. identity of the officer who can be contacted.

(4) Further provisions regarding the contents of approval for sending radioactive substances are regulated by BAPETEN Chairman's Regulations.

Article 82

(1) After having approval for sending radioactive substances, the sender must: a.

Transport Radioactive Substances in accordance with the obligations stated in the approval for the shipment of radioactive substances and statutory regulations; And

- b. submit a written report to the implementation Head of BAPETEN regarding the Transport of Radioactive Substances.

(2) Delivery ...



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- (2) Submission of the report as intended in paragraph (1) letter b is carried out no later than 5 (five) working days after the Radioactive Substance Transport is completed.

Article 83

- (1) Approval for sending radioactive substances is valid for a maximum of 3 (three) months from issuance and cannot be extended.
- (2) Further provisions regarding the details of the validity period for approval for the delivery of radioactive substances are regulated by BAPETEN Head Regulations.

Part Three

Notification of Implementation of Transport of Radioactive Substances

Article 84

- (1) Every person who will enter:
- a. Package type B(M);
 - b. Type B(M) packaging which does not comply with Design for Package type B(M);
 - c. Type B(M) packages containing radioactive substances with activity greater than 3000 (three thousand) A1, 3000 (three thousand) A2, or 1000 TBq (one thousand terabecquerels);
 - d. Type B(U) packages containing radioactive substances with activity greater than 3000 (three thousand) A1, 3000 (three thousand) A2, or 1000 TBq (one thousand terabecquerels);
 - e. Type C packages containing radioactive substances with activity greater than 3000 (three thousand) A1, 3000 (three thousand) A2, or 1000 TBq (one thousand terabecquerels); or

f. Packaging ...



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f. Packages containing Fissile Material with a Critical Safety Index number in the Container or transport vehicle exceeding 50 (fifty),

into the territory of the Unitary State of the Republic of Indonesia for the purpose of transit through and/or stopping in the customs area of the Unitary State of the Republic of Indonesia with or without changing means of transport, it is mandatory to submit a request for notification of the implementation of the Transport of Radioactive Substances in writing to the Head of BAPETEN.

(2) Application for notification of the implementation of the Transport of Radioactive Substances as intended in paragraph (1) is made before entering the customs area of the Unitary State of the Republic of Indonesia.

Article 85

(1) Request for notification of the implementation of Transportation of Substances Radioactivity as intended in Article 84 is equipped with requirements which include:

- a. identity of applicant and Carrier;**
- b. Radioactive Substance Transport routes;**
- c. Radioactive Substance Transport schedule;**
- d. purpose of Transporting Radioactive Substances;**
- e. description of radioactive substances and packages being transported;**
- f. delivery approval from the supervisory authority of the country of origin of the Transport of Radioactive Substances; And**
- g. delivery approval from the supervisory authority of the destination country.**

(2) Head ...



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- (2) After receiving the request for notification of the implementation of the Transport of Radioactive Substances as referred to in paragraph (1), the Head of BAPETEN shall carry out an assessment no later than 5 (five) working days after the request is received.
- (3) In the event that the assessment results show:
- a. the application for notification of the implementation of the Transport of Radioactive Substances meets the requirements, the Head of BAPETEN issues a notification of the implementation of the Transport of Radioactive Substances no later than 3 (three) working days after the results of the assessment are known; or
 - b. the request for notification of the implementation of the Transport of Radioactive Substances does not meet the requirements, the Head of BAPETEN rejects the request for notification of the implementation of the Transport of Radioactive Substances accompanied by the reasons for the rejection.
- (4) Notification of the implementation of the Transport of Radioactive Substances as intended in paragraph (3) letter a must contain at least:
- a. identity of notification holder and Carrier;
 - b. Radioactive Substance Transport routes;
 - c. specifications for radioactive substances and packaging;
 - d. Radioactive Substance Transport schedule;
 - e. purpose of Transporting Radioactive Substances; And
 - f. obligations of the notification holder when passing through and/or stopping in the customs area of the Unitary State of the Republic of Indonesia with or without changing means of transportation.
- (5) Notification of the implementation of the Transport of Radioactive Substances as intended in paragraph (4) is valid for 1 (one) time Transport of Radioactive Substances for the purpose of transit through and/or stopping in the customs area of the Unitary State of the Republic of Indonesia with or without changing the means of transport and cannot be extended .

(6) Notification ...



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- (6) Notification of the implementation of the Transport of Radioactive Substances issued by the Head of BAPETEN as intended in paragraph (3) letter a shall be copied to the ministry in charge of affairs in the field of transportation.**
- (7) Further provisions regarding the content of notifications for the implementation of the Transport of Radioactive Substances are regulated by BAPETEN Head Regulations.**

Article 86

Everyone who has had an implementation notification Transportation of Radioactive Substances as referred to in Article 85 paragraph (3) letter a requires submitting a written application to the Head of BAPETEN to obtain validation of:

- a. radioactive substance Design approval certificate; b. Packaging Design approval certificate; and c. approval for the shipment of radioactive substances issued by the supervisory authority of the country of origin of the Transport of Radioactive Substances.**

Part Four

Validation of Radioactive Substance Design Approval Certificate

Article 87

- (1) The sender who will import Low Dispersion Radioactive Substances into the territory of the Unitary State of the Republic of Indonesia is required to have a validation certificate for Design approval of radioactive substances.**
- (2) The sender to obtain validation of the design approval certificate for radioactive substances as intended in paragraph (1) must submit a written application to the Head of BAPETEN before entering the customs area and using it in the territory of the Unitary State of the Republic of Indonesia.**

Article 88 ...



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Article 88

- (1) Every person who will import Low Dispersion Radioactive Substances into the territory of the Unitary State of the Republic of Indonesia for the purpose of transit through and/or stopping in the customs area of the Unitary State of the Republic of Indonesia with or without changing means of transportation is required to have a validation certificate for Design of Radioactive Substances. .
- (2) Every person to obtain validation of a certificate of approval for Design of radioactive substances as intended in paragraph (1) must submit a written application to the Head of BAPETEN before entering the customs area of the Unitary State of the Republic of Indonesia.

Article 89

- (1) The written application as intended in Article 87 paragraph (2) and Article 88 paragraph (2) must be accompanied by requirements which include:
- a. applicant's identity;
 - b. schedule of arrival of radioactive substances;
 - c. Radioactive Substance Transport routes;
 - d. certificate or copy of the approval certificate for the Design of radioactive substances issued by the supervisory authority of the country of origin of the Design of radioactive substances, the country of origin of the Transport of Radioactive Substances, or the country through which the Transport of Radioactive Substances has previously passed or stopped; And
 - e. description of radioactive substances.
- (2) The description of radioactive substances as intended in paragraph (1) letter e must at least contain information regarding:

b. dimensions ...



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- b. dimensions, mass, basic components, and specifications material;
- c. specifications of physical and chemical properties; And
- d. total activity or maximum type activity.

Article 90

- (1) The Head of BAPETEN, after receiving the application for validation of the certificate of approval for the design of radioactive substances as intended in Article 89, shall carry out an assessment no later than 5 (five) working days after the application is received.
- (2) In the event that the assessment results show:
 - a. request for validation of the radioactive substance Design approval certificate meets the requirements, the Head of BAPETEN issues validation of the radioactive substance Design approval certificate no later than 3 (three) working days after the assessment results are known; or
 - b. the application for validation of the approval certificate for the design of radioactive substances does not meet the requirements, the Head of BAPETEN rejects the application for validation of the certificate of approval for the design of radioactive substances accompanied by reasons for rejection.
- (3) Validation of the design approval certificate for radioactive substances as intended in paragraph (2) letter a must contain at least:
 - a. identity of validation holder;
 - b. specifications for radioactive substances;
 - c. schedule of arrival of radioactive substances;
 - d. Radioactive Substance Transport routes;
 - e. obligations of the validation holder for the design approval certificate for radioactive substances;
 - f. Validity period for validation of design approval certificate for radioactive substances; And
 - g. sign ...



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g. identification mark.

- (4) Further provisions regarding the validation content of the approval certificate for the design of radioactive substances are regulated by BAPETEN Chairman's Regulations.**

Article 91

- (1) Validation of the design approval certificate for radioactive substances issued by the Head of BAPETEN as intended in Article 90 paragraph (2) letter a for the Sender as intended in Article 87 is valid for a maximum of 3 (three) years from issuance and cannot be extended.**
- (2) Validation of the certificate of approval for Design of radioactive substances issued by the Head of BAPETEN as intended in Article 90 paragraph (2) letter a for each person as intended in Article 88 is valid for 1 (one) transit through and/or stopover in the customs area The Unitary State of the Republic of Indonesia with or without changing transportation facilities and cannot be extended.**

Article 92

- (1) The sender who has obtained validation of the design approval certificate for radioactive substances as intended in Article 90 paragraph (2) letter a is required to submit a written application to the Head of BAPETEN to obtain approval for sending radioactive substances before the radioactive substances are released from customs area.**
- (2) Submission of applications to obtain approval for sending radioactive substances as intended in paragraph (1) can be made:**
- a. at the same time as submitting the application for validation of the certificate of approval for the design of radioactive substances; or**

b. quick ...



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- b. immediately after obtaining validation of the design approval certificate for radioactive substances.

Part Five

Validation of Package Design Approval Certificate

Article 93

(1) The sender will include:

- a. Industrial packages containing more than 0.1 kg (zero point one kilogram) of Fissile Material or uranium hexafluoride (UF₆);
- b. Type A packages containing more than 0.1 kg (zero point one kilogram) of Fissile Material or uranium hexafluoride (UF₆);
- c. Type B(U) packages that contain more than 0.1 kg (zero point one kilogram) of low-dispersion radioactive substances, fissile materials, or uranium hexafluoride (UF₆) ;
- d. Package type B(M); or
- e. Type C packages containing more than 0.1 kg (zero point one kilogram) of Fissile Material or uranium hexafluoride (UF₆),

into the territory of the Unitary State of the Republic of Indonesia must have validation of the Package Design approval certificate.

(2) The sender to obtain validation of the Package Design approval certificate as intended in paragraph (1) must submit a written application to the Head of BAPETEN before entering the customs area and using it in the territory of the Unitary State of the Republic of Indonesia.

Article 94 ...



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Article 94

(1) Every person who will enter;

- a. Industrial packages containing more than 0.1 kg (zero point one kilogram) of Fissile Material or uranium hexafluoride (UF₆);
- b. Type A packages containing more than 0.1 kg (zero point one kilogram) of Fissile Material or uranium hexafluoride (UF₆);
- c. Type B(U) packages that contain more than 0.1 kg (zero point one kilogram) of low-dispersion radioactive substances, fissile materials, or uranium hexafluoride (UF₆) ;
- d. Package type B(M); or
- e. Type C packages containing more than 0.1 kg (zero point one kilogram) of Fissile Material or uranium hexafluoride (UF₆),

into the territory of the Unitary State of the Republic of Indonesia for the purpose of transit through and/or stopping in the customs area of the Unitary State of the Republic of Indonesia with or without changing means of transport, it is mandatory to have validation of the Package Design approval certificate.

(2) Every person to obtain validation of the Package Design approval certificate as intended in paragraph (1) must submit a written application to the Head of BAPETEN before entering the customs area of the Unitary State of the Republic of Indonesia.

Article 95

(1) The written application as intended in Article 93 paragraph (2) and Article 94 paragraph (2) must be accompanied by requirements which include: a. applicant's identity;

b. timetable ...



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- b. Package arrival schedule;
 - c. Radioactive Substance Transport routes;
 - d. certificate or copy of the Package Design approval certificate issued by the supervisory authority of the country of origin of the Package Design, the country of origin of the Transport of Radioactive Substances, or the country through which the Transport of Radioactive Substances has previously passed or stopped; And
 - e. Package description;
- (2) The package description as intended in paragraph (1) letter e must at least contain information regarding:
- a. Engineering drawings;
 - b. dimensions, mass, basic components, and specifications material;
 - c. radioactive substances contained in packages;
 - d. specifications of physical and chemical properties; And
 - e. maximum total type activity or activity.

Article 96

- (1) The Head of BAPETEN, after receiving the application for validation of the Package Design approval certificate as intended in Article 95, shall carry out an assessment no later than 5 (five) working days after the application is received.
- (2) In the event that the assessment results show:
- a. request for validation of the Package Design approval certificate meets the requirements, the Head of BAPETEN issues validation of the Package Design approval certificate no later than 3 (three) working days after the assessment results are known; or
 - b. application...



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b. the application for validation of the Package Design approval certificate does not meet the requirements, the Head of BAPETEN rejects the application for validation of the Package Design approval certificate accompanied by reasons for rejection.

(3) Validation of the Design approval certificate

The package as intended in paragraph (2) letter a must contain at least:

- a. identity of validation holder;
- b. Packaging specifications;
- c. Package arrival schedule;
- d. Radioactive Substance Transport routes;
- e. validation holder obligations;
- f. validation period for the Package Design approval certificate; And
- g. identification mark.

(4) Further provisions regarding the validation content of the Package Design approval certificate are regulated by BAPETEN Head Regulations.

Article 97

(1) Validation of the Package Design approval certificate issued by the Head of BAPETEN as intended in Article 96 paragraph (2) letter a for the Sender as intended in Article 93 is valid for a maximum of 3 (three) years from issuance and cannot be extended.

(2) Validation of the Package Design approval certificate issued by the Head of BAPETEN as intended in Article 96 paragraph (2) letter a for each person as intended in Article 94 is valid for 1 (one) transit through and/or stopover in the country's customs area Unity of the Republic of Indonesia with or without changing means of transportation and cannot be extended.

Article 98 ...



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Article 98

- (1) The sender who has obtained validation of the Package Design approval certificate as intended in Article 96 paragraph (2) letter a must submit a written application to the Head of BAPETEN to obtain approval for sending radioactive substances before the Package is released from the customs area.
- (2) Submission of applications to obtain approval for sending radioactive substances as intended in paragraph (1) can be made:
 - a. at the same time as submitting the application for validation of the Package Design approval certificate; or
 - b. immediately after obtaining validation of the Package Design approval certificate.

