

NUCLEAR LAWS OF THE REPUBLIC OF KOREA

5 Regulations on Technical Standards for Radiation Safety Control, Etc.

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CHAPTER I General Provisions

Article 1 (Purpose)

The purpose of these Regulations are to prescribe matters related to the technical standards of radiation safety control, etc. necessary for prevention of any radiation hazard, among the matters delegated by the Nuclear Safety Act and the Enforcement Decree thereof.

Article 2 (Definitions)

- (1) The definitions of terms used herein shall be as follows:
1. The term “work room” means the place where unsealed radioisotopes or unsealed objects contaminated by radioisotopes are used or packaged.
 2. The term “contamination inspection room” means the place in which whether the surface of a human body or an object worn by a human including working garments, footwear and protective gear is contaminated by radioactive materials is inspected.
 3. The term “drainage equipment” means the equipment that purifies or

discharges liquid radioactive materials or fluids contaminated thereby including, but not limited to, effluent processing apparatus such as concentrators, separators and ion exchangers or the drainage pipe, drainage passage, etc. of effluent purification tanks such as storage, dilution and filtration tanks.

4. The term “solidification facilities” means the facilities that solidify radioactive materials, etc. by using concrete or other solidifying materials including, but not limited to, milling, compression, blending or re-packaging apparatus.
 5. The term “external radiation dose rate” means the radiation dose per hour exposed from the outside of a human body (millisievert/hour).
 6. The term “low-dispersive radioactive materials” means either a solid radioactive material or a solid radioactive material in a sealed capsule, that has limited dispersibility and is not in powder form.
 7. The term “transport index” means a grade given to packages, overpacks, tanks or freight containers, which is a number used for control of radiation exposure.
 8. The term “criticality safety index” means a grade given to packages, overpacks, tanks or freight containers containing fissile materials, which is a number used to control over the accumulation of packages, overpacks, tanks or freight containers containing fissile material.
- (2) Terms used herein other than those set forth in the foregoing Paragraph (1) shall have the same meaning as provided in the Nuclear Safety Act (hereinafter referred to as “Act”), the Enforcement Decree thereof (hereinafter referred to as “Decree”) or the Enforcement Regulation thereof.

Article 3 (Radiation Control Area)

- (1) The “limit as prescribed by the Ordinance of the Nuclear Safety and Security Commission” in Subparagraph 16 of Article 2 of the Act means any of the following:
 1. External radiation dose rate: 400 microsieverts per week;
 2. Concentration of radioactive materials in the air: derived air concentration; and
 3. Contamination level of the surface of an object: permissible surface contamination level.
- (2) In regard of an area where the external radiation dose rate, etc. are feared

to exceed the limit as provided in the foregoing Paragraph (1), each of the following measures shall be taken to control people's access thereto and prevent any radiation hazard to those with access thereto:

1. A radiation control area shall be established;
2. Such compartments as walls and fences shall be used and such signs as provided in the attached Table 1 shall be attached for distinction of such area from others, and in the case of access to such area by any person other than radiation workers, such person shall be required to follow instructions from radiation workers;
3. In the case of contamination by radioactive materials of the surface of floors, walls and other objects feared to be contacted by people, the level of such contamination shall not exceed the permissible surface contamination level; and
4. In those cases where a person leaves or an object is carried out from the radiation control area, the level of contamination by radioactive materials on the surface of a human body, the objects worn by a human including clothing and footwear and the object carried out (if such object is contained in a container or packaged, such container or packaging) shall not exceed one tenth (1/10) of the permissible surface contamination level.

Chapter II Use of Nuclear Materials

▣ Section 1 Facility Standards for Use Facilities, etc. of Nuclear Fuel Materials

Article 4 (Location of Use Facilities, etc.)

Use facilities, distribution facilities, storage facilities, conservation facilities, processing facilities and discharge facilities of nuclear fuel materials as provided in Subparagraph 2 of Article 46 of the Act (hereinafter referred to as "use facilities, etc.") shall be installed at a place without any fear of a fire, inundation or ground subsidence.

Article 5 (Structure and Installations of Use Facilities, etc.)

Technical standards as regards the structure and installations of use facilities, etc. of nuclear fuel materials and materials contaminated thereby (hereinafter referred to as “nuclear fuel materials, etc.”) as provided in Subparagraph 2 of Article 46 of the Act and Article 50 (1) 2 thereof shall be as follows:

1. Caves, etc. installed at use facilities shall have a structure with shielding capacity to maintain the external radiation dose rate thereof at not more than 1 millisievert per week in cases where the maximum nuclear fuel materials storable at storage facilities are used;
2. If it is necessary for the inside of caves, etc. to be maintained in a state of negative pressure (meaning the state where internal air pressure is lower than external air pressure; hereinafter the same shall apply), it shall be possible to maintain such state of negative pressure at all times;
3. If the inside of caves, etc. is not in a state of negative pressure, an apparatus generating an alarm signal shall operate with sensitivity;
4. Caves, etc. that use plutonium, compounds thereof, and materials containing one or not less than two of such materials (excluding spent nuclear fuels) or caves, etc. inside of which spent nuclear fuel processing research facilities are installed shall have a structure that can be sealed, except for the air injection inlet and ventilation outlet;
5. Spent nuclear fuel processing research facilities shall have a structure without any fear of leakage of materials therein to the outside;
6. The inside of a place where plutonium, compounds thereof, and materials containing one or not less than two of such materials with the plutonium volume of more than 100 grams or spent nuclear fuels with the radioactivity of radioactive materials of more than 3.7 petabecquerels are used shall be maintained in a state of negative pressure at all times;
7. Use facilities and storage facilities shall have a structure necessary to prevent nuclear fuel materials from achieving criticality; and
8. Emergency electrical power supply sources and other emergency safety apparatus shall operate in a fast and accurate manner.

▣ Section 2 Handling Standards for Nuclear Fuel Materials, etc.

Article 6 (Scope of Application)

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As regards technical standards concerning handling of nuclear fuel materials, etc. within a place of business as provided in Article 50 (1) 1 of the Act, the provisions of Articles 7 through 10 hereof shall apply. Provided, that the provisions of Articles 8 through 10 hereof may not apply with the acknowledgement by the Minister of Education, Science and Technology in cases where nuclear fuel materials, etc. are used for a research/testing purpose, where it is difficult to directly apply said provisions due to the characteristics of facilities or technologies, or where non-application of said provisions does not hamper safety.

Article 7 (Use and Distribution)

Technical standards as regards the use or distribution of nuclear fuel materials, etc. shall be as follows:

1. Nuclear fuel materials, etc. shall be used or distributed at use facilities or distribution facilities respectively.
2. Cautions regarding handling shall be posted at easily noticeable places in the use facilities and distribution facilities.
3. Personnel shall wear working garments, etc. while working, and such working garments, etc. shall be worn in the use facilities and distribution facilities.
4. In order to prevent any radiation hazard to radiation workers and persons with frequent access, each of the following measures shall be taken:
 - a. The personal dose on radiation workers shall not exceed the dose limit;
 - b. The concentration of radioactive materials in the air inhaled by radiation workers shall not exceed the derived air concentration; and
 - c. The personal dose on persons with frequent access shall not exceed the dose limit.
5. Measurement of the radiation dose rate and contamination by nuclear fuel materials, etc. in a radiation control area shall be performed at a place most appropriate for such measurement by using radiation measuring apparatus. Provided, that if it is difficult to perform measurement by using such radiation measuring apparatus, such rate and contamination level may be assessed by means of calculation.
6. Measurement of personal dose as regards those with access to a radiation control area shall be performed according to each of the following:

- a. Radiation measuring apparatus or radiation measuring devices shall be used for such measurement. Provided, that such quantity may be assessed by means of calculation in the case of a place where it is difficult to perform measurement by using such apparatus or devices;
 - b. In regard of exposure to external radiation, the parts of a human body that are most feared to be exposed (hands, feet, etc. and chest or abdomen if the exposed parts are hands, feet, etc.) shall be subject to measurement; and
 - c. In regard of exposure of the inside of a human body to radiation, the personal dose shall be assessed by means of measurement or calculation of the concentration and quantity of radioactive materials in the air inhaled by humans.
7. Measurement of the level of contamination by nuclear fuel materials, etc. of the surface of a human body and an object worn by a human including working garments, footwear and protective gear shall be performed at the surface of hands, feet, working garments, footwear and protective gear and other parts feared to be contaminated by nuclear fuel materials, etc. according to the method as provided in the foregoing Subparagraph 6 (a).
 8. Measurement as provided in the foregoing Subparagraph 6 shall be performed constantly during working, and measurement as provided in the foregoing Subparagraph 7 shall be conducted upon completion of working.
 9. There shall be no fear of criticality at the time of use and distribution of nuclear fuel materials.
 10. Ventilation equipment, radiation measuring apparatus and emergency equipment shall be constantly maintained in a state where they function properly.

Article 8 (Storage and Conservation)

Technical standards as regards the storage or conservation of nuclear fuel materials, etc. shall be as follows:

1. Nuclear fuel materials, etc. shall be stored or conserved at storage facilities or conservation facilities respectively.
2. Cautions regarding handling shall be posted at easily noticeable places in

storage facilities and conservation facilities:

3. Locks and access control measures shall be implemented as regards storage facilities and conservation facilities, with the exception of carry-out/carry-in of nuclear fuel materials, etc.

Article 9 (Transport)

(1) Technical standards as regards transport of nuclear fuel materials, etc. within a place of business shall be as follows:

1. There shall be no fear of criticality of nuclear fuel materials, etc.
2. Nuclear fuel materials, etc. shall be transported in a container. Provided, that this shall not apply in any of the following cases:
 - a. When measures have been taken to prevent the spread or leakage of radioactive materials or to prevent other hazards as determined and publicly notified by the Nuclear Safety and Security Commission with respect to materials contaminated by nuclear fuel materials, etc. (only those whose radioactive concentration does not exceed the limit determined and publicly notified by the Minister of Education, Science and Technology); and
 - b. When approval of the Nuclear Safety and Security Commission has been obtained as regards materials contaminated by nuclear fuel materials, etc. that are difficult to be transported in a container including large-sized machinery.
3. Such container as provided in the foregoing Subparagraph 2 shall meet each of the following standards:
 - a. Each side of a parallelepiped that circumscribes such container shall be not less than ten centimeters;
 - b. Such container can be handled in an easy and safe manner; and
 - c. There shall be no fear that such container will be cracked/damaged for such reasons as a change in the temperature/internal pressure or vibration expected during transport thereof.
4. The radiation dose rate at ten centimeters away from the surface of the container as provided in the foregoing Subparagraph 2 or materials contaminated by nuclear fuel materials, etc. (hereinafter referred to as “package” in this Article) and vehicles loaded with or containing such container or materials and other machinery and apparatus transporting nuclear fuel materials, etc. (hereinafter referred to as “transport apparatus”

- in this Article) and at two meters away from the external surface of such vehicles shall not respectively exceed the radiation dose rate determined and publicly notified by the Minister of Education, Science and Technology, and the radioactive material contamination level on the surface of a package shall not exceed the permissible surface contamination level.
5. There shall be no fear that a package will move, be inverted or fall while it is removed and loaded onto the transport apparatus.
 6. Nuclear fuel materials, etc. and dangerous goods set forth in each Subparagraph of Article 98 (1) hereof shall not be loaded in a same transport apparatus.
 7. Access to the transport route of packages by any person other than those engaging in transport and any vehicle other than those used for transport shall be restricted by such means as installation of signs or deployment of observers.
 8. In the case of transporting a package with a vehicle, such vehicle shall be operated slowly.
 9. A person, who has knowledge and experience as regards handling of nuclear fuel materials, etc., shall accompany for supervision necessary for safety control.
 10. Signs as provided in Article 106 hereof shall be attached to an appropriate area of a package (container if such package is contained in the container) and transport apparatus.
 11. The personal dose on the persons who engage in the transport of nuclear fuel materials, etc., other than radiation workers, shall not exceed the dose limit.
- (2) In cases where it is extremely difficult to take all or a part of the measures provided in Subparagraphs 3 and 4 of the foregoing Paragraph (1), equivalent measures may be taken with the approval of the Nuclear Safety and Security Commission. Provided, that said provisions shall not apply if the radiation dose rate at ten centimeters and two meters away from the surface of the relevant package respectively exceeds the radiation dose rate as determined and publicly notified by the Nuclear Safety and Security Commission.
- (3) The provisions of Subparagraphs 2 through 4 and Subparagraphs 7 through 10 of the foregoing Paragraph (1) shall not apply to transport within a radiation control area.

Article 10 (Processing and Discharge)

Technical standards as regards processing and discharge of radioactive wastes generated from nuclear fuel materials, etc. in a place of business shall be as follows:

1. Processing and discharge shall be performed under the supervision of a person who has knowledge and experience as regards prevention of radiation hazards, and those engaging in processing and discharge shall be required to wear necessary protective gear including working garments and gloves.
2. In the case of access to disposal facilities by any person other than those engaging in processing and discharge, such person shall be required to follow instructions of the supervisor.
3. In processing and discharging nuclear fuel materials, etc., gaseous radioactive wastes shall be discharged by using ventilation equipment after reducing the concentration of radioactive materials in ventilated air to the utmost possible extent by such means as filtration, radiation attenuation with lapse of time or dilution with a large amount of air. In such case, the concentration of radioactive materials in the air on the boundary of an exclusion area shall not exceed the limit under the discharge control standards (hereinafter referred to as “discharge control standards”) determined by the Nuclear Safety and Security Commission as provided in Subparagraph 12 of Article 2 of the Decree. For such purpose, the concentration of radioactive materials being ventilated shall be monitored at the ventilation outlet by using ventilation monitoring facilities.
4. In processing or discharging nuclear fuel materials, etc., liquid radioactive wastes shall be processed or discharged in the manner as provided in any of the following:
 - a. Discharge by using drainage facilities;
 - b. Storage at a storage pool that generates an effect of radiation hazard prevention;
 - c. Storage at a storage facilities that generate an effect of radiation hazard prevention by placing such wastes in a container or solidifying them (including processing for waste solidification; hereinafter the same shall apply); and
 - d. Incineration at incineration facilities as determined and publicly notified

by the Nuclear Safety and Security Commission.

5. In cases where radioactive wastes are discharged as provided in the foregoing Subparagraph 4 (a), the concentration of radioactive materials in drainage shall be reduced to the utmost possible extent prior to such discharge, by such means as filtration, evaporation, absorption with ion exchange resin, etc., radiation attenuation with lapse of time or dilution with a large amount of water. In such case, the concentration of radioactive materials in the water on the boundary of an exclusion area shall not exceed the limit under the discharge control standards. For such purpose, the concentration of radioactive materials being drained shall be monitored at the drainage passage by using drainage monitoring facilities.
6. In cases where radioactive wastes are stored for such processing as provided in the foregoing Subparagraph 4 (b), measures necessary for cooling shall be taken if it is feared that the decay heat, etc. of such stored radioactive wastes may result in overheating.
7. In cases where radioactive wastes are contained in a container for such processing as provided in the foregoing Subparagraph 4 (c), such container shall meet each of the following standards:
 - a. It shall have a structure that prevents permeation of water, resists corrosion and does not allow leakage of radioactive wastes;
 - b. There shall be no fear that the container may be cracked or damaged; and
 - c. The cover of the container shall not open easily.
8. In cases where radioactive wastes are solidified in such manner as provided in the foregoing Subparagraph 4 (c), diffusion or leakage of such solidified radioactive wastes shall be prevented.
9. In cases where radioactive wastes are stored in such manner as provided in the foregoing Subparagraph 4 (c), each of the following methods shall be employed:
 - a. If it is feared that a container containing radioactive wastes may be cracked or damaged, it shall be covered with absorbents that can absorb all such radioactive wastes and other materials that can prevent spread of contamination;
 - b. If it is feared that the decay heat, etc. of stored radioactive wastes may result in overheating, measures necessary for cooling shall be taken;
 - c. Signs that show existence of radioactive wastes shall be attached to a

- container containing radioactive wastes or solidified radioactive wastes, and a serial number shall be marked on such container or radioactive wastes for reconciliation thereof with the details recorded as provided in Article 49 of the Act; and
- d. Cautions regarding management shall be posted at easily noticeable places in the relevant storage facilities.
10. Solid radioactive wastes shall be processed in the manner as provided in any of the following:
 - a. Such wastes shall be incinerated at incineration facilities as determined and publicly notified by the Nuclear Safety and Security Commission;
 - b. Such wastes shall be stored at storage facilities, which generate an effect of radiation hazard prevention, by placing them in a container or solidifying them; and
 - c. Radioactive wastes such as large-sized machinery, etc. that can hardly be contained in a container in such manner as provided in the foregoing Item (b) or radioactive wastes that require radioactivity decrease with lapse of time shall be stored at storage facilities that generate an effect of radiation hazard prevention.
 11. In cases where radioactive wastes are stored in a container or disposed through solidification thereof as provided in the foregoing Subparagraph 10 (b), the standards set forth in the foregoing Subparagraphs 7 through Subparagraph 9 (excluding Item (a) thereof) shall apply.
 12. In cases where radioactive wastes are stored in such manner as provided in the foregoing Subparagraph 10 (c), the standards set forth in the foregoing Subparagraph 9 (b) and 9 (d) shall apply.

