

Joint Convention on the Safety of
Spent Fuel Management
and on the Safety of
Radioactive Waste Management

National Report of Japan
for the Second Review Meeting

October 2005
Government of Japan

Blank Page

Table of Contents

SECTION A. INTRODUCTION.....	A- 1
A. 1 Preparation of the Report.....	A- 1
A. 2 Current Status of Utilization of Nuclear Energy and its Management	A- 1
A. 3 International Activities.....	A- 4
A. 4 Facilities to be Reported under the Legal Framework.....	A- 4
SECTION B. POLICIES AND PRACTICES (ARTICLE 32, SECTION 1).....	B- 1
B. 1 Spent Fuel Management Policy.....	B- 1
B. 2 Spent Fuel Management Practices.....	B- 1
B. 3 Radioactive Waste Management Policy.....	B- 2
B. 4 Radioactive Waste Management Practices.....	B- 3
B. 4. 1 Government Activities related to Radioactive Waste Management.....	B- 3
B. 4. 2 Radioactive Waste Management Practices by Operators.....	B- 4
B. 5 Criteria for Definition and Classification of Radioactive Waste.....	B- 6
SECTION C. SCOPE OF APPLICATION (ARTICLE 3).....	C- 1
SECTION D. LISTS AND INVENTORIES (ARTICLE 32, SECTION 2).....	D- 1
D.1 List of Spent Fuel Management Facilities.....	D- 1
D.2 Inventory of Spent Fuel.....	D- 1
D.3 List of Radioactive Waste Management Facilities.....	D- 1
D.4 Inventory of Radioactive Waste.....	D- 2
D.4.1 Inventory of Radioactive Waste Being Held in Storage.....	D- 2
D.4.2 Inventory of Radioactive Waste That Has Been Disposed of.....	D- 2
D.4.3 Inventory of Radioactive Waste that Has Resulted from Past Practices.....	D- 3
D.5 List of Nuclear Facilities in the Process of Being Decommissioned.....	D- 3

SECTION E. LEGISLATIVE AND REGULATORY SYSTEM.....	E- 1
E.1 Implementing Measures (Article 18).....	E- 1
E.2 Legislative and Regulatory Framework (Article 19).....	E- 2
E.2.1 Basic Legislation Regulating the Utilization of Nuclear Energy.....	E- 2
E.2.2 Legislative and Regulatory Framework on the Safety of Nuclear Utilization.....	E- 2
E.2.3 Regulatory Framework for the Safety of Spent Fuel Management.....	E- 7
E.2.4 Regulatory Framework for the Safety of Radioactive Waste Management.....	E- 8
E.2.5 The Enforcement of Applicable Regulations and the Terms of the Licenses.....	E- 8
E.2.6 Clear Allocation of Responsibilities in the Different Steps.....	E- 9
E.3 Regulatory Body (Article 20).....	E-17
E.3.1 Mandate of the Regulatory Bodies.....	E-17
E.3.2 The Structure of the Regulatory Body and Supporting Organizations.....	E-18
E.3.3 Nuclear Safety Commission (NSC).....	E-21
E.3.4 Other Administrative Bodies.....	E-22
SECTION F. OTHER GENERAL SAFETY PROVISIONS.....	F- 1
F.1 Responsibility of the Licence Holder (Article 21).....	F- 1
F.1.1 Responsibility of the Licence Holder.....	F- 1
F.1.2 Steps to Ensure that Each Licence Holder Meets its Responsibility.....	F- 1
F.1.3 Steps Taken against Absence of the License Holder.....	F- 2
F.2 Human and Financial Resources (Article 22).....	F- 3
F.2.1 Human Resources of a Licence Holder to Maintain Major Nuclear Facilities.....	F- 3
F.2.2 Efforts for Ensuring Infrastructure of Human Resources.....	F- 4
F.2.3 Financial Resources and Financial Rules.....	F- 6
F.3 Quality Assurance (Article 23).....	F- 9
F.3.1 Regulatory Requirements on QA of Nuclear Installations	F- 9
F.3.2 Confirmation of Quality Assurance by NISA.....	F-10
F.4 Operational Radiation Protection (Article 24).....	F-11
F.4.1 Summary of Laws, Regulations and Requirements on Radiation Protection.....	F-11
F.4.2 National Requirements on Radiation Protection and the Implementation.....	F-12

F.4.3 Regulatory Control Activities.....	F-14
F.4.4Unplanned or Uncontrolled Releases.....	F-14
F.5 Emergency Preparedness (Article 25).....	F-15
F.5.1 Laws, Regulations and Requirements for Nuclear Emergency Preparedness.....	F-15
F.5.2 Nuclear Emergency Preparedness and the Emergency Measures.....	F-16
F.5.3 Implementation of Nuclear Emergency Countermeasures Exercises.....	F-18
F.5.4Emergency in the Vicinity of the Territory.....	F-19
F.6 Decommissioning (Article 26).....	F-25
F.6.1 Human and Financial Resources.....	F-26
F.6.2 Radiation Protection at the Decommissioning Stage.....	F-26
F.6.3 Emergency Preparedness.....	F-27
F.6.4 Keeping Records of Information Important to Decommissioning.....	F-27
SECTION G. SAFETY OF SPENT FUEL MANAGEMENT.....	G- 1
G.1 General Safety Requirements (Article 4).....	G- 3
G.1.1 Prevention of Criticality and Removal of Residual Heat.....	G- 3
G.1.2 Minimization of the Generation of Radioactive Waste in Spent Fuel Management.....	G- 3
G.1.3Interdependencies Among Different Steps in Spent Fuel Management.....	G- 3
G.1.4 Regulations for Radiation Protection.....	G- 3
G.1.5 Consideration of Biological, Chemical and Other Hazards.....	G- 4
G.1.6 Consideration of Impacts on Future Generations.....	G- 4
G.1.7Consideration of Burdens on Future Generations.....	G- 4
G.2 Existing Facilities (Article 5).....	G- 6
G.2.1 Existing Spent Fuel Management Facilities.....	G- 6
G.3 Siting of Proposed Facilities (Article 6).....	G- 7
G.3.1 Evaluation of Site-Related Factors and Impact of Proposed Facilities.....	G- 7
G.3.2 Information Disclosure.....	G- 7
G.3.3 Relationship with Neighboring Countries.....	G- 7
G.4 Design and Construction of Facilities (Article 7).....	G-10
G.4.1 Limitation of Radiological Impacts on Individuals, Society and the Environment.....	G-10

G.4.2 Conceptual Plans and Technical Provisions for Decommissioning.....	G-10
G.4.3 Steps to Support the Reliability of Technologies.....	G-10
G.5 Assessment of Safety of Facilities (Article 8).....	G-14
G.5.1 Systematic Safety Assessment and Environmental Assessment.....	G-14
G.5.2 Updating of Assessments Before Operation of Facilities.....	G-14
G.6 Operation of Facilities (Article 9).....	G-15
G.6.1 Verification through Pre-service Inspection.....	G-15
G.6.2 Operational Requirements and Conditions.....	G-15
G.6.3 Procedures and Conduct of Maintenance, Operation, Inspection, Etc.....	G-15
G.6.4 Technical Support throughout the Operation Lifetime.....	G-16
G.6.5 Reporting of Incidents and Failures.....	G-16
G.6.6 Reflecting Operating Experience.....	G-16
G.6.7 Decommissioning Plans and Updating of Information.....	G-17
SECTION H. SAFETY OF RADIOACTIVE WASTE MANAGEMENT.....	H- 1
H.1 General Safety Requirements (Article 11).....	H- 4
H.1.1 Prevention of Criticality and Removal of Residual Heat.....	H- 4
H.1.2 Minimization in the Generation of Radioactive Waste.....	H- 4
H.1.3 Interdependencies among the Different Steps in Waste Management.....	H- 5
H.1.4 Regulations for Radiation Protection.....	H- 5
H.1.5 Consideration of the Biological, Chemical and Other Hazards.....	H- 6
H.1.6 Consideration of Impacts on Future Generations.....	H- 6
H.1.7 Consideration of Burdens on Future Generations.....	H- 7
H.2 Existing Facilities and Past Practices (Article 12).....	H- 8
H.2.1 Existing Radioactive Waste Management Facilities.....	H- 8
H.2.2 Examination of the Results of Past Practices.....	H- 9
H.3 Siting of Proposed Facilities (Article 13).....	H-10
H.3.1 Evaluation of Site-related Factors and Impact of Proposed Facilities.....	H-10
H.3.2 Evaluation of Site-related Factors and Impact of Disposal Facilities After Closure.....	H-11
H.3.3 Information Disclosure.....	H-11

H.3.4 Relationship with Neighboring Countries.....	H-11
H.4 Design and Construction of Facilities (Article 14).....	H-12
H.4.1 Limitation of Radiological Impacts on Individuals, Society and the Environment.....	H-12
H.4.2 Procedure and Technical Provisions for Decommissioning.....	H-14
H.4.3 Technical Provisions for the Closure of Disposable Facilities.....	H-14
H.4.4 Steps to Support the Reliability of Technologies.....	H-14
H.5 Assessment of Safety of Facilities (Article 15).....	H-17
H.5.1 Systematic Safety Assessment and Environmental Assessment.....	H-17
H.5.2 Assessment for the Period following Closure of Disposal Facilities.....	H-17
H.5.3 Updating of Assessments Before Operation of Facilities.....	H-18
H.6 Operation of Facilities (Article 16).....	H-19
H.6.1 Verification through Pre-service Inspection.....	H-19
H.6.2 Operational Requirements and Conditions.....	H-20
H.6.3 Procedures of Operation and Updating of Assessment of a Disposal Facility.....	H-20
H.6.4 Technical Support throughout the Operating Lifetime.....	H-21
H.6.5 Characterization and Segregation of Radioactive Waste.....	H-21
H.6.6 Reporting of Incidents and Failures.....	H-22
H.6.7 Reflecting Operating Experience.....	H-23
H.6.8 Preparation of Plans for Decommissioning of Nuclear facilities.....	H-23
H.6.9 Preparation of Plans for the Closure of Disposal Facilities.....	H-24
H.7 Institutional Measures after Closure (Article 17).....	H-31
H.7.1 Records Keeping of Waste Disposal Facilities.....	H-31
H.7.2 Implementation of Institutional Controls.....	H-31
H.7.3 Intervention Measures if Necessary.....	H-33
SECTION I. TRANSBOUNDARY MOVEMENT (ARTICLE 27).....	I- 1
I. 1 Transboundary Movement.....	I- 2
I. 1. 1 Steps to Ensure Prior Notification and Consent of the State of Destination.....	I- 2
I. 1. 2 Steps to Ensure Transboundary Movement Subject to International Obligations.....	I- 2
I. 1. 3 Consent as a State of Destination.....	I- 2

I. 1. 4 Confirmation of the Capacity of a State of Destination.....	I- 2
I. 1. 5 Steps to Permit Re-entry in case of Uncompleted Transboundary Movement.....	I- 2
I. 2 Steps to Ban Shipment to a Destination South of Latitude 60° South.....	I- 2
SECTION J. DISUSED SEALED SOURCES (ARTICLE 28).....	J- 1
J.1 The Infrastructure for Regulatory Control.....	J- 1
J.2 Management of Radioactive Sources at the end of their Life Cycles.....	J- 2
J.2.1 Criteria for Storage of Disused Sealed Radioactive Sources	J- 2
J.2.2 Reentry of Returning Sealed Sources.....	J- 3
J.2.3 Response to Missing Radioactive Sources.....	J- 3
J.2.4 Response to Orphan Sources.....	J- 3
J.2.5 Detection for Orphan Sources.....	J- 4
J.2.6 Response to Accident Relating Radioactive Sources.....	J- 4
J.2.7 Progress in Establishing A National Register of Radioactive Sources.....	J- 4
SECTION K. PLANNED ACTIVITIES TO IMPROVE SAFETY.....	K-1

Annex 1 Legislations and Guidelines

Annex 2 Glossary

A. Introduction

Blank Page

Section A. Introduction

A. 1 Preparation of the report

This national report of Japan, submitted in accordance with the provisions of Article 32 of “the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management”, addresses the measures taken to implement each of the obligations of the Convention. The text (Sections B through K) and the annexes (Section L) of the report are prepared in accordance with “the Guidelines regarding the Form and Structure of National Reports”, and the text of each Article of the Convention is reproduced in bold letters at the top of the report on the Article.

This report was prepared by the Nuclear and Industrial Safety Agency (NISA) of the Ministry of Economy, Trade and Industry (METI), the Science and Technology Policy Bureau (STPB) of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), and the Pharmaceutical and Food Safety Bureau (PFBS) and Health Policy Bureau (HPB) of the Ministry of Health, Labour and Welfare (MHLW), in consultation with other relevant governmental organizations, and was reported to the Nuclear Safety Commission (hereinafter called the NSC). In preparing the report, cooperation was obtained from the Japan Nuclear Energy Safety Organization (JNES) and other relevant organizations. The report was also reviewed by the Nuclear and Industrial Safety Subcommittee of the Advisory Committee for Natural Resources and Energy of METI.