Part Six

Validation of Approval for Delivery of Radioactive Substances

Published by the Home Country Supervisory Authority

Transport of Radioactive Substances

Article 99

- (1) Every person who will enter:
 - a. Package type B(M);
 - b. Type B(M) packaging which does not comply with design for Package type B(M);
 - c. Type B(M) packages containing radioactive substances with activity greater than 3000 (three thousand) A1, 3000 (three thousand) A2, or 1000TBq (one thousand terrabecquerels);
 - d. Packaging...



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d. Type B(U) packages containing radioactive substances with activity greater than 3000 (three thousand) A1, 3000 (three thousand) A2, or 1000TBq (one thousand Becquerel terra);

e. Type C packages containing radioactive substances with activity greater than 3000 (three thousand) A1, 3000 (three thousand) A2, or 1000TBq (one thousand terrabecquerels); or

f. Packages containing Fissile Material with a Critical Safety Index number in the container or transport vehicle exceeding 50 (fifty),

into the territory of the Unitary State of the Republic of Indonesia for the purpose of transit through and/or stopping in the customs area of the Unitary State of the Republic of Indonesia with or without changing means of transport, it is mandatory to have validation of approval for the delivery of radioactive substances issued by the supervisory authority of the country of origin of the Transport of Radioactive Substances.

(2) Every person to obtain validation of approval for the delivery of radioactive substances issued by the supervisory authority of the country of origin for the Transport of Radioactive Substances as intended in paragraph (1) must submit a written application to the Head of BAPETEN after having:

a. notification of implementation of Transport of Radioactive Substances as intended in Article 85 paragraph (3) letter a;

b. validation of the design approval certificate for radioactive substances as intended in Article 90 paragraph (2) letter a; and c. validation of the Package Design approval certificate as intended in Article 96 paragraph (2) letter a.

Article 100 ...



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Article 100

(1) The Chairman of BAPETEN after receiving a request for validation of approval for the delivery of radioactive substances issued by the supervisory authority of the country of origin for the Transport of Radioactive Substances as intended in Article 99 shall carry out an assessment no later than 5 (five) working days after the application is received.

(2) In the event that the assessment results show:

a. application for validation of the approval for sending radioactive substances issued by the supervisory authority of the country of origin of the Transport of Radioactive Substances meets the requirements, the Head of BAPETEN issues validation of the approval for sending radioactive substances issued by the supervisory authority of the country of origin of the Transport of Radioactive Substances no later than 3 (three) working days from the results of the assessment is known; or

b. the application for validation of approval for the delivery of radioactive substances issued by the supervisory authority of the country of origin of the Transport of Radioactive Substances does not meet the requirements, the Chairman of BAPETEN rejects the application for validation of the approval for the delivery of radioactive substances issued by the supervisory authority of the country of origin of the Transport of Radioactive Substances accompanied by reasons for rejection.

(3) Validation of approval for sending radioactive substances issued by the supervisory authority of the country of origin Transport of Radioactive Substances as intended in paragraph (2) letter a must contain at least:

a. identity of validation holder;
b. specifications for radioactive substances and packaging;
c. arrival schedule for radioactive substances and packages; d. Radioactive Substance Transport routes;

e. obligation ...



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e. validation holder obligations; f.

validity period of validation of the approval for the shipment of radioactive substances issued by the supervisory authority of the country of origin of the Transport of Radioactive

Substances; and g. identification mark.

(4) Further provisions regarding the contents of validation of approvals for sending radioactive substances issued by the supervisory authority of the country of origin for the Transport of Radioactive Substances are regulated by BAPETEN Head Regulations.

Article 101

Validation of approval for the delivery of radioactive substances issued by the supervisory authority of the country of origin for the Transport of Radioactive Substances issued by the Head of BAPETEN as intended in Article 100 paragraph (2) letter a is valid for 1 (one) transit through and/or stopover in the customs area of the Unitary State Republic of Indonesia with or without changing transportation facilities and cannot be extended.

Article 102

Every person who has validated the approval for sending radioactive substances issued by the supervisory authority of the country of origin of the Transport of Radioactive Substances is obliged to transport Radioactive Substances through and/or stopping in the customs area of the Unitary State of the Republic of Indonesia with or without changing the means of transport in accordance with the obligations listed in validation of the approval for the shipment of radioactive substances issued by the supervisory authority of the country of origin for the Transport of Radioactive Substances and statutory regulations.

CHAPTER VIII ...



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CHAPTER VIII

ADMINISTRATIVE SANCTIONS

Article 103

- (1) Sender who does not fulfill or violates the provisions of Article 8 paragraph (1), Article 14 paragraph (2), Article 16 paragraph (1), Article 17 paragraph (1), Article 20 paragraph (1), Article 21 paragraph (2) and paragraph (3), Article 26 paragraph (1), Article 30 paragraph (1), Article 31, Article 33 paragraph (1), Article 36 paragraph (2), Article 38 paragraph (1) and paragraph (2), Article 40 paragraph (1) and paragraph (2), Article 41 paragraph (1) and paragraph (2), Article 45 paragraph (1), Article 47 paragraph (1), Article 53 paragraph (1), Article 54, Article 57 paragraph (1), Article 58 paragraph (1), Article 59, Article 62 paragraph (1) letter d, letter f, letter g, letter h, and letter i, Article 65 paragraph (1) and paragraph (3), Article 68 paragraph (1) and paragraph (3), Article 69 paragraph (1), Article 76 paragraph (1), Article 77 paragraph (1), Article 82 paragraph (1), Article 87 paragraph (1), Article 92 paragraph (1), Article 93 paragraph (1), and/or Article 98 paragraph (1) are subject to administrative sanctions.
- (2) The sender is obliged to follow up on the written warning within a maximum period of 10 (ten) days from the date the written warning is issued.
- (3) In the event that the Sender does not comply with the written warning as intended in paragraph (2), the Head of BAPETEN will give a second written warning.
- (4) The sender is obliged to follow up on the second written warning as intended in paragraph (3) within a maximum period of 10 (ten) days from the date the written warning is issued.
- (5) In the event that the Sender does not comply with the written warning as referred to in paragraph (2), the Head of BAPETEN temporarily suspends Radioactive Substance Transport activities.
- (6) The sender is obliged to temporarily suspend Radioactive Substance Transport activities as of the stipulation of the decision to temporarily suspend Radioactive Substance Transport activities as referred to in paragraph (5).

(7) Decision ...



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- (7) The decision to terminate Radioactive Substance ^{temporary} transport activities is valid until the technical provisions for Radiation Safety in Transport of Radioactive Substances and/or the technical provisions for Safety in Transport of Radioactive Substances are fulfilled.
- (8) Shippers who continue to carry out Radioactive Substance Transport activities during the temporary suspension of Radioactive Substance Transport activities as referred to in paragraph (7) are subject to administrative sanctions in the form of freezing permits for the use of ionizing radiation sources or permits for the use of nuclear materials.

Article 104

Senders who do not fulfill or violate the provisions of Article 80 paragraph (1) are subject to administrative sanctions in the form of freezing permits to use sources of ionizing radiation or permits to use nuclear materials.

Article 105

- (1) The sender is obliged to temporarily stop activities in the use of ionizing radiation sources or the use of nuclear materials as of the stipulation of the decision to freeze the permit as intended in Article 103 paragraph (8) and Article 104.
- (2) Suspension of permits is valid until the technical provisions for Radiation Safety in Transporting Radioactive Substances and/or technical provisions for Safety in Transporting Radioactive Substances are fulfilled.
- (3) In the event that the Sender has fulfilled the technical provisions for Radiation Safety in Transporting Radioactive Substances and/or the technical provisions for Safety in Transporting Radioactive Substances as intended in paragraph (2), the Sender shall notify the Head of BAPETEN.

(4) Head ...



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- (4) The Head of BAPETEN sends a team of BAPETEN inspectors to check compliance with the technical provisions for Radiation Safety in Transporting Radioactive Substances and/or technical provisions for Safety in Transporting Radioactive Substances.
- (5) In the event that the BAPETEN inspector team states that the sender has fulfilled the technical provisions for Radiation Safety in Transporting Radioactive Substances and/or the technical provisions for Safety in Transporting Radioactive Substances, the Head of BAPETEN issues a decision to re-apply the permit for the use of ionizing radiation sources or the permit for the use of nuclear materials.

Article 106

- (1) Carriers who do not fulfill or violate the provisions of Article 64 are subject to administrative sanctions.
- (2) Administrative sanctions as intended in paragraph (1) are given in accordance with the provisions of statutory regulations.

CHAPTER IX

TRANSITIONAL PROVISIONS

Article 107

When this Government Regulation comes into force, all radioactive substance Design approval certificates, Package Design approval certificates, radioactive substance delivery approvals, validation of radioactive substance Design approval certificates, and validation of Package Design approval certificates, are declared to remain valid until their validity period ends.

Article 108 ...



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Article 108

Transport of Radioactive Substances that will be carried out before the enactment of this Government Regulation must be adjusted to the provisions in this Government Regulation no later than 3 (three) months after this Government Regulation comes into force.

CHAPTER X

CLOSING

Article 109

When this Government Regulation comes into force:

- a. all Legislative Regulations which are implementing regulations of Government Regulation Number 26 of 2002 concerning Safety of Transport of Radioactive Substances (State Gazette of the Republic of Indonesia of 2002 Number 51, Supplement to State Gazette of the Republic of Indonesia Number 4201), are declared to still be valid as long as they do not conflict with the provisions of the Regulations this government; And
- b. Government Regulation Number 26 of 2002 concerning the Safety of Transporting Radioactive Substances (State Gazette of the Republic of Indonesia of 2002 Number 51, Supplement to State Gazette of the Republic of Indonesia Number 4201) is revoked and declared invalid.

Article 110

This Government Regulation comes into force on the date of promulgation.

So that ...



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So that everyone is aware, this Government Regulation is ordered to be promulgated by placing it in the State Gazette of the Republic of Indonesia.

Set in Jakarta

on August 10, 2015

PRESIDENT OF THE REPUBLIC OF INDONESIA,

signed.

JOKO WIDODO

Promulgated in Jakarta

on August 10, 2015

MINISTER OF LAW AND HUMAN RIGHTS

REPUBLIC OF INDONESIA,

signed.

YASONNA H. LAOLY

STATE GAZETTE OF THE REPUBLIC OF INDONESIA YEAR 2015 NUMBER 185

Salinan sesuai dengan aslinya

KEMENTERIAN SEKRETARIAT NEGARA
REPUBLIK INDONESIA

Asisten Deputi Perundang-undangan
Bidang Perekonomian,



[Handwritten signature]
Silvanna Djaman



PRESIDEN
REPUBLIK INDONESIA

COPY

EXPLANATION

ON

GOVERNMENT REGULATIONS OF THE REPUBLIC OF INDONESIA

NUMBER 58 OF 2015

ABOUT

RADIATION SAFETY AND SECURITY

IN TRANSPORTATION OF RADIOACTIVE SUBSTANCE

I. GENERAL

Nuclear energy utilization activities in Indonesia continue to increase from time to time, covering the fields of research and development, industry, health and agriculture. The activity of using nuclear power cannot be separated from the presence of radioactive substances. The presence of radioactive substances at the location of the activity in question has penetrated all areas of the province. This condition causes the need for transportation of radioactive substances between regions, as well as to and from abroad using public transportation modes to also increase.

Considering that in every aspect of activities related to radioactive substances, in addition to the benefits that can be taken, there is also a potential risk of radiation hazards, the activity of transporting radioactive substances must be regulated through adequate and enforceable laws and regulations to provide safety guarantees to workers and members. society, and protection of the environment.

As an implementation of the mandate of Law Number 10 of 1997 concerning Nuclear Energy, Government Regulation Number 26 of 2002 concerning the Safety of Transporting Radioactive Substances has been implemented. The Government Regulation in question regulates the activities of transporting radioactive substances from the safety aspect regarding radiation hazards (*safety aspect*).

After ...



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After the September 11 2001 tragedy which hit the *World Trade Center* building in the United States, international attention to security aspects increased. Likewise, in the activity of transporting radioactive substances, the security aspect is important and cannot be ignored any longer. The security aspect *focuses* on all actions or a series of actions to prevent theft, sabotage, terror, or other unlawful acts that result in the fall of radioactive substances to other parties who are not authorized and responsible.

Taking into account the development of international publications on the Transport of Radioactive Substances and the existence of several weaknesses in previous Government Regulations, it is deemed necessary to reorganize the legal system in the Transport of Radioactive Substances activities in Indonesia.

This Government Regulation regulates:

- a. types of radioactive substances in the Transport of Radioactive Substances;
- b. technical Radiation Safety in Transporting Radioactive Substances; c. technical security in transporting radioactive substances;
- d. Radiation Safety Management in Transporting Radioactive Substances and Security in Transporting Radioactive Substances;
- e. preparedness and emergency response system in the Transport of Radioactive Substances;
- f. Management of Transport of Radioactive Substances; And
- g. administrative sanctions.

II. ARTICLE BY ARTICLE

article 1

Quite clear.

Section 2

Letter a

Radioactive substances which are an integral part of transportation equipment include *depleted uranium counterweights* or tritium as an exit indicator used in aircraft.

Letter b...



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Letter b

Movement within an area does not use public roads and within the area attention is paid to safety and security.

Letter c

Examples of radioactive substances installed or attached to people or animals for diagnostic or therapeutic purposes include pacemakers for certain heart patients or radioactive substances used on humans or animals for diagnosis or therapy.

Letter d

Examples of consumer goods include smoke detectors, items coated with radioactive substances, and antistatic equipment containing polonium.

Letter e

Quite clear.

Letter f

Quite clear.

Letter g

Quite clear.

Article 3

Paragraph (1)

Letter a

Quite clear.

Letter b

Quite clear.

Letter c

Quite clear.

Letter d

Quite clear.

Letter e

Quite clear.

Letter f ...



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Letter f

What is meant by uranium hexafluoride (UF₆) is a form of chemical compound between uranium and fluoride atoms.

Paragraph (2)

Quite clear.

Paragraph (3)

Quite clear.

Paragraph (4)

Quite clear.

Article 4

Quite clear.

Article 5

Quite clear.

Article 6

Quite clear.

Article 7

Quite clear.

Article 8

Paragraph (1)

Quite clear.