■ Section 3 Handling Standards for Nuclear Raw Materials

Article 11 (Scope of Application)

As regards the technical standards for the use (including the storage, transport, processing and discharge thereof) of nuclear raw materials as provided in Article 52 (2) of the Act, the provisions of Articles 12 through 15 hereof shall apply.

Article 12 (Use)

Technical standards as regards the use of nuclear raw materials shall be as follows:

1. Nuclear raw materials shall be used at the use facilities thereof.
2. Cautions regarding use of nuclear raw materials shall be posted at easily noticeable places of the use facilities thereof.
3. In order to prevent any radiation hazard to radiation workers and persons with frequent access, each of the following measures shall be taken:
 - a. The personal dose on radiation workers shall not exceed the dose limit;
 - b. The concentration of radioactive materials in the air inhaled by radiation workers shall not exceed the derived air concentration; and
 - c. The personal dose on persons with frequent access shall not exceed the dose limit.
4. Measurement of the radiation dose rate and the level of contamination by nuclear raw materials in a radiation control area shall be performed at a place most appropriate for such measurement by using radiation measuring apparatus. Provided, that if it is difficult to perform measurement by using such radiation measuring apparatus, such rate and contamination level may be assessed by means of calculation.
5. Measurement of personal dose as regards those who have access to a radiation control area shall be performed according to each of the following:
 - a. Radiation measuring apparatus or radiation measuring devices shall be used for such measurement. Provided, that such quantity may be assessed by means of calculation in cases where it is difficult to perform measurement by using such apparatus or devices;
 - b. In regard of exposure to external radiation, the parts of a human body that are most feared to be exposed (hands, feet, etc. and chest or abdomen if the exposed parts are hands, feet, etc.) shall be subject to measurement; and
 - c. In regard of exposure of the inside of a human body to radiation, the personal dose shall be assessed by means of measurement or calculation of the concentration and quantity of radioactive materials in the air inhaled by humans.
6. Measurement of the level of contamination by nuclear raw materials of

the surface of a human body and an object worn by a human including working garments, footwear and protective gear shall be performed at the surface of hands, feet, working garments, footwear and protective gear and other parts feared to be contaminated by nuclear raw materials according to the method as provided in the foregoing Subparagraph 5 (a).

7. Measurement as provided in the foregoing Subparagraph 5 shall be performed constantly during working, and measurement as provided in the foregoing Subparagraph 6 shall be conducted upon completion of working.
8. Ventilation equipment, radiation measuring apparatus and emergency equipment shall be constantly maintained in a state where they can function properly.

Article 13 (Storage)

Technical standards as regards the storage of nuclear raw materials shall be as follows:

1. Nuclear raw materials shall be stored at the storage facilities thereof; and
2. Cautions regarding storage of nuclear raw materials shall be posted at easily noticeable places near the storage facilities thereof.

Article 14 (Transport)

Technical standards as regards the transport of nuclear raw materials shall be as follows:

1. Nuclear raw materials shall be transported in a container. Provided, that this shall not apply in the case of transporting nuclear raw materials within the use facilities thereof;
2. A container containing nuclear raw materials shall not be easily damaged;
3. If it is feared that a container containing liquid or gaseous nuclear raw materials may be cracked/damaged, such container shall be covered with absorbents and other materials that can prevent spread of contamination by nuclear raw materials;
4. In the case of transporting nuclear raw materials, a mark specifying the type and quantity of such nuclear raw materials shall be attached to the container. Provided, that this shall not apply in the case of transporting nuclear raw materials within the use facilities thereof; and

5. The radiation dose rate on the surface of a container, in which nuclear raw materials to be transported remain sealed, shall not exceed 2 millisieverts per hour, and the radiation dose rate at one meter away from the surface of such container shall not exceed 0.1 millisievert per hour. Provided, that this shall not apply in the case of transporting nuclear raw materials within the use facilities thereof.

Article 15 (Processing and Discharge)

With respect to processing and discharge of nuclear raw materials, the provisions of Article 10 hereof shall apply mutatis mutandis. In such case, “nuclear fuel materials, etc.” in the main clause of the same Article shall be deemed “nuclear raw materials.”

Chapter III Safety Control of Radioisotopes and Radiation Generating Devices

▣ Section 1 Facility Standards for Radioisotopes and Radiation Generating Devices

Sub-section 1 Unsealed Sources

Article 16 (Scope of Application)

As regards the technical standards for the location, structure and installations of the production facilities, use facilities, etc. of unsealed radioisotopes (hereinafter referred to as “unsealed sources”) among those radioisotopes provided in Article 55 (1) 1 and Article 59 (1) 1 of the Act, the provisions of Articles 17 through 23 hereof shall apply.

Article 17 (Production Facilities of Unsealed Sources)

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- (1) Production facilities of unsealed sources shall be installed at a place with solid ground and without any fear of a fire or inundation.
- (2) Technical standards as regards the structure and installations of the production facilities of unsealed sources shall be as follows:
 1. Major structures thereof shall be fireproof or made of non-flammable materials:
 2. Necessary shielding walls or shielding materials shall be installed to ensure that the radiation dose falling under any of the following is not higher than the dose limit:
 - a. Radiation dose at a place in production facilities to which people have access at ordinary times; and
 - b. Radiation dose at an area adjoining the boundary of the place of business.
 3. A work room shall be set up in accordance with each of the following standards:
 - a. The surface of the walls, floors and other parts feared to be contaminated by unsealed sources inside a work room shall be even and smooth and without any opening or hole, and be made of materials with strong corrosion resistance so that any gas or fluid cannot permeate; and
 - b. Devices that prevent diffusion of gaseous radioisotopes including a hood and glove box installed at a work room shall be linked to ventilation equipment.
 4. A contamination inspection room shall be set up in accordance with each of the following standards:
 - a. A contamination inspection room shall be installed at a place most appropriate for inspection of contamination by unsealed sources including a place adjoining the entrance/exit accessed by people at ordinary times;
 - b. The walls, floors and other parts feared to be contaminated by unsealed sources inside a contamination inspection room shall meet the technical standards as provided in the foregoing Subparagraph 3 (a); and
 - c. A contamination inspection room shall be equipped with washing/dressing facilities, radiation measuring apparatus for contamination inspection and equipment necessary for contamination elimination.
 5. At irradiation facilities for production of unsealed sources, equipment shall be installed in accordance with each of the following standards:
 - a. Devices that automatically display the fact that irradiation is underway shall be installed at the entrance/exit;

- b. Interlocking devices that make the entrance/exit be opened/closed according to whether irradiation is underway shall be installed;
 - c. Devices that allow constant monitoring of the inside shall be installed; and
 - d. Devices restricting people's access shall be installed.
6. Fences and other facilities restricting people's access shall be set up on the boundary of the production facilities. Provided, that this shall not apply to those cases where shielding walls or shielding materials necessary to maintain the radiation dose, which falls under the foregoing Subparagraph 2 (a), at not higher than the dose limit remain installed:
7. Signs as specified in the attached Table 1 shall be attached to the fences and other facilities restricting people's access that are installed on the boundary of the production facilities, work room and contamination inspection room.

Article 18 (Location of Use Facilities, etc.)

Use facilities, etc. of unsealed sources shall be installed at a place with a solid ground and without any fear of a fire or inundation.

Article 19 (Use Facilities and Distribution Facilities)

- (1) Technical standards as regards the structure and installations of the use facilities and distribution facilities of unsealed sources shall be as follows:
- 1. Major structures shall be fire-proof or made of non-flammable materials. Provided, that this shall not apply to those cases as determined and publicly notified by the Nuclear Safety and Security Commission.
 - 2. Use facilities shall secure a sufficient space to install equipment and facilitate handling of unsealed sources.
 - 3. Necessary shielding walls or shielding materials shall be installed to ensure that the radiation dose falling under any of the following is not higher than the dose limit:
 - a. Radiation dose at a place in use facilities and distribution facilities to which people have access at ordinary times; and
 - b. Radiation dose at an area adjoining the boundary of the place of business.
 - 4. A work room shall be set up in accordance with each of the following:
 - a. The surface of the walls, floors and other parts feared to be contaminated by unsealed sources inside a work room shall be even and smooth and

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- without any opening or hole, and be made of materials with strong corrosion resistance so that any gas or fluid cannot permeate; and
- b. Devices that prevent diffusion of gaseous radioisotopes including a hood and glove box installed at a work room shall be linked to ventilation equipment. Provided, that this shall not apply to those cases as determined by the Nuclear Safety and Security Commission.
5. A contamination inspection room that meets each of the following shall be set up. Provided, that this shall not apply to those cases where unsealed sources are used or distributed within a sealed apparatus to eliminate any fear that the surface of a human body and an object worn by a human including working garments and footwear may be contaminated by radioisotopes and where the Nuclear Safety and Security Commission determines and publicly notifies:
 - a. A contamination inspection room shall be installed at a place most appropriate for inspection of contamination by unsealed sources including a place adjoining the entrance/exit accessed by people at ordinary times;
 - b. The walls, floors and other parts feared to be contaminated by unsealed sources inside a contamination inspection room shall meet the technical standards as provided in the foregoing Subparagraph 4 (a); and
 - c. A contamination inspection room shall be equipped with washing/dressing facilities, radiation measuring apparatus for contamination inspection and machinery necessary for contamination elimination.
 6. Fences and other facilities restricting people's access shall be set up on the boundary. Provided, that this shall not apply to those cases where shielding walls or shielding materials necessary to maintain the radiation dose, which falls under the foregoing Subparagraph 3 (a), at not higher than the dose limit remain installed.
 7. Signs as specified in the attached Table 1 shall be attached to the fences and other facilities restricting people's access that are installed on the boundary of the use facilities, distribution facilities, work room and contamination inspection room.
- (2) The provisions of the foregoing Paragraph (1) shall not apply to those cases where unsealed sources are extensively distributed or moved for such purposes as water leakage checking, epidemic survey of insects or relocation investigation of raw materials in their production process or where unsealed sources are temporarily used or distributed.

Article 20 (Storage Facilities)

Technical standards as regards the structure and installations of the storage facilities of unsealed sources shall be as follows:

1. Storage facilities shall have such structure as provided in each of the following:
 - a. Major structures and entrance/exit of a storage room shall be fireproof or made of non-flammable materials; and
 - b. A storage box shall have a fireproof structure or be made of non-flammable materials.
2. Shielding walls or shielding materials that meet the technical standards under Article 19 (1) 3 hereof shall be installed at storage facilities.
3. Containers that are kept available at storage facilities shall meet each of the following standards:
 - a. A container containing unsealed sources that are feared to contaminate the air in the outside shall have an airtight structure;
 - b. A container containing liquid unsealed sources shall have a structure that prevents leakage of any fluids and be made of materials that fluids cannot permeate; and
 - c. If it is feared that a container containing liquid or gaseous unsealed sources may be cracked or damaged, undertrays, absorbents and other facilities or apparatus to prevent spread of contamination by unsealed sources shall be installed.
4. Locks and other equipment or apparatus for prevention of any theft or loss shall be installed at a point of storage facilities leading to the outside including a door and cover.
5. On the boundary of storage facilities, fences, other facilities restricting people's access thereto and security/control facilities to prevent a theft, loss and so forth shall be set up.
6. Signs as specified in the attached Table 1 shall be attached to the storage room, storage box, containers as provided in the foregoing Subparagraph 3 and the fences and other facilities restricting people's access that are installed on the boundary of the storage facilities.

Article 21 (Conservation Facilities)

Technical standards as regards the structure and installations of conservation

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facilities of unsealed sources and materials contaminated thereby shall be as follows:

1. Major structures thereof shall be fireproof or made of non-flammable materials.
2. Shielding walls or shielding materials that meet the technical standards as provided in Article 19 (1) 3 hereof shall be installed.
3. Conservation installations meeting each of the following standards shall be secured:
 - a. The installations shall have a structure that is compartmented from the outside;
 - b. Locks and other equipment or apparatus for prevention of any theft or loss shall be installed at a point leading to the outside including a door and cover; and
 - c. Containers meeting the technical standards under Subparagraph 3 of Article 20 hereof shall be kept available. Provided, that this shall not apply to large-sized machinery, etc. contaminated by radioisotopes which can hardly be contained in a container and regarding which measures to prevent spread of contamination have been taken accordingly.
4. Signs as specified in the attached Table 1 shall be attached to the conservation installations, containers as provided in the foregoing Subparagraph 3 (c) and other facilities restricting people's access.

Article 22 (Processing Facilities)

Technical standards as regards the structure and installations of the processing facilities of unsealed sources and materials contaminated thereby shall be as follows:

1. Major structures thereof shall be fireproof or made of non-flammable materials.
2. Shielding walls or shielding materials that meet the technical standards as provided Article 19 (1) 3 hereof shall be installed.
3. In the case of incineration of radioisotopes and materials contaminated thereby, incineration facilities shall be installed as determined and publicly notified by the Nuclear Safety and Security Commission:
4. In cases where radioisotopes and materials contaminated thereby are solidified with concrete or other solidifying materials, installation of solidification facilities in accordance with each of the following as well as

installation of a contamination inspection room and ventilation equipment meeting the standards set forth in Subparagraph 4 of Article 23 hereof shall be performed:

- a. Solidification facilities shall have a structure that prevents leakage or overflow of radioisotopes and materials contaminated thereby and diffusion of dust; and
 - b. Solidification facilities shall be made of materials that fluids cannot permeate and that have strong corrosion resistance.
5. Signs as specified in the attached Table 1 shall be attached to the incinerator, contamination inspection room and other facilities restricting people's access.

Article 23 (Discharge Facilities)

Technical standards as regards the structure and installations of the discharge facilities of unsealed sources and materials contaminated thereby shall be as follows:

1. Major structures thereof shall be fireproof or made of non-flammable materials.
2. Shielding walls or shielding materials that meet the technical standards as provided in Article 19 (1) 3 hereof shall be installed.
3. In cases where liquid radioisotopes are purified or discharged, drainage equipment shall be installed as provided in each of the following. Provided, that this shall not apply to those cases as determined and publicly notified by the Nuclear Safety and Security Commission:
 - a. Drainage equipment shall be capable of maintaining the radioisotope concentration of effluents collected at a drainage passage at not higher than the limit under the discharge control standards. Provided, that this shall not apply to those cases where it is difficult to keep the radioisotope concentration of effluents collected at a drainage passage at not higher than the limit under the discharge control standards to the extent that drainage monitoring facilities for monitoring of the radioisotope concentration in effluents have been installed and the radioisotope concentration in the water outside the boundary of the place of business is maintained at not higher than the limit under the discharge control standards;

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- b. Drainage equipment shall have a structure which prevents leakage of any effluents, and shall be made of materials that effluents cannot permeate and that have strong corrosion resistance; and
 - c. A drainage purification tank shall be installed for collection of effluents and easy measurement of radioisotope concentration therein, and facilities restricting people's access thereto including fences shall be set up in the surroundings thereof.
 4. In the case of purification or ventilation of gaseous radioisotopes, ventilation equipment shall be installed as provided in each of the following. Provided, that this shall not apply to those cases as determined and publicly notified by the Nuclear Safety and Security Commission:
 - a. Ventilation equipment shall be capable of maintaining the concentration of radioisotopes in the air at a place accessed by people, at ordinary times, in a work room at not higher than the limit under the discharge control standards;
 - b. Ventilation equipment shall be capable of maintaining the radioisotope concentration in ventilated air at the ventilation outlet at not higher than the limit under the discharge control standards. Provided, that this shall not apply to those cases where it is difficult to keep the radioisotope concentration in ventilated air at the ventilation outlet at not higher than the limit under the discharge control standards, to the extent that ventilation monitoring facilities for monitoring of the radioisotope concentration in ventilated air have been installed and the radioisotope concentration in the air outside the boundary of the place of business, etc. is maintained at not higher than the limit under the discharge control standards;
 - c. Ventilation equipment shall have a structure which prevents leakage of gas through anything other than a ventilation outlet, and shall be made of materials with strong corrosion resistance; and
 - d. Ventilation equipment shall be equipped with devices that can swiftly prevent spread of air contaminated by radioisotopes in the case of any breakdown thereof.
 5. Signs as specified in the attached Table 1 shall be attached to drainage equipment, ventilation equipment and other facilities restricting people's access.

Sub-section 2 Sealed Sources

Article 24 (Scope of Application)

As regards the technical standards for the location, structure and installations of the production facilities, use facilities, etc. of sealed radioisotopes (hereinafter referred to as “sealed sources”) among those radioisotopes provided in Article 55 (1) 1 and Article 59 (1) 1 of the Act, the provisions of Articles 25 through 29 hereof shall apply.

Article 25 (Production Facilities of Sealed Sources)

(1) The production facilities of sealed sources shall have a structure that enables people in such production facilities to rapidly escape in the event of an emergency, and the entrance/exit thereof not accessed by people at ordinary times including a entrance/exit and emergency exit shall not be allowed to be opened/closed from the outside.