Table A.1 Contributed organizations for preparing the report

Japan Nuclear Energy Safety Organization
Japan Nuclear Cycle Development Institute
Japan Atomic Energy Research Institute
Nuclear Waste Management Organization of Japan
The Federation of Electric Power Companies
The Japan Atomic Power Company
Japan Nuclear Fuel Limited
Japan Society of Newer Metals
Radioactive Waste Management Funding and Research Center
Nuclear Safety Research Association

In this report, following issues are taken into consideration. Some items for which it was recommended by the summary report of the first review meeting to provide further information in the next review meeting, and questions and comments on our previous report raised by other Contracting Parties during the first review meeting.

A. 2 Current Status of Utilization of Nuclear Energy and its Management

(1) Current Status of Utilization of Nuclear Energy

In Japan, 40 years have passed since research, development and utilization of nuclear energy began, and various activities are presently ongoing. Outline of the current status as of March 2005 is as follows.

Operation of the first commercial nuclear power reactor in Japan started in 1966. Following the 1973 oil crisis, nuclear power plants were built actively, and now a total of 56 commercial nuclear power reactors are in operation. One reactor is at the decommissioning stage. Nuclear fuel cycle facilities related to commercial power generation, including 2 enrichment facilities, 4 fuel manufacturing facilities, 2 reprocessing facilities, 2 disposal facilities are in operation or under construction. In addition, sixteen research reactors are in operation at national and private institutes and universities.

Various forms of utilization of radiation are now widely applied in research applications, in medical diagnosis and treatment and in commercial activities. There are more than 5000 national or private facilities utilizing various types of radiation.

(2) Basic Policy of Utilization of Nuclear Energy and Current Status of its Management

The research, development and utilization of nuclear energy in Japan are conducted solely for peaceful purposes in accordance with the Atomic Energy Basic Law. The Atomic Energy Commission (AEC), established on the basis of the law, plans, deliberates and makes decisions on national policies relating to the utilization of nuclear energy for peaceful purposes. In order to clarify the fundamentals for the utilization of nuclear energy and its development, the Commission has formulated a total of nine Long-Term Programs for Research, Development and Utilization of Nuclear Energy (Long-Term Programs) since 1956, one approximately every five years. The new program is being prepared and will be published by the end of 2005. Based on the policy stated in the Long-Term Program, the Agency for Natural Resources and Energy (ANRE) of METI and MEXT establish implementation plans for utilization of nuclear energy for power generation and related fuel cycle activities, and implementation plans for utilization of nuclear energy in science and technology and radioisotopes, respectively.

Fundamental laws to ensure safety in the utilization of nuclear energy and radiation are the Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors (the Reactor Regulation Law) and the Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc. (the Radiation Hazards Prevention Law), both of which are based on the Atomic Energy Basic Law, and the Medical Care Law, the Pharmaceutical Affairs Law and the Clinical Laboratory Technicians and Health Laboratory Technicians Law (the latter three are referred to hereafter as the Medical Care Law, etc.). These laws and their related regulations have been amended, as appropriate, as the utilization of nuclear energy and radiation expands and diversifies. The laws are consistent among them in terms of the basics and details of radiation protection. The NSC, established on the basis of the Atomic Energy Basic Law, plans, deliberates and makes decisions on policies aimed at ensuring the safe utilization of nuclear energy. As the regulatory bodies responsible for ensuring safety within their particular area of competence, NISA of METI, the STPB of MEXT and the PFSB and the HPB of the MHLW regulate and issue guidance on relevant activities. Operators of nuclear facilities conduct their activities under the policies and the regulations mentioned above.

Important progresses from previous report on nuclear safety regulations are as follows. The Reactor Regulation Law and the relevant regulation were amended in October 2003. License holders are obliged to include their Quality Assurance Programs in the Operational Safety Programs and obtain approval from the regulatory body. The Electric Utilities Industry Law was amended to provide for the Periodical Licensee's Inspection and the Periodical Safety Management Inspection in addition to the ongoing Periodical Inspection. Also, Japan Nuclear Energy Safety Organization, a technical support organization to NISA, was founded in October 2003. In April 2004, NISA established the Nuclear Safety Public Relations and Training Division within NISA and assigned the Regional Public Relations Officer for Nuclear Safety, in order to promote public relations. In Other General Safety Provisions in this report, infrastructures of human resources and financial resources, framework of quality assurance and confirmation of quality assurance by the regulatory body, and regulatory procedure on decommissioning are emphasized.

(3) Current Status of Spent Fuel Management

As the regulatory authority within their respective areas of competence, NISA of METI and the STPB of MEXT regulate, and issue guidance on activities aimed at ensuring the safety of spent fuel management at reactor facilities and spent fuel reprocessing plants, based on the Reactor Regulation Law and/or the Electricity Utilities Industry Law.

Basic policy of Japan in this field is to reprocess spent fuel and make effective use of the recovered uranium, plutonium and other usable elements. Spent fuel generated in nuclear power reactors is sent for reprocessing after a period of on-site storage. Until now, the spent fuel, with the exception of a portion reprocessed by the Tokai Reprocessing Plant of the Japan Nuclear Cycle Development Institute (JNC), has been reprocessed in overseas facilities. In the meantime, Japan Nuclear Fuel Ltd. (JNFL) is constructing the Rokkasho-mura Spent Fuel Reprocessing Plant, which will start operation in 2007. Storage of spent fuel in the storage facility in the plant has started since 1999.

Interim storage of spent fuel before reprocessing allows flexibility in the process of nuclear fuel cycle. The Reactor Regulation Law was amended in 1999 to incorporate provisions on interim spent fuel storage, and a company is preparing for commercial operation of interim storage facilities by 2010.

(4) Current Status of Radioactive Waste Management

Based on the Reactor Regulation Law and/or Electricity Utilities Industry Law, NISA of METI regulates, and issues guidance on facility and activities ensuring the safety of radioactive waste management in repositories, power reactors, uranium enrichment facilities, fuel manufacturing facilities and reprocessing facilities. In each nuclear facility and activity, according to the grade of importance of safety, criteria and guidance are established for each facility to regulate each stage of licensing design, construction, operation and decommissioning, including emergency preparedness.

Based on the Reactor Regulation Law, the STPB of MEXT regulates, and issues guidance on activities to ensure the safety of radioactive waste management in research reactors and fuel material use for research and development purposes, and establishes regulations according to the characteristics and scale of each facility.

The STPB, on the basis of the Radiation Hazards Prevention Law, regulates, and issues guidance on activities of radioactive waste management to ensure the safety of facilities using radioisotopes.

The PFSB and the HPB of the MHLW regulate, and issue guidance on activities of radioactive waste management facility to ensure the safe management of radioactive wastes produced in medical applications, based on the Medical Care Law, etc.

The basic policy on the radioactive waste management is that the current generations, who receive the benefit of nuclear energy, should bear the responsibility to manage the resulting waste generated in the research, development and utilization of nuclear energy, and should make continued efforts at promoting radioactive waste disposal. The operator of the facility that produces waste has the primary responsibility for safe processing and disposal of the waste, and based on the principle, they prepare and implement their plans with consultation of other relevant organizations. Meanwhile, the government regulates, and issues guidance to, the producers, ensuring that waste processing and disposal are carried out appropriately and safely.

Radioactive waste is classified into two categories. One is high-level waste (HLW) generated from spent fuel reprocessing, and the other is low-level waste (LLW). The LLW is sub-classified according to origin (radionuclide composition) and level of radioactivity. The AEC decides on the basic policy for disposal of radioactive waste. Based on the classification, the NSC decides fundamental concept for safety regulations on radioactive waste disposal, upper bound of radioactivity concentration in disposal and the guidance on safety assessment of radioactive waste disposal facilities. METI and MEXT establish relevant regulations.

LLW generated in reactors, reprocessing facilities, etc., is processed and temporarily stored in storage facility in these facilities and then sent to disposal facility. LLWs below the upper bound level from power reactors are being transferred to the waste disposal facility of Japan Nuclear Fuel

Ltd. for disposal. Concerning other LLW from power reactors which are in storage, relevant safety criteria on disposal are being prepared. Disposal of very low-level concrete waste from dismantling of the Japan Power Demonstration Reactor (JPDR) was completed and the disposal facility was closed in 1997. Reactor of the Tokai Power Station of the Japan Atomic Power Co. ceased operation in 1998 and has been in decommissioning stage since December 2001.

The Reactor Regulation Law was amended in May 2005 to provide for clearance, and relevant regulations are being established based on IAEA safety standard.

The Specified Radioactive Waste Final Disposal Act, enacted in the year 2000, provides for an implementing organization for disposal of the HLW generated from spent fuel reprocessing, financial resource reserved for the disposal, the procedure for selecting disposal sites, etc. In the year 2000, based on the law, Nuclear Waste Management Organization of Japan was established. In 2002, the organization started open solicitation for candidate site as the Preliminary Investigation Areas, which is the first step to select geological disposal site.

A. 3 International Activities

Grounded on the basic policy of Japan, research, development and utilization of nuclear energy should be conducted solely for peaceful purposes. The government of Japan actively contributed to the establishment of the International Atomic Energy Agency (IAEA) and has participated in its various conferences and committees, appropriately taking the results of deliberations into its national policy making and planning on utilization of nuclear energy. Recognizing that international cooperation is essential in ensuring safety of spent fuel and radioactive waste management, Japan has taken part in activities of the IAEA and OECD/NEA. NISA hosted the Tokyo conference organized by IAEA in October 2005 on the safety of radioactive waste management.

A. 4 Facilities to be Reported under the Legal Framework

Under the legal framework of Japan, the facilities related to various nuclear activities, each of which has to be classified and to be licensed by the Reactor Regulation Law or the Radiation Hazards Prevention Law. The basic concept of regulations is common among all facilities and activities of each classification. In this report, discussions related to the common concept are described, being supplemented as necessary with additional observations referring to any particular facilities, thus avoiding unnecessary duplication.

As mentioned in Section E later, the description on the Medical Care Law, etc. is omitted in and after Section F, since content of the regulation is similar to that of the Radiation Hazards Prevention Law.

The word "processing" in this report is used as meaning of "any operation that changes the characteristics of waste, in the process of pretreatment, treatment and conditioning".

B. Policies and Practices

Blank Page

B. Policies and Practices (Article 32, Section 1)

1. In accordance with the provisions of Article 30, each Contracting Party shall submit a national report to each review meeting of Contracting Parties. This report shall address the measures taken to implement each of the obligations of the Convention. For each Contracting Party the report shall also address its:

- (i) spent fuel management policy;**
- (ii) spent fuel management practices;**
- (iii) radioactive waste management policy;**
- (iv) radioactive waste management practices;**
- (v) criteria used to define and categorize radioactive waste.**

As introduced in Section A, the AEC has formulated a series of Long-Term Programs. According to the policy stated in the latest Long-Term Program (The Program), the ANRE of METI establishes implementation plans for utilizing nuclear energy for power generation and fuel cycle activities, and MEXT establishes implementation plans for scientific and technological applications of nuclear power and utilization of radioisotopes, respectively. Moreover, the NSC plans, deliberates and decides on policies ensuring safe utilization of nuclear energy. As the responsible regulatory bodies for ensuring safety, NISA of METI, the STPB of MEXT and the PFSB and the HPB of the MHLW regulate and issue guidance on licensing process for relevant activities within their particular areas of competences. Operators of nuclear facilities conduct their activities according to these policies and regulations mentioned above.

Following are the national policies on spent fuel management and radioactive waste management as stated in the Program, etc., as well as the implementation plans established by the government of Japan and the practices conducted by operators of nuclear facilities.

B. 1 Spent Fuel Management Policy

The Program states that nuclear power generation should contribute to energy supply system in Japan as an economical, stable and environmentally acceptable source of energy, and that nuclear fuel cycle technologies have the potential to further improve these aspects, having possibilities for people to enjoy the benefits of nuclear power generation over a long period of time. Recognizing these features, and the geographical conditions and energy resources of the country, and considering the economical conditions, Japan has made it a basic policy to reprocess spent fuel and to make effective use of the recovered uranium, plutonium and other usable elements, while ensuring safety and nuclear non-proliferation. Also, Japan intends to reprocess all spent fuel within the country as a national policy, ensuring self-sustainable nuclear fuel cycle. The Program also states that interim storage of spent fuel ensures flexibility in the nuclear fuel cycle, allowing sufficient time before reprocessing.

There are concerns about safety and nuclear proliferation related to the use of plutonium recovered from reprocessing of spent fuel. To address these concerns, Japan is making doubly sure to ensure safety and nuclear non-proliferation, and to make policy of Japan understood in the international community.

B. 2 Spent Fuel Management Practices

Spent fuel generated in power reactors are sent to reprocessing facilities after a period of on-site cooling and storage. The spent fuel has been reprocessed overseas in accordance with contracts with British and French companies, with the exception of a portion reprocessed by the Tokai Reprocessing

Plant of the JNC. In the meantime, considering national demand for reprocessing, JNFL began constructing the Spent Fuel Reprocessing Plant in Rokkasho-mura, based on operational experience accumulated at the Tokai Reprocessing Plant and on technologies and experience from advanced countries. The plant was in the situation of test operation using uranium in March 2005, and will start operation from 2007. Storage of spent fuel at storage facility in the plant started since 1999, and export of spent fuel to foreign reprocessing plants ended in July 2001.