Paragraph (2)

Letter a

Industrial packaging is a type of packaging that is commonly used for industrial activities.

Letter b...



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Letter b

Type A packaging is a packaging designed to be used for normal conditions in the transportation of radioactive substances.

Letter c

Type B(U) packages are packages that are designed to withstand severe accident conditions and in the delivery process require design approval from the supervisory authority of the country of origin and do not require validation of design approval by the supervisory authority of each country through which they travel or stop, except for type B packages (U) which contains more than 0.1 kg (zero point one kilogram) of Low Dispersion Radioactive Substance, Fissile Material, or uranium hexafluoride (UF6) .

Letter d

Type B(M) packages are packages designed to withstand severe accident conditions and in the shipping process require approval or validation of design approval by the supervisory authority of each country through which they travel or stop.

Letter e

Type C packaging is a packaging designed to withstand aircraft accident conditions.

Letter f

What is meant by "other packaging" is a package that contains radioactive substances that are exempt from supervision or contains cargo that includes, among other things, equipment made from natural uranium, reduced grade uranium, or natural thorium, and empty packaging.

Paragraph (3)

Quite clear.

Article 9

Quite clear.

Article 10

Quite clear.

Article 11 ...



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Article 11

Paragraph (1)

Quite clear.

Paragraph (2)

The activity values A1 and A2 are the basis for determining the use of type A packages, type B packages (U), type B packages (M) and type C packages for transporting radioactive substances.

Paragraph (3)

Quite clear.

Paragraph (4)

Quite clear.

Article 12

Paragraph (1)

Letter a

Used empty packaging is packaging that previously contained radioactive substances.

Letter b

Quite clear.

Letter c

Quite clear.

Letter d

Quite clear.

Letter e

Quite clear.

Paragraph (2)

Quite clear.

Paragraph (3)

Quite clear.

Article 13

Quite clear.

Article 14

Paragraph (1)

Package Category is a parameter that indicates the level of potential radiation hazard of a package. The higher the packaging category, the higher the potential radiation hazards that accompany it.

Paragraph (2) ...



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Paragraph (2)

Quite clear.

Paragraph (3)

Quite clear.

Paragraph (4)

Quite clear.

Article 15

Quite clear.

Article 16

Quite clear.

Article 17

Quite clear.

Article 18

Quite clear.

Article 19

Quite clear.

Article 20

Quite clear.

Article 21

Paragraph (1)

Quite clear.

Paragraph (2) ...



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Paragraph (2)

Letter a

Identification code is a Design code issued by the country that issued the Design approval certificate.

An example of an identification code for Indonesia is "RI" and for Austria it is "A".

Letter b

The Packaging Design serial number is a serial number that specifically identifies each wrapper that conforms to the Design.

Paragraph (3)

Letter a

Quite clear.

Letter b

The Packaging Design serial number is a serial number that specifically identifies each wrapper that conforms to the Design.

Letter c

Quite clear.

Paragraph (4)

Quite clear.

Article 22

Paragraph (1)

Quite clear.

Paragraph (2)

Letter a

Quite clear.

Letter b

The text that reads "Outer Packaging" is used if the transport of radioactive substances is carried out within the territory of the Unitary State of the Republic of Indonesia, while the text that reads "*overpack*" is used if the transport of radioactive substances is carried out outside the territory of the Unitary State of the Republic of Indonesia.

Article 23...



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Article 23

Paragraph (1)

Quite clear.

Paragraph (2)

Letter a

The sign "RADIOACTIVE AJR-I" is used if the transportation of radioactive substances is carried out within the territory of the Unitary State of the Republic of Indonesia, while the sign "*RADIOACTIVE LSA-I*" is used if the transportation of radioactive substances is carried out outside the territory of the Unitary State of the Republic of Indonesia.

Letter b

The "RADIOACTIVE BTP-I" mark is used if the transport of radioactive substances is carried out within the territory of the Unitary State of the Republic of Indonesia, while the mark "*RADIOACTIVE SCO-I*" is used if the transport of radioactive substances is carried out outside the territory of the Unitary State of the Republic of Indonesia.

Article 24

Paragraph (1)

Quite clear.

Paragraph (2)

What is meant by "change" in the list of PBB Numbers is the addition or reduction of the PBB Number and shipping name and description, due to, among other things, changes in international standards in the field of Transport of Radioactive Substances or developments in the implementation of the Transport of Radioactive Substances.

Article 25

Quite clear.

Article 26

Paragraph (1)

Quite clear.

Paragraph (2)

Quite clear.

Paragraph (3) ...



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Paragraph (3)

Letter a

Quite clear.

Letter b

The text that reads "RADIOACTIVE" is used if the transport of radioactive substances is carried out within the territory of the Unitary State of the Republic of Indonesia, while the text that reads "*RADIOACTIVE*" is used if the transport of radioactive substances is carried out outside the territory of the Unitary State of the Republic of Indonesia.

Letter c

Quite clear.

Letter d

Quite clear.

Letter e

Quite clear.

Letter f

Quite clear.

Letter g

Class 7 is a dangerous goods class for radioactive substances.

Paragraph (4)

Quite clear.

Article 27

Paragraph (1)

Quite clear.

Paragraph (2)

Letter a

Quite clear.

Letter b...



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Letter b

The text that reads "RADIOACTIVE" is used if the transport of radioactive substances is carried out within the territory of the Unitary State of the Republic of Indonesia, while the text that reads "*RADIOACTIVE*" is used if the transport of radioactive substances is carried out outside the territory of the Unitary State of the Republic of Indonesia.

Letter c

Quite clear.

Letter d

Quite clear.

Letter e

Quite clear.

Letter f

Quite clear.

Letter g

Class 7 is a class of dangerous goods for radioactive substances.

Paragraph (3)

Quite clear.

Article 28

The text that reads "Fissile" is used if the transport of radioactive substances is carried out within the territory of the Unitary State of the Republic of Indonesia, while the text that reads "*FISSILE*" is used if the transport of radioactive substances is carried out outside the territory of the Unitary State of the Republic of Indonesia.

Article 29

Quite clear.

Article 30

Paragraph (1)

Quite clear.

Paragraph (2) ...



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Paragraph (2)

Quite clear.

Paragraph (3)

Letter a

Quite clear.

Letter b

The text that reads "RADIOACTIVE" is used if the transport of radioactive substances is carried out within the territory of the Unitary State of the Republic of Indonesia, while the text that reads "*RADIOACTIVE*" is used if the transport of radioactive substances is carried out outside the territory of the Unitary State of the Republic of Indonesia.

Letter c

Class 7 is a dangerous goods class for radioactive substances.

Article 31

Quite clear.

Article 32

Quite clear.

Article 33

Quite clear.

Article 34

Quite clear.

Article 35

Paragraph (1)

Quite clear.

Paragraph (2) ...



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Paragraph (2)

Letter a

Barriers in this case are used to reduce access by unauthorized people, including in the form of prohibitory signs, barriers, or locked rooms.

Letter b

Quite clear.

Letter c

Quite clear.

Paragraph (3)

Quite clear.

Article 36

Quite clear.

Article 37

Letter a

Quite clear.

Letter b

Quite clear.

Letter c

The dose study includes a description of the method and results of the dose study.

Letter d

Quite clear.

Letter e

Quite clear.

Letter f

Quite clear.

Letter g

Self-explanatory.

Letter h ...



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Letter h

Quite clear.

Letter i

Quite clear.

Letter j

Self-explanatory.

Article 38

Quite clear.

Article 39

Quite clear.

Article 40

Paragraph (1)

Quite clear.

Paragraph (2)

Barriers in this provision are used to reduce access by unauthorized people, including in the form of prohibitory signs, barriers or locked rooms.

Paragraph (3)

Quite clear.

Article 41

Paragraph (1)

Quite clear.

Paragraph (2)

Barriers in this provision are used to reduce access by unauthorized people, including in the form of prohibitory signs, barriers or locked rooms.

Paragraph (3)

Quite clear.

Article 42...



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Article 42

Quite clear.

Article 43

Quite clear.

Article 44

Quite clear.

Article 45

Quite clear.

Article 46

Quite clear.

Article 47

Quite clear.

Article 48

Paragraph (1)

Quite clear.

Paragraph (2)

Quite clear.

Paragraph (3)

Quite clear.

Paragraph (4)

Exclusion from the safety level classification of radioactive sources in this provision means that for Special Form Radioactive Substances and Low Spread Power Radioactive Substances which are categorized as category 4 and category 5 radioactive sources, only the technical Radiation Safety in Transporting Radioactive Substances applies.

Article 49

Letter a

Quite clear.

Letter b...



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Letter b

The choice of transportation mode is also included if the transportation uses multimodal transportation.

Letter c

Quite clear.

Letter d

Identification of Transporter personnel is carried out for transportation by road transport with the aim of avoiding the danger of sabotage, illegal transfer and other unlawful acts against radioactive substances during transportation.

Letter e

Inspection of transport vehicles in this provision is carried out by the Sender before Transport of Radioactive Substances is carried out.

Letter f

Quite clear.

Letter g

Self-explanatory.

Letter h

Quite clear.

Article 50

Letter a

Quite clear.

Letter b

Quite clear.

Letter c

What is meant by "use of security communication systems" is a communication system between radioactive source security officers guarding the shipment and the sender.

Letter d

Quite clear.

Letter e

Quite clear.

Letter f ...



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Letter f

Quite clear.

Letter g

Quite clear.

Article 51

Quite clear.

Article 52

Quite clear.

Article 53

Quite clear.

Article 54

Quite clear.

Article 55

Quite clear.

Article 56

Quite clear.

Article 57

Quite clear.

Article 58

Quite clear.

Article 59

Quite clear.

Article 60

Quite clear.

Article 61...



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Article 61

Quite clear.

Article 62

Quite clear.

Article 63

Quite clear.

Article 64

Quite clear.

Article 65

Paragraph (1)

What is meant by "management system" is a set of elements that are interrelated or interact to establish policies and targets, and enable these targets to be achieved efficiently and effectively, by combining all organizational elements including structure, resources and processes.

Determination and implementation of a management system is based on a multilevel approach according to the level of radiation risk of radioactive substances being transported, frequency of transportation, use of transportation modes and domestic or international shipping destinations.

Paragraph (2)

Quite clear.

Paragraph (3)

Quite clear.

Article 66

Quite clear.

Article 67

Quite clear.

Article 68...



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Article 68

Paragraph (1)

Quite clear.

Paragraph (2)

Letter a

First aid and rescue of victims is coordinated with the police, fire department and nearest hospitals.

Letter b

Other related agencies include the police and local government.

Letter c

Quite clear.

Letter d

Quite clear.

Letter e

Quite clear.

Letter f

What is meant by "recovery" is the restoration of the location of an emergency incident in the Transport of Radioactive Substances.

Letter g

Quite clear.

Paragraph (3)

Quite clear.

Paragraph (4)

Quite clear.

Article 69

Quite clear.

Article 70...



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Article 70

Letter a

Quite clear.

Letter b

Quite clear.

Letter c

Quite clear.

Letter d

Quite clear.

Letter e

Quite clear.

Letter f

Quite clear.

Letter g

Regional governments in this provision include the health service and the fire department.

Letter h

Quite clear.

Article 71

Quite clear.

Article 72

Quite clear.

Article 73

Letter a

First aid and rescue of victims must prioritize the safety of human lives.

Letter b

Other related agencies include the police and local government.

Letter c...



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Letter c

Quite clear.

Letter d

Quite clear.

Letter e

Quite clear.

Letter f

Quite clear.

Letter g

Quite clear.

Article 74

Quite clear.

Article 75

Paragraph (1)

Letter a

Quite clear.

Letter b

Quite clear.

Letter c

Quite clear.

Letter d

Other related agencies include the police and local government.

Paragraph (2)

Quite clear.

Paragraph (3)

Quite clear.

Article 76...



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Article 76

Paragraph (1)

Quite clear.

Paragraph (2)

Letter a

Quite clear.

Letter b

Quite clear.

Letter c

Quite clear.

Letter d

BAPETEN's emergency response unit is a task force that carries out emergency response functions in the event of a nuclear emergency and/or radiological emergency.

Article 77

Quite clear.

Article 78

Quite clear.

Article 79

Quite clear.

Article 80

Quite clear.

Article 81

Quite clear.

Article 82

Quite clear.

Article 83...



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Article 83

Quite clear.

Article 84

Paragraph (1)

Letter a

Quite clear.

Letter b

Type B(M) packages that do not comply with the design for type B(M) packages, namely packages that are not designed to take into account temperatures of -40°C (minus forty degrees Celsius) to 70°C (seventy degrees Celsius) or are designed to allow ventilation to be opened at any time in the package in a controlled manner.

Letter c

Quite clear.

Letter d

Quite clear.

Letter e

Quite clear.

Letter f

Quite clear.

Paragraph (2)

Quite clear.

Article 85

Quite clear.

Article 86

Quite clear.

Article 87

Quite clear.

Article 88 ...



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Article 88

Quite clear.

Article 89

Quite clear.

Article 90

Quite clear.

Article 91

Quite clear.

Article 92

Quite clear.

Article 93

Quite clear.

Article 94

Quite clear.

Article 95

Quite clear.

Article 96

Quite clear.

Article 97

Quite clear.

Article 98 ...



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Article 98

Quite clear.

Article 99

Quite clear.

Article 100

Quite clear.

Article 101

Quite clear.

Article 102

Quite clear.

Article 103

Quite clear.

Article 104

Quite clear.

Article 105

Quite clear.

Article 106

Paragraph (1)

Quite clear.

Paragraph (2)

What is meant by "legislative provisions" is the provisions of statutory regulations in the field of transportation.

Article 107 ...



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Article 107

Quite clear.

Article 108

Quite clear.

Article 109

Quite clear.

Article 110

Quite clear.