(2) As regards the technical standards for the structure and installations of the production facilities of sealed sources, the provisions of Article 17 (1) and Subparagraphs 1, 2 and 5 through 7 of Article 17 (2) hereof shall apply mutatis mutandis to those matters not provided in the foregoing Paragraph (1). In such case, “unsealed sources” in Article 17 hereof shall be deemed “sealed sources.”

Article 26 (Location of Use Facilities, etc.)

The use facilities, etc. of sealed sources shall be installed at a place without any fear of a fire, inundation or ground subsidence.

Article 27 (Use Facilities and Distribution Facilities)

(1) Technical standards as regards the structure and installations of the use facilities and distribution facilities of sealed sources shall be as follows:

1. Major structures shall be fireproof or made of non-flammable materials.
2. Necessary shielding walls or shielding materials shall be installed to ensure that the radiation dose falling under any of the following is not higher than

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- the dose limit:
- a. Radiation dose at a place to which people have access at ordinary times; and
 - b. Radiation dose at an area adjoining the boundary of the place of business.
3. In using or distributing sealed sources of not less than 111 terabecquerels, each of the following equipment shall be secured:
- a. The apparatus automatically displaying the fact that sealed sources are being used or distributed shall be installed at the entrance/exit;
 - b. Interlocking devices, which make the entrance/exit be opened/closed according to whether sealed sources are being used or distributed, shall be installed;
 - c. Apparatus that allows constant monitoring of the inside shall be installed; and
 - d. Apparatus limiting people's access shall be installed.
4. On the boundary of the use and distribution facilities, facilities restricting people's access thereto including fences shall be set up and the signs as specified in the attached Table 1 shall be attached. Provided, that this shall not apply to those cases where shielding walls or shielding materials necessary to maintain the radiation dose, which falls under the foregoing Subparagraph 2 (a), at not higher than the dose limit remain installed:
5. The use facilities or distribution facilities shall have a structure that enables people in such facilities to rapidly escape in the event of an emergency, and the entrance/exit thereof not accessed by people at ordinary times including the carry-in entrance and emergency exit shall not be allowed to be opened/closed from the outside.
- (2) The provisions of Subparagraphs 1, 2, 3 and 5 of the foregoing Paragraph (1) shall not apply to those cases where sealed sources are moved, from time to time, for use or distribution thereof.

Article 28 (Storage Facilities)

Technical standards as regards the structure and installations of the storage facilities of sealed sources are as follows:

1. The structure of storage facilities shall be as follows:
 - a. Major structures and entrance/exit of a storage room shall be fireproof or made of non-flammable materials; and

- b. A storage box shall have a fireproof structure or be made of non-flammable materials.
2. Shielding walls or shielding materials that meet the technical standards as provided in Article 27 (1) 2 hereof shall be installed.
3. Locks and other equipment or apparatus for prevention of any theft or loss shall be installed at a point leading to the outside including a door and cover:
4. Fences, other facilities restricting people's access and crime prevention/security control facilities to prevent a theft, loss and so forth shall be installed on the boundary of the storage facilities.
5. Signs as specified in the attached Table 1 shall be attached to the storage room, storage box, fences installed on the boundary of storage facilities and so forth.

Article 29 (Conservation Facilities)

Technical standards as regards the structure and installations of the conservation facilities of sealed sources to be disposed shall be as follows:

1. The facilities shall have a fireproof structure or be made of non-flammable materials;
2. The facilities shall have a structure which is compartmented from the outside;
3. Locks and other equipment or apparatus for prevention of any theft or loss shall be installed at a point leading to the outside including a door and cover;
4. Shielding walls or shielding materials that meet the technical standards as provided in Article 27 (1) 2 hereof shall be installed; and
5. On the boundary of the facilities, signs as specified in the attached Table 1 shall be attached, and fences, other facilities restricting people's access thereto and crime prevention/security control facilities to prevent a theft, loss and so forth shall be installed.

Sub-section 3 Radiation Generating Devices

Article 30 (Scope of Application)

As regards the technical standards for the location, structure and installations of the production facilities, utilization facilities and conservation facilities of

radiation generating devices as provided in Article 55 (1) 1 and Article 59 (1) 1 of the Act, the provisions of Articles 31 through 34 hereof shall apply.

Article 31 (Production Facilities of Radiation Generating Devices)

The provisions of Article 17 (1) and Subparagraphs 2, 6 and 7 of Article 17 (2) hereof shall apply *mutatis mutandis* to the technical standards for the structure and installations of the production facilities of radiation generating devices. In such case, “unsealed sources” in Article 17 hereof shall be deemed “radiation generating devices.”

Article 32 (Location of Use Facilities and Conservation Facilities)

The use facilities and conservation facilities of radiation generating devices shall be installed at a place without any fear of a fire, inundation or ground subsidence.

Article 33 (Use Facilities)

(1) Technical standards as regards the structure and installations of the use facilities of radiation generating devices shall be as follows:

1. Necessary shielding walls or shielding materials shall be installed at use facilities to ensure that the radiation dose falling under any of the following is not higher than the dose limit:
 - a. Radiation dose at a place in use facilities to which people have access at ordinary times; and
 - b. Radiation dose at an area adjoining the boundary of the place of business.
2. In using radiation generating devices, the apparatus automatically displaying the fact that radiation generating devices are in use and the apparatus limiting people's access shall be installed at the entrance/exit of the use facilities thereof.
3. In using radiation generating devices, interlocking devices, which make the entrance/exit of use facilities be opened/closed according to whether radiation generating devices are in use, shall be installed.
4. Fences and other facilities restricting people's access shall be set up on the

boundary of the use facilities. Provided, that this shall not apply to those cases where shielding walls or shielding materials necessary to maintain the radiation dose, which falls under the foregoing Paragraph (1) 1 (a), at not higher than the dose limit remain installed:

5. Signs as specified in the attached Table 1 shall be attached to the fences and other facilities restricting people's access which are set up at use facilities and on the boundary of use facilities.
 6. The use facilities shall have a structure that enables people in such facilities to rapidly escape in the event of an emergency, and the entrance/exit not accessed by people at ordinary times including a carry-in entrance and emergency exit shall not be allowed to be opened/closed from the outside.
- (2) The provisions of Subparagraphs 1, 3 and 6 of the foregoing Paragraph (1) shall not apply to those cases where radiation generating devices are moved, from time to time, for the use thereof.

Article 34 (Conservation Facilities)

Technical standards as regards the structure and installations of the conservation facilities of radiation generating devices shall be as follows:

1. Locks and other equipment or apparatus to prevent any theft or loss shall be installed at a point leading to the outside including a door and cover; and
2. Cautions necessary for prevention of radiation hazards shall be posted at an easily noticeable place of the entrance/exit.

▣ Section 2 Handling Standards for Radioisotopes and Radiation Generating Devices

Sub-section 1 Unsealed Sources

Article 35 (Scope of Application)

As regards the technical standards for the production of unsealed sources among those radioisotopes as provided in Article 59 (1) 2 of the Act and the use, distribution, storage, transport, conservation, processing or discharge of unsealed sources or materials contaminated thereby, the provisions of Articles 36 through 40 hereof shall apply.

Article 36 (Production)

Technical standards as regards the production of unsealed sources shall be as follows:

1. The personal dose on radiation workers or persons with frequent access shall not exceed the dose limit by execution of each of the following measures:
 - a. Shielding of radiation by means of shielding walls or shielding materials;
 - b. Ensuring a reasonable distance between unsealed sources and humans by using remote-controlled devices, grippers and so forth and the use of shielding materials; and
 - c. Reduction of the time of exposure of a human to radiation by means of detailed work plans, proficiency/training and so forth.
2. The concentration of radioisotopes in the air inhaled by people at a place in production facilities accessed by them at ordinary times shall not exceed the derived air concentration by means of the purification or ventilation of air contaminated by radioisotopes.
3. The level of contamination by radioisotopes on the surface of an object contacted by people in the production facilities shall not exceed the permissible surface contamination level.
4. Personnel shall be required to wear working garments, footwear, protective gear and so forth in the production facilities, and shall not be allowed to leave a work room wearing these working garments and so forth.
5. In leaving the production facilities, the level of contamination by radioisotopes on the surface of objects worn by humans shall be inspected, and any contamination shall be eliminated.
6. Cautions necessary for the prevention of radiation hazards shall be posted at easily noticeable places in the production facilities.

Article 37 (Use and Distribution)

Technical standards as regards the use or distribution of unsealed sources shall be as follows:

1. Unsealed sources shall be used or distributed at use facilities or work rooms.
2. The personal dose on radiation workers or persons with frequent access

shall not exceed the dose limit by execution of each of the following measures:

- a. Shielding against radiation by means of shielding walls or shielding materials;
 - b. Ensuring a reasonable distance between unsealed sources and humans by using remote-controlled devices, grippers and so forth and the use of shielding materials; and
 - c. Reduction of the time of exposure of a human to radiation by means of detailed work plans, proficiency/training and so forth.
3. The concentration of radioisotopes in the air inhaled by people at a place in a work room accessed by them at ordinary times shall not exceed the derived air concentration, by means of purification or ventilation of the air contaminated by radioisotopes.
 4. The level of contamination by radioisotopes on the surface of an object contacted by people in a work room or contamination inspection room shall not exceed the permissible surface contamination level.
 5. Personnel shall be required to wear working garments, footwear, protective gear and so forth in a work room, and shall not be allowed to leave the work room wearing such working garments and so forth.
 6. In leaving a work room, the level of contamination by radioisotopes on the surface of a human body and the objects worn by a human including working garments, footwear and protective gear shall be inspected and any contamination shall be eliminated.
 7. Cautions necessary for the prevention of radiation hazards shall be posted at easily noticeable places in use or distribution facilities.

Article 38 (Storage)

Technical standards as regards the storage of unsealed sources shall be as follows:

1. Unsealed sources shall be stored in containers at storage facilities;
2. Unsealed sources shall not be stored in excess of the storage capacity of the storage facilities.
3. The personal dose on radiation workers or persons with frequent access shall not exceed the dose limit by execution of the measures set forth in each item of Subparagraph 2 of Article 37 hereof;

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4. Transport of a storage box shall be restricted while unsealed sources are contained in such storage case;
5. The concentration of radioisotopes in the air inhaled by people in storage facilities shall not exceed the derived air concentration.
6. Each of the following measures shall be taken in order to ensure that the level of contamination by radioisotopes on the surface of an object in contact with people in storage facilities does not exceed the permissible surface contamination level:
 - a. Liquid radioisotopes shall be contained in a container that has a structure preventing the overflow of fluids and is made of materials prohibiting permeation of fluids; and
 - b. If it is feared that a container containing liquid radioisotopes may be cracked or damaged, spread of contamination by radioisotopes shall be prevented by using undertrays, absorbents and other facilities or apparatus.
7. Measures such as crime prevention and security control shall be taken in a radiation control area to restrict people's access thereto and prevent any theft, loss and so forth.

Article 39 (Transport)

- (1) Technical standards as regards the transport of unsealed sources and materials contaminated thereby within a place of business shall be as follows:
 1. Unsealed sources and materials contaminated thereby shall be transported in sealed containers. Provided, that this shall not apply to those cases where any of the following measures are taken:
 - a. Transport of materials contaminated by radioisotopes (only in those cases where the concentration of radioisotopes contained in such materials does not exceed the permissible surface contamination level) based on the implementation of actions to prevent diffusion or leakage of radioisotopes or other actions for the prevention of any radiation hazard as determined and publicly notified by the Minister of Education, Science and Technology; and
 - b. Transport of materials contaminated by radioisotopes, which are difficult to be transported in a container such as large-sized machinery, with the approval of the Nuclear Safety and Security Commission.

2. The radiation dose rate at ten centimeters away from the surface of the container containing radioisotopes and materials contaminated thereby (including those contaminated by radioisotopes as provided in Item (a) or (b) of the foregoing Subparagraph 1; hereinafter referred to as the “package” in this Article), and vehicles carrying them or machinery/devices transporting radioisotopes and materials contaminated thereby (hereinafter referred to as “vehicles, etc.” in this Article) and at two meters away from the external surface of such vehicles shall not exceed the radiation dose rate determined and publicly notified by the Nuclear Safety and Security Commission, and the level of contamination by radioisotopes on the surface of a package shall not exceed the permissible surface contamination level.
3. In loading packages onto vehicles, etc., the safety of the packages will not be hampered for such reasons as their moving, being inverted or falling during the transport thereof.
4. Dangerous goods set forth in Article 98 hereof and packages shall not be loaded in the same vehicle, etc.
5. Access to the transport route of packages by any person other than those engaging in transport and any vehicles, etc. other than those used for transport shall be restricted by such means as installation of signs or deployment of observers.
6. Any vehicles, etc., which are being used to transport packages, shall be operated slowly.
7. A person, who has knowledge and experience regarding the handling of radioisotopes, shall be required to accompany or provide supervision necessary for the prevention of any radiation hazard.
8. Signs as provided in the attached Table 2 hereof shall be attached to an easily noticeable spot on packages, vehicles, etc.
9. The personal dose on any persons who engage in transporting packages, other than radiation workers, shall not exceed the dose limit.
10. Radioisotopes and materials contaminated thereby that are feared to have the possibility to contaminate the packages, etc. outside a container shall be transported in a container with an airtight structure.
11. Liquid radioisotopes and materials contaminated thereby shall be transported in a container which is made of materials resisting permeation of such fluids or corrosion and which has a structure that makes it hard

to be inverted.

- (2) In those cases where it is difficult to take all or a part of the measures set forth in Subparagraph 3 of the foregoing Paragraph (1), such measures may be substituted with those measures approved by the Nuclear Safety and Security Commission. In such case, the radiation dose rate at ten centimeters and two meters away from the surface of the relevant package shall not exceed the radiation dose rate as determined and publicly notified by the Nuclear Safety and Security Commission.
- (3) The provisions of Subparagraphs 1, 2 and 5 through 8 of the foregoing Paragraph (1) shall not apply to transport within a radiation control area.
- (4) The provisions of the foregoing Paragraph (1) shall not apply to the transport of radioisotopes and materials contaminated thereby within use facilities, etc. as well as those cases where the time spent for transport is short and there is no likelihood of a radiation hazard.

Article 40 (Conservation, Processing and Discharge)

In those cases where radioisotopes or materials contaminated thereby are conserved, processed and discharged in a place of business, each of the following technical standards as well as the provisions in each Subparagraph of Article 37 hereof (excluding Subparagraph 1) shall apply *mutatis mutandis*. In such case, “use or distribution facilities” in Subparagraph 7 of the same Article shall be deemed “conservation, processing and discharge facilities”:

1. Gaseous radioisotopes or materials contaminated thereby shall be purified or discharged with ventilation equipment.
2. In the case of discharge as provided in the foregoing Subparagraph 1, the concentration of radioisotopes in ventilated air at the ventilation outlet of ventilation equipment shall be no higher than the limit under the discharge control standards. Provided, that said provisions shall not apply in the case of the proviso of Subparagraph 4 (b) of Article 22 hereof.
3. In eliminating radioisotopes attached to ventilation equipment, ground cloth, undertray or absorbents, other facilities and apparatus to prevent spread of contamination by radioisotopes and protective gear shall be used.
4. Liquid radioisotopes or materials contaminated thereby shall be conserved, processed or discharged based on any of the following methods:
 - a. Purification with drainage equipment or discharge;

- b. Conservation by placing them in a container or solidifying them with concrete or other solidifying materials in solidification facilities; and
 - c. Incineration according to the standards determined and publicly notified by the Nuclear Safety and Security Commission to prevent any radiation hazard.
5. In the case of discharge in such method as provided in the foregoing Subparagraph 4 (a), the concentration of radioisotopes in effluents at the drainage passage of drainage equipment shall be no higher than the limit under the discharge control standards. Provided, that this shall not apply in the case of the proviso of Subparagraph 3 (a) of Article 23 hereof.
 6. In the case of discharge in such method as provided in the foregoing Subparagraph 4 (a), ground cloth, undertrays or absorbents, other facilities and apparatus to prevent spread of contamination by radioisotopes or protective gear shall be used, if effluents are processed or radioisotopes such as deposits or sediments of the drainage equipment as provided in said Subparagraph 4 (a) are eliminated.
 7. In the case of conservation in such method as provided in the foregoing Subparagraph 4 (b), the container containing liquid radioisotopes and materials contaminated thereby shall have a structure that prevents the overflow of fluids and be made of materials prohibiting permeation of fluids.
 8. In the case of conservation of liquid radioisotopes or materials contaminated thereby in a container in such manner as provided in the foregoing Subparagraph 4 (b), spread of contamination by radioisotopes shall be prevented by the use of undertrays, absorbents and other facilities or apparatus to prevent spread of contamination by radioisotopes, if it is feared that such container may be cracked or damaged.
 9. In the case of solidification of liquid radioisotopes or materials contaminated thereby among the methods as set forth in the foregoing Subparagraph 4 (b), any diffusion or leakage of such liquid radioisotopes or materials contaminated thereby shall be prevented.

sub-section 2 Sealed Sources

Article 41 (Scope of Application)

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As regards the technical standards for the production of sealed sources among the radioisotopes as provided in Article 59 (1) 2 of the Act and the use, distribution, conservation, storage or transport of sealed sources or materials contaminated thereby, the provisions of Articles 42 through 46 hereof shall apply.