The Reactor Regulation Law was amended in 1999 to incorporate provisions on interim spent fuel storage, and a company is currently preparing for commercial operation of interim fuel storage facilities in 2010.

The spent fuel from research reactor facilities has been exported to the USA, or is to be reprocessed in Japan.

B. 3 Radioactive Waste Management Policy

The AEC, in its Program and other documents, states that the current generations, which enjoy the benefits of nuclear energy, are obliged to make their utmost to ensure the safe disposal of radioactive waste generated in the research, development and utilization of nuclear energy, and should invest continued efforts in achieving this obligation. The AEC states that the operator of the facility that produces waste has the primary responsibility for safe processing and disposal of the waste and that the government has the responsibility for taking necessary measures to ensure that this processing and disposal are carried out appropriately and safely by the producers, through giving adequate guidance and setting necessary regulations. Further, the AEC states that the government should play an appropriate role in implementing the disposal program for radioactive waste, with a view to ensuring long-term safety, in addition to its activities related to promotion of research and development activities and safety regulation.

The AEC states that nuclear facilities should be decommissioned safely by the responsibility of license holder with understanding and support of the local community, and also states that generation of radioactive waste should be minimized. The AEC encourages research and development efforts aimed at recycling and/or reusing waste.

METI and MEXT have established and continued to improve the legal framework consisting of the Reactor Regulation Law and the Radiation Hazards Prevention Law, for safe and proper processing, storage and disposal of radioactive waste, on the bases of studies and decisions made by the AEC and the NSC.

Among these regulations, the criteria for gaseous and liquid radioactive waste discharge have been established in accordance with relevant international recommendations.

Solid radioactive waste is classified into two categories, namely HLW (liquid waste generated from spent fuel reprocessing and its vitrified package) and other LLW. The LLW is sub-classified according to origin (differing radionuclide composition) and level of radioactivity, as shown in Table B. 3-1.

The Reactor Regulation Law was amended in May 2005 to provide for clearance level and the procedure for its monitoring for compliance, while the relevant regulations are going to be established in future.

The AEC makes decision on the basic policy for radioactive waste disposal. Based on the policy, the NSC decides on the basic concept for the safety regulations for land disposal (*1), upper bounds of radioactivity concentration for disposal of radioactive materials and methods for safety assessment of disposal facilities. METI and MEXT establish relevant regulations. Table B. 3-2 shows the status of regulatory activities aimed at preparing the relevant regulations for radioactive waste disposal.

A summary of the basic concepts for radioactive waste disposal shown in Table B. 3-2 is as follows.

There are two basic concepts for land disposal, i.e. “geological disposal” and “near surface and intermediate depth disposal with institutional control”. The near surface and intermediate depth disposal consists of near surface disposal with artificial barrier (concrete vault), near surface disposal without artificial barrier (trench) and intermediate depth disposal (disposal at a depth sufficient to safety margin for conventional underground building). HLW is disposed of solely by geological disposal, and LLW can be disposed of either by geological disposal or near surface and intermediate depth disposal with institutional control, depending on the property of the waste. Vitrified HLW is emplaced in a stable geological formation at a depth of more than 300 meters, following 30 to 50 years of interim storage to allow cooling. Among LLW from power reactors, relatively higher radioactive wastes are disposed of in intermediate depth disposal facilities, relatively lower radioactive waste are disposed of in near surface disposal facilities with artificial barriers, and very low level waste are disposed of in near surface disposal facilities without artificial barriers. Radioactive wastes containing transuranic nuclides from reprocessing process, uranium waste from enrichment and/or fuel manufacturing, and radioactive waste from medical, industrial and research facilities are disposed of either by geological disposal or near surface and intermediate depth disposal with institutional control, depending on types of radionuclides and levels of radioactivity. In the future, discussions will continue on measures that can be taken to provide different disposal methods in a single disposal facility, or to dispose of wastes of different origin in a single disposal facility.

Concerning the regulations for disposal of LLW from power reactors, the upper bounds of radioactivity concentration, to be applied for license for radioactive waste disposal, have already been established on the basis of the Reactor Regulation Law. The radioactive waste returned from overseas reprocessing is to be disposed of together with waste from domestic reprocessing.

The Specified Radioactive Waste Final Disposal Act, enacted in the year 2000, provides for the establishment of an implementing organization for disposal of HLW, the financial resources reserved for disposal, and procedure for selecting a disposal site, etc. The nuclear industry established Nuclear Waste Management Organization of Japan (NUMO), the implementing organization for HLW disposal approved by the government on the basis of the law.

The NSC issued the “Basic Concept of Regulation on HLW disposal” in November 2000, and indicated a schedule to establish basic guidelines for safety examination before the selection of the detailed investigation area, and other guidelines for safety examination before the start of the safety examination of the disposal facility.

In compliance with the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972) and its amendment to Annex I in 1993, the AEC decided on November 2, 1993 to eliminate the option of sea dumping of radioactive waste. Based on this decision the Reactor Regulation Law was amended in May, 2005.

*1: Basic Concept for Safety Regulation for Land Disposal of Low-Level Solid Radioactive Waste
(Committee on Safety Regulation of Radioactive Waste, NSC, October 11, 1985)

B. 4 Radioactive Waste Management Practices

B. 4. 1 Government Activities related to Radioactive Waste Management

The regulatory body establishes regulations on HLW disposal, while NUMO is responsible for implementing HLW disposal economically and efficiently. Japan Nuclear Cycle Development Institute and other national institutes conduct various programs to develop safety assessment methodology, to promote fundamental research on deep geological formation, etc. and to enhance reliability of geological disposal technology.

The Nuclear Safety Committee issued a report "Environmental Requirements to be Considered at the Selection of the Preliminary Investigation Areas for High-Level Radioactive Wastes Disposal" in September 2002. The environmental requirements shown in the report are reflected in the report of NUMO "Considerations for Selection of the Preliminary Investigation Areas".

Furthermore, the Committee made a report "Nuclear Research Programs Important to Safety" in July 2004, which shows the environmental requirements at the selection of the detailed investigation areas and research tasks necessary for study of the basic guidelines for safety examination. And also, the said program describes research tasks for development of the basic idea for safety evaluation concerning processing and disposal of low-level wastes of comparatively high radioactivity, TRU wastes and uranium wastes in addition to the decommissioning technology.

The Radioactive Waste Safety Subcommittee of the Nuclear and Industrial Safety Subcommittee issued, in July 2003, a report titled "Toward Establishing Framework of Safety Regulation of HLW", which shows future objects of research and discusses research support organization to the regulatory body.

Partitioning and transmutation is a technology to separate radioactive materials with long half-lives in HLW from the rest of the waste and convert them into short half-lives or stable materials. This technology, even though it is still in early stage of development, should be further pursued because it may contribute to reduction of waste processing and disposal cost and to effective use of available resources.

B. 4. 2 Radioactive Waste Management Practices by Operators

Operators, recognizing their responsibility concerning radioactive waste management addressed in B.3, shall manage radioactive waste generated at their facilities in compliance with the Reactor Regulation Law, the Radiation Hazards Prevention Law and relevant regulations.

(1) High-Level Radioactive Waste Management Practices

In Japan, spent fuel has been reprocessed by the Tokai Reprocessing Plant of the JNC and by reprocessing plants in France and the United Kingdom. JNFL is constructing a vitrification facility of HLW, attached to its reprocessing plant, at Rokkasho-mura in Aomori prefecture. This facility is to be completed by 2007. High-level liquid waste generated at the Tokai Reprocessing Plant of the JNC is stored in storage tanks within the facility. The vitrification facility started operation in January 1995. As of March 2005, about 400 cubic meters of liquid waste and 169 vitrified waste canisters are in storage. Utilities in Japan have concluded reprocessing contracts with British and French companies for a total of 5,600 t U of spent fuel from light water reactors and 1,500 t U of spent fuel from a gas cooled reactor. In accordance with these contracts, vitrified waste canisters are returned to the utilities and are stored by JNFL. By March 2005, 892 vitrified canisters had been returned, and a total of 2,200 canisters will have been returned, with remaining packages being returned in the next ten-odd years.

Vitrified HLW will be disposed of by geological disposal. Based on the Specified Radioactive Waste Final Disposal Act, the Nuclear Waste Management Organization of Japan (NUMO), the responsible implementing organization, will start disposal in late 2030s after three steps procedure of site selection, that is, selection of the preliminary investigation areas, detailed investigation areas and final disposal facility. NUMO, in 2002, started the first step by open solicitation of candidate of sites for the preliminary investigation areas, and published the "application format", "outline of the disposal facility", "investigation items" and "coexistence of disposal facility and local community". In case of receiving proposal of candidate areas, NUMO will assess validity of the candidates by conducting survey of the site with existing literature on volcanic activities, active faults and other geological conditions, and will decide the preliminary investigation areas

by 2010.

(2) Low-Level Radioactive Waste Management Practices

As shown in B. 3. 1, LLW is classified into waste from power reactors, waste containing transuranic nuclides, uranium waste and radioactive waste from medical, industrial and research facilities. The waste management strategy for each of these categories is as follows, while gaseous and liquid radioactive wastes are discharged under monitoring, after attenuation of radioactivity, filtering, adsorption and/or distillation. (see H.6.5)

1) Waste from Power Reactors

As of March 2005, fifty-six nuclear power reactors were in operation. Liquid waste concentrate is solidified with cement in drums after evaporation. Paper, clothing and other combustibles are placed in drums after incineration. Plastics, metals and other non-combustibles are placed in drums after compaction. Replaced steam generators and other large-volume solid wastes are placed in storage facilities. Replaced control rods and channel boxes, etc. are stored in spent fuel pools and spent ion exchange resins are stored in tanks. Near-surface disposal of solidified liquid waste and compacted and solidified non-combustible wastes started in 1992 at the disposal facility of JNFL at Rokkasho Village in Aomori Prefecture.

Concerning decommissioning activity in Japan, dismantling of the Japan Power Demonstration Reactor (JPDR) completed in May 1996. The very low-level concrete waste generated by dismantling was disposed of at a disposal facility, which was closed in 1997. A reactor at the Tokai Power Station of the Japan Atomic Power Co. ceased operation in 1998 and has been in decommissioning stage since December 2001. The advanced thermal reactor "Fugen" of JNC ceased operation in March 2003. Spent fuel is being transferred to Tokai Facility of JNC, and decommissioning is being planned.

For non-radioactive waste generated in non-nuclear facilities, the waste generators are requested to minimize the generation, to reuse, to reprocess / reuse and to dispose appropriately of waste.

As shown in B.3, The Reactor Regulation Law was amended in May 2005 to provide for clearance level and the procedure for its monitoring for compliance. For those waste generated in nuclear facilities and monitored for compliance as non-radioactive waste, it is necessary to reprocess / reuse and to minimize the volume of waste to be finally disposed of, with the understanding and cooperation of the people and community.

Before the clearance level system is generally accepted in the society, electric utilities are considering that the non-radioactive waste generated from the dismantling of nuclear power plants are to be treated by those waste processors conscious of clearance level system, and to be shipped to the specified disposal facilities and that electric utilities are to reprocess / reuse non-radioactive waste within their nuclear power plant sites.

2) Waste Containing Transuranic Nuclides

Liquid transuranic waste generated at the Tokai Reprocessing Plant of JNC is stored in tanks and concentrated by evaporation, and a portion of it is solidified in drums. Segmented fuel cladding, used filters and sampling bottles are put in containers and other solid waste is put in drums. These drums and the containers are being held in storage at on-site storage facilities. Transuranic waste generated at spent fuel reprocessing plant in France and UK will be returned to Japan after 2013. Utilities are planning to construct a storage facility for it. Research and development programs on transuranic waste disposal have been promoted by JNC and utilities. They published a report in June 2005 titled "Technological Report on TRU Waste Disposal, 2nd report".

3) Uranium Waste

Liquid waste containing uranium generated from enrichment and/or fuel manufacturing facilities of JNC and/or other private facilities are stored in tanks. Solid uranium waste and ash resulting from incineration are put in drums. They are held in storage at on-site storage facilities.

4) Radioactive Waste from Medical, Industrial and Research Facilities

Radioactive waste generated from medical, industrial and research facilities are collected by the license holders of radioactive waste management facility, who store it at their own storage facilities after compaction or incineration.

Radioactive waste generated in facilities of research reactor and fuel material use of the Japan Atomic Energy Research Institute (JAERI), the JNC and universities are stored in drums at their own storage facilities after compaction or incineration.

B. 5 Criteria for Definition and Classification of Radioactive Waste

As shown in B. 3, radioactive waste is classified into two categories, namely HLW and LLW. Depending on its origin, the LLW is sub-classified into waste from power reactors, radioactive waste containing transuranic nuclides (reprocessing facility, MOX fuel manufacturing facility), uranium waste (uranium fuel manufacturing facility, uranium enrichment facility) and radioactive waste from medical, industrial and research facilities.

For three subcategories of wastes from power reactors as shown in the Table B.3-1, the NSC has calculated the concentrations of the radionuclides that correspond to the reference dose values, using consistent safety assessment concept, models and parameters which are conformable to the international standards.