SUPPLEMENT TO THE STATE GAZETTE OF THE REPUBLIC OF INDONESIA NUMBER 5728



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APPENDIX I
GOVERNMENT REGULATIONS OF THE REPUBLIC OF INDONESIA
NUMBER 58 OF 2015
ABOUT
RADIATION SAFETY AND INTERNAL SECURITY
TRANSPORTATION OF RADIOACTIVE SUBSTANCES

INDUSTRIAL PACKAGE USE
FOR RADIOACTIVE SUBSTANCES OF LOW TYPE ACTIVITY
AND SURFACE CONTAMINATED OBJECTS

Radioactive Substances	Used Industrial Packaging	
	Transportation by Exclusive	Transportation by Nonexclusive
Low-I Type Activity		
Congested	Industrial packaging-I	Industrial packaging-I
Liquid	Industrial packaging-I	Industrial packaging-II
Low Activity Type-II		
Congested	Industrial packaging-II	Industrial packaging-II
Liquid and gas	Industrial packaging-II	Industrial packaging-III
Low Activity Type-III	Industrial packaging-II	Industrial packaging-III
Contaminated Objects		
Surface-I	Industrial packaging-I	Industrial packaging-I
Surface-II	Industrial packaging-II	Industrial packaging-II

PRESIDENT OF THE REPUBLIC OF INDONESIA,

signed.

JOKO WIDODO

Salinan sesuai dengan aslinya

KEMENTERIAN SEKRETARIAT NEGARA
REPUBLIK INDONESIA

Asisten Deputi Perundang-undangan
Bidang Perekonomian,



[Signature]
Silvanna Djaman



PRESIDEN
REPUBLIK INDONESIA

APPENDIX II
GOVERNMENT REGULATIONS OF THE REPUBLIC OF INDONESIA
NUMBER 58 OF 2015
ABOUT
RADIATION SAFETY AND INTERNAL SECURITY
TRANSPORTATION OF RADIOACTIVE SUBSTANCES

BASIC VALUES OF RADIONUCLIDES

Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive Which Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Actinium (89)				
Ac-225(a)	8 x 10 ⁻¹	6 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁴
Ac-227(a)	9 x 10 ⁻¹	9 x 10 ⁻⁵	1 x 10 ⁻¹	1 x 10 ³
Ac-228	6 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Silver (47)				
Ag-105	2 x 10 ⁰	1 x 10 ⁰	1 x 10 ⁰	1 x 10 ⁶
Ag-108m (a)	7 x 10 ⁻¹	7 x 10 ⁻¹	1 x 10 ¹ (b)	1 x 10 ⁶ (b)
Ag-110m (a)	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Ag-111	2 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Aluminum (13)				
Al-26	1 x 10 ⁻¹	1 x 10 ⁻¹	1 x 10 ⁻¹	1 x 10 ⁵
Americium (95)				
Am-241	1 x 10 ¹	1 x 10 ⁻³	1 x 10 ⁰	1 x 10 ⁴
Am-242m (a)	1 x 10 ¹	1 x 10 ⁻³	1 x 10 ⁰ (b)	1 x 10 ⁴ (b)
Am-243(a)	5 x 10 ⁰	1 x 10 ⁻³	1 x 10 ⁰ (b)	1 x 10 ³ (b)
Argon (18)				
Ar-37	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁶	1 x 10 ⁸
Ar-39	4 x 10 ¹	2 x 10 ¹	1 x 10 ⁷	1 x 10 ⁴
Ar-41	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁹
Arsenic (33)				
Ace-72	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
As-73	4 x 10 ¹	4 x 10 ¹	1 x 10 ³	1 x 10 ⁷
As-74	1 x 10 ⁰	9 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶

Ace-76 ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Ace-76	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁵
Ace-77	2 x 10 ¹	7 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Astatine (85)				
At-211 (a)	2 x 10 ¹	5 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁷
Gold (79)				
Au-193	7 x 10 ⁰	2 x 10 ⁰	1 x 10 ²	1 x 10 ⁷
Au-194	1 x 10 ⁰	1 x 10 ⁰	1 x 10 ¹	1 x 10 ⁶
Au-195	1 x 10 ¹	6 x 10 ⁰	1 x 10 ²	1 x 10 ⁷
Au-198	1 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Au-199	1 x 10 ¹	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Barium (56)				
Ba-131(a)	2 x 10 ⁰	2 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Ba-133	3 x 10 ⁰	3 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Ba-133m	2 x 10 ¹	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Ba-140(a)	5 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹ (b)	1 x 10 ⁵ (b)
Beryllium (4)				
Be-7	2 x 10 ¹	2 x 10 ¹	1 x 10 ³	1 x 10 ⁷
Be-10	4 x 10 ¹	6 x 10 ⁻¹	1 x 10 ⁴	1 x 10 ⁶
Bismuth (83)				
Bi-205	7 x 10 ⁻¹	7 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Bi-206	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Bi-207	7 x 10 ⁻¹	7 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Bi-210	1 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Bi-210m (a)	6 x 10 ⁻¹	2 x 10 ⁻²	1 x 10 ¹	1 x 10 ⁵
Bi-212(a)	7 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ¹ (b)	1 x 10 ⁵ (b)
Berkelium (97)				
Bk-247	8 x 10 ⁰	8 x 10 ⁻⁴	1 x 10 ⁰	1 x 10 ⁴
Bk-249(a)	4 x 10 ¹	3 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Bromine (35)				
Br-76	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵

Br-77 ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Br-77	3 x 100	3 x 100	1 x 10 ²	1 x 10 ⁶
Br-82	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Carbon (6)				
C-11	1 x 100	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
C-14	4 x 10 ¹	3 x 100	1 x 10 ⁴	1 x 10 ⁷
Calcium (20)				
Ca-41			1 x 10 ⁵	1 x 10 ⁷
	Infinite	Infinite		
Ca-45	4 x 10 ¹	1 x 100	1 x 10 ⁴	1 x 10 ⁷
Ca-47(a)	3 x 100	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Cadmium (48)				
Cd-109	3 x 10 ¹	2 x 100	1 x 10 ⁴	1 x 10 ⁶
CD-113m	4 x 10 ¹	5 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Cd-115(a)	3 x 100	4 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
CD-115m	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Cerium (58)				
Ce-139	7 x 100	2 x 100	1 x 10 ²	1 x 10 ⁶
Ce-141	2 x 10 ¹	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁷
Ce-143	9 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Ce-144(a)	2 x 10 ⁻¹	2 x 10 ⁻¹	1 x 10 ² (b)	1 x 10 ⁵ (b)
California (98)				
Cf-248	4 x 10 ¹	6 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁴
Cf-249	3 x 100	8 x 10 ⁻⁴	1 x 100	1 x 10 ³
Cf-250	2 x 10 ¹	2 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁴
Cf-251	7 x 100	7 x 10 ⁻⁴	1 x 100	1 x 10 ³
Cf-252	5 x 10 ⁻²	3 x 10 ⁻³	1 x 10 ⁻¹	1 x 10 ⁴
Cf-253(a)	4 x 10 ¹	4 x 10 ⁻²	1 x 10 ²	1 x 10 ⁵
Cf-254	1 x 10 ⁻³	1 x 10 ⁻³	1 x 100	1 x 10 ³
Chlorine (17)				
Cl-36	1 x 10 ¹	6 x 10 ⁻¹	1 x 10 ⁴	1 x 10 ⁶
Cl-38	2 x 10 ⁻¹	2 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵

Curium (96) ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Curium (96)				
Cm-240	4 x 10 ¹	2 x 10 ⁻²	1 x 10 ²	1 x 10 ⁵
Cm-241	2 x 10 ⁰	1 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Cm-242	4 x 10 ¹	1 x 10 ⁻²	1 x 10 ²	1 x 10 ⁵
Cm-243	9 x 10 ⁰	1 x 10 ⁻³	1 x 10 ⁰	1 x 10 ⁴
Cm-244	2 x 10 ¹	2 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁴
Cm-245	9 x 10 ⁰	9 x 10 ⁻⁴	1 x 10 ⁰	1 x 10 ³
Cm-246	9 x 10 ⁰	9 x 10 ⁻⁴	1 x 10 ⁰	1 x 10 ³
Cm-247 (a)	3 x 10 ⁰	1 x 10 ⁻³	1 x 10 ⁰	1 x 10 ⁴
Cm-248	2 x 10 ⁻²	3 x 10 ⁻⁴	1 x 10 ⁰	1 x 10 ³
Cobalt (27)				
Co-55	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Co-56	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Co-57	1 x 10 ¹	1 x 10 ¹	1 x 10 ²	1 x 10 ⁶
Co-58	1 x 10 ⁰	1 x 10 ⁰	1 x 10 ¹	1 x 10 ⁶
Co-58m	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁴	1 x 10 ⁷
Co-60	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Chromium (24)				
Cr-51	3 x 10 ¹	3 x 10 ¹	1 x 10 ³	1 x 10 ⁷
Cesium (55)				
Cs-129	4 x 10 ⁰	4 x 10 ⁰	1 x 10 ²	1 x 10 ⁵
Cs-131	3 x 10 ¹	3 x 10 ¹	1 x 10 ³	1 x 10 ⁶
Cs-132	1 x 10 ⁰	1 x 10 ⁰	1 x 10 ¹	1 x 10 ⁵
Cs-134	7 x 10 ⁻¹	7 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁴
CS-134m	4 x 10 ¹	6 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁵
CS-135	4 x 10 ¹	1 x 10 ⁰	1 x 10 ⁴	1 x 10 ⁷
Cs-136	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Cs-137(a)	2 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ¹ (b)	1 x 10 ⁴ (b)
Copper (29)				
Cu-64	6 x 10 ⁰	1 x 10 ⁰	1 x 10 ²	1 x 10 ⁶

Cu-67 ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Cu-67	1 x 10 ¹	7 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Dysprosium (66)				
Dy-159	2 x 10 ¹	2 x 10 ¹	1 x 10 ³	1 x 10 ⁷
Dy-165	9 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Dy-166(a)	9 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Erbium (68)				
Er-169	4 x 10 ¹	1 x 10 ⁰	1 x 10 ⁴	1 x 10 ⁷
Er-171	8 x 10 ¹	5 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Europium (63)				
Eu-147	2 x 10 ⁰	2 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Eu-148	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Eu-149	2 x 10 ¹	2 x 10 ¹	1 x 10 ²	1 x 10 ⁷
Eu-150 (short half-life)	2 x 10 ⁰	7 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Eu-150 (long half-life)	7 x 10 ⁻¹	7 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Eu-152	1 x 10 ⁰	1 x 10 ⁰	1 x 10 ¹	1 x 10 ⁶
Eu-152m	8 x 10 ⁻¹	8 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Eu-154	9 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Eu-155	2 x 10 ¹	3 x 10 ⁰	1 x 10 ²	1 x 10 ⁷
Eu-156	7 x 10 ⁻¹	7 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Fluorine (9)				
F-18	1 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Iron (26)				
Fe-52(a)	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Fe-55	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁴	1 x 10 ⁶
Fe-59	9 x 10 ⁻¹	9 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Fe-60(a)	4 x 10 ¹	2 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁵
Gallium (31)				
Ga-67	7 x 10 ⁰	3 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Ga-68	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Ga-72	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵

Gadolinium (64) ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Gadolinium (64)				
Gd-146(a)	5 x 10 ¹	5 x 10 ¹	1 x 10 ¹	1 x 10 ⁶
Gd-148	2 x 10 ¹	2 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁴
Gd-153	1 x 10 ¹	9 x 10 ⁰	1 x 10 ²	1 x 10 ⁷
Gd-159	3 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Germanium (32)				
Ge-68	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Ge-71	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁴	1 x 10 ⁸
Ge-77	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Hafnium (72)				
Hf-172 (a)	6 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
HF-175	3 x 10 ⁰	3 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
HF-181	2 x 10 ⁰	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
HF-182			1 x 10 ²	1 x 10 ⁶
	Infinite	Infinite		
Mercury (80)				
Hg-194(a)	1 x 10 ⁰	1 x 10 ⁰	1 x 10 ¹	1 x 10 ⁶
Hg-195m (a)	3 x 10 ⁰	7 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Hg-197	2 x 10 ¹	1 x 10 ¹	1 x 10 ²	1 x 10 ⁷
Hg-197m	1 x 10 ¹	4 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Hg-203	5 x 10 ⁰	1 x 10 ⁰	1 x 10 ²	1 x 10 ⁵
Holmium (67)				
Ho-166	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁵
Ho-166m	6 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Iodine (53)				
I-123	6 x 10 ⁰	3 x 10 ⁰	1 x 10 ²	1 x 10 ⁷
I-124	1 x 10 ⁰	1 x 10 ⁰	1 x 10 ¹	1 x 10 ⁶
I-125	2 x 10 ¹	3 x 10 ⁰	1 x 10 ³	1 x 10 ⁶
I-126	2 x 10 ⁰	1 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
I-129			1 x 10 ²	1 x 10 ⁵
	Infinite	Infinite		

I-131 ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
I-131	3 x 100	7 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
I-132	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
I-133	7 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
I-134	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
I-135(a)	6 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Indium (49)				
In-111	3 x 100	3 x 100	1 x 10 ²	1 x 10 ⁶
In-113m	4 x 100	2 x 100	1 x 10 ²	1 x 10 ⁶
In-114m (a)	1 x 10 ¹	5 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
In-115m	7 x 100	1 x 100	1 x 10 ²	1 x 10 ⁶
Iridium (77)				
Ir-189 (a)	1 x 10 ¹	1 x 10 ¹	1 x 10 ²	1 x 10 ⁷
Ir-190	7 x 10 ⁻¹	7 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Ir-192	1 x 100(c)	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁴
Ir-194	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁵
Potassium (19)				
K-40	9 x 10 ⁻¹	9 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
K-42	2 x 10 ⁻¹	2 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
K-43	7 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Krypton (36)				
Kr-79	4 x 100	2 x 100	1 x 10 ³	1 x 10 ⁵
Kr-81	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁴	1 x 10 ⁷
Kr-85	1 x 10 ¹	1 x 10 ¹	1 x 10 ⁵	1 x 10 ⁴
Kr-85m	8 x 100	3 x 100	1 x 10 ³	1 x 10 ¹⁰
Kr-87	2 x 10 ⁻¹	2 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁹
Lanthanum (57)				
La-137	3 x 10 ¹	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
La-140	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Lutesium (71)				
Lu-172	6 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶

Lu-173 ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Lu-173	8 x 100	8 x 100	1 x 10 ²	1 x 10 ⁷
Lu-174	9 x 100	9 x 100	1 x 10 ²	1 x 10 ⁷
Lu-174m	2 x 10 ¹	1 x 10 ¹	1 x 10 ²	1 x 10 ⁷
Lu-177	3 x 10 ¹	7 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁷
Magnesium (12)				
Mg-28(a)	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ¹
Manganese (25)				
Mn-52	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Mn-53	Infinite	Infinite	1 x 10 ⁴	1 x 10 ⁹
Mn-54	1 x 100	1 x 100	1 x 10 ¹	1 x 10 ⁶
Mn-56	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Molybdenum (42)				
Mo-93	4 x 10 ¹	2 x 10 ¹	1 x 10 ³	1 x 10 ⁸
Mo-99(a)	1 x 100	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Nitrogen (7)				
N-13	9 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁹
Sodium (11)				
Na-22	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Na-24	2 x 10 ⁻¹	2 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Niobium (41)				
Nb-93m	4 x 10 ¹	3 x 10 ¹	1 x 10 ⁴	1 x 10 ⁷
Nb-94	7 x 10 ⁻¹	7 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Nb-95	1 x 100	1 x 100	1 x 10 ¹	1 x 10 ⁶
Nb-97	9 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Neodinium (60)				
Nd-147	6 x 100	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Nd-149	6 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Nickel (28)				
Ni-59	Infinite	Infinite	1 x 10 ⁴	1 x 10 ⁸

Ni-63 ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Ni-63	4 x 10 ¹	3 x 10 ¹	1 x 10 ⁵	1 x 10 ⁸
Ni-65	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Neptunium (93)				
Np-235	4 x 10 ¹	4 x 10 ¹	1 x 10 ³	1 x 10 ⁷
Np-236 (short half-life)	2 x 10 ¹	2 x 10 ⁰	1 x 10 ³	1 x 10 ⁷
Np-236 (long half-life)	9 x 10 ⁰	2 x 10 ⁻²	1 x 10 ²	1 x 10 ⁵
Np-237	2 x 10 ¹	2 x 10 ⁻³	1 x 100(b)	2 x 103(b)
Np-239	7 x 10 ⁰	4 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁷
Osmium (76)				
Os-185	1 x 10 ⁰	1 x 10 ⁰	1 x 10 ¹	1 x 10 ⁶
Os-191	1 x 10 ¹	2 x 10 ⁰	1 x 10 ²	1 x 10 ⁷
Os-191m	4 x 10 ¹	3 x 10 ¹	1 x 10 ³	1 x 10 ⁷
Os-193	2 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Os-194 (a)	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁵
Phosphorus (15)				
P-32	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁵
P-33	4 x 10 ¹	1 x 10 ⁰	1 x 10 ⁵	1 x 10 ⁸
Protactinium (91)				
Pa-230(a)	2 x 10 ⁰	7 x 10 ⁻²	1 x 10 ¹	1 x 10 ⁶
Pa-231	4 x 10 ⁰	4 x 10 ⁻⁴	1 x 10 ⁰	1 x 10 ³
Pa-233	5 x 10 ⁰	7 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁷
Lead (82)				
Pb-201	1 x 10 ⁰	1 x 10 ⁰	1 x 10 ¹	1 x 10 ⁶
Pb-202	4 x 10 ¹	2 x 10 ¹	1 x 10 ³	1 x 10 ⁶
Pb-203	4 x 10 ⁰	3 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Pb-205			1 x 10 ⁴	1 x 10 ⁷
	Infinite	Infinite		
Pb-201(a)	1 x 10 ⁰	5 x 10 ⁻²	1 x 101(b)	1 x 104(b)
Pb-212(a)	7 x 10 ⁻¹	2 x 10 ⁻¹	1 x 101(b)	1 x 105(b)
Palladium (46)				
Pd-103(a)	4 x 10 ¹	4 x 10 ¹	1 x 10 ³	1 x 10 ⁸

Pd-107 ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Pd-107	Infinite	Infinite	1 x 10 ⁵	1 x 10 ⁸
Pd-109	2 x 10 ⁰	5 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Promethium (61)				
Pm-143	3 x 10 ⁰	3 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Pm-144	7 x 10 ⁻¹	7 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Pm-145	3 x 10 ¹	1 x 10 ¹	1 x 10 ³	1 x 10 ⁷
Pm-147	4 x 10 ¹	2 x 10 ⁰	1 x 10 ⁴	1 x 10 ⁷
Pm-148m (a)	8 x 10 ⁻¹	7 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Pm-149	2 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Pm-151	2 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Polonium (84)				
Po-210	4 x 10 ¹	2 x 10 ⁻²	1 x 10 ¹	1 x 10 ⁴
Praseodymium (59)				
Pr-142	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁵
Pr-143	3 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ⁴	1 x 10 ⁶
Platinum (78)				
Pt-188 (a)	1 x 10 ⁰	8 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Pt-191	4 x 10 ⁰	3 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Pt-193	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁴	1 x 10 ⁷
Pt-193m	4 x 10 ¹	5 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁷
Pt-195m	1 x 10 ¹	5 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Pt-197	2 x 10 ¹	6 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Pt-197m	1 x 10 ¹	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Plutonium (94)				
Pu-236	3 x 10 ⁻¹	3 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁴
Pu-237	2 x 10 ¹	2 x 10 ¹	1 x 10 ³	1 x 10 ⁷
Pu-238	1 x 10 ¹	1 x 10 ⁻³	1 x 10 ⁰	1 x 10 ⁴
Pu-239	1 x 10 ¹	1 x 10 ⁻³	1 x 10 ⁰	1 x 10 ⁴
Pu-240	1 x 10 ¹	1 x 10 ⁻³	1 x 10 ⁰	1 x 10 ³
Pu-241(a)	4 x 10 ¹	6 x 10 ⁻²	1 x 10 ²	1 x 10 ⁵

Pu-242 ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Pu-242	1 x 10 ¹	1 x 10 ⁻³	1 x 100	1 x 10 ⁴
Pu-244(a)	4 x 10 ⁻¹	1 x 10 ⁻³	1 x 100	1 x 10 ⁴
Radium (88)				
Ra-233(a)	4 x 10 ⁻¹	7 x 10 ⁻³	1 x 10 ² (b)	1 x 10 ⁵ (b)
Ra-224(a)	4 x 10 ⁻¹	2 x 10 ⁻²	1 x 10 ¹ (b)	1 x 10 ⁵ (b)
Ra-225(a)	2 x 10 ⁻¹	4 x 10 ⁻³	1 x 10 ²	1 x 10 ⁵
Ra-226(a)	2 x 10 ⁻¹	3 x 10 ⁻³	1 x 10 ¹ (b)	1 x 10 ⁴ (b)
Ra-228(a)	6 x 10 ⁻¹	2 x 10 ⁻²	1 x 10 ¹ (b)	1 x 10 ⁵ (b)
Rubidium (37)				
Rb-81	2 x 100	8 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Rb-83(a)	2 x 100	2 x 100	1 x 10 ²	1 x 10 ⁶
Rb-84	1 x 100	1 x 100	1 x 10 ¹	1 x 10 ⁶
Rb-86	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁵
Rb-87			1 x 10 ⁴	1 x 10 ⁷
	Infinite	Infinite		
Rb (nature)			1 x 10 ⁴	1 x 10 ⁷
	Infinite	Infinite		
Rhenium (75)				
Re-184	1 x 100	1 x 100	1 x 10 ¹	1 x 10 ⁶
Re-184m	3 x 100	1 x 100	1 x 10 ²	1 x 10 ⁶
Re-186	2 x 100	5 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Re-187			1 x 10 ⁶	1 x 10 ⁹
	Infinite	Infinite		
Re-188	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁵
Re-189(a)	3 x 100	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Re (nature)			1 x 10 ⁶	1 x 10 ⁹
	Infinite	Infinite		
Rhodium (45)				
Rh-99	2 x 100	2 x 100	1 x 10 ¹	1 x 10 ⁶
Rh-101	5 x 10 ⁻¹	3 x 100	1 x 10 ²	1 x 10 ⁷
Rh-102	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Rh-102m	2 x 100	2 x 100	1 x 10 ²	1 x 10 ⁶

Rh-103m ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Rh-103m	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁴	1 x 10 ⁸
Rh-105	1 x 10 ⁻¹	8 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁷
Radon (26)				
Rn-222 (a)	3 x 10 ⁻¹	4 x 10 ⁻³	1x 10 ¹ (b)	1 x 10 ⁸ (b)
Ruthenium (44)				
Ru-97	5 x 10 ⁰	5 x 10 ⁰	1 x 10 ²	1 x 10 ⁷
Ru-103 (a)	2 x 10 ⁰	2 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Ru-105	1 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Ru-106 (a)	2 x 10 ⁻¹	2 x 10 ⁻¹	1 x 10 ² (b)	1 x 10 ⁵ (b)
Sulfur (16)				
S-35	4 x 10 ¹	3 x 10 ⁰	1 x 10 ⁵	1 x 10 ⁸
Antimony (51)				
Sb-122	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁴
Sb-124	6 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Sb-125	2 x 10 ⁰	1 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Sb-126	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ⁻¹	1 x 10 ⁵
Scandium (21)				
Sc-44	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Sc-46	5 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Sc-47	1 x 10 ¹	7 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Sc-48	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Selenium (34)				
Se-75	3 x 10 ⁰	3 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Se-79	4 x 10 ¹	2 x 10 ⁰	1 x 10 ⁴	1 x 10 ⁷
Silicone (14)				
Si-31	6 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Si-32	4 x 10 ¹	5 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Samarium (62)				
Sm-145	1 x 10 ¹	1 x 10 ¹	1 x 10 ²	1 x 10 ⁷
Sm-147			1 x 10 ¹	1 x 10 ⁴
	Infinite	Infinite		

SM-151 ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
SM-151	4 x 10 ¹	1 x 10 ¹	1 x 10 ⁴	1 x 10 ⁸
SM-153	9 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Tin (50)				
Sn-113(a)	4 x 10 ⁰	2 x 10 ⁰	1 x 10 ³	1 x 10 ⁷
Sn-117m	7 x 10 ⁰	4 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Sn-119m	4 x 10 ¹	3 x 10 ¹	1 x 10 ³	1 x 10 ⁷
Sn-121m (a)	4 x 10 ¹	9 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁷
Sn-123	8 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Sn-125	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁵
Sn-126(a)	6 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Strontium (38)				
Sr-82(a)	2 x 10 ⁻¹	2 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
SR-85	2 x 10 ⁰	2 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
SR-85m	5 x 10 ⁰	5 x 10 ⁰	1 x 10 ²	1 x 10 ⁷
Sr-87m	3 x 10 ⁰	3 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Sr-89	6 x 10 ⁻¹	6 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Sr-90(a)	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ² (b)	1 x 10 ⁴ (b)
Sr-91(a)	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Sr-92(a)	1 x 10 ⁰	3 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Tritium (1)				
T(H-3)	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁶	1 x 10 ⁹
Tantalum (73)				
Ta-178 (long half-life)	1 x 10 ⁰	8 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Ta-179	3 x 10 ¹	3 x 10 ¹	1 x 10 ³	1 x 10 ⁷
Ta-182	9 x 10 ⁻¹	5 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁴
Terbium (65)				
Tb-157	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁴	1 x 10 ⁷
Tb-158	1 x 10 ⁰	1 x 10 ⁰	1 x 10 ¹	1 x 10 ⁶
TB-160	1 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶

Technicium (43) ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Technician (43)				
Tc-95m (a)	2 x 100	2 x 100	1 x 101	1 x 106
Tc-96	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 101	1 x 106
Tc-96m (a)	4 x 10 ⁻¹	4 x 10 ⁻³	1 x 103	1 x 107
Tc-97	Infinite	Infinite	1 x 103	1 x 108
Tc-97m	4 x 101	1 x 100	1 x 103	1 x 107
Tc-98	8 x 10 ⁻¹	7 x 10 ⁻¹	1 x 101	1 x 106
Tc-99	4 x 101	9 x 10 ⁻¹	1 x 104	1 x 107
Tc-99m	1 x 101	4 x 101	1 x 102	1 x 107
Tellurium (52)				
Te-121	2 x 100	2 x 100	1 x 101	1 x 106
Te-121m	5 x 100	3 x 100	1 x 102	1 x 105
Te-123m	8 x 100	1 x 100	1 x 102	1 x 107
Te-125m	2 x 101	9 x 10 ⁻¹	1 x 103	1 x 107
Te-127	2 x 101	7 x 10 ⁻¹	1 x 103	1 x 106
Te-127m (a)	2 x 101	5 x 10 ⁻¹	1 x 103	1 x 107
Te-129	7 x 10 ⁻¹	6 x 10 ⁻¹	1 x 102	1 x 106
Te-129m (a)	8 x 10 ⁻¹	4 x 10 ⁻¹	1 x 103	1 x 106
Te-131m (a)	7 x 10 ⁻¹	5 x 10 ⁻¹	1 x 101	1 x 106
Te-132 (a)	5 x 10 ⁻¹	4 x 10 ⁻¹	1 x 102	1 x 107
Thorium (90)				
Th-227	1 x 101	5 x 10 ⁻³	1 x 101	1 x 104
Th-228 (a)	5 x 10 ⁻¹	1 x 10 ⁻³	1 x 100(b)	1 x 104(b)
Th-229	5 x 100	5 x 10 ⁻⁴	1 x 100(b)	1 x 103(b)
Th-230	1 x 101	1 x 10 ⁻³	1 x 100	1 x 104
Th-231	4 x 101	2 x 10 ⁻²	1 x 103	1 x 107
Th-232	Infinite	Infinite	1 x 101	1 x 104
Th (nature)	Infinite	Infinite	1 x 100(b)	1 x 103(b)