Article 42 (Production)

As regards the technical standards for the production of sealed sources, the provisions of Subparagraphs 1 and 6 of the foregoing Article 36 shall apply *mutatis mutandis*.

Article 43 (Use)

Technical standards as regards the use of sealed sources shall be as follows:

1. Sealed sources shall be used only in use facilities.
2. There shall be no likelihood that sealed sources will be opened or destroyed during normal use.
3. The personal dose on radiation workers or persons with frequent access shall not exceed the dose limit by execution of each of the following measures:
 - a. Shielding of radiation by means of shielding walls or shielding materials;
 - b. Ensuring a reasonable distance between unsealed sources and a human by using remote-controlled devices, grippers and so forth; and
 - c. Reduction of the time of radiation exposure to a human by means of detailed work plans, handling proficiency/training and so forth.
4. Cautions necessary for the prevention of radiation hazards shall be posted at easily noticeable places at use facilities or radiation control areas.
5. In the case of mobile use of sealed sources, any abnormality including loss or leakage of such sealed sources shall be checked immediately after the use thereof. If any abnormality is detected, a survey and other measures necessary for the prevention of radiation hazards shall be implemented.
6. In order to verify the integrity of sealed sources, checking for leakage shall be conducted as determined and publicly notified by the Nuclear Safety and Security Commission.
7. In order to verify the integrity of radiation equipment containing sealed sources, regular checking shall be conducted as determined and publicly

notified by the Nuclear Safety and Security Commission.

Article 44 (Distribution)

Technical standards as regards the distribution of sealed sources shall be as follows:

1. Sealed sources shall be distributed at distribution facilities;
2. In cases where radioisotopes are distributed sealed, such radioisotopes shall be distributed in a state meeting the provisions of Subparagraph 2 of Article 43 hereof; and
3. Cautions necessary for the prevention of radiation hazards shall be posted at easily noticeable places in the distribution facilities.

Article 45 (Conservation/Storage)

Technical standards as regards conservation or storage of sealed sources shall be as follows:

1. Sealed sources not being used shall be stored at storage facilities;
2. Radioisotopes shall not be stored in excess of the storage capacity of storage facilities;
3. The personal dose on radiation workers and persons with frequent access shall not exceed the dose limit by execution of the measures as set forth in each item of Subparagraph 2 of Article 37 hereof;
4. In the case of conservation/storage of radioisotopes in a storage box (if radioisotopes are conserved in a fireproof container, such container), transport thereof shall be restricted;
5. Measures such as crime prevention and security control shall be taken in a radiation control area for the prevention of any theft, loss and so forth; and
6. Cautions necessary for the prevention of radiation hazards shall be posted at easily noticeable places in conservation/storage facilities.

Article 46 (Transport)

In those cases where sealed sources are transported within a place of business, the provisions of Article 39 hereof shall apply *mutatis mutandis*. In such case, “unsealed sources and materials contaminated thereby” shall be deemed “sealed sources.”

sub-section 3 Radiation Generating Devices

Article 47 (Production)

As regards the technical standards for the production of radiation generating devices as provided in Article 59 (1) 2 of the Act, the provisions of Subparagraphs 1 and 6 of Article 36 hereof shall apply *mutatis mutandis*. In such case, “unsealed sources” in Article 36 hereof shall be deemed “radiation generating devices.”

Article 48 (Use)

Technical standards as regards the use of radiation generating devices as provided in Article 59 (1) 2 of the Act shall be as follows:

1. Such devices shall be used in use facilities only.
2. There shall be no likelihood that radiation generating devices will be destroyed during normal use.
3. Each of the following measures shall be taken:
 - a. Shielding of radiation by means of shielding walls or shielding materials;
 - b. Ensuring a reasonable distance between radiation generating devices and humans by using remote-controlled devices; and
 - c. Reduction of the time of exposure of a human to radiation by means of detailed work plans, handling proficiency/training and so forth.
4. Cautions necessary for the prevention of radiation hazards shall be posted at easily noticeable places at use facilities or radiation control areas.
5. In order to verify the integrity of radiation generating devices, regular checking shall be conducted as determined and publicly notified by the Nuclear Safety and Security Commission.

■ Section 3 Medical Safety Control

Article 49 (Scope of Application)

As regards the facility standards of use facilities, etc. and handling standards at medical institutions as provided in Subparagraph 1 of Article 55 (1) and Subparagraphs 1 and 2 of Article 59 (1) of the Act, the provisions of

Articles 16 through 48 hereof as well as Articles 50 through 54 hereof shall apply.

Article 50 (Control of Radiological Medical Equipment)

- (1) Any medical institution, which uses radioisotopes and radiation generating devices (hereinafter referred to as “radioisotopes, etc.”) on a human body for the purpose of providing medical service, shall maintain the personal dose on a patient as prescribed by a doctor.
- (2) Such medical institution as provided in the foregoing Paragraph (1) shall maintain and control radiological medical equipment as publicly notified by the Nuclear Safety and Security Commission.

Article 51 (Hospital Room)

- (1) Any medical institution, which uses radioisotopes on a human body for the purpose of providing medical service, shall accommodate the patient, regarding whom residual radioisotopes in the body exceed the amount as determined and publicly notified by the Nuclear Safety and Security Commission, separately from ordinary patients.
- (2) Any medical institution, which uses radioisotopes on a human body for the purpose of providing medical service, shall install a rest room in the hospital room of a patient for the exclusive use of such patient.

Article 52 (Bodily Wastes of Patients)

In those cases where a medical institution, which uses radioisotopes on a human body for the purpose of providing medical service, discharges bodily wastes of a patient, such discharge shall be performed in such method as determined and publicly notified by the Nuclear Safety and Security Commission.

Article 53 (Discharge of Patients from Hospital)

Any medical institution, which uses radioisotopes on a human for the purpose of providing medical service, shall not discharge a patient, regarding whom residual

radioisotopes in the body exceed the amount as determined and publicly notified by the Nuclear Safety and Security Commission.

Article 54 (Caregivers)

Any medical institution, which uses radioisotopes on a human body for the purpose of providing medical service, shall ensure that the personal dose on caregivers does not exceed the established dose limit regarding radiation workers.

■ Section 4 Safety Control of Mobile Use

Article 55 (Scope of Application)

As regards the facility standards and handling standards concerning the mobile use as provided in Subparagraph 3 of Article 59 (1) of the Act, the provisions of Articles 24 through 34 and Articles 41 through 48 hereof as well as the provisions of Articles 56 through 58 hereof shall apply.

Article 56 (Location)

In the case of the use of radioisotopes, etc. by moving them to a temporary place of use, the provisions of Articles 26 and 32 hereof shall not apply.

Article 57 (Use Facilities)

Technical standards as regards the use of radioisotopes, etc. at a place other than fixed and shielded use facilities shall be as follows:

1. Necessary shielding walls or shielding materials shall be installed to ensure that the personal dose is not more than the dose limit; and
2. Warning lights that double as sirens as well as signal lights shall be installed in all directions of the facilities restricting people's access including fences installed at the boundary of a radiation control area.

Article 58 (Mobile Use)

Technical standards as regards the mobile use of radioisotopes, etc. shall be as follows:

1. Radioisotopes, etc. shall be used in use facilities or radiation control areas.
2. There shall be no likelihood that sealed sources will be opened or destroyed during normal use.
3. The personal dose on radiation workers or persons with frequent access shall not exceed the dose limit by execution of each of the following measures:
 - a. A dedicated workshop shall be installed or radiation shall be shielded by means of shielding walls or shielding materials;
 - b. Ensuring a reasonable distance between radioisotopes and humans by using remote-controlled devices, grippers and so forth; and
 - c. Reduction of the time of exposure of a human to radiation based on detailed work plans, proficiency/training and so forth.
4. Cautions necessary for the prevention of radiation hazards shall be posted at easily noticeable places in use facilities or radiation control areas.
5. People's access to use facilities shall be restricted, and in the case of access to such facilities by any person other than radiation workers, such person shall be required to follow instructions from radiation workers.
6. Signs as specified in the attached Table 1 shall be attached to use facilities.
7. Immediately after the use of sealed sources, any abnormality including loss and leakage of radioisotopes thereof shall be checked. In those cases where any abnormality is detected, a survey and other measures necessary for the prevention of radiation hazards shall be implemented.
8. In the case of the use of gamma ray irradiation equipment, a collimator shall be mounted and used.
9. At least one radiation measuring apparatus, of which the scope of measurement is appropriate for the site of work, shall be carried and used per a gamma ray irradiator in checking for any abnormality.
10. During any radiation work, waiting to work and breaks, an observer shall be constantly deployed for monitoring for the purpose of preventing any theft, loss and so forth of a gamma ray irradiator.
11. Radiation work shall be performed, without exception, by a group of not less than two persons. Duties shall be assigned to each individual, and the head of such group shall fall under any of the following:

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- a. A person who has obtained a general license as an operator of radioisotope handling or a license as the supervisor of radiation handling; and
 - b. A person who has completed the education to be qualified as a non-destructive test personnel as determined and publicly notified by the Nuclear Safety and Security Commission.
12. Personnel in charge of on-site radiation safety shall check, without exception, the site of work prior to commencing such work, and provide sufficient education to radiation workers by determining the working methods and procedures appropriate for the environment thereof and matters necessary for the prevention of radiation hazards.
13. In order to ensure the normal operation of a radiation irradiator and perform the work safely, the work shall be performed after determining the inspection procedures concerning gamma ray irradiator equipment and conducting such inspection according to such procedures.
14. In those cases where radiation work is performed at night, each of the following apparatus, etc. necessary for the performance of such work shall be secured:
- a. Apparatus that allow easy discernment of the boundary of a radiation control area;
 - b. Lighting apparatus necessary for the performance of the work; and
 - c. Other apparatus necessary for the performance of the work.
15. Each of the following measures shall be taken in order to check the safety of a radiation irradiator, etc. upon completion of radiation work:
- a. It shall be checked whether radioisotopes of a gamma ray irradiator are in normal condition;
 - b. Personal dosimeters shall be checked; and
 - c. The safety status of other safety apparatus, etc. shall be checked.
16. Sources of which use has been discontinued shall not be stored in the place of temporary use.

▣ Section 5 Safety Control of Sales

Article 59 (Scope of Application)

As regards the facility standards and handling standards concerning sale of radioisotopes, etc. as provided in Subparagraph 3 of Article 59 (1) of the Act,

the provisions of Articles 60 through 63 hereof shall apply.

Article 60 (Facility Standards for Sale of Radioisotopes, etc.)

Any person who intends to sell radioisotopes shall have storage facilities as provided in Article 20 or Article 28 hereof. Provided, that such person shall be equipped with distribution facilities, conservation facilities, processing facilities and discharge facilities as provided in Article 19 and Articles 21 through 23 hereof in addition to the storage facilities in the case of the sale of unsealed sources based on production thereof or opening/division of the original packaging thereof, and be equipped with distribution facilities and conservation facilities as provided in Articles 27 and 29 hereof in addition to the storage facilities in the case of the sale of sealed sources based on production thereof or opening/division of the original packaging thereof.

Article 61 (Handling Standards for Sale of Radioisotopes)

- (1) In the case of the sale of radioisotopes, it shall be checked whether the purchaser has obtained a permit for the use of radioisotopes (including a permit for mobile use thereof) or filed a notification thereof.
- (2) In those cases where any equipment containing radioisotopes as determined and publicly notified by the Nuclear Safety and Security Commission is sold and such equipment is conserved at a place other than the sales facilities for installation thereof at the place of an end-user, such equipment shall be conserved at facilities that correspond to the provisions of Article 34 hereof.
- (3) In those cases where radioisotopes are to be produced or distributed for sale, the applicable technical standards shall be as follows:
 1. Only those goods of which surface contamination level does not exceed the permissible surface contamination level shall be sold after inspecting such surface contamination level at each stage of packaging;
 2. In connection with the foregoing Subparagraph 1, such surface contamination level shall be measured and the record thereof shall be maintained; and
 3. In the case of distribution of radioisotopes, etc., procedures necessary for such distribution shall be formulated and maintained.
- (4) In the case of the sale of radioisotopes or equipment containing radioisotopes, documents evidencing normal operation thereof including the

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design approval or production inspection completion certificate of such radioisotopes or equipment containing radioisotopes shall be provided to the user.

(5) In the case of the sale of radioisotopes or equipment containing radioisotopes, the methods of use, operation, maintenance, control and so forth thereof shall be produced and provided in a manner easily understandable by the user. Upon the request of the user, education and training shall be provided.

(6) In the case of the sale and installation of any equipment containing radioisotopes as determined and publicly notified by the Nuclear Safety and Security Commission, any possible leakage shall be checked as determined and publicly notified by the Nuclear Safety and Security Commission.

(7) In the case of the detection of any defect with the safety of any radioisotopes or equipment containing radioisotopes that have been sold, it shall be promptly notified to the user and necessary measures taken.

(8) Matters related with the collection/disposal of radioactive wastes generated in connection with the sale of radioisotopes or equipment containing radioisotopes shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 62 (Facility Standards for Sale of Radiation Generating Devices)

Any person who intends to sell radiation generating devices shall be equipped with conservation facilities as provided in Article 34 hereof.

Article 63 (Handling Standards for Sale of Radiation Generating Devices)

(1) In the case of the sale of radiation generating devices, it shall be checked, prior to the sale, whether the purchaser has obtained a permit for the use of radiation generating devices or filed a notification thereof.

(2) Safety rules as recommended by the producer shall be marked on the surface of radiation generating devices.

(3) In the case of the sale of radiation generating devices, matters related with equipment operation, maintenance and control methods and so forth shall be formulated and provided to the user so that such user can gain an understanding thereof. Upon the request of the user, education and training shall be provided.

(4) In the case of the sale of radiation generating devices, documents evidencing normal operation of such radiation generating devices including

the design approval or production inspection completion certificate shall be provided to the user.

(5) In the case of the detection of any defect with the safety of any radiation generating devices sold, it shall be promptly notified to the user and necessary measures shall be taken.

Chapter IV Safety Control of Radioactive Wastes

▣ Section 1 Facility Standards for Disposal Facilities, etc.

Article 64 (Scope of Application)

As regards the technical standards for the location, structure and installations of the storage, processing and disposal facilities of radioactive wastes and the accessory facilities thereof (hereinafter referred to as “disposal facilities, etc.”) as provided in Subparagraph 2 of Article 64 and in Subparagraph 1 of Article 68 (1) of the Act, the provisions of Articles 65 through 74 hereof shall apply.

Article 65 (Location of Shallow Disposal Facilities)

(1) The location of shallow disposal facilities of low and intermediate level radioactive wastes shall meet each of the following standards:

1. The facilities shall be at a distance from densely populated areas;
2. The facilities shall be located in an appropriate area, in consideration of the meteorological and hydrological conditions, ground surface and geological situation;
3. The facilities shall be located at a place that is as far from surface water and subsurface water as possible, and where the distribution status thereof is appropriate; and
4. The facilities shall be located at an appropriate place in terms of seismic and ecological characteristics, utilization of water resources and other environmental conditions.

(2) Detailed technical standards as regards the location of shallow disposal facilities of low and intermediate level radioactive wastes as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 66 (Location of Deep Disposal Facilities)

(1) The standards as regards the location of deep disposal facilities of high-level radioactive wastes shall be as follows:

1. The facilities shall be at a distance from densely populated areas;
2. If the facilities are located on a coastal area, such facilities shall be in a location not seriously affected by sea water;
3. The adjoining area thereof shall be geologically stable for the safety of disposal facilities;
4. The facilities shall be in a deep location where such factors as weather changes do not seriously affect the safety of disposal facilities;
5. The rocks in the geological strata shall be of low osmosis, porosity and diffusivity to restrain radioactive materials from being jolted;
6. In regard of underground medium, the decay heat, etc. of radioactive materials shall not have a serious impact on the safety of disposal facilities;
7. The facilities shall be at a far distance from surface water and subsurface water; and
8. The facilities shall be at a far distance from the deposits of flammable minerals including petroleum and natural gas.