The NSC then, in consideration of the concentration distribution of the radioactive waste to be disposed of, has obtained the upper bound of the concentrations of radionuclides for radioactive waste to be disposed of (*2). Based on the value obtained as mentioned above, the upper bound of radionuclides concentrations for license application of waste repository has been provided in the Reactor Regulation Law. (*3)

Moreover, the clearance system has also provided. The Atomic Energy Commission (hereinafter called AEC) issued the report "Policy on Processing and Disposal of Radioactive Wastes" in August 1984 about the concept of the clearance level that divides wastes into the radioactive waste and the "materials not requiring treatment as radioactive wastes". In response to the above policy, the NSC presented a basic concept of "materials not requiring consideration of particularities as radioactive wastes" in 1985. Afterwards, the concept, derivation methods, etc. of the "clearance level" were provided in IAEA-TECDOC-855, in January 1996 (*4).

In such a situation, the NSC has obtained the clearance level (radionuclides concentrations) using the calculation method accordant with that described in IAEA-TECDOC-855, and referring to the dose values due to cleared materials shown in the recommendation by the International Commission on Radiological Protection (ICRP) (Pub. 46, 1985), report of the Radiation Council (1987), report of the NSC (1988), IAEA-TECDOC-855, and other IAEA reports. The results are reported as "Clearance Level for Major Nuclear Facilities" (March, 1999), "Clearance Level for Heavy Water Reactors, Fast Neutron Reactors, etc." (July, 2001), and "Clearance Level for Nuclear Fuel Use Facilities (Facilities dealing with irradiated fuels and materials)" (April, 2003).

Under the circumstances that the dismantling program of gas cooled reactor in the Tokai Power Station of Japan Atomic Power Company has become active, and IAEA issued the Safety Guide "Application of the Concepts of Exclusion, Exemption and Clearance", Safety Standards Series No. RS-G-1.7 (2004), the NSC has made a re-evaluation of the above mentioned three reports on the clearance level taking the latest findings etc. about application concepts of exemption level and evaluation methods shown in RS-G-1.7 into account. The results were issued as a report "Radionuclides Concentrations for Materials not Requiring

Treatment as Radioactive Wastes, Generated from Dismantling etc. of Reactor Facilities and Nuclear Fuel Use Facilities" in December, 2004. The NSC concluded that though the former values are comparable to the re-evaluated values, it is necessary to use the latter values since new findings are incorporated. In addition, it was concluded that though the re-evaluated values and the values of exemption level provided in the IAEA safety guide are comparable, it is suitable to use the latter values to keep the international consistency. The Radioactive Wastes Safety Subcommittee of the Nuclear and Industrial Safety Subcommittee also studied this matter and concluded that it is essentially suitable to use the values of the IAEA safety guide ("Establishment of the Clearance System for Nuclear Facilities (December, 2004)). Moreover, the Radioactive Waste Safety Subcommittee led conclusions about the validation of clearance level in the report that the party who generated the waste should judge that their waste concerned is below the clearance level, and then, the government should be appropriately involved in the confirmation. The involvement by the government should be composed of two steps, i.e., the first step includes authorization of "methods of measurement for concerned materials and clearance judgment based on the measurement values" prepared by the operator, and the second step includes confirmation that the actual measurements and judgment are properly done by the authorized methods by checking records and by sampling measurement as required.

As the results of these studies, the Reactor Regulation Law was amended as mentioned above and the clearance system will be started its application.

Besides, the NSC showed the basic concept to distinguish "solid wastes that are not radioactive wastes" from radioactive wastes in the report "Reference Radionuclides Concentration Values for Low-level Radioactive Solid Waste to be Land Disposed (interim report)" (December, 1986). The solid wastes which are not radioactive wastes are materials which have totally no potential contamination with radioactive materials or materials of which radioactive level is not admitted to be significantly different from the natural levels.

*2: "Reference Radionuclides Concentration Values for Low-level Radioactive Solid Waste to be Land Disposed (interim report)", NSC, December, 1986, "Reference Radionuclides Concentration Values for Low-level Radioactive Solid Waste to be Land Disposed (the 2nd interim report)", NSC, June, 1992, and "Reference Radionuclides Concentration Values for Low-level Radioactive Solid Waste to be Land Disposed (the 3rd interim report)", NSC, September, 2000

*3: The upper bounds of radionuclides concentration provided in Paragraph 2 of Article 13-9 of the Ordinance for the Enforcement of the Reactor Regulation Law. But at the review of a license application of waste disposal, in addition to the radionuclides concentration, the safety of each waste disposal facility has to be examined for license issuance.

*4: "Clearance Levels for Radionuclides in Solid Materials: Application of Exemption Principles", interim report for comment" IAEA-TECDOC-855 (January 1996)

Table B.3-1 Classification of Radioactive Wastes

Classification		Example	Origin of Waste
High-Level Radioactive Waste		Canister High-Level Liquid Waste	Reprocessing facilities
Low-Level Radioactive Waste	Waste from Power Reactors	Relatively Higher Radioactive Waste Control Rods Core Internals Spent Ion Exchange Resin	Power Reactors
		Relatively Lower Radioactive Waste Liquid Waste Filters Used Equipment Expendables	
		Very Low-Level Radioactive Waste Concrete Metals	
	Waste Containing Transuranic Nuclides	Parts of Fuel Rod Liquid waste Filters	Reprocessing Facilities MOX Fuel Manufacturing Facilities
	Uranium Waste	Expendables Sludge Used Equipment	Enrichment and Fuel Manufacturing Facilities
Radioisotope and Waste from Research Facilities, etc.	Liquid waste Metals Concrete Plastics Filters Disposable Syringe	Fuel Material Use Facilities Radioisotope Use Facilities Research Reactor Facilities Reactors at the Research and Development Stage Medical Institution Research Organization Medicine Manufacturer	
Material that need not be treated as radioactive waste (Waste below the Clearance Level)	A Part of Waste from Decommissioning	Sources as shown in the above	

Table B.3-2 Classification of basic concepts for disposal and status of activities preparing relevant regulations

Classification	AEC		NSC			Legislation etc. on safety regulations				
	Disposal method		Basic concept of safety regulation	Upper bound of radioactive waste disposal	Safety examination guidelines	Law	Government order	Regulation	Notification on technical details	
High-level radioactive waste	Concluded “Policy on processing and disposal of radioactive wastes” (August, 1984) “Fundamental concept toward disposal of high-level radioactive wastes” (May 1998)		Concluded Policy on safety regulation concerning disposal of high-level radioactive waste “ (November 6, 2000)	/	Future discussion	Future discussion				
Low-level radioactive waste	Waste from reactor facility	Relatively higher radioactive waste	Concluded “Basic concept of disposal of low-level radioactive waste that exceeds the concentration limit value in the ordinance” (October 16, 1998)		Concluded “Basic concept of safety regulation on disposal of low-level radioactive waste that exceeds concentration limit value in ordinance” (September 14, 2000)	Under discussion	Concluded “Ordinance for the reactor regulation law” (December 2000)	Future discussion		
		Relatively lower radioactive waste	Concluded “Policy on processing and disposal of radioactive wastes” (August 7, 1984; October 8, 1985)	Concluded “Basic concept for safety regulation for land disposal of low-level solid radioactive waste” (October 24, 1985)	Concluded 1. Upper bounds for safety regulations for land disposal of low-level radioactive solid waste (February 1987) 2. Upper bounds for safety regulations for land disposal of low-level radioactive solid waste (June 1992)	Concluded “Fundamental guidelines of licensing review of land disposal facility of low-level radioactive waste” (March, 1988)	Concluded “Ordinance for the reactor regulation law” (March 1987, September 1992)	Concluded “Rules for radioactive waste disposal for nuclear fuel material or those which are contaminated there with” (January 1988, February 1993)	Concluded “Notice on the technical details of waste Management of nuclear fuel materials, etc. outside plants” (January 1988), “Notice on the technical details of disposal of nuclear fuel materials, etc.” (February 1993) *2	
					Very low-level Radioactive waste	Concrete, etc.	“Upper bounds for safety regulations for land disposal of low-level radioactive solid waste” (June 1992)	Amendment of “Fundamental guidelines of licensing review of land disposal facility of low-level radioactive waste” (January 7, 1993)	Concluded “Ordinance for the reactor regulation law” (September 1992)	Concluded “Rules for radioactive waste disposal for nuclear fuel material or those which are contaminated there with” (February 1993)
			Metal, etc.	“Upper bounds for safety regulations for land disposal of low-level radioactive solid waste” (September 2000)	Under discussion	Concluded “Ordinance for the reactor regulation law” (December 2000)	Future discussion			
		Waste including transuranic nuclide	Concluded “Fundamental concept of processing and disposal of radioactive wastes containing transuranic nuclides”	Under discussion since June 2000	Future discussion		Future discussion			
		Uranium waste	Concluded “Fundamental concept of processing and disposal of Uranium wastes” (December 14, 2000)	Under discussion since April 2001	Future discussion		Future discussion			
	Radioisotope and waste from research facilities etc.	Concluded “Fundamental concept of processing and disposal of wastes generated at research laboratories, etc.”(May 28, 1998)	Concluded “Near surface disposal of radioisotope wastes” (January 26, 2004) *1, Others under discussion	Future discussion		Future discussion				
	Materials that need not be treated as radioactive wastes	Clearance level value	Concluded “Policy on processing and disposal of radioactive wastes” (August 7, 1984)	Concluded: 1. Major nuclear reactor facility (March 17, 1999) 2. Heavy water reactors, fast neutron reactors (July 16, 2001), 3. Radioactive concentration of materials that need not be treated as radioactive wastes, generated along with dismantling etc. of reactor facility and nuclear fuel use facility” (December 16, 2004), (Partial amendment, March 17, 2005) Under discussion: Nuclear fuel cycle facility, Radioisotope facility Future discussion: TRU, Uranium		/	The Reactor Regulation Law *3			
		Monitoring for compliance with clearance level		/						

*1):Basic concept of safety regulation of near surface disposal of solid radioactive waste generated from radioisotope use facility etc.

*2):Future discussion is necessary for metal waste of large volume with relatively lower radioactivity.

*3):RI wastes are regulated under the Radiation Hazard Prevention Law, the Medical Service Law and the Pharmaceutical Affairs Law. Wastes generated from research facilities, etc. are regulated under the Reactor Regulation Law and/or the Radioactive Hazards Prevention Law. Preparation of regulations on disposal of radioactive waste under the Radiation Hazards Prevention Law is under way.

Blank Page

C. Scope of Application

Blank Page

Section C. Scope of Application (Article 3)

- 1. This Convention shall apply to the safety of spent fuel management when the spent fuel results from the operation of civilian nuclear reactors. Spent fuel held at reprocessing facilities as part of a reprocessing activity is not covered in the scope of this Convention unless the Contracting Party declares reprocessing to be part of spent fuel management.**
- 2. This Convention shall also apply to the safety of radioactive waste management when the radioactive waste results from civilian applications. However, this Convention shall not apply to waste that contains only naturally occurring radioactive materials and that does not originate from the nuclear fuel cycle, unless it constitutes a disused sealed source or it is declared as radioactive waste for the purposes of this Convention by the Contracting Party.**
- 3. This Convention shall not apply to the safety of management of spent fuel or radioactive waste within military or defence programmes, unless declared as spent fuel or radioactive waste for the purposes of this Convention by the Contracting Party. However, this Convention shall apply to the safety of management of spent fuel and radioactive waste from military or defence programmes if and when such materials are transferred permanently to and managed within exclusively civilian programmes.**
- 4. This Convention shall also apply to discharges as provided for in Articles 4, 7, 11, 14, 24 and 26.**

The government of Japan applies this Convention to the safety of spent fuel management when the spent fuel results from the operation of civilian nuclear reactors. The government of Japan, jointly with UK and France, declared that it should report, within the context of the Convention, on reprocessing as part of spent fuel management (September 5, 1997), and, when acceding to the convention, declared reprocessing to be part of spent fuel management.

The government of Japan applies this Convention to the safety of radioactive waste management when the radioactive waste results from civilian applications. However, the government of Japan does not apply this Convention to waste that contains only naturally occurring radioactive materials and that does not originate from the nuclear fuel cycle.

Japan does not have, or does not plan to have, any spent fuel within military or defence programmes. The government of Japan does not make declaration specified in the Article 3. 3.

Blank

D. Lists and Inventories

Blank Page

Section D Lists and Inventories (Article 32, Section 2)

This report shall also include:

- (i) a list of the spent fuel management facilities subject to this Convention, their location, main purpose and essential features;**
- (ii) an inventory of spent fuel that is subject to this Convention and that is being held in storage and of that which has been disposed of. This inventory shall contain a description of the material and, if available, give information on its mass and its total activity;**
- (iii) a list of the radioactive waste management facilities subject to this Convention, their location, main purpose and essential features;**
- (iv) an inventory of radioactive waste that is subject to this Convention that:**
 - (a) is being held in storage at radioactive waste management and nuclear fuel cycle facilities;**
 - (b) has been disposed of; or**
 - (c) has resulted from past practices.****this inventory shall contain a description of the material and other appropriate information available, such as volume or mass, activity and specific radionuclides;**
- (v) a list of nuclear facilities in the process of being decommissioned and the status of decommissioning activities at those facilities.**

D.1 List of Spent Fuel Management Facilities

Spent fuel from power reactor facilities is being held in storage at spent fuel management facilities within power reactor facilities or at the spent fuel management facilities within the Tokai Reprocessing Facility of JNC and Rokkasho Reprocessing Plant of JNFL. Spent fuel from research reactor facilities is being held in storage at spent fuel management facilities of the research reactor facilities. The locations, main purposes and essential features of these spent fuel management facilities are listed in Tables D.1-1 and D.1-2.