Titanium (22) ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Titanium (22)				
Ti-44 (a)	5 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
Thallium (81)				
Tl-200	9 x 10 ⁻¹	9 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁶
Tl-201	1 x 10 ¹	4 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Tl-202	2 x 10 ⁰	2 x 10 ⁰	1 x 10 ²	1 x 10 ⁶
Tl-204	1 x 10 ¹	7 x 10 ⁻¹	1 x 10 ⁴	1 x 10 ⁴
Tellurium (69)				
Tm-167	7 x 10 ⁰	8 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
Tm-170	3 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ³	1 x 10 ⁶
Tm-171	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁴	1 x 10 ⁸
Uranium (72)				
U-230 (rapid lung absorption) (a) (d)	4 x 10 ¹	1 x 10 ⁻¹	1 x 10 ¹ (b)	1 x 10 ⁵ (b)
U-230 (moderate lung absorption) (a) (e)	4 x 10 ¹	4 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁴
U-230 (slow lung absorption) (a) (f)	3 x 10 ¹	3 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁴
U-232 (rapid lung absorption) (d)	4 x 10 ¹	1 x 10 ⁻²	1 x 10 ⁰ (b)	1 x 10 ³ (b)
U-232 (moderate lung absorption) (e)	4 x 10 ¹	7 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁴
U-232 (slow lung absorption) (f)	1 x 10 ¹	1 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁴
U-233 (rapid lung absorption) (d)	4 x 10 ¹	9 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁴
U-233 (moderate lung absorption) (e)	4 x 10 ¹	2 x 10 ⁻²	1 x 10 ²	1 x 10 ⁵
U-233 (slow lung absorption) (f)	4 x 10 ¹	6 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁵
U-234 (rapid lung absorption) (d)	4 x 10 ¹	9 x 10 ⁻²	1 x 10 ¹	1 x 10 ⁴
U-234 (moderate lung absorption) (e)	4 x 10 ¹	2 x 10 ⁻²	1 x 10 ²	1 x 10 ⁵

U-234 ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
U-234 (slow lung absorption) (f)	4 x 10 ¹	6 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁵
U-235 (all lung absorption type) (a), (d), (e), (f)	Infinite	Infinite	1 x 10 ¹ (b)	1 x 10 ⁴ (b)
U-236 (rapid lung absorption) (d)	Infinite	Infinite	1 x 10 ¹	1 x 10 ⁴
U-236 (moderate lung absorption) (e)	4 x 10 ¹	2 x 10 ⁻²	1 x 10 ²	1 x 10 ⁵
U-236 (slow lung absorption) (f)	4 x 10 ¹	6 x 10 ⁻³	1 x 10 ¹	1 x 10 ⁴
U-238 (all lung absorption type) (a), (d), (e), (f)	Infinite	Infinite	1 x 10 ¹ (b)	1 x 10 ⁴ (b)
U (nature)	Infinite	Infinite	1 x 10 ⁰ (b)	1 x 10 ³ (b)
U {enriched to a maximum of 20% (twenty percent)} (g)	Infinite	Infinite	1 x 10 ⁰	1 x 10 ³
U (depleted or reduced in content)	Infinite	Infinite	1 x 10 ⁰	1 x 10 ³
Vanadium (23)				
V-48	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ¹	1 x 10 ⁵
V-49	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁴	1 x 10 ⁷
Tungsten (74)				
W-178(a)	9 x 10 ⁰	5 x 10 ⁰	1 x 10 ¹	1 x 10 ⁶
W-181	3 x 10 ¹	3 x 10 ¹	1 x 10 ³	1 x 10 ⁷
W-185	4 x 10 ¹	8 x 10 ⁻¹	1 x 10 ⁴	1 x 10 ⁷
W-187	2 x 10 ⁰	6 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁶
W-188(a)	4 x 10 ⁻¹	3 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁵
Xenon (54)				
Xe-122 (a)	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 10 ²	1 x 10 ²
Xe-123	2 x 10 ⁰	7 x 10 ⁻¹	1 x 10 ²	1 x 10 ⁹
Xe-127	4 x 10 ⁰	2 x 10 ⁰	1 x 10 ³	1 x 10 ⁵
Xe-131m	4 x 10 ¹	4 x 10 ¹	1 x 10 ⁴	1 x 10 ⁴
Xe-133	2 x 10 ¹	1 x 10 ¹	1 x 10 ³	1 x 10 ⁴

Xe-135 ...



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Radionuclides (atomic number)	Grade A1	Grade A2	Limit Concentration Substance Activity Radioactive ones Excluded	Activity Limits for Items The shipment Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
Xe-135	3 x 100	2 x 100	1 x 103	1 x 1010
Yttrium (39)				
Y-87 (a)	1 x 100	1 x 100	1 x 101	1 x 106
Y-88	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 101	1 x 106
Y-90	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 103	1 x 105
Y-91	6 x 10 ⁻¹	6 x 10 ⁻¹	1 x 103	1 x 106
Y-91m	2 x 100	2 x 100	1 x 102	1 x 106
Y-92	2 x 10 ⁻¹	2 x 10 ⁻¹	1 x 102	1 x 105
Y-93	3 x 10 ⁻¹	3 x 10 ⁻¹	1 x 102	1 x 105
Ytterbium (70)				
Yb-169	4 x 100	1 x 100	1 x 102	1 x 107
Yb-175	3 x 101	9 x 10 ⁻¹	1 x 103	1 x 107
Zinc (30)				
Zn-65	2 x 100	2 x 100	1 x 101	1 x 106
Zn-69	3 x 100	6 x 10 ⁻¹	1 x 104	1 x 106
Zn-69m (a)	3 x 100	6 x 10 ⁻¹	1 x 102	1 x 106
Zirconium (40)				
Zr-88	3 x 100	3 x 100	1 x 102	1 x 106
Zr-93			1 x 103(b)	1 x 107(b)
	Infinite	Infinite		
Zr-95 (a)	2 x 100	8 x 10 ⁻¹	1 x 101	1 x 106
Zr-97(a)	4 x 10 ⁻¹	4 x 10 ⁻¹	1 x 101(b)	1 x 105(b)

Information:

(a) The A1 value and A2 value include contributions from derivative nuclides with a half-life of less than 10 (ten) days as follows:

Mg-28	Al-28
Ar-42	K-42
Ca-47	Sc-47
Ti-44	Sc-44

Fe-52 ...



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Fe-52	Mn-52m
Fe-60	Co-60m
Zn-69m	Zn-69
Ge-68	Ga-68
Rb-83	Kr-83m
SR-82	Rb-82
SR-90	Y-90
Sr-91	Y-91m
Sr-92	Y-92
Y-87	Sr-87m
Zr-95	Nb-95m
Zr-97	Nb-97m, Nb-97
Mo-99	Tc-99m
Tc-95m	Tc-95
Tc-96m	Tc-96
Ru-103	Rh-103m
Ru-106	Rh-106
Pd-103	Rh-103m
Ag-108m	Ag-108
Ag-110m	Ag-110
Cd-115	In-115m
In-114m	In-114
Sn-113	In-113m
Sn-121m	Sn-121
Sn-126	Sb-126m
Te-118	Sb-118
Te-127m	Te-127
Te-129m	Te-129
Te-131m	Te-131
Te-132	I-132
I-135	Xe-135m
Xe-122	I-122

CS-137 ...



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Cs-137	Ba-137m
Ba-131	Cs-131
Ba-140	La-140
Ce-144	Pr-144m, Pr-144
Pm-148m	Pm-148
Gd-146	Eu-146
Dy-166	Ho-166
Hf-172	Lu-172
W-178	Ta-178
W-188	Re-188
Re-189	Os-189m
Os-194	Ir-194
Ir-189	Os-189m
Pt-188	Ir-188
Hg-194	Au-194
Hg-195m	Hg-195
Pb-210	Bi-210
Pb-212	Bi-212, Tl-208, Po-212
Bi-210m	Tl-206
Bi-212	Tl-208, Po-212
At-211	Po-211
Rn-222	Po-218, Pb-214, At-218, Bi-214, Po-214
Ra-223	Rn-219, Po-215, Pb-211, Bi-211, Po-211, Tl-207
Ra-224	Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212
Ra-225	Ac-225, Fr-221, At-217, Bi-213, Tl-209, Po-213, Pb-209
Ra-226	Rn-222, Po-218, Pb-214, At-218, Bi-214, Po-214
Ra-228	Ac-228
Ac-225	Fr-221, At-217, Bi-213, Tl-209, Po-213, Pb-209
Ac-227	Fr-223
Th-228	Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212
Th-234	Pa-234m, Pa-234
Pa-230	Ac-226, Th-226, Fr-222, Ra-222, Rn-218, Po-214

U-230 ...



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U-230	Th-226, Ra-222, Rn-218, Po-214
U-235	Th-231
Pu-241	U-237
Pu-244	U-240, Np-240m
Am-242m	Am-242, Np-238
Am-243	Np-239
Cm-247	Pu-243
Bk-249	Am-245
Cf-253	Cm-249

(b) Parent nuclides and derivatives included in secular equilibrium are as follows:

SR-90	Y-90
Zr-93	Nb-93m
Zr-97	Nb-97
Ru-106	Rh-106
Ag-108m	Ag-108
Cs-137	Ba-137m
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-222	Po-218, Pb-214, Bi-214, Po-214
Ra-223	Rn-219, Po-215, Pb-211, Bi-211, Tl-207
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-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-nature	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 ...



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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-nature	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
Np-237	Pa-233
Am-242m	Am-242
Am-243	Np-239

- (c) The quantity can be determined from an estimate of the decay rate or an estimate of the radiation level at a specified distance from the source.
- (d) This value only applies to uranium compounds with the chemical formulas UF_6 , UO_2F_2 , and $UO_2(NO_3)_2$.
- (e) This value only applies to uranium compounds with the chemical formula UO_3 , UF_4 , UCl_4 , and hexavalent compounds.
- (f) This value applies to all uranium compounds other than those included in letters (d) and (e).
- (g) This value applies only to unirradiated uranium.

TABLE 2. BASIC RADIONUCLIDE VALUES FOR UNKNOWN RADIONUCLIDES OR MIXTURES

Radioactive Contents	Mark A1	Mark A2	Concentration Activities for Materials Excluded	Limit Value Activities for Goods Delivery Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
The known radioactive contents are nuclides that emit beta or gamma	0.1	0.02	1 x 10 ¹	1 x 10 ⁴

Contents ...



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Radioactive Contents	Mark A1	Mark A2	Concentration Activities for Materials Excluded	Limit Value Activities for Goods Delivery Excluded
	(TBq)	(TBq)	(Bq/g)	(Bq)
The known radioactive contents are alpha-emitting nuclides	0.2	9×10^{-5}	1×10^{-1}	1×10^3
There is no relevant data regarding radioactive content	0.0019×10^{-5}		1×10^{-1}	1×10^3

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[Signature]
Silvanna Djaman



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APPENDIX III
GOVERNMENT REGULATIONS OF THE REPUBLIC OF INDONESIA
NUMBER 58 OF 2015
ABOUT
RADIATION SAFETY AND INTERNAL SECURITY
TRANSPORTATION OF RADIOACTIVE SUBSTANCES

ACTIVITY LIMIT VALUE FOR OTHER PACKAGES

Physical Forms of Matter Radioactive	Activity Limit Value Equipment or Goods	Limit Value Activity Equipment or Inside stuff Package	Limit Value Activity Package
Congested:			
a. Special Forms of Radioactive Substances	10-2A1	A1	10-3A1
b. Radioactive Substances besides Substances Radioactive Special Shape	10-2A2	A2	10-3A2
Liquid:	10-3A2	10-1A2	10-4A2
Gas:			
a. Tritium	2 x 10-2A2	2 x 10-1A2	2 x 10-2A2
b. Special Form Radioactive Substances	10-3A1	10-2A1	10-3A1
c. Radioactive Substances besides Substances Radioactive Special Shape	10-3A2	10-2A2	10-3A2

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APPENDIX IV
GOVERNMENT REGULATIONS OF THE REPUBLIC OF INDONESIA
NUMBER 58 OF 2015
ABOUT
RADIATION SAFETY AND INTERNAL SECURITY
TRANSPORTATION OF RADIOACTIVE SUBSTANCES

**DETERMINATION OF TRANSPORT INDEX ON PACKAGES,
OUTER PACKING, AND CONTAINERS**

The Transport Index can be determined by measuring the maximum radiation level as follows:

- a. Maximum radiation level measurements use units of mSv/hour (millisieverts per hour) and are carried out at a distance of 1 m (one meter) from the surface of the package, outer packaging or container. The Transport Index value is obtained from multiplying the maximum radiation level measurement result by 100 (one hundred);
- b. for Low Type Activity Radioactive Substances in the form of uranium and thorium minerals and their concentrates, the maximum radiation level at each point at a distance of 1 m (one meter) from the outer surface of the cargo is determined as listed in Table 1;

**TABLE 1. MAXIMUM RADIATION LEVEL VALUE AT EACH POINT AT A DISTANCE OF 1 M (ONE METER)
FOR PACKAGES CONTAINING LOW TYPE ACTIVITY RADIOACTIVE SUBSTANCES IN THE
FORM OF URANIUM, THORIUM AND THEIR CONCENTRATES**

No.	Radiation Levels Maximum	Low Type Activity Radioactive Substances
1.	0.4 mSv/hour (zero point four millisieverts per hour)	for minerals and physical concentrates of uranium and thorium;
2.	0.3 mSv/hour (zero point three millisieverts per hour)	for thorium chemical concentrate; And
3.	0.02 mSv/hour (zero point zero two millisieverts per hour)	for uranium chemical concentrates, other than uranium hexafluoride;

c. For ...



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- c. For Tanks, Containers and Radioactive Substances of Low Activity Type-I or Surface Contaminated Objects-I which are transported without using packaging, the maximum radiation level is measured in units of mSv/hour at a distance of 1 m (one meter) from the surface of the Tank, Container , and Type-I Low Activity Radioactive Substances or Surface-I Contaminated Objects which are transported without using packaging.

The Transport Index value is obtained from multiplying the maximum radiation level measurement results with the factors as listed in Table 2 as follows:

TABLE 2. MULTIPLIING FACTORS FOR TANKS, CONTAINERS AND LOW-I TYPE RADIOACTIVE SUBSTANCE OR SURFACE-I CONTAMINATED OBJECTS TRANSPORTED WITHOUT USE OF PACKAGING

Payload Size	Multiplier Factor
Load size is smaller than or equal to 1 m ² (one square meter)	1
The size of the load is greater than 1 m ² (one square meter) but smaller than or equal to 5 m ² (five square meters)	2
Load size is greater than 5 m ² (five square meters) but smaller than 20 m ² (twenty square meters)	3
Load size greater than 20 m ² (twenty square meters)	10

a The widest cross-sectional area of the load being measured.