(2) Detailed technical standards as regards the location of deep disposal facilities of high-level radioactive wastes as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 67 (Location of Interim Storage Facilities of Spent Nuclear Fuels)

(1) The standards as regards the location of interim storage facilities of spent nuclear fuels shall be as follows:

1. The facilities shall be at a distance from densely populated areas;
2. The facilities shall be located in an area with no hazard, based on the

- results of investigation/assessment of seismic and geological characteristics;
3. The facilities shall be located in an area with no hazard, based on the results of assessment of the potential impact by a man-made event due to industrial, transportation and military facilities;
 4. The facilities shall be located in an area with no hazard with respect to the surrounding atmospheric environment, based on the results of investigation/assessment of diffusion and dilution characteristics in the event that radioactive materials are released into the atmosphere from the facilities,
 5. The facilities shall be located in an area where natural phenomena including overflowing of the sea, whirlwind, hurricanes, floods, heavy snow or heavy rain cannot cause severe accidents, based on the results of investigation/ assessment thereof;
 6. The facilities shall be located in an area not affected by overflow of a river arising from the destruction of a reservoir or dam, rain water and so forth; and
 7. The facilities shall be located in an area with no hazard with respect to the surrounding marine environment, based on the results of investigation/assessment of hydrological characteristics of surface water and subsurface water.
- (2) Detailed technical standards as regards the location of spent nuclear fuel interim storage facilities as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 68 (Ventilation Equipment)

At disposal facilities, etc. at which radiation hazards from the air contaminated by radioactive materials need to be prevented, ventilation equipment meeting each of the following technical standards shall be installed:

1. The ventilation equipment shall have necessary ventilation capability to prevent any radiation hazard;
2. The ventilation equipment shall have a structure wherein air contaminated by radioactive materials is not leaked and that prevents any fear of backflow thereof;
3. In those cases where equipment to purify discharged air has been installed, such equipment shall have a structure that facilitates replacement of equipment

- purifying and filtrating the air contaminated by radioactive materials; and
4. An air inlet shall be installed, with the intake of air contaminated by radioactive materials prevented.

Article 69 (Prevention of Contamination by Radioactive Materials)

As regards the surface of walls, floors and other parts feared to be contaminated by radioactive materials in buildings, etc. frequently accessed by people in the disposal facilities, etc. that might come in contact with people, it shall be ensured that the possibility of contamination thereon by radioactive materials is eliminated.

Article 70 (Waste Storage Facilities)

(1) Technical standards as regards the storage facilities of radioactive wastes shall be as follows:

1. Such facilities shall have sufficient capacity to store radioactive wastes generated in the course of operation;
2. Such facilities shall resist the decay heat and the heat generated by irradiation and maintain the state of normal operation even in those cases where they are corroded by chemicals, etc.; and
3. Spread of contamination by radioactive wastes shall be prevented.

(2) At facilities where equipment storing liquid radioactive wastes is installed, a dike shall be installed to prevent such liquid radioactive wastes from being leaked to the outside of such facilities as a result of breakdown, damage, etc. of such equipment.

Article 71 (Structure and Installation of Shallow Disposal Facilities)

(1) Technical standards as regards the structure and installations of shallow disposal facilities for low and intermediate level radioactive wastes shall be as follows:

1. The facilities shall be designed and constructed to control movement of radioactive materials to the utmost possible extent in consideration of the geological characteristics and soil ion exchangeability of the surroundings, ensuring that the functions thereof will be maintained until closure thereof;

2. There shall be no possibility that water may stagnate near the place of disposal;
 3. The place of disposal shall be thickly covered in order to prevent overflowing by surrounding surface water;
 4. Radioactive material monitoring equipment shall be installed near the place of disposal; and
 5. It shall be assured that radioactive materials shall not be leaked from disposal facilities in the event of such accident as a fire or earthquake.
- (2) Detailed technical standards as regards the structure and installations of shallow disposal facilities of low and intermediate level radioactive wastes as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 72 (Structure and Installation of Deep Disposal Facilities)

- (1) Technical standards as regards the structure and installations of deep disposal facilities of high-level radioactive wastes shall be as follows:
1. Decay heat and pressure generated by disposed radioactive wastes shall be fully controlled; and
 2. There shall be no possibility that disposed radioactive wastes will achieve criticality.
- (2) Detailed technical standards as regards the structure and installations of deep disposal facilities of high-level radioactive wastes as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 73 (Structure and Installation of Spent Nuclear Fuel Interim Storage Facilities)

- (1) Technical standards as regards the structure and installation of spent nuclear fuel interim storage facilities shall be as follows:
1. These facilities shall maintain radiation shielding capability sufficient for safe handling and storage of spent nuclear fuels;
 2. Criticality of spent nuclear fuels shall be efficiently prevented;
 3. Sufficient cooling capability shall be maintained in order to prevent spent nuclear fuels from melting for such reasons as decay heat;

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4. No radiation hazard shall be sustained by the public due to damages caused by such natural phenomena as overflowing of the sea, whirlwinds, hurricanes, floods, heavy snow, heavy rain or earthquakes;
 5. Impact of such incidents as a fire or explosion shall be fully coped with; and
 6. Contamination of the surrounding environment and the public by radioactive materials or exposure thereof to radiation due to leakage of radioactive materials caused by a radiological accident shall be prevented.
- (2) Detailed technical standards as regards the structure and installations of spent nuclear fuel interim storage facilities as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 74 (Waste Processing Installations)

- (1) Technical standards as regards the processing installations of radioactive wastes shall be as follows:
1. The installations shall be capable of processing radioactive wastes generated from disposal facilities in order to maintain the concentration of radioactive materials in the air and water on the boundary of an exclusion area at no higher than the limit under the discharge control standards.
 2. The installations shall be set up, separately from the facilities processing wastes other than radioactive wastes. Provided, that this shall not apply in the case of connection to the installations processing liquid wastes other than radioactive wastes, to the extent that there exists no fear of backflow through such connected facilities.
 3. The installations shall have a structure preventing leakage of radioactive wastes and have no fear of serious corrosion by chemicals, etc.
 4. The provisions of Article 70 (1) 3 hereof shall apply mutatis mutandis to gaseous radioactive waste processing installations, and gaseous radioactive wastes shall not be discharged at a place other than the exit of a ventilation duct.
 5. Facilities where liquid radioactive waste processing installations are set up shall meet each of the following standards:
 - a. The interior of such facilities shall have a structure that makes liquid radioactive wastes flow into the drainage passage by the gradient of the

- floor or a drain built thereon, and a dike for the prevention of the spread of any leakage of liquid radioactive wastes shall be installed therein;
- b. A dike to prevent any leakage of liquid radioactive wastes to the outside of the facilities shall be installed at the entrance/exit that leads to the outside of the facilities or the surrounding area thereof. Provided, that this shall not apply in cases where there exists no fear of such leakage to the outside of the facilities as the floor inside the facilities is lower than the level of the floor or land surface adjacent thereto; and
 - c. Liquid radioactive wastes shall not be discharged at a place other than the exit of a drainage basin.
6. The facilities where solid radioactive waste processing installations are set up shall be capable of solidifying or stabilizing such radioactive wastes in a form appropriate for disposal thereof or loading such radioactive wastes in a container of which disposal safety has been proven, as determined and publicly notified by the Nuclear Safety and Security Commission.
 - (2) Detailed technical standards as regards the structure and installation of radioactive waste processing installations as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

▣ Section 2 Performance Standards for Disposal Facilities, etc.

Article 75 (Scope of Application)

As regards technical standards for the performance of storage, processing and disposal facilities of radioactive wastes and accessory facilities thereof (hereinafter referred to as “disposal facilities, etc.”) as provided in Subparagraph 2 of Article 64 and Subparagraph 1 of Article 68 (1) of the Act, the provisions of Articles 76 through 83 hereof shall apply.

Article 76 (Structures, Systems and Equipment)

The structures, systems and equipment of the disposal facilities, etc. of radioactive wastes shall be able to maintain normal operation thereof as determined and publicly notified by the Nuclear Safety and Security Commission.

Article 77 (Exhaust and Ventilation)

As regards the performance of exhaust and ventilation systems, the safety of radiation workers and the public shall be ensured in normal times as well as in the event of an emergency.

Article 78 (Protection Facilities against Fire)

Protection facilities against a fire shall be able to maintain the diffusion and leakage of radioactive materials at not higher than the permissible limit in the event of a fire.

Article 79 (Monitoring and Control)

The safety systems and equipment of disposal facilities, etc. shall be able to perform constant monitoring and control in the event of an accident.

Article 80 (Emergency Electrical Power Source Devices)

Emergency electrical power source devices shall be able to be operated to ensure maintenance of the performance of the safety systems and equipment of disposal facilities, etc. in the event of a power cutoff from the outside of a power plant.

Article 81 (Drainage)

Drainage facilities shall suppress inflow of surface water or subsurface water to the utmost possible extent, and shall ensure that disposal facilities, etc. will not be affected by natural disasters including a flood or overflow of a river.

Article 82 (Radiation Control)

It shall be ensured that the radiation dose rate at a place accessed by people and other places requiring special radiation control and the concentration of radioactive materials in the air therein can be maintained at not higher than the limit determined and publicly notified by the Nuclear Safety and Security Commission.

Article 83 (Radioactive Material Handling and Processing Capacity)

Storage, processing and disposal capacity of radioactive wastes shall be no less than the capacity stated in the documents attached to an application for a permit including the safety analysis report as provided in Article 63 of the Act.

▣ Section 3 Disposal of Radioactive Wastes

Article 84 (Scope of Application)

As regards technical standards for the storage, processing or disposal of radioactive wastes as provided in Subparagraph 2 of Article 68 (1) of the Act, the provisions of Articles 85 through 88 hereof shall apply.

Article 85 (Storage, Processing or Disposal at Shallow Disposal Facilities)

(1) Technical standards as regards storage, processing or disposal of low and intermediate level radioactive wastes at shallow disposal facilities shall be as follows:

1. Radioactive wastes shall be contained in an appropriate container or solidified to prevent any radiation hazard;
2. The radioactive concentration and quantity of radioactive wastes shall not exceed the limits under detailed technical standards determined and publicly notified by the Nuclear Safety and Security Commission by type of radioactive materials;
3. As regards radioactive wastes, radioactivity signs as specified in the attached Table 1 shall be attached in an easily noticeable location on the surface thereof, and a serial number shall be posted thereon for reconciliation with the records on radioactive wastes;
4. Location and boundary shall be marked, and a preservation area shall be set up, with the radioactivity signs under the attached Table 1 installed on the boundary thereof;
5. The personal dose on radiation workers and persons with frequent access shall not exceed the dose limit; and
6. In the case of the closure of the facilities, necessary safety measures shall be taken, and posterior management and monitoring shall be performed thereafter.

(2) Detailed technical standards as regards the storage, processing or disposal at

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shallow disposal facilities for low and intermediate level radioactive wastes as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 86 (Storage, Processing or Disposal at Deep Disposal Facilities)

(1) Technical standards as regards storage, processing or disposal of high-level radioactive wastes and spent nuclear fuels at the place of deep disposal thereof shall be as follows:

1. A preservation area shall be set up around the place of disposal, and review of establishment of an exclusion area shall be implemented without fail;
2. As regards radioactive wastes, radioactivity signs as specified in the attached Table 1 shall be attached on an easily noticeable location on the surface thereof, and a serial number shall be posted thereon for reconciliation with the records on radioactive wastes; and
3. The personal dose on radiation workers and persons with frequent access shall not exceed the dose limit.

(2) Detailed technical standards as regards the storage, processing or disposal at deep disposal facilities of high-level radioactive wastes and spent nuclear fuels as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 87 (Storage and Processing in Disposal Facilities)

Technical standards as regards storage and processing of radioactive wastes generated at the time of operation of disposal facilities, etc. shall be as follows:

1. Processing and storage shall be performed under the supervision of a person who has knowledge and experience as regards protection against radiation hazards, and those engaging in processing and storage shall be required to wear necessary protective gear including working garments and gloves.
2. In the case of access to disposal facilities by any person other than those engaging in processing and storage, such person shall be required to follow instructions from the supervisor.
3. Gaseous radioactive wastes shall be discharged by using ventilation equipment after reducing the concentration of radioactive materials in ventilated air by such means as filtration, radioactivity decrease with lapse of time or dilution

- with a large amount of air. In such case, the concentration of radioactive materials in the air on the boundary of an exclusion area shall not exceed the limit under the discharge control standards based on monitoring of the concentration of radioactive materials in ventilated air at the ventilation outlet.
- 4 Liquid radioactive wastes shall be discharged/stored in such method as provided in any of the following:
 - a. Discharge by means of drainage equipment;
 - b. Storage at a storage reservoir that generates an effect of radiation hazard prevention.
 - c. Storage at storage facilities that generate an effect of radiation hazard prevention by placing such wastes in a container and subsequently solidifying them; and
 - d. Incineration at incineration facilities as determined and publicly notified by the Nuclear Safety and Security Commission for prevention of radiation hazards.
 5. In the case of discharge as provided in the foregoing Subparagraph 4 (a), the concentration of radioactive materials in drainage shall be reduced by such means as filtration, evaporation, absorption with ion exchange resin, etc., radioactivity decrease with lapse of time or dilution with a large amount of water at the drainage facilities. In such case, the concentration of radioactive materials in the water on the boundary of an exclusion area shall not exceed the limit under the discharge control standards as determined and publicly notified by the Nuclear Safety and Security Commission, based on monitoring of the concentration of radioactive materials in drainage at the drainage passage.
 6. In those cases where radioactive wastes are stored in such manner as provided in the foregoing Subparagraph 4 (b), if it is feared that the decay heat, etc. of such stored radioactive wastes may result in significant overheating, measures necessary for cooling shall be taken.
 7. In the case of storage in a container as provided in the foregoing Subparagraph 4 (c), such container containing radioactive wastes shall meet each of the following standards:
 - a. It shall have a structure that prevents permeation of water, resists corrosion and does not allow leakage of radioactive wastes;
 - b. There shall be no likelihood that the container may be cracked or damaged; and
 - c. The cover of the container shall not open easily.

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8. In the case of storage through solidification among the methods as set forth in the foregoing Subparagraph 4 (c), diffusion or leakage of solidified radioactive wastes shall be prevented.
9. In the case of storage of radioactive wastes at storage facilities that generate an effect of radiation hazard prevention among the methods as provided in the foregoing Subparagraph 4 (c), each of the following standards shall be met:
 - a. In cases where radioactive wastes are stored in a container and it is feared that such container may be cracked or damaged, spread of potential contamination shall be prevented by packaging such container with materials that can absorb all the radioactive wastes or installing an adequate undertray in regard of such container;
 - b. If it is feared that the decay heat, etc. of stored radioactive wastes may result in significant overheating, measures necessary for cooling shall be undertaken;
 - c. Signs as specified in the attached Table 1 that show the existence of radioactive wastes shall be attached to a container containing radioactive wastes or solidified radioactive wastes, and a serial number shall be posted in accordance with the detailed technical standards determined and publicly notified by the Nuclear Safety and Security Commission for reconciliation thereof with the details of the relevant radioactive wastes recorded as provided in Article 67 of the Act; and
 - d. Cautions regarding management shall be posted at easily noticeable places in storage facilities.
10. Solid radioactive wastes shall be disposed in such method as provided in any of the following:
 - a. Incineration at incineration facilities as determined and publicly notified by the Nuclear Safety and Security Commission for the prevention of any radiation hazards;
 - b. Storage at storage facilities, that generate an effect of radiation hazard prevention, by placing such wastes in a container or solidifying them; and
 - c. Radioactive wastes such as large-sized machinery, etc. that are difficult to be stored in such method as provided in the foregoing Item (b) or radioactive wastes that require radiation attenuation with lapse of time shall be stored at storage facilities that generate an effect of radiation hazard prevention.
11. In those cases where radioactive wastes are stored in a container as provided in the foregoing Subparagraph 10 (b), the examples set forth in the foregoing

- Subparagraph 7 and Subparagraph 9 (excluding Item (a) thereof) shall apply.
12. In cases where radioactive wastes are solidified and stored as provided in the foregoing Subparagraph 10 (b), the examples set forth in the foregoing Subparagraph 8 and Subparagraph 9 (excluding Item (a) thereof) shall apply.
 13. In cases where radioactive wastes are stored as provided in the foregoing Subparagraph 10 (c), the examples set forth in the foregoing Subparagraph 9 (b) and 9 (d) shall apply.

Article 88 (Quality Assurance)

- (1) The provisions of Articles 68 through 85 of the Regulations on Technical Standards for Nuclear Reactor Facilities, etc. shall apply *mutatis mutandis* as regards quality assurance in respect to the design, construction and operation of disposal facilities, etc.
- (2) Detailed standards as regards quality assurance as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Chapter V Safety Control of Packaging and Transport of Radioactive Material, etc.

▣ Section 1 Technical Standards for Packages and Transport Containers

Article 89 (Scope of Application)

As regards the technical standards for packages and transport containers for the transport of radioactive materials and materials contaminated thereby (hereinafter referred to as “radioactive materials, etc.”) as provided in Article 72 of the Act, Articles 90 through 93 hereof shall apply.

Article 90 (Types of Packages)

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The radioactive materials, etc. and packaging thereof (hereinafter referred to as “packages”) presented for transport shall be classified as follows according to the types of radioactive materials, etc. and the maximum quantity thereof:

1. Type L package;
2. Type IP package (Type IP package shall be classified into Type IP-1 package, Type IP-2 package or Type IP-3 package.);
3. Type A package;
4. Type B package (Type B package shall be classified into Type B(U) package or Type B(M) package.);
5. Type C package; and
6. Fissile material package.