D.2 Inventory of Spent Fuel

Spent fuel stored in above-mentioned spent fuel management facilities totals approximately 13000 ton as of the end of March, 2005.

D.3 List of Radioactive Waste Management Facilities

Radioactive waste management facilities within power reactor facilities include the followings: waste processing facilities where waste generated at the reactor facility is processed; solid waste storage facilities where drums (homogeneous solidification, fill-up solidification, miscellaneous solid and others), etc. filled with processed waste are being held in storage; storage facilities where the replaced steam generators and other large solid wastes are being held in storage; spent fuel pools etc. where the disused control rods, the disused channel boxes, etc. are being held in storage; and tanks where the spent ion exchange resin is being held in storage.

Radioactive waste management facilities within enrichment and fuel manufacturing plants include the followings; waste processing equipments that processes waste generated at the plants; and solid waste storage facilities where drums filled with processed waste are held in storage.

Radioactive waste management facilities within spent fuel reprocessing plants include the followings; waste processing equipments that processes waste generated at the plant; waste storage facilities where vitrified waste and high level liquid waste are being held in storage; and waste storage facilities where low level liquid waste and low level solid waste are being held in storage.

Radioactive waste management facilities licensed under the waste disposal management facilities include the followings; radioactive waste repositories where radioactive waste is disposed of; and waste management facilities where radioactive waste is processed and being held in storage before disposal.

Radioactive waste management facilities within research reactors and major fuel material use facilities include the followings; waste processing equipments that processes low level radioactive waste generated at those facilities; and solid waste storage facilities where drums filled with processed waste are being held in storage.

Radioisotope waste management facilities licensed on the basis of the Radiation Hazards Prevention Law include storage facilities, where drums, etc. filled with processed waste generated at radioisotopes use facilities, etc, are being held in storage.

Radioactive waste management facilities licensed on the basis of the Medical Care Laws etc. include the storage facilities, etc., where drums, etc. filled with processed radioactive medical waste generated at medical care facilities, etc, being are being held in storage.

The locations, main purposes and essential features of these radioactive waste management facilities are listed in Tables D.3-1 and D.3-2.

D.4 Inventory of Radioactive Waste

D.4.1 Inventory of Radioactive Waste Being Held in Storage

The wastes stored in the above-mentioned radioactive waste management facilities of nuclear power reactor facilities include approximately 560000 drums (converted to number of 200 litter drums) in solid waste storage facilities, 29 steam generators in steam generator storage facilities, used control rods, disused channel boxes, spent resin in spent fuel pools and other facilities at the end of March 2005.

At facilities other than nuclear power reactor facilities, HLW of approximately 1100 vitrified packages and approximately 400m³ high level liquid waste are stored in fuel reprocessing facilities, and LLW of approximately 440000 drums (converted to number of 200 litter drums) and approximately 4000m³ low level liquid waste are stored in fuel reprocessing facilities, fuel fabrication facilities, laboratories, research reactor facilities of universities, and storage facilities of Japan Radioisotopes Association at the end of March 2003.

D.4.2 Inventory of Radioactive Waste That Has Been Disposed of

A portion of LLW stored at radioactive waste management facilities of commercial power reactor facilities, which has comparatively low concentration of radionuclides, has been transported to a radioactive waste disposal facility of JNFL and disposed of at near surface disposal facility since 1992.

The amount of the waste emplaced at the disposal facility is listed in Table D.4-1. Presently, the disposal facility of JNFL is in operation and has disposed of about 170000 drums (each carrying 200 liters) of waste, as of the end of March 2005. At the disposal facility of Tokai Research Establishment of

JAERI, about 1670 tons of very low level waste resulting from dismantling of JPDR were disposed of. The facility has started operation in 1995, and the disposal facility has been at the preservation stage since October 1997.

D.4.3 Inventory of Radioactive Waste that Has Resulted from Past Practices

None.

D.5 List of Nuclear Facilities in the Process of Being Decommissioned

Nuclear facilities in the process of being decommissioned include Tokai Power Station of the Japan Atomic Power Co., and JRR-2 of JAERI. Nuclear facilities scheduled to be decommissioned include the advanced thermal reactor Fugen Nuclear Power Plant of JNC. The status of decommissioning activities, etc. is listed in Tables D.5-1 and D.5-2.

Table D.1-1 List of Spent Fuel Management Facilities (Related to Power Generation) (No. 1)

Nuclear facilities where spent fuel management facilities are located	Location	Main purpose	Essential features
The Japan Atomic Power Co. Tokai-No.2 Power Station	Ibaraki-pref.	Storage of spent fuel	Wet storage (partly stored in dry casks)
The Japan Atomic Power Co. Tsuruga Power Station	Fukui-pref.	Storage of spent fuel	Wet storage
Hokkaido Electric Power Co., Inc. Tomari Power Station	Hokkaido-pref.	Storage of spent fuel	Wet storage
Tohoku Electric Power Co., Inc. Onagawa Nuclear Power Station	Miyagi-pref.	Storage of spent fuel	Wet storage
Tohoku Electric Power Co., Inc. Higashidori Nuclear Power Station	Aomori-pref.	Storage of spent fuel	Wet storage
Tokyo Electric Power Co., Inc. Fukushima Daiichi Nuclear Power Station	Fukushima-pref.	Storage of spent fuel	Wet storage (partly stored in dry casks)
Tokyo Electric Power Co., Inc. Fukushima Daini Nuclear Power Station	Fukushima-pref.	Storage of spent fuel	Wet storage
Tokyo Electric Power Co., Inc. Kashiwazaki Kariwa Nuclear Power Station	Niigata-pref.	Storage of spent fuel	Wet storage
Chubu Electric Power Co., Inc. Hamaoka Nuclear Power Station	Shizuoka-pref.	Storage of spent fuel	Wet storage
Hokuriku Electric Power Co., Inc. Shika Nuclear Power Station	Ishikawa-pref.	Storage of spent fuel	Wet storage
The Kansai Electric Power Co., Inc. Mihama Power Station	Fukui-pref.	Storage of spent fuel	Wet storage
The Kansai Electric Power Co., Inc. Takahama Power Station	Fukui-pref.	Storage of spent fuel	Wet storage
The Kansai Electric Power Co., Inc. Ohi Power Station	Fukui-pref.	Storage of spent fuel	Wet storage
The Chugoku Electric Power Co., Inc. Shimane Nuclear Power Station	Shimane-pref.	Storage of spent fuel	Wet storage
Shikoku Electric Power Co., Inc. Ikata Power Station	Ehime-pref.	Storage of spent fuel	Wet storage
Kyushu Electric Power Co., Inc. Genkai Nuclear Power Station	Saga-pref.	Storage of spent fuel	Wet storage
Kyushu Electric Power Co., Inc. Sendai Nuclear Power Station	Kagoshima-pref.	Storage of spent fuel	Wet storage
Japan Nuclear Cycle Development Institute Fugen Nuclear Power Station	Fukui-pref.	Storage of spent fuel	Wet storage
Japan Nuclear Cycle Development Institute Tokai Reprocessing Plant	Ibaraki-pref.	Storage of spent fuel	Wet storage
Japan Nuclear Fuel Limited Rokkasho Reprocessing Plant	Aomori-pref.	Storage of spent fuel	Wet storage
Japan Nuclear Cycle Development Institute Monju*1	Fukui-pref.	Storage of spent fuel	Wet storage

*1: Pre-service inspection stage

(As of the end of March 2005)

Table D.1-2 List of Spent Fuel Management Facilities (Research Reactors) (No. 2)

Nuclear facilities where spent fuel management facilities are located	Location	Main purpose	Essential features
Japan Atomic Energy Research Institute Tokai Research Establishment	Ibaraki-pref.	Storage of spent fuel	Dry storage
Japan Atomic Energy Research Institute Oarai Research Establishment	Ibaraki-pref.	Storage of spent fuel	Wet storage
Japan Nuclear Cycle Development Institute Oarai Engineering Center	Ibaraki-pref.	Storage of spent fuel	Wet storage
Musashi Institute of Technology Atomic Energy Research Laboratory	Kanagawa-pref.	Storage of spent fuel	Dry storage
Kyoto University Research Reactor Institute	Osaka-pref.	Storage of spent fuel	Wet storage
Hitachi Ltd. Power & Industrial Systems Nuclear System Division Ozenji Hitachi Training Reactor Center	Kanagawa-pref.	Storage of spent fuel	Wet storage

(As of the end of March 2005)

Table D.3-1 List of Radioactive Waste Management Facilities (Power Reactors)

Nuclear facilities located radioactive waste management facilities	Location	Main Purpose	Essential Features
The Japan Atomic Power Co. Tokai Power Station	Ibaraki-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
The Japan Atomic Power Co. Tokai-No.2 Power Station	Ibaraki-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
The Japan Atomic Power Co. Tsuruga Power Station	Fukui-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Hokkaido Electric Power Co., Inc. Tomari Power Station	Hokkaido-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Tohoku Electric Power Co., Inc. Onagawa Nuclear Power Station	Miyagi-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Tohoku Electric Power Co., Inc. Higashidori Nuclear Power Station	Aomori-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Tokyo Electric Power Co., Inc. Fukushima Daiichi Nuclear Power Station	Fukushima-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Tokyo Electric Power Co., Inc. Fukushima Daini Nuclear Power Station	Fukushima-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Tokyo Electric Power Co., Inc. Kashiwazaki Kariwa Nuclear Power Station	Niigata-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Chubu Electric Power Co., Inc. Hamaoka Nuclear Power Station	Shizuoka-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Hokuriku Electric Power Co., Inc. Shika Nuclear Power Station	Ishikawa-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
The Kansai Electric Power Co., Inc. Mihama Power Station	Fukui-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
The Kansai Electric Power Co., Inc. Takahama Power Station	Fukui-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
The Kansai Electric Power Co., Inc. Ohi Power Station	Fukui-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
The Chugoku Electric Power Co., Inc. Shimane Nuclear Power Station	Shimane-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Shikoku Electric Power Co., Inc. Ikata Power Station	Ehime-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Kyushu Electric Power Co., Inc. Genkai Nuclear Power Station	Saga-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Kyushu Electric Power Co., Inc. Sendai Nuclear Power Station	Kagoshima - pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Japan Nuclear Cycle Development Institute, the advanced thermal Reactor Fugen Nuclear Power Station	Fukui-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, incineration, etc.
Japan Nuclear Cycle Development Institute Monju	Fukui-pref.	Processing and storage of waste from the power plant	Stored at a storage facility after volume reduction by compaction, etc.

(As of the end of March 2005)

Table D.3-2 List of Radioactive Waste Management Facilities (Other Than Power Reactors)

Nuclear facilities where radioactive waste management facilities are located		Location	Main Purpose	Essential features
Global Nuclear Fuel - Japan Co., Ltd.	Enrichment and/or fuel manufacturing facility	Kanagawa-pref.	Processing and storage of uranium waste	Stored at a storage facility, etc. after volume reduction by compaction, etc.
Mitsubishi Nuclear Fuel Co., Ltd.	Enrichment and/or fuel manufacturing facility	Ibaraki-pref.	Processing and storage of uranium waste	Stored at a storage facility, etc. after volume reduction by compaction, incineration, etc.
Nuclear Fuel Industries, Ltd. Tokai Works	Enrichment and/or fuel manufacturing facility	Ibaraki-pref.	Processing and storage of uranium waste	Stored at a storage facility, etc. after volume reduction by incineration, etc.
	Fuel material use facility		Processing and storage of waste from fuel material use facility	Stored at a storage facility, etc. after volume reduction by incineration, etc.
Nuclear Fuel Industries, Ltd. Kumatori Works	Enrichment and/or fuel manufacturing facility	Osaka-pref.	Processing and storage of uranium waste	Stored at a storage facility, etc. after volume reduction by compaction, etc.
Japan Nuclear Cycle Development Institute Ningyo Toge Environmental Engineering Center	Enrichment and/or fuel manufacturing facility	Okayama-pref.	Processing and storage of uranium waste	Stored at a storage facility, etc. after volume reduction by incineration, etc.
	Fuel material use facility		Processing and storage of waste from fuel material use facility	Stored at a storage facility, etc. after volume reduction by incineration, etc.
Japan Nuclear Cycle Development Institute Tokai Works	Reprocessing facility	Ibaraki-pref.	Processing and storage of HLW and waste containing transuranic nuclides	HLW stored after vitrification, waste containing transuranic nuclides stored after volume reduction by incineration, etc.
	Fuel material use facility		Processing and storage of waste from fuel material use facility	Stored at a storage facility, etc. after volume reduction by compaction, incineration, etc.
Japan Nuclear Cycle Development Institute Oarai Engineering Center	Research reactor facility; Fuel material use facility	Ibaraki-pref.	Processing and storage of waste from fuel material use facility and research reactor facility	Disposition on treatment to JAERI-Oarai.
Japan Nuclear Fuel Limited Reprocessing Business division	Reprocessing facility	Aomori-pref.	Processing and storage of HLW and waste containing transuranic nuclides	Presently, waste from a reception and storage facility for spent fuel is stored at a storage facility (main facility is currently under construction).
	Waste management facility		Storage of vitrified waste	A storage facility for returned vitrified waste