- d. The values obtained as intended in letters a, b and c are rounded to one digit after the comma, such as 1.13 (one point thirteen) to 1.2 (one point two), except for the value 0.05 (zero point zero five) or less can be considered 0 (zero).

e. Index ...



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- e. The Transport Index for each outer wrapper and container can also be determined by adding up all the Transport Indexes for all packages contained in the outer wrapper, container or transport vehicle.

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APPENDIX V
GOVERNMENT REGULATIONS OF THE REPUBLIC OF INDONESIA
NUMBER 58 OF 2015
ABOUT
RADIATION SAFETY AND INTERNAL SECURITY
TRANSPORTATION OF RADIOACTIVE SUBSTANCES

RADIATION SIGNS, LABELS, AND PLAQUES

I. RADIATION SIGNS FOR TYPE B(U), TYPE B(M), AND TYPE C PACKAGES

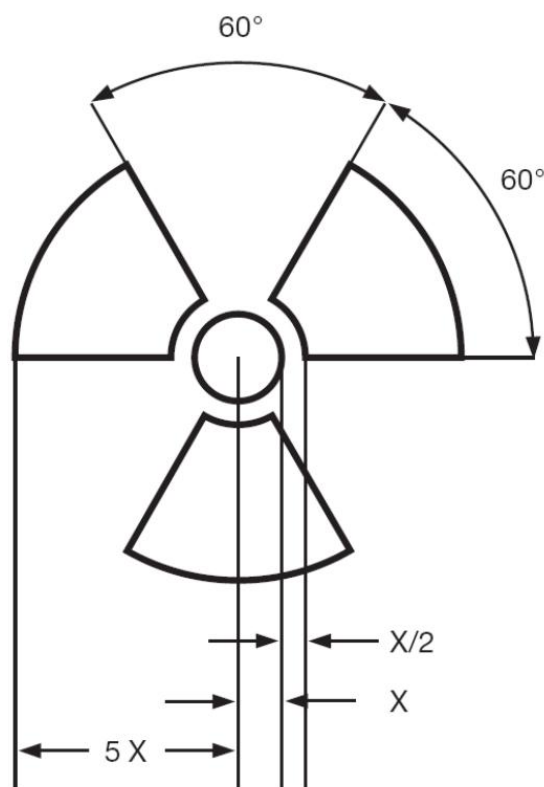


Figure 1

Information:

X is the size of the radius of the central circle of the radiation sign, with a minimum size of 4mm (four millimeters).