Article 91 (Quantity Limits of Radioactive Materials by Packages)

(1) Radioactive materials, etc. of Type L packages and the maximum quantity thereof shall be as follows:

1. For articles manufactured of natural uranium, depleted uranium or natural thorium, Type L package may contain any quantity of such material provided that the outer surface of the uranium or thorium is an inactive sheath made of metal or some other substantial material.
2. For radioactive material other than articles manufactured of natural uranium, depleted uranium or natural thorium, Type L package shall not contain activities greater than the following:
 - a. Where the radioactive material is enclosed in or is included as a component part of an instrument or other manufactured article, such as a clock or electronic apparatus, the limits specified in columns 2 and 3 of Table 3 for each individual item and each package, respectively; and
 - b. Where the radioactive material is not so enclosed in or is not included as a component of an instrument or other manufactured article, the package limits specified in column 4 of Table 3.
3. For fissile materials, Type L package shall not contain activities greater than the exemption quantity of fissile materials or the ratio thereof as determined and publicly notified by the Nuclear Safety and Security Commission.

(2) Radioactive materials, etc. of Type IP packages and the maximum quantity thereof shall be as follows:

1. The quantity of LSA material in a single Industrial package Type 1 (Type

- IP-1), Industrial package Type 2(Type IP-2), Industrial package Type 3 (Type IP-3), or object or collection of objects, whichever is appropriate, shall be so restricted that the external radiation level at 3m from the unshielded material or object or collection of objects does not exceed 10mSv/h
2. The quantity of SCO in a single Industrial package Type 1(Type IP-1), Industrial package Type 2(Type IP-2), Industrial package Type 3(Type IP-3), or object or collection of objects, whichever is appropriate, shall be so restricted that the external radiation level at 3m from the unshielded material or object or collection of objects does not exceed 10mSv/h
 3. A single package of non-combustible solid LSA-II or LSA-III material, if carried by air, shall not contain an activity greater than $3000A_2$
 4. The quantity of radioactive materials in a package shall not exceed the radioactivity limits as regards the designated means of transport provided in the attached Table 4.
- (3) Radioactive materials, etc. of Type A packages and the maximum quantity thereof shall be as follows:
1. For single radionuclide whose identity and activity are known;
 - a. Special form radioactive materials: A_1
 - b. All other Radioactive materials: A_2
 2. For mixtures of radionuclides whose identities and respective activities are known, the aggregate of the ratios to A_1 and A_2 by nuclide shall not exceed 1.
- (4) Radioactive materials, etc. of Type B packages and the maximum quantity thereof shall be as follows:
1. Activities authorized for the package design.
 2. Type B(U) and Type B(M) package, if transported by air, shall meet the requirement of Subparagraph 1 and shall not contain activities greater than the following
 - a. For low dispersible radioactive material - as authorized for the package design as specified in the certificate of approval
 - b. For special form radioactive material - $3000A_1$ or $100000A_2$, whichever is the lower; or
 - c. For all other radioactive material - $3000A_2$
- (5) Radioactive materials, etc. of Type C packages and the maximum quantity thereof, which exceed the radioactive materials, etc. and the maximum quantity as set out in Subparagraphs 2 (b) and 2 (c) of the foregoing Paragraph 4, shall not exceed the limits set forth in a relevant design approval in those cases where the

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packages are transported by air.

(6) The quantity limit of a fissile material package, which is a package containing fissile materials, shall be as follows:

1. In the case of a fissile material package which does not contain uranium hexafluoride (UF₆), the limit provided in a design approval shall not be exceeded.
2. The quantity limit of radioactive materials for a fissile material package containing uranium hexafluoride shall meet each of the following standards:
 - a. The limit specified in the foregoing Subparagraph 1 shall not be exceeded;
 - b. Uranium hexafluoride in a package shall not reach a point of saturation in consideration of the highest temperature of the surroundings of the place of use; and
 - c. Uranium hexafluoride shall be maintained in a solid state, and internal pressure shall be maintained at lower than the surrounding pressure.

(7) The A₁ and A₂ values in the foregoing Paragraphs 1 through 6, which are the maximum radioactivity permitted for Type A packages, shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 92 (Types of Transport Containers)

(1) Transport containers shall be classified according to the types of packages to be transported as provided in the foregoing Article 90:

1. Type L transport container;
2. Type IP transport container (classified into Type IP-1 transport container, Type IP-2 transport container and Type IP-3 transport container);
3. Type A transport container;
4. Type B transport container (classified into Type B(U) transport container and Type B(M) transport container);
5. Type C transport container; and
6. Fissile material transport container.

(2) Technical standards for each transport container as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 93 (Classification of Low Specific Activity Materials and Surface Contaminated Objects)

- (1) Low specific activity (LSA) materials shall be classified into LSA-I, LSA-II and LSA-III.
- (2) Surface contaminated objects (SCO) shall be classified into SCO-I and SCO-II.
- (3) Standards for classification of low specific activity materials and surface contaminated objects as provided in the foregoing Paragraphs (1) and (2) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 94 (Special Arrangement Approval)

- (1) In those cases where it is extremely difficult to perform transport as provided in Articles 90 through 93 hereof, the Nuclear Safety and Security Commission may approve special transport notwithstanding the provisions of Articles 90 through 93 hereof to the extent that necessary measures for safety have been taken and it is acknowledged, in his reasonable discretion, that safety shall not be compromised.
- (2) In the case of the foregoing Paragraph (1), the Nuclear Safety and Security Commission may order the execution of necessary measures to ensure safety.

▣ Section 2 Technical Standards for Packaging and Transport

Article 95 (Scope of Application)

As regards technical standards for the packaging and transport of radioactive materials, etc. as provided in Article 72 of the Act, the provisions of Articles 96 through 119 hereof shall apply.

Article 96 (Packaging)

- (1) A package shall meet each of the following standards prior to the first shipment thereof:
 1. It shall be ensured that the containment system of each package conforms to the approved design requirements relating to the capability of that system to maintain its integrity under the pressure concerned.
 2. For each Type B(U), Type B(M) and Type C packages and for each package containing fissile material, it shall be ensured that the effectiveness of its

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shielding and containment and, where necessary and the heat transfer characteristics, are within the limits applicable to or specified for the approved design.

3. For packages containing fissile material, neutron poisons are specifically included as components of the package, checks shall be performed to confirm the presence and distribution of those neutron poisons.
- (2) A package shall meet each of the following standards prior to each shipment thereof:
1. Any lifting attachment, which fails to satisfy the standards determined and publicly notified by the Nuclear Safety and Security Commission, shall be removed or otherwise rendered incapable of being used for lifting the package.
 2. In the case of Type B(U) packages, Type B(M) packages and Type C packages, each of the following standards shall be met:
 - a. All standards specified in a relevant design approval certificate shall be satisfied;
 - b. Temperature and pressure shall remain in equilibrium; and
 - c. It shall be inspected or tested as to whether all closures, valves and openings of the containment system, which has the possibility of escape of radioactive materials, are properly closed to prevent escape of radioactive materials.
 3. In the case of packages of fissile materials and special form radioactive materials, the standards specified in a relevant design approval certificate shall be met.
 4. In the case of a fissile material package irradiated by neutrons, a test to check the contents by isotope regarding radioactive materials and to verify proper closure of such package shall be performed.
 5. If the radioactive materials in a package are low dispersible radioactive materials, the standards specified in a relevant design approval certificate shall be met.

Article 97 (Articles other than Radioactive Materials)

Technical standards as regards the packaging/transport of articles other than radioactive materials shall be as follows:

1. A package shall not be packaged or transported together with those other

than articles necessary for the use of the relevant radioactive materials, etc. Provided, that this shall not apply in cases where there exists no likelihood that the safety of the relevant package may be hampered due to interaction therewith; and

2. Any tank and freight container used for transport of radioactive materials, etc. shall not be used for the storage or transport of other articles, unless they are decontaminated to the level where the average of removable contamination measured on the internal/external surface thereof of not less than 300cm² is not higher than 0.4 becquerel per cm² in the case of beta/gamma emitters or low toxicity alpha emitters, and not higher than 0.04 becquerel per cm² in the case of all the other alpha emitters.

Article 98 (Limitations, etc. on Mixed Loading with Dangerous Materials)

(1) A package shall not be loaded mixed with objects or materials set forth in any of the following:

1. Gunpowder;
2. High-pressure gas;
3. Gasoline, alcohol, carbon disulfide and other flammable materials, of which the flash point is no higher than 50°C;
4. Hydrochloric acid, sulfuric acid, nitric acid and other strong acids, of which acid content exceeds 10 percent of volume; and
5. Objects or materials other than those as set forth in the foregoing Subparagraphs 1 through 4, that are feared to cause a hazard to safe transport of a package.

(2) Risks associated with radioactive materials in a package including explosiveness, flammability, spontaneous combustibility, chemical toxicity or corrosiveness shall be considered, in addition to radioactivity or fissionability.

Article 99 (Radiation Dose Rate)

The maximum radiation dose rate of a package or overpack shall not exceed the limits set forth in each of the following:

1. 2 millisieverts per hour at the external surface. Provided, that 10 millisieverts per hour shall apply in the case of exclusive transport; and
2. 0.1 millisievert per hour at a place one meter away from the external surface. Provided, that exceptions shall be made in the case of exclusive transport.

Article 100 (Surface Contamination Level)

In regard of the removable surface contamination level on the external surface of a package and the internal/external surface of an overpack, freight container and tank, the average value measured at any surface area of not less than 300cm² shall not exceed 4 becquerels per cm² in the case of beta/gamma emitters and low toxicity alpha emitters and 0.4 becquerel per cm² in the case of all the other alpha emitters.

Article 101 (Contamination and Leakage Control)

- (1) In those cases where a package is damaged or leaking, or feared to be damaged or leaking, access to such package shall be limited, and the contamination level and radiation dose rate of such package shall be assessed as rapidly as possible. In such case, the assessment shall include any and all matters related with transport including the package, means of transport and adjacent loading/unloading zones.
- (2) In cases where a package is damaged or leaking, measures shall be taken in order to protect the safety of people, property and environment.
- (3) Any package of which radioactive materials are damaged or leaking shall be transported after repair and decontamination based on relocation thereof to a reasonable place.
- (4) As regards the conveyance and equipment of transport usually used for the transport of radioactive materials, etc., the status of contamination thereof shall be checked on a regular basis.
- (5) Any conveyance and equipment of transport and related appurtenance thereof, which have been contaminated in excess of the limit as provided in Article 100 hereof during the transport process of radioactive materials, etc. or has a radiation dose rate on the surface that exceeds 5 microsieverts per hour, shall be decontaminated as swiftly as possible.
- (6) Any conveyance and equipment of transport and related appurtenance thereof, of which removable surface contamination level exceeds the limits as provided in Article 100 hereof or of which the radiation dose rate exceeds 5 microsieverts per hour due to fixed contamination on the surface after decontamination thereof, shall not be reused.
- (7) In the case of exclusive transport of radioactive materials, etc., the provisions of the foregoing Paragraph (5) and Article 100 hereof shall not apply as regards the

internal surface of overpacks, freight containers, tanks and the conveyance of transport.

Article 102 (Transport Index and Criticality Safety Index)

(1) The transport index and criticality safety index of packages and overpacks shall be as follows. Provided, that exclusive transport is excepted:

1. The transport index shall not exceed 10; and
2. The criticality safety index shall not exceed 50.

(2) The calculation method of the transport index and criticality safety index as provided in the foregoing Paragraph (1) shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 103 (Prevention of Nuclear Criticality)

In the case of a fissile material package, necessary measures shall be taken to prevent the reaching of nuclear criticality in the packaging, loading or transport process.

Article 104 (Category of Packages)

Packages and overpacks shall be classified into Category I - white, Category II - yellow and Category III - yellow according to the conditions set out in the attached Table 5 and each of the following standards:

1. Classification category of packages or overpacks shall be determined in consideration of the transport index and surface radiation dose rate; and
2. If either the transport index or surface radiation dose rate falls into a higher category, the relevant packages or overpacks shall be classified as such higher category.

Article 105 (Marking)

(1) Technical standards as regards the marking of packages shall be as follows:

1. Easily legible and durable marks of the consignor or consignee or both shall be on the outside of the packaging; and
2. In the event of transport of radioactive materials, UN numbers and relevant

- shipping names shall be displayed on the outside of the transport container in an easily legible and durable manner as specified in the attached Table 6.
- (2) In the event the total weight of a package exceeds 50 kilograms, the total weight thereof shall be displayed on the outside of the transport container in an easily legible and durable manner.

Article 106 (Labels)

- (1) Technical standards as regards the labels of packages, overpacks and freight containers shall be as follows:
1. A relevant label as provided in each of the following shall be attached to packages classified in accordance with Article 104 hereof:
 - a. Category I - white transport label as specified in Figure 2 of the attached Table 2 for Category I - white packages;
 - b. Category II - yellow transport label as specified in Figure 3 of the attached Table 2 for Category II - yellow packages; and
 - c. Category III - yellow transport label as specified in Figure 4 of the attached Table 2 for Category III - yellow packages.
 2. Labels not related to radioactive materials shall be removed or covered.
- (2) A criticality safety transport label in Figure 5 of the attached Table 2 shall be attached to any package, overpack and freight container containing fissile materials.
- (3) Labels as provided in the foregoing Paragraphs (1) and (2) shall be attached in the manner as specified in each of the following:
1. Labels provided in Subparagraph 1 of the foregoing Paragraph (1) shall be affixed to two opposite sides of the outside of a package or overpack, and on the outside of all four sides of a freight container or tank;
 2. A criticality safety transport label as provided in the foregoing Paragraph (2) shall be attached near the labels that have been affixed in such manner as provided in the foregoing Subparagraph 1; and
 3. These labels shall not overlap the marks provided in Article 105 hereof.
- (4) Transport placards for vehicles shall be attached to a freight container and tank as provided in each of the following. Provided, that this shall not apply to Type L packages:
1. Four transport placards for vehicles specified in Figure 6 of the attached Table 2 shall be respectively affixed to each side walls and end walls of a freight

container or tank in a vertical orientation. Provided, that this shall not apply in cases where the transport labels as provided in the foregoing Paragraphs (1) and (2) are affixed after being enlarged to the minimum size of Figure 6 of the attached Table 2 or larger; and

2. Any placards not related to radioactive materials shall be removed or covered.
- (5) In the case of mixed loading with such dangerous materials as provided in the foregoing Article 98, a label indicating the danger of such materials shall be affixed.

Article 107 (Isolation of Packages)

- (1) Any package, overpack and freight container containing radioactive materials, etc. shall be isolated from the residence of ordinary people or dangerous materials as provided in Article 98 hereof during transport thereof.
- (2) Category II - yellow packages or Category III - yellow packages shall not be carried into an area frequently accessed by the general public.

Article 108 (Loading Limit)

- (1) Any package or overpack, of which the average heat extraction rate from the surface exceeds 15 watts per m², shall not be transported with other freight.
- (2) A package, overpack and freight container shall be loaded in accordance with each of the following:
 1. As regards the quantity of a package, overpack or freight container that can be loaded in a single conveyance of transport, the total transport index thereof shall not exceed the transport index limits provided in the attached Table 7. Provided, that this shall not apply to a package of LSA-I or a package transported exclusively.
 2. As regards transport, the radiation dose rate shall not exceed each of the following standards:
 - a. 2 millisieverts per hour on the external surface of any conveyance of transport;
 - b. 0.1 millisievert per hour at a spot two meters from the external surface of the conveyance of transport; and
 - c. 0.02 millisievert per hour at the location where a person goes aboard.
 3. The total criticality safety index of the conveyance of transport and freight

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containers shall not exceed the criticality safety index limits defined in the attached Table 8.

(3) Any package or overpack, of which transport index exceeds 10 or criticality safety index exceeds 50, shall be transported exclusively.

Article 109 (Isolation of Fissile Material Packages)

(1) As regards the quantity of packages, overpacks or freight containers containing fissile materials that are stored in a storage compartment during transport thereof, the total criticality safety index of an assembly of the relevant packages, overpacks or freight containers shall not exceed 50. In such case, an assembly of the packages, overpacks or freight containers containing fissile materials shall be maintained at least six meters away from an assembly of the other packages, overpacks or freight containers containing fissile materials.

(2) In cases where the total criticality safety index defined in the attached Table 8 exceeds 50, the relevant packages, overpacks or freight containers shall be stored at least six meters away from an assembly of the other packages, overpacks or freight containers containing fissile materials or the conveyance of transport carrying radioactive materials.

Article 110 (Customs Clearance Procedures)

Customs clearance procedures including inspection of radioactive materials of a package shall be performed at a place equipped with appropriate means to control radiation exposure and in the presence of a transporter in charge. Packages opened in the customs clearance process shall be restored to their original state prior to the delivery thereof to the consignee.

Article 111 (Undeliverable Packages)

In those cases where a transporter in charge cannot deliver a package, he shall store such package in a safe place, promptly file a report thereof to the Nuclear Safety and Security Commission and receive instructions in regard to the handling thereof.