Nuclear facilities where radioactive waste management facilities are located		Location	Main Purpose	Essential features
Japan Nuclear Fuel Limited	Waste disposal facility	Aomori-pref.	Disposal of low level radioactive waste	No.1 Disposal facility and No.2 Disposal facility
Enrichment and Disposal Office	Enrichment and/or fuel manufacturing facility		Processing and storage of uranium waste	Stored at a storage facility
Japan Atomic Energy Research Institute	Waste disposal facility	Ibaraki-pref.	Disposal of low level radioactive waste	
Tokai Research Establishment	Research reactor facility; Fuel material use facility; Radioisotope Waste Management facility*1		Processing and storage of radioactive waste from medical, industrial and research facilities	Stored at a storage facility, etc. after volume reduction by compaction, incineration, etc.
Japan Atomic Energy Research Institute	Waste management facility; Fuel material use facility; Radioisotope Waste Management facility*1	Ibaraki-pref.	Processing and storage of radioactive waste from medical, industrial and research facilities	Stored at a storage facility, etc. after volume reduction by compaction, incineration, etc.
Oarai Research Establishment	Research reactor facility		Storage of waste from research reactor facility	
Japan Atomic Energy Research Institute	Research reactor facility	Aomori-pref.	Processing and storage of waste from research reactor facility	Stored at a storage facility, etc. after volume reduction by compaction, etc.
Mutsu Establishment				
The University of Tokyo	Research reactor facility; Fuel material use facility	Ibaraki-pref.	Momentary storage of waste from research reactor facility and fuel material use facility	Processed in Japan Atomic Energy Research Institute Tokai Research Establishment
Nuclear Engineering Research Laboratory, Graduate School of Engineering				
Kyoto University	Research reactor facility	Osaka-pref.	Processing and storage of waste from research reactor facility and fuel material use facility	Stored at a storage facility, etc.
Research Reactor Institute	Fuel material use facility			
Rikkyo University	Research reactor facility	Kanagawa-pref.	Processing and storage of waste from research reactor facility	Stored at a storage facility, etc.
Institute for Atomic Energy				
Musashi Institute of Technology	Research reactor facility	Kanagawa-pref.	Storage of waste from research reactor facility	Stored at a storage facility, etc.
Atomic Energy Research Institute				
Kinki University	Research reactor facility	Osaka-pref.	Storage of waste from research reactor facility	Stored at a storage facility, etc.
Atomic Energy Research Institute				
Toshiba Corporation	Research reactor facility	Kanagawa-pref.	Storage of waste from research reactor facility	Stored at a storage facility, etc.
Research Reactor Center				

Nuclear facilities where radioactive waste management facilities are located		Location	Main Purpose	Essential features
Toshiba Corporation Nuclear Engineering Lab.	Fuel material use facility; Research reactor facility	Kanagawa-pref.	Storage of waste from research reactor facility and fuel material use facility	Stored at a storage facility, etc.
Hitachi, Ltd. Power & Industrial Systems Nuclear System Division Ozenji Hitachi Training Reactor Center	Research reactor facility	Kanagawa-pref.	Storage of waste from research reactor facility	Stored at a storage facility, etc.
National Institute of Radiological Sciences Radiotoxicology Building Operations Section	Fuel material use facility	Chiba-pref.	Storage of waste from fuel material use facility	Stored at a storage facility, etc.
National Institute of Advanced Industrial Science and Technology Tsukuba Central 2	Fuel material use facility	Ibaraki-pref.	Storage of waste from fuel material use facility	Stored at a storage facility, etc.
Nuclear Material Control Center Rokkasho Safeguards Analytical Laboratory	Fuel material use facility	Aomori-pref.	Processing and storage of waste from fuel material use facility	Stored at a storage facility, etc.
Nuclear Material Control Center Tokai Safeguards Center	Fuel material use facility	Ibaraki-pref.	Storage of waste from fuel material use facility	Stored at a storage facility, etc.
Nippon Nuclear Fuel Development Co., Ltd. NFD Hot Laboratory	Fuel material use facility	Ibaraki-pref.	Processing and storage of waste from fuel material use facility	Disposition on treatment to JAERI-Oarai
Nuclear Development Corporation Fuel Hot Laboratory	Fuel material use facility	Ibaraki-pref.	Processing and storage of waste from fuel material use facility	Stored at a storage facility, etc. after volume reduction by compaction, etc.
Japan Radioisotope Association The Kaya Memorial Takizawa Laboratory	Radioisotope Waste Management facility*2	Iwate-pref.	Processing and storage of waste from radioisotope use facility, etc.	Stored at a storage facility, etc. after volume reduction by compaction, incineration, etc.
Japan Radioisotope Association Kanto Storage Facility	Radioisotope Waste Management facility*2	Ibaraki-pref.	Storage of waste from radioisotope use facility, etc.	Stored at a storage facility, etc.
Japan Radioisotope Association Ichihara Office	Radioisotope Waste Management facility*2	Chiba-pref.	Storage of waste from radioisotope use facility, etc.	Stored at a storage facility, etc.
Japan Radioisotope Association Kanto Waste Relay Station II	Radioisotope Waste Management facility*2	Chiba-pref.	Processing and storage of waste from radioisotope use facility, etc.	Stored at a storage facility, etc. after volume reduction by compaction, etc.
Japan Radioisotope Association Kanto Waste Relay Station	Radioisotope Waste Management facility*2	Chiba-pref.	Storage of waste from radioisotope use facility, etc.	Stored at a storage facility, etc.
Japan Radioisotope Association Kansai Waste Relay Station	Radioisotope Waste Management facility*2	Kyoto-pref.	Storage of waste from radioisotope use facility, etc.	Stored at a storage facility, etc.

Nuclear facilities where radioactive waste management facilities are located	Location	Main Purpose	Essential features	
The University of Tokyo Radioisotope Center	Radioisotope Waste Management facility*1	Tokyo-Metro.	Processing and storage of waste from radioisotope use facility, etc.	Stored at a storage facility, etc. after volume reduction by incineration, etc.
T.N. Technos Co. Tsukuba Research Center	Radioisotope Waste Management facility*1	Ibaraki-pref.	Processing and storage of waste from radioisotope use facility, etc.	Stored at a storage facility, etc. after volume reduction by incineration, etc.

(As of the end of March 2005)

*1 : Radioisotope Waste Management facility licensed on the basis of the Radiation Hazards Prevention Law

*2 : Radioisotope Waste Management facility licensed on the basis of the Radiation Hazards Prevention Law and the Medical Care Laws etc.

Table D.4-1 The Amount of Waste Disposed of

Name of facility		Representative nuclides	Disposed amount
Japan Nuclear Fuel Limited, Enrichment and Disposal Office, Radioactive waste disposal facility*1	No. 1 disposal facility	Co-60, Ni-63, Cs-137, Sr-90, C-14	135899 drums*3
	No. 2 disposal facility	Co-60, Ni-63, Cs-137, Sr-90, C-14	38512 drums*3
Japan Atomic Energy Research Institute, Tokai Research Establishment *2	Waste disposal facility	Co-60, Ni-63, Cs-137, Sr-90, Ca-41, C-14, Eu-152, H-3	1670 tons

*1: As of the end of March 2005

*2: Disposed of very low level concrete waste resulting from the dismantling of JPDR, and shifted to the preservation stage of the disposal facility since October 1997.

*3: 200-liter drums

Table D.5-1 List of Nuclear Facilities in the Process of Being Decommissioned and Planned to Be Decommissioned. Status of Decommissioning Activities at These Facilities
(With Respect to Power Reactors)

Name of facility	Location	Reactor type	Electrical output (MW)	Commercial operation	Status of decommissioning
Japan Atomic Power Co., Tokai Power Plant	Ibaraki -pref.	GCR	166	Jul 1966 - Mar 1998	Decommissioning started in 2001
Japan Nuclear Cycle Development Institute, the advanced thermal reactor Fugen Nuclear Power Station	Fukui -pref.	ATR	165	1979 - Mar 2003	Termination of operation in March 2003. Continue taking out of spent fuels and preparation for decommissioning.

(As of the end of March 2005)

Table D.5-2 List of Nuclear Facilities in the Process of Being Decommissioned and Planned to Be Decommissioned. Status of Decommissioning Activities at These Facilities
(With Respect to Research Reactors)

Name of facility	Location	Reactor type	Thermal output (kW)	Service period*	Status of decommissioning
Japan Atomic Energy Research Institute Tokai Research Establishment JRR-1	Ibaraki-pref.	Water-boiler reactor	50	Aug 1957 - Mar 1969	Dismantling has been completed. Extended-shutdown (as using facility of nuclear fuel materials)
Japan Atomic Energy Research Institute Tokai Research Establishment JRR-2	Ibaraki-pref.	Heavy-water moderated cooling tank reactor	10000	Oct 1960 - Dec 1996	The following activities for decommissioning have been completed. Shipment of spent fuel and heavy water, isolation of reactor cooling system and reactor body, removal of secondary cooling system and experimental equipment.
Japan Atomic Energy Research Institute Tokai Research Establishment VHTRC	Ibaraki-pref.	Graphite-moderated reactor	0.01	May 1985 - Jun 1999	Dismantling and removal of the reactor body and leveling of reactor (including resin painting) have been completed.
Japan Atomic Energy Research Institute Mutsu Establishment The Reactor Facilities Of The First Nuclear Ship (Mutsu)	Aomori-pref.	Pressurized light-water moderated and cooled reactor, PWR	36000	Aug 1974 - Feb 1992	Dismantling has been completed. Accessory land facilities are currently being maintained for the purpose of storing solid waste and processing liquid waste .
Japan Nuclear Cycle Development Institute. Oarai Engineering Center Deuterium Criticality Assembly (DCA)	Ibaraki-pref.	Heavy-water moderated reactor	1	Dec 1969 - Sep 2001	Deactivation has been completed. Carry out heavy-water and remove cooling system

Name of facility	Location	Reactor type	Thermal output (kW)	Service period*	Status of decommissioning
Hitachi Ltd. Power & Industrial Systems Nuclear System Division Ozenji Hirachi Training Reactor Centor	Kanagawa -pref.	Light-water moderated and cooled reactor	100	Dec 1961 - Feb 1975	Dismantling has been completed. Currently being proceeding are the maintenance of the pool storing spent fuel and the storage and maintenance of radioactive waste.
Toshiba Corporation Research Reactor Center Toshiba Training Reactor-1 (TTR-1)	Kanagawa -pref.	Light-water moderated inhomogeneous reactor	100	Mar 1962 - Jan 2001	Permanent suspension of operational functions and removal of reactor cooling system facilities. Carry out spent fuel.
Rikkyo University Institute for Atomic Energy	Kanagawa -pref.	Zirconium hydride moderated light-water cooled reactor	100	Dec 1961 - Dec 2001	Extended-shutdown, carry out spent fuel.

(As of the end of March 2005)

*: A period from the first criticality to the termination of operation

E. Legislative and Regulatory System

Blank Page

Section E. Legislative and Regulatory System

E.1 Implementing Measures (Article 18)

Each Contracting Party shall take, within the framework of its national law, the legislative, regulatory and administrative measures and other steps necessary for implementing its obligations under this Convention.

This section of the national report describes the legislative, regulatory and administrative measures and other steps, taken by the Government of Japan, necessary for implementing its obligation under this Convention.

E.2 Legislative and Regulatory Framework (Article 19)

Each Contracting Party shall establish and maintain a legislative and regulatory framework to govern the safety of spent fuel and radioactive waste management.

This legislative and regulatory framework shall provide for:

- (i) the establishment of applicable national safety requirements and regulations for radiation safety;**
- (ii) a system of licensing for spent fuel and radioactive waste management activities;**
- (iii) a system of prohibition for the operation of a spent fuel or radioactive waste management facility without a license;**
- (iv) a system of appropriate institutional control, regulatory inspection and documentation and reporting;**
- (v) the enforcement of applicable regulations and of the terms of the licenses;**
- (vi) a clear allocation of responsibilities of the bodies involved in the different steps of spent fuel and radioactive waste management.**

When considering whether to regulate radioactive materials as radioactive waste, Contracting Parties shall take due account of the objectives of this Convention.

E.2.1 Basic Legislation Regulating the Utilization of Nuclear Energy

The basic law on the utilization of nuclear energy in Japan is the Atomic Energy Basic Law that was established in 1955. The objectives of the law are quoted as “to secure future energy resources, achieve progress in science and technology, and promote industry, by encouraging research, development, and utilization of nuclear energy, and thereby contribute to the improvement of the welfare of human society and the national living standard.” The basic policy here is prescribed as follows: “The research, development and utilization of nuclear energy shall be limited to peaceful purposes, on a basis of ensuring priority to safety, and performed on a self-disciplined basis under democratic administration, and the results thereof shall be made public and actively contribute to international cooperation.”