II. LABEL ...



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II. LABEL

A. CATEGORY I-WHITE

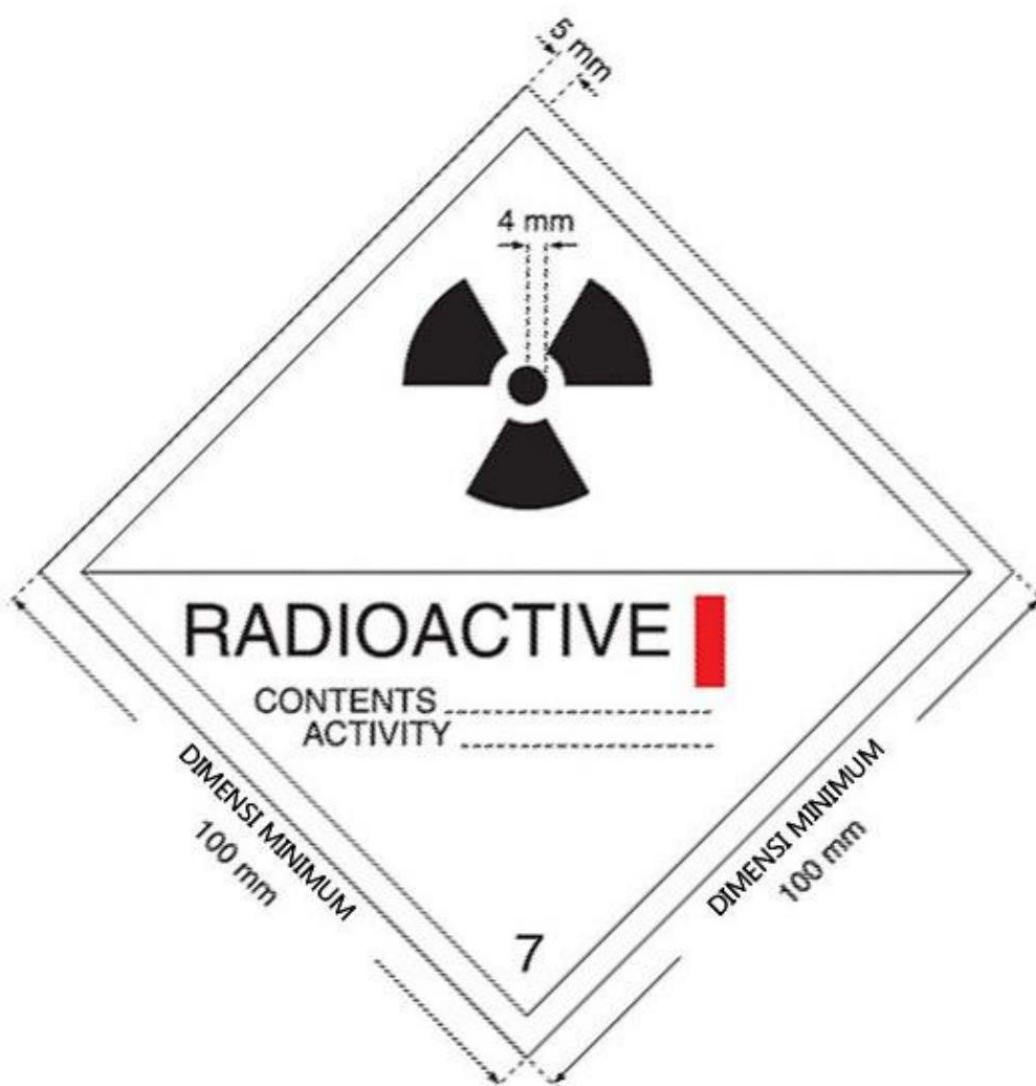


Figure 2

B. CATEGORIES ...



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B. CATEGORY II-YELLOW

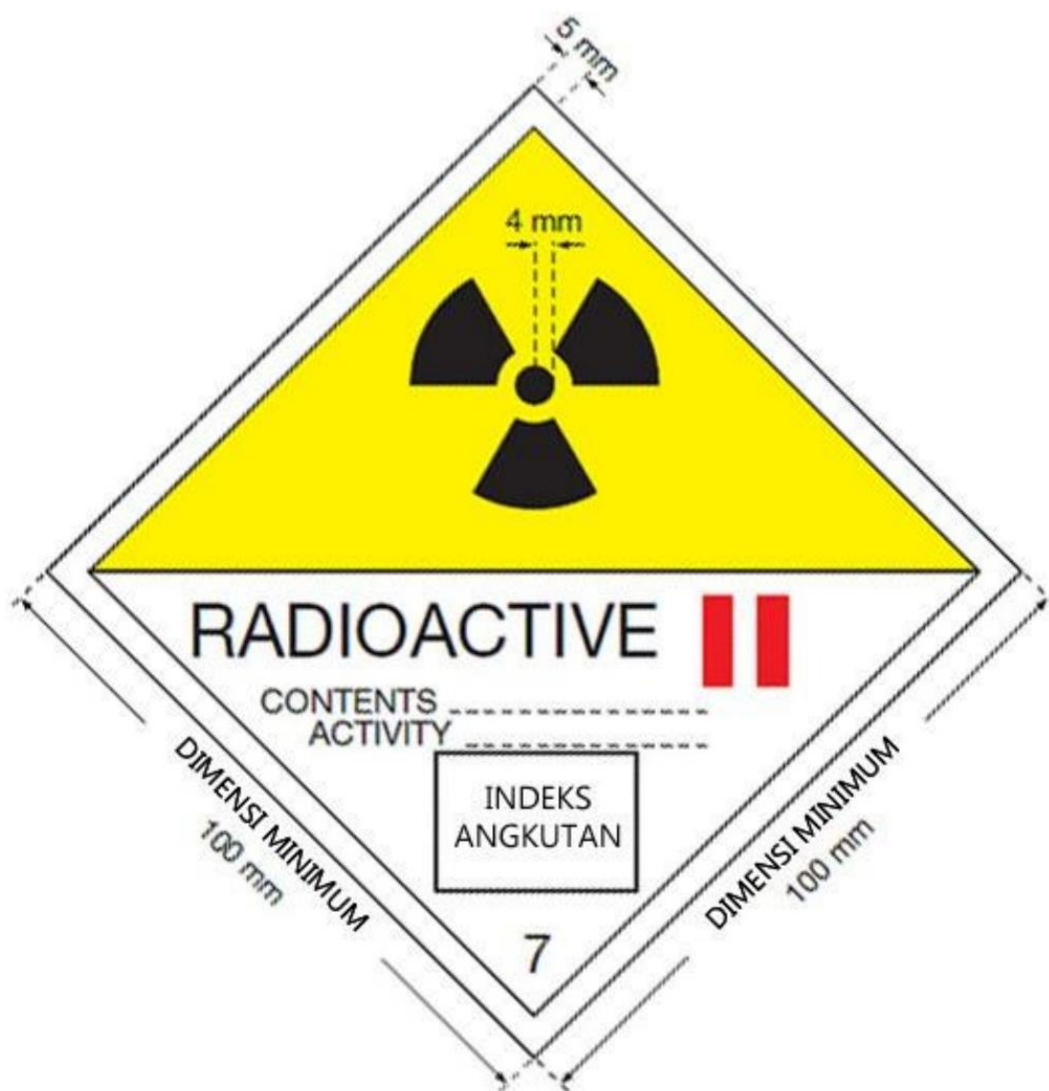


Figure 3

C. CATEGORIES ...



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C. CATEGORY III-YELLOW

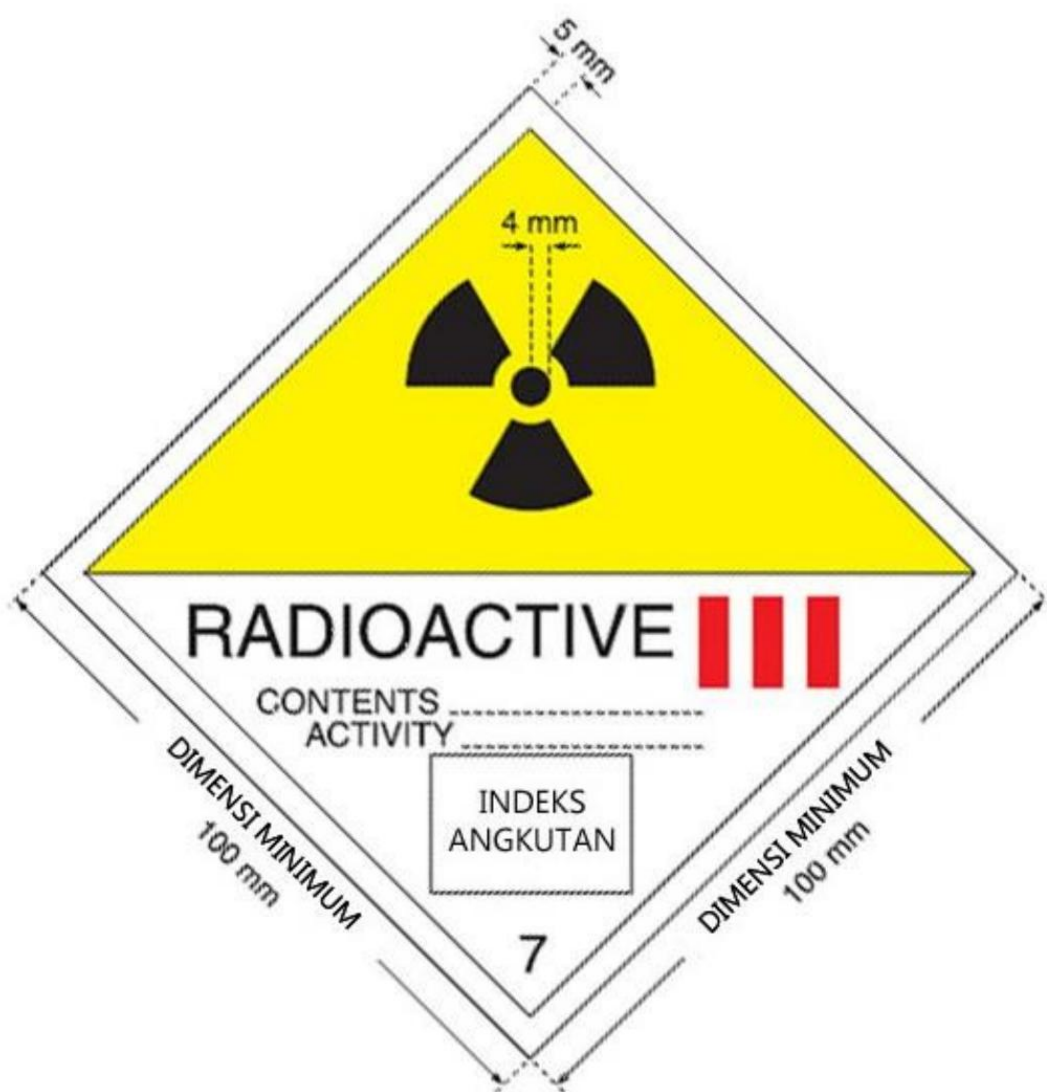


Figure 4

D. MATERIALS ...



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D. FICTIONAL MATERIAL

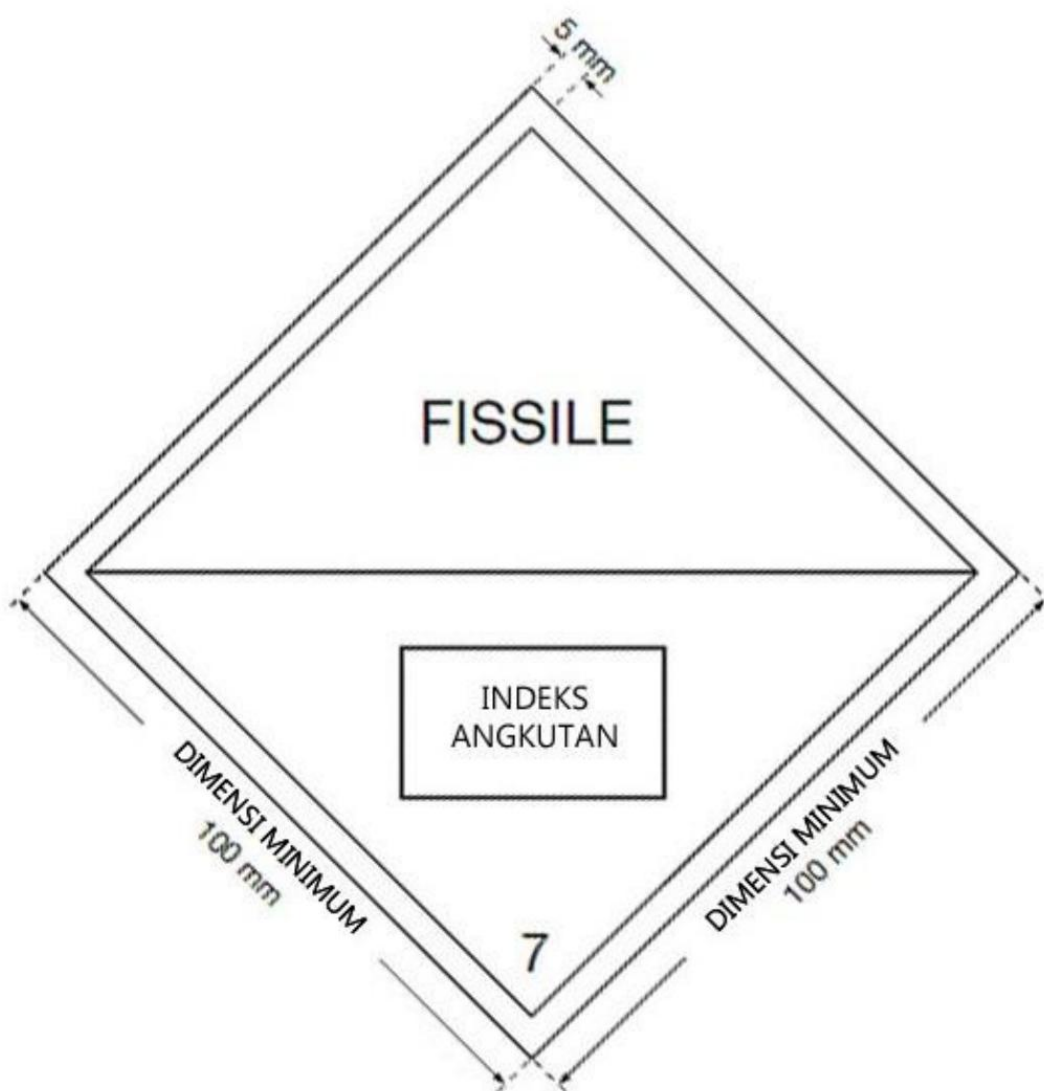


Figure 5

III. PLAQUE ...



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III. PLAQUES AND PROCEDURES FOR INCLUSION OF UN NUMBERS ON PLAQUES

A. PLAQUE IMAGE



Figure 6

B. TATA ...



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B. PROCEDURES FOR INCLUSION OF UN NUMBERS ON THE PLAQUE

Inclusion of PBB Number is carried out on:

- a. on the same plaque as listed in Figure 7; or
- b. on a separate plaque as stated in Figure 8.



Figure 7

FIGURE 8 ...



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FIGURE 8. UN NUMBER PLAQUE



Figure 8

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APPENDIX VI
GOVERNMENT REGULATIONS OF THE REPUBLIC OF INDONESIA
NUMBER 58 OF 2015
ABOUT
RADIATION SAFETY AND INTERNAL SECURITY
TRANSPORTATION OF RADIOACTIVE SUBSTANCES

LIST OF UN NUMBERS, NAME AND SHIPPING DESCRIPTION

No.	UN Number	Shipping Name and Description ^a
Other Packages		
1.	UN 2908	RADIOACTIVE SUBSTANCES, OTHER PACKAGING --- WRAPPER BLANK
2.	UN 2909	RADIOACTIVE SUBSTANCES, OTHER PACKAGES --- ARTICLES MANUFACTURED from NATURAL URANIUM or URANIUM DEPLOYED or NATURAL THORIUM
3.	UN 2910	RADIOACTIVE SUBSTANCES, OTHER PACKAGES --- QUANTITY LIMITED MATERIALS
4.	UN 2911	RADIOACTIVE SUBSTANCES, OTHER PACKAGES --- INSTRUMENTS or ARTICLES
5.	UN 3507	URANIUM HEXAFLORIDE, RADIOACTIVE SUBSTANCES, OTHER PACKAGES, less than 0.1 kg per Package, non-fissile or exempt fissile
Low Type Activity Radioactive Substances		
6.	UN 2912	RADIOACTIVE SUBSTANCES, LOW TYPE ACTIVITY (AJR-I) are not fissile or exempt fissile
7.	UN 3321	RADIOACTIVE SUBSTANCES, LOW TYPE ACTIVITY (AJR-II) non-fissile or exempt fissile
8.	UN 3322	RADIOACTIVE SUBSTANCES, LOW TYPE ACTIVITY (AJR-III) non-fissile or exempt fissile
9.	UN 3324	RADIOACTIVE SUBSTANCES, LOW TYPE ACTIVITY (AJR-II), Fissile

10. UN 3325 ...



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No.	UN Number	Shipping Name and Descriptiona
10.	UN 3325	RADIOACTIVE SUBSTANCES, LOW TYPE ACTIVITY (AJR-III), Fissile
Surface Contaminated Objects		
11.	UN 2913	RADIOACTIVE SUBSTANCE, OBJECTS CONTAMINATED IN SURFACE (BTP-I or BTP-II) is not fissile or excluded fissile
12.	UN 3326	RADIOACTIVE SUBSTANCE, OBJECTS CONTAMINATED IN SURFACE (BTP-I or BTP-II), Fissile
Type A Packaging		
13.	UN 2915	RADIOACTIVE SUBSTANCES, TYPE A PACKAGES, not special forms, not fissile or excluded fissile
14.	UN 3327	RADIOACTIVE SUBSTANCE, TYPE A PACKAGE, FISHIL not a special form
15.	UN 3332	RADIOACTIVE SUBSTANCES, TYPE A PACKAGING, FORM SPECIFICALLY not fissile or excluded fissile
16.	UN 3333	RADIOACTIVE SUBSTANCES, TYPE A PACKAGING, FORM SPECIFICALLY, FICTIONAL MATERIAL
Package Type B(U)		
17.	2916	RADIOACTIVE SUBSTANCE, TYPE B(U) PACKAGING, not fissile material exempt fissile material
18.	3328	RADIOACTIVE SUBSTANCES, TYPE B(U) PACKAGING, MATERIALS PHYSICAL
Package Type B(M)		
19.	2917	RADIOACTIVE SUBSTANCE, TYPE B(M) PACKAGE, no Excluded Fissile Material or Fissile Material
20.	3329	RADIOACTIVE SUBSTANCES, TYPE B(M) PACKAGING, MATERIAL PHYSICAL

Packaging ...



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No.	UN Number	Shipping Name and Description
Type C Package		
21.	3323	RADIOACTIVE SUBSTANCES, TYPE C PACKAGES, are not fissile materials or excluded Fissile Materials
22.	3330	RADIOACTIVE SUBSTANCES, TYPE C PACKAGES, FICTIONAL MATERIALS
Uranium Hexafluoride		
23.	2977	RADIOACTIVE SUBSTANCES, URANIUM HEXAFLUORIDE, MATERIAL PHYSICAL
24.	2978	RADIOACTIVE SUBSTANCES, URANIUM HEXAFLUORIDE not Excluded Fissile Material or Fissile Material

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signed.

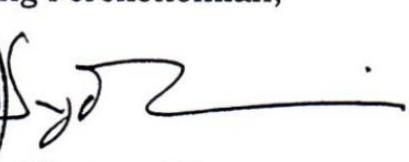
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Salinan sesuai dengan aslinya

KEMENTERIAN SEKRETARIAT NEGARA
REPUBLIK INDONESIA

Asisten Deputi Perundang-undangan
Bidang Perekonomian,




Silvana Djaman



PRESIDEN
REPUBLIK INDONESIA

APPENDIX VII
GOVERNMENT REGULATIONS OF THE REPUBLIC OF INDONESIA
NUMBER 58 OF 2015
ABOUT
RADIATION SAFETY AND INTERNAL SECURITY
TRANSPORTATION OF RADIOACTIVE SUBSTANCES

**TABLE 1. RADIOACTIVE SOURCE CATEGORIES
FOR TRANSPORTATION ACTIVITIES**

Source Category Radioactive	Radioactivity Threshold (A/D)^a	Type of Use
1	$A/D \geq 1000$ {A/D is greater than or equal to 1000 (one thousand)}	a. Radioactive source for irradiator b. Radioactive source for radiotherapy
2	$1000 > A/D \geq 10$ {A/D is less than 1000 (one thousand) and greater than or equal to 10 (ten)}	a. Radioactive sources for industrial radiography b. Radioactive source for brachytherapy

3 10 ...



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Source Category Radioactive	Radioactivity Threshold (A/D) ^a	Type of Use
3	$10 > A/D \geq 1$ {A/D is less than 10 (ten) and greater than or equal to 1 (one)}	a. Radioactive sources for <i>gauging</i> with high activity radioactive sources b. Radioactive sources for <i>well logging</i> c. Radioactive source for photofluorography
4	$1 > A/D \geq 0.01$ {A/D is less than 1 (one) and greater than or equal to 0.01 (zero point zero one)}	Radioactive sources for <i>gauging</i> with low activity radioactive sources
5	$0.01 > A/D$ and $A >$ exception rate {A/D is less than 0.01 and A is greater than the exception rate}	a. Radioactive source for educational, research and development purposes b. <i>Check sources</i> c. Radioactive source for calibration d. Radioactive sources for standardization

Information:

a The radioactivity threshold is expressed as A/D. A/D is the ratio of radionuclide activity (A) to the D value.

The D value is the activity of a type of radionuclide from a radioactive source that can cause severe deterministic effects.

TABLE ...



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TABLE 2. CLASSIFICATION OF NUCLEAR MATERIALS

No.	Element	Description	Nuclear Material Classes			
			I	II	III	IV
1.	Plutonium	<p>Not irradiated or irradiated with exposure less than or equal to 1 Gy/hour (one gray per hour) or 100 rad/hour (one hundred rads per hour)</p> <p>at a distance of 1 m (one meter) without radiation shielding</p>	<p>Mass plutonium greater than 2 kg (two kilograms)</p>	<p>Mass more plutonium larger than 500 g (five hundred grams) more but smaller than 2 kg (two kilograms)</p>	<p>The mass of plutonium is greater than 15 g (fifteen grams) but less than or equal to 500 g (five hundred grams)</p>	<p>Mass more plutonium less than or equal to 15 g (fifteen grams)</p>

2. Uranium ...



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No.	Element	Description	Nuclear Material Classes			
			I	II	III	IV
2.	Uranium-235 (U-235)	<p>Not irradiated or irradiated with exposure less than 1 Gy/hour (one gray per hour) or 100 rad/hour (one hundred rad per hour) at a distance of 1 m (one meter) without radiation shielding.</p> <p>a. Uranium enriched greater than or equal to 20% (twenty percent)</p> <p style="text-align: center;">Uranium-235</p> <p>(U-235) and uranium enriched between 10% (ten percent) to 20% (twenty percent)</p> <p style="text-align: center;">Uranium-235</p> <p>(U-235)</p>	<p>Mass Uranium-235 (U-235) greater than or equal to 5 kg (five kilograms)</p>	<p>Mass Uranium-235 (U-235) is greater than 1 kg (one kilogram) but smaller than 5 kg (five kilograms)</p>	<p>Mass of Uranium-235 (U-235) is greater than 15 g (fifteen grams) but smaller than 1 kg (one kilogram)</p>	<p>Uranium Mass-235 (U-235) is smaller or equal to 15 g (fifteen grams)</p>

b. Uranium ...



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No.	Element	Description	Nuclear Material Classes			
			I	II	III	IV
		b. Uranium is enriched between 10% (ten percent) to 20% (twenty percent) Uranium-235 (U-235)	-	Mass Uranium-235 (U-235) greater than or equal to 10 kg (ten kilograms)	Mass of Uranium-235 (U-235) is greater than 1 kg (one kilogram) but smaller than 10 kg (ten kilograms)	Mass Uranium-235 (U-235) is less than or equal to 1 kg (one kilogram)
		c. Uranium is enriched above natural uranium, but less than 10% (ten percent) Uranium-235 (U-235)	-	-	Mass of Uranium-235 (U-235) greater than or equal to 10 kg (ten kilograms)	Mass Uranium-235 (U-235) smaller than 10 kg (ten kilograms)

3. Uranium ...



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No.	Element	Description	Nuclear Material Classes			
			I	II	III	IV
3.	Uranium-233 (U-233)	Not irradiated or irradiated with exposure less than or equal to 1 Gy/hour (one gray per hour) or 100 rad/hour (one hundred rad per hour) at a distance of 1 m (one meter) without radiation shielding	Mass Uranium-233 (U-233) greater than or equal to 2 kg (two kilograms)	Mass Uranium-233 (U-233) is greater than 500 g (five hundred grams) more hundred but smaller than 2 kg (two kilograms)	Mass of Uranium-233 (U-233) greater than 15 g (fifteen grams) but smaller than or equal to 500 g (five hundred grams)	Mass Uranium-233 (U-233) is smaller than or equal to 15 g (fifteen grams)
4.	Material other than irradiated natural uranium, depleted or reduced uranium, thorium, or fuel enriched less than 10% (ten percent)	burn between		Not limited in number		

5. Uranium ...



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No.	Element	Description	Nuclear Material Classes			
			I	II	III	IV
5.	Natural uranium, depleted or reduced uranium, and thorium					Not limited in number

Note: a For all

Plutonium except with isotopic concentrations exceeding 80% (eighty percent) in Plutonium-238 (Pu-238).

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