Article 112 (Transport Vehicles)

Technical standards as regards a vehicle used for transport of radioactive materials, etc. shall be as follows:

1. Such vehicle shall be appropriate for the transport of packages;
2. As regards small-sized packages that are difficult to be fastened to the vehicle tightly, the vehicle shall be equipped with a transport case to prevent such packages from moving, being inverted and falling during transport. In such case, the transport case shall remain fastened tightly to the vehicle; and
3. Such vehicle shall be equipped with necessary equipment including a spare tire or fire extinguisher to be prepared for any possible breakdown or fire thereof and so forth.

Article 113 (Transporter in Charge, etc.)

In those cases where Type B(U)/Type B(M)/Type C packages, fissile material packages or large-sized machinery and equipment contaminated by radioactive materials that are inappropriate for packaging in a transport container are to be transported, technical standards to prevent any radiation hazard arising from an accident during such transport shall be as follows:

1. Transport shall be performed by not less than two (2) persons at all times.
2. A transporter in charge shall be designated at the time of transport, and such transporter in charge shall be required to accompany the package in order to engage in necessary supervision for accident and radiation hazard prevention.
3. Radiation measuring apparatus, protective gear and communication equipment shall be carried to be able to rapidly respond to emergencies and to report to the authorities concerned in the event of an accident during transport.
4. Necessary safety education and training shall be conducted as regards drivers.
5. The driver and transporter in charge shall perform a safety inspection of the vehicle prior to departure.
6. The transporter in charge as provided in the foregoing Subparagraph 2 shall be designated among any of the following:
 - a. Chief officer of an organization in charge of radiation safety control or radiation safety officer with knowledge and experience, in case of the transport of fissile materials; and
 - b. Those with a license on handling radioisotopes belonging to the institutions

concerned, in other cases.

Article 114 (Packages Shipped to a Foreign Country)

Any package shipped to a foreign country shall meet the relevant regulations of the country that such package is to pass through or arrive at.

Article 115 (Type L Package)

Notwithstanding the provisions of Articles 96 through 113 hereof, a Type L package shall meet each of the following packing standards:

1. The radiation dose rate on the external surface of a package shall not exceed 5 microsieverts per hour.
2. The average of removable surface contamination at any points of not less than 300cm² on the external surface of a package shall not exceed any of the following limits:
 - a. 4 becquerels per cm² in the case of beta/gamma emitters and low-toxicity alpha emitters; and
 - b. 0.4 becquerels per cm² in the case of all alpha emitters except those as provided in the foregoing Item (a).
3. Other risks associated with radioactive materials in a package including explosions, flammability, spontaneous combustibility, chemical toxicity or corrosiveness, shall be considered, in addition to radioactivity or fissionability.
4. Such marking as provided in Article 105 hereof shall be performed.

Article 116 (Transport of Low Specific Activity Materials)

- (1) Low specific activity materials may be transported in Type IP package according to the requirements set forth in the attached Table 9.
- (2) Total radioactivity in a single hold or compartment of an inland water craft or in another conveyance, for carriage of low specific activity materials in Type IP package shall not exceed the limit specified in the attached Table 4.

Article 117 (Transport of Surface Contaminated Objects)

- (1) Surface contaminated objects may be transported in Type IP package

according to the requirements set forth in the attached Table 9.

(2) Total radioactivity in a single hold or compartment of an inland water craft or in another conveyance, for carriage of surface contaminated objects in Type IP package shall not exceed the limit specified in the attached Table 4.

Article 118 (Transport of Type L Packages)

(1) As regard radioactive materials enclosed in or included as a component part of an instrument or other manufactured article, with activity not exceeding the item and package limits specified in columns 2 and 3 respectively of Table 3, the technical standards for transport thereof shall be as follows:

1. The radiation dose rate at ten centimeters away from any point on the external surface of any unpackaged instrument or article shall not exceed 0.1 millisievert per hour;
2. A marking reading "radioactive materials" shall be attached to each instrument or article. Provided, that this shall not apply to radioluminescent time-pieces or devices; and
3. The active material is completely enclosed by non-active components.

(2) Technical standards for the transport of radioactive materials other than those provided in the foregoing Paragraph (1), of which radioactivity does not exceed the limits as specified in Column 4 of the attached Table 3 shall be as follows:

1. The package retains its radioactive contents under routine conditions of transport; and
2. The package bears the marking "RADIOACTIVE" on an internal surface in such a manner that a warning of the presence of radioactive material is visible on opening the package.

(3) A manufactured article in which the sole radioactive material is unirradiated natural uranium, unirradiated depleted uranium or unirradiated natural thorium may be transported as an Type L package provided that the outer surface of the uranium or thorium is enclosed in an inactive sheath made of metal or some other substantial material.

(4) The contamination and leakage control standards as provided in Article 101 hereof shall be met.

Article 119 (Transport of Empty Transport Containers)

An empty packaging which had previously contained radioactive material may be transported as a Type L package provided that:

1. It is in a well maintained condition and securely closed;
2. The level of internal removable contamination does not exceed one hundred times the level specified in Article 100 hereof; and
3. Any labels which may have been displayed on it in conformity with Article 106 are no longer visible.

■ Section 3 Obligations of Consignor, etc.

Article 120 (Scope of Application)

As regards technical standards that must be complied with by those engaging in packaging of radioactive materials, etc. for transport thereof and in transport of radioactive materials, etc. as provided in Article 72 of the Act, the provisions of Articles 121 through 123 hereof shall apply.

Article 121 (Preparation of Transport Documents)

- (1) In regard to each package that a consignor intends to transport, he shall prepare transport documents as determined and publicly notified by the Nuclear Safety and Security Commission and provide such documents to the transporter of the package.
- (2) The consignor shall include a written declaration determined and publicly notified by the Nuclear Safety and Security Commission in the transport documents provided in the foregoing Paragraph (1). Provided, that this shall not apply to any transport conducted in accordance with the transport regulations of international conventions that cover the purpose of such declaration.
- (3) The consignor shall affix his signature and seal to such written declaration as provided in the foregoing Paragraph (2).

Article 122 (Information, etc. for Transporter)

- (1) The consignor shall provide in the transport document a statement regarding actions, if any, that are required to be taken by the transporter.
 1. Supplementary requirements for loading, stowage, carriage, handling and unloading of the package, overpack or freight container including any special stowage provisions for the safe dissipation of heat, or a statement that no such requirements are necessary;
 2. Restrictions on the mode of transport or conveyance and any necessary routing instructions;
 3. Emergency arrangements appropriate to the consignment.
- (2) In the case of transport of a package to a foreign country, a consignor shall provide the transporter with necessary certificates issued by the authorities concerned prior to loading and unloading.

Article 123 (Possession, etc. of Written Approval and Transport Documents)

- (1) A consignor shall possess a copy of the design approval certificate and a copy of shipping documents as regards appropriate closure of the package and other matters related to preparation for transport.
- (2) A consignor and consignee shall maintain a copy of the design approval certificate, shipping documents and other records necessary for transport.
- (3) A consignor, transporter and consignee shall comply with the matters specified in a design approval certificate.
- (4) A consignor, transporter and consignee shall ensure that there will not arise any loss, theft, etc. in the packaging or transport process and clarify the authority and responsibilities by performing delivery/receipt according to a transport contract.

■ Section 4 Technical Standards for Conveyance of Transport

Article 124 (Scope of Application)

As regards the technical standards for transport of radioactive materials, etc. concerning each conveyance of transport as provided in Article 72 of the Act, the provisions of Articles 125 through 128 hereof shall apply.

Article 125 (Standards for Transport by Railway and by Road)

(1) Any vehicle, which transports a package, overpack or freight container with the transport labels of Figures 2 through 5 of the attached Table 2, shall attach a transport placard for vehicles specified in Figure 6 of the attached Table 2 according to each of the following manner:

1. The two external lateral walls in the case of a railway vehicle; and
2. The two external lateral walls and the external rear wall in the case of a road vehicle.

(2) In the case of a vehicle without side walls, the placard may be affixed directly on the cargo-carrying unit provided that they are readily visible and in the case of physically large tanks or freight container, the placards on the tanks or freight containers shall suffice.

(3) The radiation dose rate of exclusively transported packages shall not exceed the limits set forth in each of the following:

1. 10 millisieverts per hour regarding the external surface of a package or overpack. Provided, that the limit shall be 2 millisieverts per hour if any of the following standards are not met:
 - a. The vehicle is equipped with an enclosure which prevents the access of unauthorized persons to the interior of the enclosure;
 - b. Provisions are made to secure the package or overpack so that its position within the vehicle enclosure remain fixed; and
 - c. There is no loading or unloading during the shipment.
2. 2 millisieverts per hour at any point on the outer surfaces of the vehicle, including the upper and lower surfaces, or, in the case of an open vehicle, at any point on the vertical planes projected from the outer edges of the vehicle, on the upper surface of the load, and on the lower external surface of the vehicle: and
3. 0.1 millisievert per hour at any point two meters from the vertical plane represented by the outer lateral surfaces of the vehicle, or, if the load is transported in an open vehicle, at any point two meters from the vertical planes projected from the outer edges of the vehicle.

(4) In the case of a road vehicle, no persons other than the driver and assistants shall be permitted in vehicles carrying packages, overpacks or freight containers bearing category 2 - yellow or category 3 - yellow labels.

Article 126 (Standards for Transport by Vessels)

- (1) Packages having a surface radiation level greater than 2 millisieverts per hour, unless being carried in or on a vehicle under exclusive use, shall not be transported by vessel except under special arrangement.
- (2) The transport of consignments by means of a special use vessel which is dedicated to the purpose of carrying radioactive material, shall be excepted from the requirements specified in Article 108 (2) provided that the following conditions are met.
 1. A radiation protection program for the shipment shall be approved by the competent authority of the flag state of the vessel and, when requested, by the competent authority at each port of call;
 2. Stowage arrangements shall be predetermined for the whole voyage including any consignments to be loaded at ports of call en route;
 3. The loading, carriage and unloading of the consignment shall be supervised by persons qualified in the transport of radioactive material.
- (3) The captain of a ship shall install locks or compartments at the entrance of the place where packages remain loaded, or take measures to prevent any person other than related authorized personnel from having access thereto.
- (4) The captain of a ship shall establish an off-limits area around the place where package are loaded, to restrict any people other than related authorized personnel from accessing such area, and install signs restricting access.
- (5) In the case of transport of any package, the captain of the ship shall carry necessary documents that state the type, quantity, handling method and cautions of such package and measures to be taken in the event of an accident.
- (6) Except those provided for in Paragraphs (1) through (5), the detailed technical standards for safety control of transport by vessel of package shall be determined and publicly notified by the Nuclear Safety and Security Commission.

Article 127 (Standards for Transport by Air)

- (1) Type B(M) packages and consignment under exclusive use shall not be transported on passenger aircraft.
- (2) Vented Type B(M) packages, packages which require external cooling by

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an ancillary cooling system, packages subject to operational controls during transport, and packages containing liquid pyrophoric materials shall not be transported by air.

(3) Packages or overpacks having a surface radiation dose rate greater than 2 millisieverts per hour shall not be transported by air except by special arrangement.

(4) A package shall not be loaded in an area used by the airplane crew, etc. at ordinary times.

(5) In the case of transport of a package, etc. the captain of the airplane shall carry necessary documents that state the type, quantity, handling method and cautions of such package and measures to be taken in the event of an accident.

Article 128 (Standards for Transport by Post)

(1) Any package of which radioactive contents does not exceed one tenth of the limit specified in the attached Table 3 may be accepted for domestic movement by national postal authorities, to the extent that the requirements prescribed by the postal authorities are met.

(2) Any package of which radioactive contents does not exceed one tenth of the limit specified in the attached Table 3 may be transported by international post, to the extent that the requirements set forth in each of the following are met:

1. It shall be deposited with the postal service only by consignors authorized by the national authority;
2. It shall be dispatched by the quickest route, normally by air;
3. It shall be plainly and durably marked on the outside with the words "RADIOACTIVE MATERIAL - QUANTITIES PERMITTED FOR MOVEMENT BY POST"; these words shall be crossed out if the packaging is returned empty;
4. It shall carry on the outside the name and address of the consigner with the request that the consignment be returned in the case of non-delivery; and
5. The name and address of the consignor and the contents of the consignment shall be indicated on the internal packaging.

ADDENDA <Notification No. 2011-7, Nov. 11, 2011>

Article 1 (Enforcement Date)

These Rules shall enter into force on the date of their notification.

Article 2 (Transitional Measures)

Any disposition, procedure or other actions concerning nuclear energy safety taken in accordance with the former Rules on Technical Standards for Radiation Safety Management, etc. (Ordinance of the Ministry of Education, Science and Technology No. 1) at the time these Rules enter into force shall be deemed taken in accordance with these Rules.

[Table 1]

Various Signs and Radioactivity Signs

[Related to Article 3 (2) 1, etc.]

Classification	Details of Signs	Size of Radioactivity Signs	Places where a Sign is Required to be Posted
1. Various facilities of a radiation control area (production, utilization, distribution, storage, temporary storage, processing, discharge and disposal), etc. [Articles 3 (2) 1, 17 and 19 (1) 7, Subparagraph 6 of Article 20, Subparagraph 4 of Article 21, Subparagraph 5 of Article 22, Subparagraph 5 of Article 23, Article 25, Article 27 (1) 4, Subparagraph 5 of Article 28, Subparagraph 5 of Article 29, Article 31, Article 33 (1) 5, and Subparagraph 6 of Article 58]	“Radiation Control Area” to be marked above the sign as specified in the figures below (hereinafter referred to as “sign”) and “Production Facilities”, “Use Facilities”, “Distribution Facilities”, “Storage Facilities”, “Temporary Storage Facilities”, “Processing Facilities”, “Discharge Facilities” or “Disposal Facilities”, etc. thereunder; “No Entrance without Permission” to be marked underneath the signs.	Radius of 15 cm or longer	Place designated as the entrance/exit of production facilities, use facilities, etc. and the boundary of a radiation control area
2. Production, utilization and work rooms of radioisotopes or radiation generating devices [Article 17, Article 19 (1) 7, Article 25, Article 27 (1) 4, Article 31, Article 33 (1) 5, and Subparagraph 6 of Article 58]	“Radioisotope Production Room”, “Radioisotope Utilization Room”, “Radioisotope Utilization Work Room”, “Radiation Generating Devices Production Room” or “Radiation Generating Devices Utilization Room” to be marked above the signs.	Radius of 10 cm or longer	Entrance/exit of the radioisotope production room, radioisotope utilization room, radioisotope utilization work room, radiation generating devices production room or radiation generating device utilization room and the places adjacent thereto
3. Distribution room of radioisotopes [Article 19 (1) 7 and Article 27 (1) 4]	“Radioisotope Distribution Room” to be marked above the signs.	Radius of 10 cm or longer	Entrance/exit of the radioisotope distribution room and the places adjacent thereto
4. Storage room of radioisotopes (Subparagraph 6 of Article 20 and Subparagraph 5 of Article 28)	“Radioisotope Storage Room” to be marked above the signs and “No Access without Permission” underneath the signs.	Radius of 10 cm or longer	Entrance/exit of the radioisotope storage room and the places adjacent thereto

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Classification	Details of Sign	Size of Radioactivity Signs	Places where a Sign is Required to be Posted
5. Contamination inspection room and processing work room [Article 19 (1) 7 and Subparagraph 5 of Article 22]	“Contamination Inspection Room” or “Disposal Work Room” to be marked above the signs.	Radius of 10 cm or longer	Entrance/exit of the contamination inspection room or disposal work room or the places adjacent thereto
6. Storage case of radioisotopes (Subparagraph 6 of Article 20, and Subparagraph 5 of Article 28)	“Radioisotope Storage Case” to be marked above the signs and “No Access Without Permission” underneath the signs.	Radius of 3 cm or longer	Surface of the storage case
7. Vessel kept available at radioisotope storage facilities (Subparagraph 6 of Article 20)	“Radioisotopes” to be marked above the signs and the types and quantity of radioisotopes underneath the signs.	Radius of 2.5 cm or longer	Surface of the vessel
8. Drainage facilities (Subparagraph 5 of Article 23)	“Drainage Facilities” to be marked above the signs and “No Entrance without Permission” underneath the signs.	Radius of 10 cm or longer in case of a drainage purification tank, radius of 5 cm or longer in case of effluent processing apparatus, radius of 2.5 cm or longer in the case of a drainage pipe, and radius of 10 cm or longer in case of other signs attached near the facilities	Surface of a drainage purification tank (if such tank is buried, the ground thereon or right above), and the surface of exposed areas on the ground and areas adjacent thereto in the case of effluent processing apparatus and drainage pipe
9. Incinerator (Subparagraph 5 of Article 22)	“Incinerator” to be marked above the signs and “No Access Without Permission” underneath the signs.	Radius of 5 cm or longer	Near the incinerator
10. Ventilation equipment (Subparagraph 5 of Article 23)	“Ventilation Facilities” to be marked above the signs and “No Access Without Permission” underneath the signs.	Radius of 5 cm or longer	Drainage passage or places adjacent thereto and the surface of ventilation and purification device exhaust pipes.
11. Temporary storage equipment and vessels kept available at temporary storage facilities (Subparagraph 4 of Article 21)	“Radioactive Wastes” to be marked above the signs.	Radius of 2.5 cm or longer	Surface of a vessel