In order to attain these objectives and achieve the basic policy, the law prescribes the following:

- Establishment of the AEC and the NSC, and their duties, organization, administration, and authorities
- Regulations on the nuclear fuel materials
- Regulations on the construction, etc. of reactor facility.
- Prevention of radiation hazards

The law also prescribes the assignment of these matters to the respective laws.

E.2.2 Legislative and Regulatory Framework on the Safety of Nuclear Utilization

Major laws established for the purpose of providing safety regulations on the utilization of nuclear energy and related laws include “the Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors (the Reactor Regulation Law)”, “the Electricity Utilities Industry Law,” “the Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc. (the Radiation Hazards Prevention Law)” and “Medical Care Law, etc.” Also included are “the Basic Law for General Emergency Preparedness,” “the Special Law of Nuclear Emergency Preparedness (the Special Law for Nuclear Emergency),” “the Law for Technical Standards of Radiation Hazards Prevention” and “the Specified Radioactive Waste Final Disposal Act,” etc. Overviews of these laws are provided in the following paragraphs.

Besides the laws mentioned above, “the Law for Establishment of the AEC and the NSC,” “the Ministry of Economy, Trade and Industry (METI) Establishment Law,” “the Ministry of Education, Culture, Sports, Science and Technology (MEXT) Establishment Law,” “the Ministry of Health, Labour and Welfare (MHLW) Establishment Law,” “the Japan Nuclear Energy Safety Organization Establishment Law,” etc. establish the administrative organizations responsible for the safety regulation of nuclear facilities.

The major laws related to the safety regulation of nuclear facilities are shown in Tables E.2-1 (a) and (b).

(1) The Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors (the Reactor Regulation Law) and the Electricity Utilities Industry Law

In accordance with the objectives of “the Atomic Energy Basic Law”, the Reactor Regulation Law, to ensure that the uses of nuclear source material, nuclear fuel material, and reactors are limited to peaceful purposes, and carried out in a planned manner, and to ensure public safety by preventing hazards and providing physical protection of nuclear fuel material. The Reactor Regulation Law provides on the safety requirement for the following facilities and activities:

- Nuclear fuel fabrication
- Establishment and operation of reactor facilities
- Spent fuel storage
- Spent fuel reprocessing
- Radioactive waste disposal
- Use of nuclear fuel material, etc., and
- Radioactive waste management outside of the licensed site.

The safety of the management of spent fuel generated in a reactor facility and stored on site, spent fuel stored off site or spent fuel brought into and stored in a reprocessing facility, is regulated by the provisions on the establishment and operation of reactor facilities, by the provisions on the spent fuel storage or by the provisions on the spent fuel reprocessing, respectively.

As radioactive wastes generated at enrichment and/or fuel manufacturing facilities, reactor facilities, spent fuel storage facilities, reprocessing facilities, fuel material use facilities, etc. are stored or processed in associated facilities of the respective facility, the safety of their management is regulated by the provisions on respective activities. Meanwhile, the provisions on radioactive waste disposal regulate the safety of waste disposal and related waste management.

The Reactor Regulation Law stipulates following provisions on various nuclear facilities, taking account of characteristics of each facility.

- Regulations on basic design or design policy at the time of facility establishment (Licensing)
- Regulations on detailed design at the time of facility construction (Approval of Design and Construction Methods)
- Inspections at the time of facility construction (Welding Inspection, Pre-Service Inspection)
- Regulations for safe maintenance and operation (Approval of the Operational Safety Program, and the Nuclear Safety Inspection)
- Inspections of facility during operation (Periodical Inspection of Facility)

- Measures taken for securing safety of facility
- Record management
- Report collection
- Regulations on facility transfer, and succession or merger of operator
- Decommissioning
- Safety verification on radioactive waste package for disposal (Waste Disposal).
- Monitoring for compliance with clearance level

The content of major regulations is as follows:

At the stage of issuing the License for Establishment of a nuclear facility, the regulatory body conducts an examination to determine adequacy of the site and adequacy of the basic design of structure and equipment from the point of prevention of radiological hazards. In addition, the regulatory body confirms that the nuclear facility will not be used for non-peaceful purposes, the license accommodates to planned development and utilization of atomic energy, and the applicant planning to establish the nuclear facility has sufficient technical capability to ensure safety and sufficient financial resources to execute the plan.

At the stage of Approval of the Design and Construction Methods of nuclear facilities, the regulatory body evaluates detailed design to determine whether the structures, system and components to be constructed are in accordance with the above basic design, as well as in compliance with national technical standards.

At the stage of construction, the regulatory body conducts the Pre-Service Inspection and the Welding Inspection of pipes, components, etc. to confirm whether the construction of facilities and the manufacturing of the components are in accordance with the detailed design mentioned above. During operation, the regulatory body also conducts the Periodical Inspection of Facilities to continually confirm the integrity of the facilities and equipment. The operators are required to report and keep operation records.

In the radioactive waste disposal, the regulatory body confirms whether the radioactive waste disposal facility, the waste packages and the safety measures are in accordance with the technical standards.

At the operation of a nuclear facility, in addition to regulations focusing on the integrity of structural aspects described above, an assessment is also conducted concerning managerial aspects of the operator such as the organization, reporting system, operating procedure, equipment maintenance, surveillance, radiation control for personnel, radioactive waste management, radioactive gaseous and liquid waste discharge, radiation monitoring and safety education for personnel, quality assurance, etc. These aspects are comprehensively documented in the Operational Safety Program, which should be approved by the regulatory body. By the amendment of the Reactor Regulation Law in October 2003, operator's quality assurance program is included in the Operational Safety Program, the Nuclear Safety Inspection system is established, and the Nuclear Safety Inspectors who confirms compliance with the Operational Safety Program are stationed at each nuclear facility. The allegation system, established by the Reactor Regulation Law, was revised so that personnel can allege violation of safety regulation to the NSC as well as to NISA without any unfavorable treatment. The rules under the law provides that the personal data of alleged be protected. The rule also provides for adequate procedures for investigation and disclosure of alleged case.

By the amendment of the Reactor Regulation Law in May 2005, regulatory procedure of decommissioning was defined and clearance system was newly introduced.

Concerning the decommissioning of the nuclear facilities, the operator submit to NISA decommissioning plan describing decommissioning process and method, and starts decommissioning process after obtaining approval . NISA confirms the decommissioned site after completion of

decommissioning. Graded safety regulation is applied, as the decommissioning process proceeds. Details are shown in Section F. 6.

Concerning the clearance system, clearance level is defined as “radioactivity concentration level of the materials, on which no measures are required to prevent hazard due to the radiation”. The operator carry out measurement and estimate radiation concentration level by the method approved by NISA. NISA confirms the results. Then, the substance can be treated as unpolluted substance. Detailed regulations both on decommissioning and clearance level will be established in future.

Provisions on the Construction Plan, the Pre-Service Inspection and the Periodic Inspection of the Electricity Utilities Industry Law apply to a commercial power reactor facility, as it is also an electric facility, and the corresponding provisions of the Reactor Regulation Law are exempted from application in order to avoid duplication of regulation. As the relevant provisions of these two laws are similar each other, these two laws are referred to as the “Reactor Regulation Law etc.” hereinafter. Some of these provisions of the Electricity Utilities Industry Law were amended in October 2003. Details of the amendment should be referred to the “National Report of Japan for the Third Review Meeting of the Convention on the Nuclear Safety”.

As shown in Figures E.2-1 (a) and (b), rules and standards are established for each nuclear facilities under the Reactor Regulation Law. When conducting safety examination of a nuclear facility, safety regulatory guides. (Table E.2-1) established by the NSC are used. In addition, appropriate academic society and association Standards. (Table E 2-2) are used as necessary.

(2) The Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc. (The Radiation Hazards Prevention Law)

The objectives of the Radiation Hazards Prevention Law are to prevent radiation hazards of the workers and public on the use of radioisotopes, radiation generating devices, and material contaminated with radioisotopes, etc.

As shown in Figure E.2-1 (a), the Ordinance and Rules for the Enforcement of the Radiation Hazards Prevention Law are established.

A license holder for radioisotope distribution, lease of the radiation equipment and waste management and use a radiation generating device under the Radiation Hazards Prevention Law is obligated the Pre-Service Inspection and the Periodic Inspection to confirm if they have sufficient capacity of the storage facility.

Those who use the facility licensed under the Radiation Hazard Prevention law must compile a set of the Internal Rules for Prevention of Radiation Hazards, designate the Qualified Staff of Radiation Protection, and notify these results to the regulatory body before use of facility. Furthermore, those who use the facility have an obligation to conform to the criteria for facilities to be used, which have been established by legislation. Other obligations include: measuring the radiation doses within the premises or on the boundary of the establishment; measuring the exposure doses of the occupational personnel; providing education and training; and conducting health examinations, etc (some of operators are excluded).

Regarding management of radioisotopes or materials contaminated with such radioisotopes generated from radioisotopes using facility must be carried out in conformity with the criteria established by laws and regulations within the premises of licensed facility or the premises of the licensed facility of radioisotope waste management.

Legislation on disposal of radioisotope wastes mentioned above is in preparation.

When the use of radioisotopes or radiation generating devices is to be discontinued, a notify describing the measures adopted as part of the discontinuation (abolishing) procedures must be

submitted to the Minister of MEXT, along with a notice of such discontinuation (abolition)

If necessary, MEXT gives instruction for the Radiation Inspectors to conduct an on site inspection in order to ascertain the state of compliance with the standards established by laws and regulations.

(3) Medical Care Law, etc.

(Waste management facility operators designated by the Minister of MHLW) conduct) Radioisotope (radioisotope) waste management for medical use, on the basis of the Medical Care Law etc. (the Medical Care Law, the Clinical Laboratory Technicians and Health Laboratory Technicians Law, and the Pharmaceutical Affairs Law) is conducted by the designated operators.

Site, structure, and equipment of the waste management facility have to comply with related technical criteria (standards) in order to be designated by the Minister of MHLW and Welfare.

Furthermore, Periodical Inspection, Radiation Hazard Prevention Rules, conformance order to the standards of waste management facilities, education and training, notification of closure of waste management facility, etc, are provided by these laws equivalent to (the same as by) the Radiation Hazards Prevention Law.

(4) The Basic Law for General Emergency Preparedness and the Specific Law for Nuclear Emergency Preparedness

The measures to be taken at a nuclear emergency are addressed by the Basic law for General Emergency Preparedness and the Specific Law for Nuclear Emergency Preparedness. The Specific Law stipulates specific measures for nuclear emergency, including obligation of operators to prevent occurrence of nuclear emergency, the Declaration of Nuclear Emergency and establishment of headquarters for the nuclear emergency (Response Headquarters), and enforcement of emergency measures. The Senior Officer for Nuclear Emergency is stationed in the vicinity of each nuclear facility, to direct and advise the operator in preparing its Plan for Nuclear Emergency Preparedness, as well as to conduct its duty to prevent occurrence of nuclear emergency and mitigate consequences should it occur.

Moreover, In the part of the nuclear emergency measures of the Basic Plan for Emergency Preparedness on the basis of the Basic Law for General Emergency Preparedness, measures necessary to prevent occurrence and progression of nuclear emergency, where an abnormal level of radioactivity is released outside the nuclear facility, and to recover from the emergency is described.

(5) The Law for Technical Standards of Radiation Hazards Prevention

The objectives of the Law for Technical Standards of Radiation Hazards Prevention are to clarify the basic policy for defining technical standards for radiation hazards prevention and to establish the Radiation Review Council of MEXT, so that consistency of technical standards for radiation hazards prevention can be realized. "The Radiation Review Council Orders" are stipulated under the Law for Technical Standards of Radiation Hazards Prevention.

(6) The Specified Radioactive Waste Final Disposal Act

“The Specified Radioactive Waste Final Disposal Act”, established in May, 2000 provided the framework for the planned and steady final disposal of “Specified Radioactive Waste” which is high level radioactive waste (HLW) resulted from reprocessing of spent nuclear fuel. The major points of the law are, (1) the government establishes basic policy and plan on final disposal of specific wastes (Final Disposal Plan), (2) establishment of an implementing organization, (3) measures to secure financial resources for disposal, and (4) site selection procedure. Figure E.2-2 shows the basic scheme

of the procedures. The Minister of METI establishes basic policy and based on this, provides Final Disposal Plan. Nuclear Waste Management Organization of Japan (NUMO), which was established as an implementing organization based on the Final Disposal Plan, carries out the activities of final disposal. Utilities shall contribute financial resources to the fund reserved for disposal, which is managed by an organization designated by the Minister of METI (RWMC). NUMO promotes site selection by a three step procedure, that is, selection of the preliminary investigation area, detailed investigation area and site for disposal facility, and obtain approval of the Minister of METI at each step of procedure.

The three step procedure for site selection is as follows, and items for investigation and evaluation are clearly defined.

- Preliminary investigation area

Definition: The area to investigate by boring etc. whether the geological formation concerned is stable for long term .

Requirements for selection: There shall be no record of remarkable variation of the geological formations by natural phenomena, such as earthquakes.

- Detailed investigation area

Definition: The area to investigate, by constructing underground facility with testing and measuring equipment, whether the property of the geological formation concerned is suitable for construction of disposal facility.