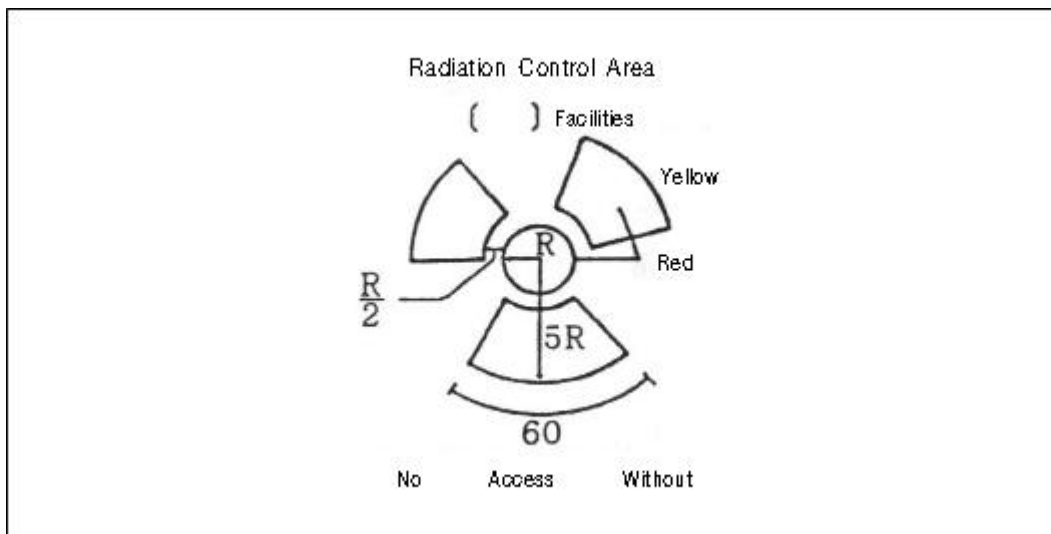
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Classification	Details of Sign	Size of Radioactivity Signs	Places where a Sign is Required to be Posted
12. Place where radioisotopes or materials contaminated by radioisotopes are kept [Article 136 (1) 3 (d) of the Decree]	“Radioactive Contaminated Materials” to be marked above the signs and “No Access Without Permission” underneath the signs.	Radius of 10 cm or longer	Nearby the place where they are kept
13. When the surface radiation dose rate exceeds the numbers determined by the Minister of Education, Science and Technology for temporary storage, processing, storage, discharge or disposal of radioactive wastes [Article 85 (1) 3, Article 86 (1) 2 and Subparagraph 9 (c) of Article 87]	“Radioactive Wastes” to be marked above the signs and the name of the disposing enterpriser, quantity of wastes, concentration of radioactive materials, serial number, etc. underneath the signs.	Radius of 5 cm or longer	Surface of radioactive wastes

- Note: 1. In cases where it is acknowledged that it is difficult to determine the size of a radiation sign in accordance with the radius standards specified in the table above, the relevant radius standards may not apply.
2. “Radius” in the table above refers to the size of 5R in the supplementary figure below.

[Supplementary Figure]

Sign Example



[Table 2]

Packaging and Transport-Related Signs

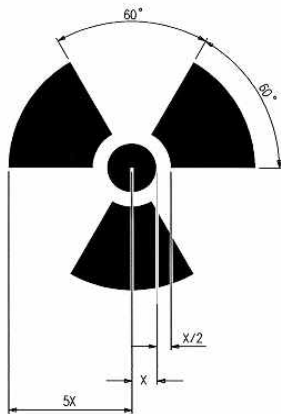
[Related to Articles 39, 106 and 125]

Classification	Details of Sign	Form and Size of Radioactivity Signs	Places where a Sign is Required to be Posted
1. Category I - white package	Print "Radioactive Materials" in Korean under the sign shown in Figure 1, specify the name and radiation quantity of such radioactive materials on the next line and state the number "7" indicating the type of dangerous materials thereunder.	A radioactivity signs shall take the form shown in Figure 2 and the width/length thereof shall be no shorter than 100mm respectively.	Two opposite sides of the surface of a package
2. Category II - yellow package	Print "Radioactive Materials" in Korean under the sign shown in Figure 1, specify the name, radiation quantity and transport index of such radioactive materials on the next line and state the number "7" indicating the type of dangerous materials thereunder.	A radioactivity signs shall take the form shown in Figure 3 and the width/length thereof shall be no shorter than 100mm, respectively.	Two opposite sides of the surface of a package
3. Category III - yellow package	Print "Radioactive Materials" in Korean under the sign shown in Figure 1, specify the name, radiation quantity and transport index of such radioactive materials on the next line and state the number "7" indicating the type of dangerous materials thereunder.	A radioactivity signs shall take the form shown in Figure 4 and the width/length thereof shall be no shorter than 100mm, respectively.	Two opposite sides of the surface of a package
4. Package containing fissile materials	Specify the criticality safety index under "fissile materials", and state number "7" indicating the type of dangerous materials thereunder.	A radioactivity signs shall take the form shown in Figure 5, and the width/length thereof shall be no shorter than 100mm, respectively.	Two opposite sides of the surface of a package

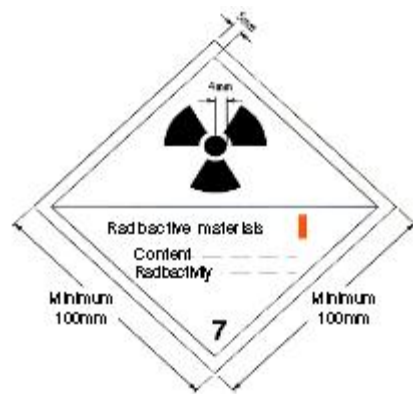
Regulations on Technical Standards for Radiation Safety Control, Etc.

5. Freight container or tank containing radioactive packages	Print “Radioactive Materials” in Korean under the sign shown in Figure 1, and state number “7” indicating the type of dangerous materials thereunder.	A radioactivity signs shall take the form shown in Figure 6, and the width/length thereof shall be no shorter than 250mm, respectively.	Four sides of a container or tank
6. Vehicle transporting radioactive materials by road and railway	Print “Radioactive Materials” in Korean under the sign shown in Figure 1, and state the number “7” indicating the type of dangerous materials thereunder.	A radioactivity signs shall take the form shown in Figure 6 and the width/length thereof shall be no shorter than 250mm, respectively.	Two sides, front and rear of a vehicle
7. Road and railway vehicle transporting radioactive materials of a single UN number under exclusive use	State the relevant UN number in the size of 65mm or larger as shown in Figure 7, according to the radioactive materials transported.	A radioactivity signs shall take the form shown in Figure 7 and the width/length thereof shall be no shorter than 300mm and 120mm, respectively.	Two sides of a vehicle

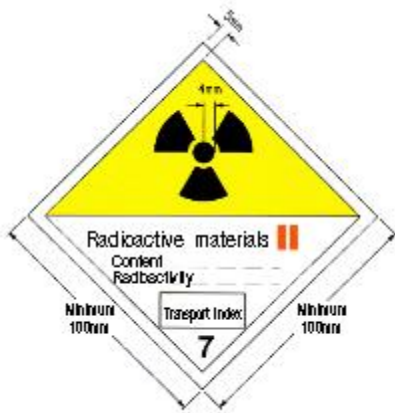
Note: The size of the signs above may be adjusted according to the relevant circumstances including the size of the objects to which they are to be attached.



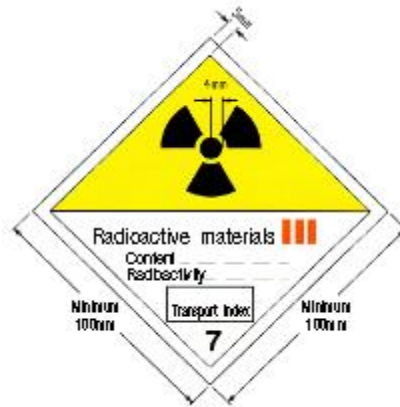
[Figure 1] Radioactivity Sign Standard



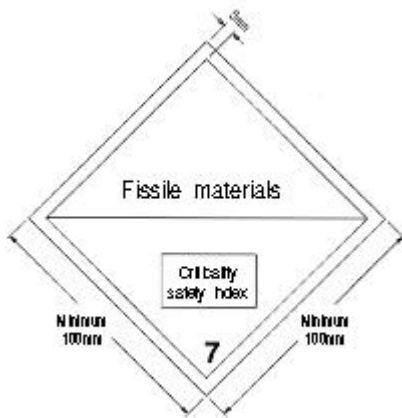
[Figure 2] Category I - White Transport Label



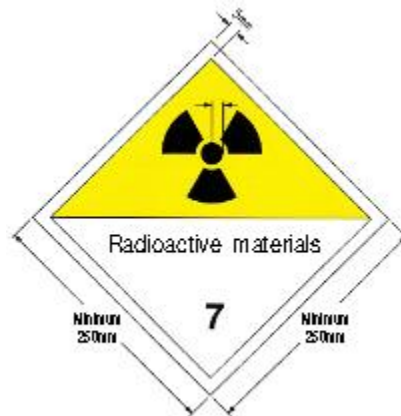
[Figure 3] Category II - Yellow Transport Label



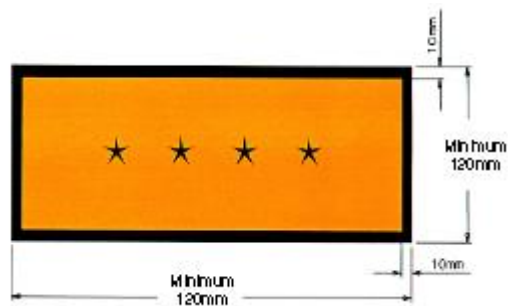
[Figure 4] Category III - Yellow Transport Label



[Figure 5] Criticality Safety Index Label



[Figure 6] Transport Placard for Vehicle



[Figure 7] UN Number Transport Sign

[Table 3]

Radioactivity Limits of Type L Packages

[Related to Article 91 (1), Article 118 and Article 128]

Physical State of Contents	Instrument or Article		Radioactive Materials
	Item Limit	Package Limit	Package Limit
Column 1	Column 2	Column 3	Column 4
Solids: Special form radioactive material	$10^{-2} A_1$	A_1	$10^{-3} A_1$
Other than special form	$10^{-2} A_2$	A_2	$10^{-3} A_2$
Liquids	$10^{-3} A_2$	$10^{-1} A_2$	$10^{-4} A_2$
Gases: Tritium	$2 \times 10^{-2} A_2$	$2 \times 10^{-1} A_2$	$2 \times 10^{-2} A_2$
Special form radioactive material	$10^{-3} A_1$	$10^{-2} A_1$	$10^{-3} A_1$
Other than special form	$10^{-3} A_2$	$10^{-2} A_2$	$10^{-3} A_2$

[Table 4]

Radioactivity Limits of the Means of Maritime Transport regarding Type IP Packages [Related to Article 91 (2), Article 116 (2) and Article 117 (2)]

Material Characteristics	Maritime	Inland Waterways
LSA(low specific activity)-I	No limits	No limits
LSA-II and LSA-III (non-combustible solids)	No limits	$100 A_2$
LSA-II and LSA-III (combustible solids, liquids and gases)	$100 A_2$	$10 A_2$
Surface contaminated objects	$100 A_2$	$10 A_2$

[Table 5]

Standards for Categorization of Packages and Overpacks
 [Related to Article 104]

Conditions		Category
Transport Index	Maximum radiation dose rate at any point on external surface	
0	Not more than 0.005mSv/h	Category I - White Package
More than 0 but not more than 1	More than 0.005mSv/h but not more than 0.5mSv/h	Category II - Yellow Package
More than 1 but not more than 10	More than 0.5mSv/h but not more than 2mSv/h	Category III - Yellow Package
More than 10	More than 2mSv/h but not more than 10mSv/h	Category III - Yellow Package ¹

Note 1. In this case, the packages shall be transported under exclusive use, without exception.

[Table 6]

UN Shipping Names of Radioactive Packages

[Related to Article 105 (1) 2]

UN Number	Shipping Name/Description	Subsidiary Risk
UN 2910	Radioactive materials, Type L package/ Material quantity limit	
UN 2911	Radioactive materials, Type L package/ Instrument or article	
UN 2909	Radioactive materials, Type L package/ Articles manufactured from natural uranium, depleted uranium or natural thorium	
UN 2908	Radioactive materials, Type L package/ Empty transport container	
UN 2912	Radioactive materials, LSA(low specific activity)-I/ Non-fissile or fissile - Type L ¹	
UN 3321	Radioactive materials, LSA-II/ Non-fissile or fissile - Type L	
UN 3322	Radioactive materials, LSA-III/ Non-fissile or fissile - Type L	
UN 2913	Radioactive materials, SCO(surface contaminated object)-I or SCO-II/ Non-fissile or fissile - Type L	
UN 2915	Radioactive materials, Type A package / Non-special form, non-fissile or fissile - Type L	
UN 3332	Radioactive materials, Type A package / special form, non-fissile or fissile - Type L	
UN 2916	Radioactive materials, Type B(U) package / Non-fissile or fissile - Type L	
UN 2917	Radioactive materials, Type B(M) package / Non-fissile or fissile - Type L	
UN 3323	Radioactive materials, Type C package / Non-fissile or fissile - Type L	
UN 2919	Radioactive materials, Transported under special arrangement/ Non-fissile or fissile - Type L	
UN 2978	Radioactive materials, Uranium hexafluoride/ Non-fissile or fissile - Type L	
UN 3324	Radioactive materials, LSA-II/ Fissile	
UN 3325	Radioactive materials, LSA-III/ Fissile	
UN 3326	Radioactive materials, SCO-I or SCO-II / Fissile	
UN 3327	Radioactive materials, Type A package/ Fissile, non-special form	
UN 3333	Radioactive materials, Type A package/ special form, fissile	
UN 3328	Radioactive materials, Type B(U) package/ Fissile	
UN 3329	Radioactive materials, Type B(M) package/ Fissile	
UN 3330	Radioactive materials, Type C package/ Fissile	
UN 3331	Radioactive materials, Transported under special arrangement/ Fissile	
UN 2977	Radioactive materials, Uranium hexafluoride/ Fissile	corrosiveness (UN Class 8)

Note 1. Fissile-Type L falls under Article 91 (1) 3 hereof.

[Table 7]

Transport Index Limits regarding Freight Containers and Transport Means under Non-Exclusive Use

[Related to Article 108 (2) 1]

Freight Container or Form of Other Means of Transport	Limits on the Total Transport Index regarding Freight Containers or Means of Transport
Freight Containers	50
Vehicles	50
Airplanes: Passenger	50
Freight	200
Ships for inland waterway transport	50
Ship for maritime transport ¹	
(1) Hold, waterproof compartment and designated deck area: package, overpack, freight container	50 (200 in case of a large freight container ²)
(2) Entire ship: package, overpack, freight container	200

Note 1. Any package or overpack that is transported exclusively under Article 125 (3) hereof may be transported by sea, with such package or overpack loaded on a vehicle.

2. It means a freight container of which the external length is at least 1.5 meters and the internal volume exceeds 3 cubic meters.

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[Table 8]

Criticality Safety Index Limits

[Related to Article 108 (2) and Article 109 (2)]

Type	Criticality Safety Index Limit	
	Exclusive	Non-exclusive
Freight Containers	100	50
Vehicles	100	50
Airplanes: Passenger	N/A	50
Freight	100	50
Ships for inland waterway transport	100	50
Ships for maritime transport ¹	100	50
(1) Hold, waterproof compartment and designated deck area: package, overpack, freight container	200	200
(2) Entire ship: package, overpack, freight container	(No limits in the case of a large freight container)	(No limits in the case of a large freight container)

Note 1. Any package or overpack that is transported exclusively under Article 125 (3) hereof may be transported by sea, with such package or overpack loaded on a vehicle.

2. It means a freight container of which the external length is at least 1.5 meters and the internal volume exceeds 3 cubic meters.

[Table 9]

Based on Type IP Packages of Low Specific Activity Materials and Surface Contaminated Objects

[Related to Article 116 (1) and Article 117 (1)]

Radioactive Substance	Type IP Package	
	Exclusive	Non-exclusive
LSA-I: Solid	Type IP-1 package	Type IP-1 package
Liquid	Type IP-1 package	Type IP-2 package
LSA-II: Solid	Type IP-2 package	Type IP-2 package
Liquid & gaseous	Type IP-2 package	Type IP-3 package
LSA-III	Type IP-2 package	Type IP-3 package
SCO-I	Type IP-1 package	Type IP-1 package
SCO-II	Type IP-2 package	Type IP-2 package

Disclaimer

This is an unofficial translation of the official NUCLEAR LAWS OF THE REPUBLIC OF KOREA for the benefit of interested readers, for all questions regarding meaning and phrasing, please refer to the official version in Korean.

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