Requirements for selection: Remarkable variation of the geological formations by natural phenomena, such as earthquakes, has not occurred for long term.

- Selection of Final disposal facility construction site

Definition: The site where the final disposal facility is to be built.

Requirements for selection: It is expected that underground facility to be built within the geological formation will not be attacked by an extraordinary pressure, and that physical property of the geological formation is suitable for the final disposal facility.

When a site is selected as the final disposal facility, The Minister of METI have to consult with governors and local governments, and revise and finalize the Final Disposal Plan as appropriate considering the opinions.

The safety regulations for the disposal of specified radioactive wastes are to be established separately.

(7) The Law for Deposit and Management of the Fund Reserved for Spent Fuel Reprocessing etc. in the Nuclear Power Generation.

This law, established in May 2005, provides the frame work for deposit and management of the fund reserved for spent fuel reprocessing. The fund is managed by an organization designated by the Minister of METI (Fund Management Organization). The Minister of METI, every fiscal year, notifies utilities of the amount of deposit based on the amount of electricity generated by the nuclear fuel, and utilities deposit the amount in the Fund Management Organization.

Related regulations are being prepared.

E.2.3 Regulatory Framework for the Safety of Spent Fuel Management

As described in Section E.2.2 (1), the safety of management of spent fuel on a reactor facility or a reprocessing facility is regulated by the provisions of the Reactor Regulation Law concerning the establishment and operation of reactor facility or a operation of reprocessing plant, respectively. More specifically, spent fuel management facilities are regulated as facilities in affiliation with main facilities. Details of the safety regulations for spent fuel management are described in Section G.

On the other hand, the safety of management of spent fuel stored outside of a reactor site or a reprocessing plant site is regulated in accordance with the provisions of the Reactor Regulation Law concerning spent fuel storage, and provisions on licensing, permission, approval and inspections of a spent fuel storage facility are regulated as an independent facility. At present, there is no independent storage facility in operation, under construction or in the process of license application in Japan.

E.2.4 Regulatory Framework for the Safety of Radioactive Waste Management

As described in Section E.2.2 (1), radioactive wastes generated at enrichment and/or fuel manufacturing facilities, reactor facilities, spent fuel storage facilities, reprocessing facilities, fuel material use facilities, etc. are stored or processed in associated facilities to the respective facility, and the safety of their management is regulated by the provisions on respective facility and activities.

The provisions on radioactive waste disposal facility and activities regulate the safety of waste disposal and related waste management. The “Specified Radioactive Waste Final Disposal Act”, mentioned E2.2 (7), provides for the funds reserved for HLW final disposal, the procedure for selecting disposal site, etc., other safety regulations for HLW final disposal to be established separately from the Act.

Details of the safety regulations for the radioactive waste management of the radioactive waste disposal facility and activities are described in Section H.

The safety of the radioisotope waste management at facilities licensed under the Radiation Hazards Prevention Law is regulated as described in Section E.2.2 (2).

The safety of the radioactive waste management at facilities licensed under the Medical Care Law, etc. is regulated as described in Section E.2.2 (3), and relevant provisions are similar to those in the Radiation Hazards Prevention Law. Therefore, description of the safety of waste management under the Medical Care Law is omitted in Sections F and thereafter.

E.2.5 The Enforcement of Applicable Regulations and the Terms of the Licenses

The Reactor Regulation Law and the Radiation Hazards Prevention Law prescribes imprisonment and/or fines under circumstances such as establishing a nuclear facility without a license, violating a Shut-Down Order, or failing to take relevant emergency measures. The competent minister, on the basis of the Reactor Regulation Law, the Radiation Hazards Prevention Law or the Medical Care Law, etc., may revoke the license or impose other administrative measures under circumstances such as starting operation of a nuclear facility or use of fuel materials without a license, violating an order legally issued by the regulatory body, failing to implement measures necessary for operational safety prescribed by the regulatory body, operating nuclear facility without the Operational Safety Program or the Internal Rules for Prevention of Radiation Hazards (the Operational safety program, etc.) approved by the regulatory body, or failing to comply with the Operational Safety Program, etc.

The regulatory body may order changes in the Operational safety program, etc., whenever it is deemed necessary for preventing accident. License holders failing to abide by such orders could be punished with a fine.

E.2.6 Clear Allocation of Responsibilities in the Different Steps

An operator of nuclear facilities shall have an approved license for each of the steps in a series of processes including generation, storage and reprocessing of spent fuels. The allocation of responsibilities within the regulatory body that issues license for each of these steps is clearly defined as illustrated in the report of Article 20 (Section E.3.3, Table E.3-1).

The responsibilities of operators of facilities those produce waste and the operators of radioactive waste disposal facilities have been allocated in accordance with the fundamental concept shown by the AEC in the report, "Policy on Radioactive Waste Processing and Disposal" (October 8, 1985, the Special Committee on Radioactive Wastes). The report says that while the waste generators should bear overall responsibility for management of the wastes, it is more appropriate the operator of consolidated low level radioactive waste disposal facility take the legal responsibility for the safe operation in order to execute efficient activities with clear responsibility for ensuring safety. And it also says that the waste generator should make every support for the operator of the consolidated disposal facility to ensure the disposal operation of the waste smoothly.

As shown in E.2.2, the activities for radioactive waste management stream, from the generation of radioactive wastes, processing and storage, shipment, to disposal are regulated by the Reactor Regulation Law without any discontinuity. The regulation for disposal of radioactive wastes (Table B.3-2) is under preparation keeping consistency among divisions of radioactive wastes (Table B.3-1).

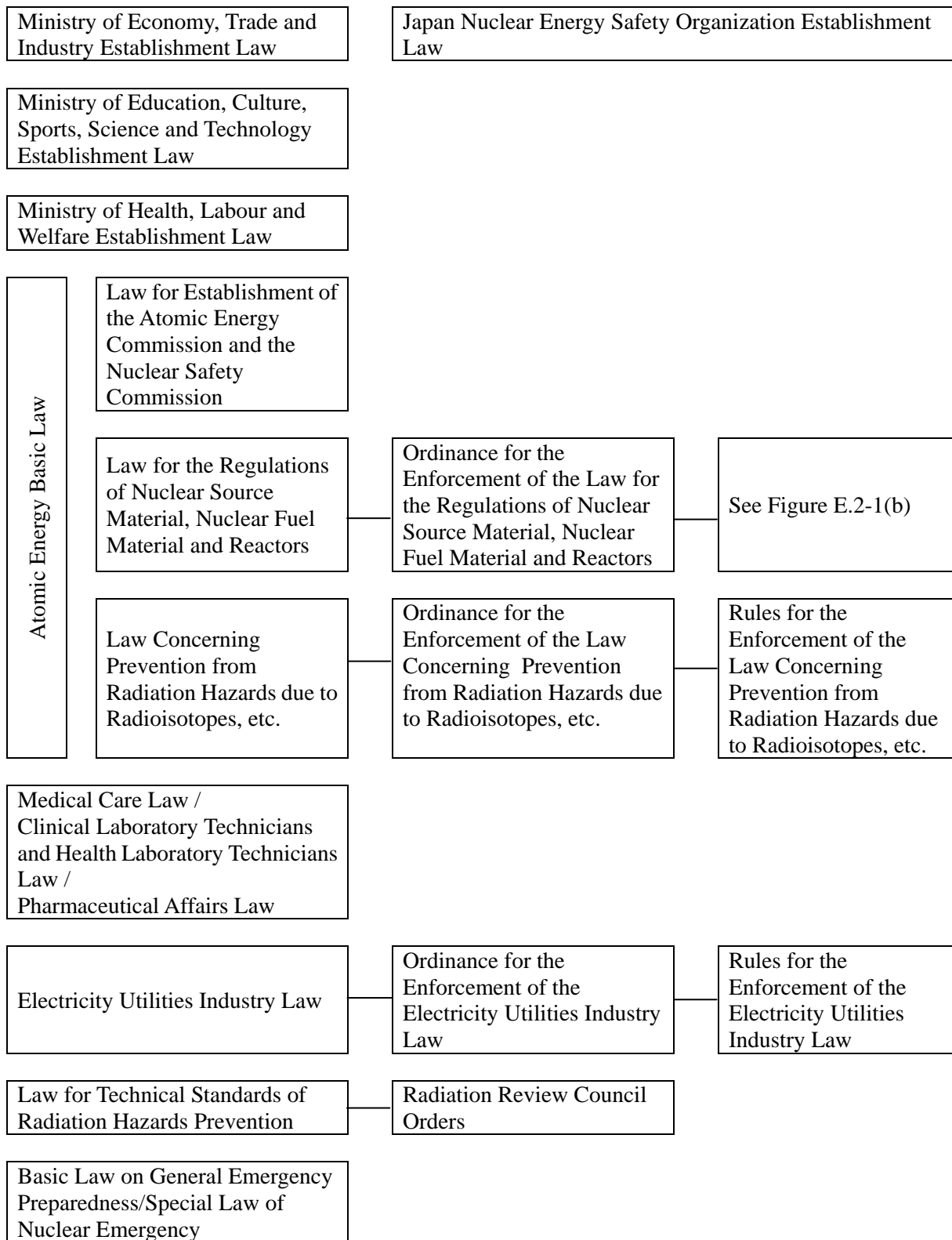


Figure E.2-1(a) Major Laws for the Safety Regulation of the Nuclear Facility

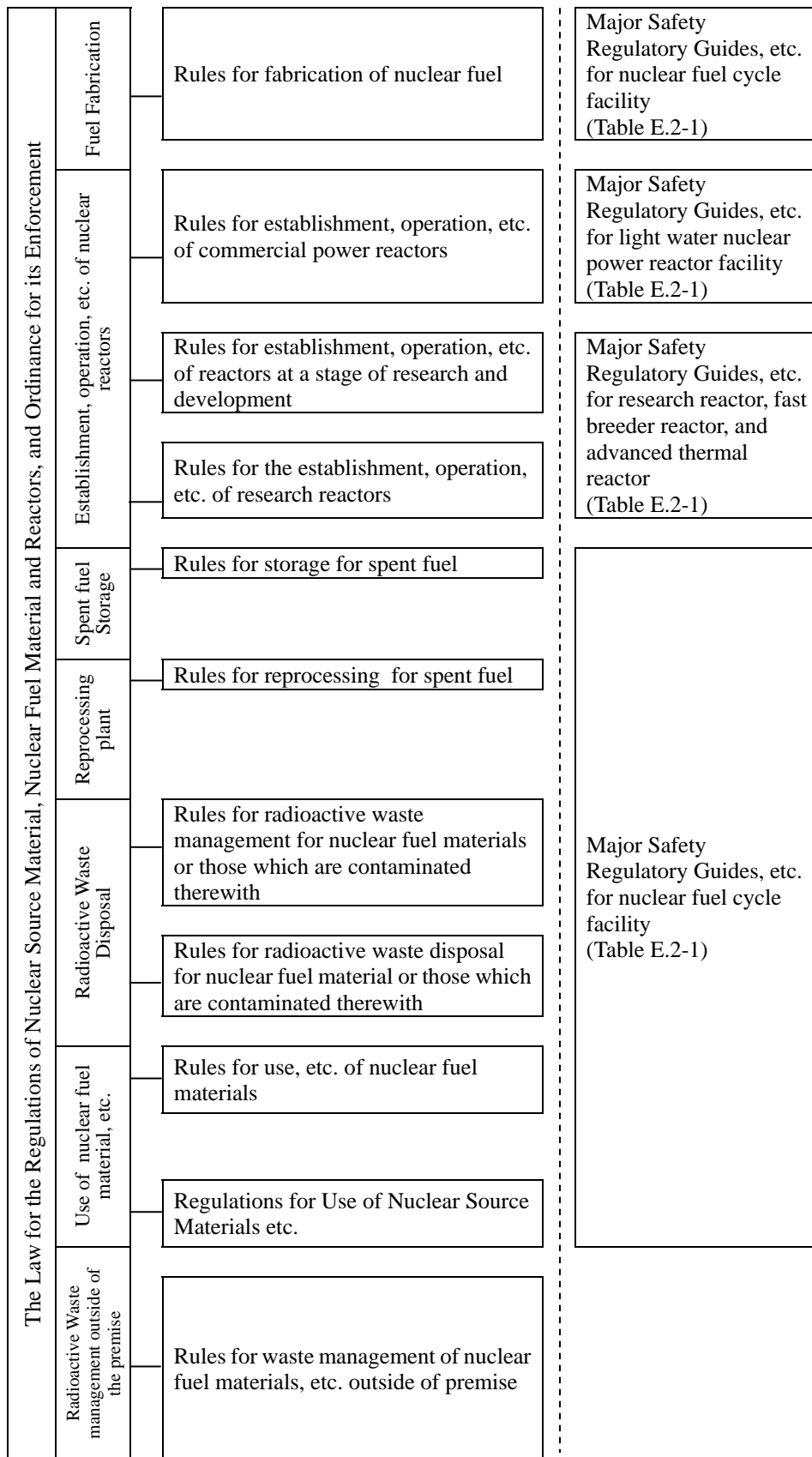


Figure E.2-1(b) Major Laws for the Safety Regulation of the Nuclear facility

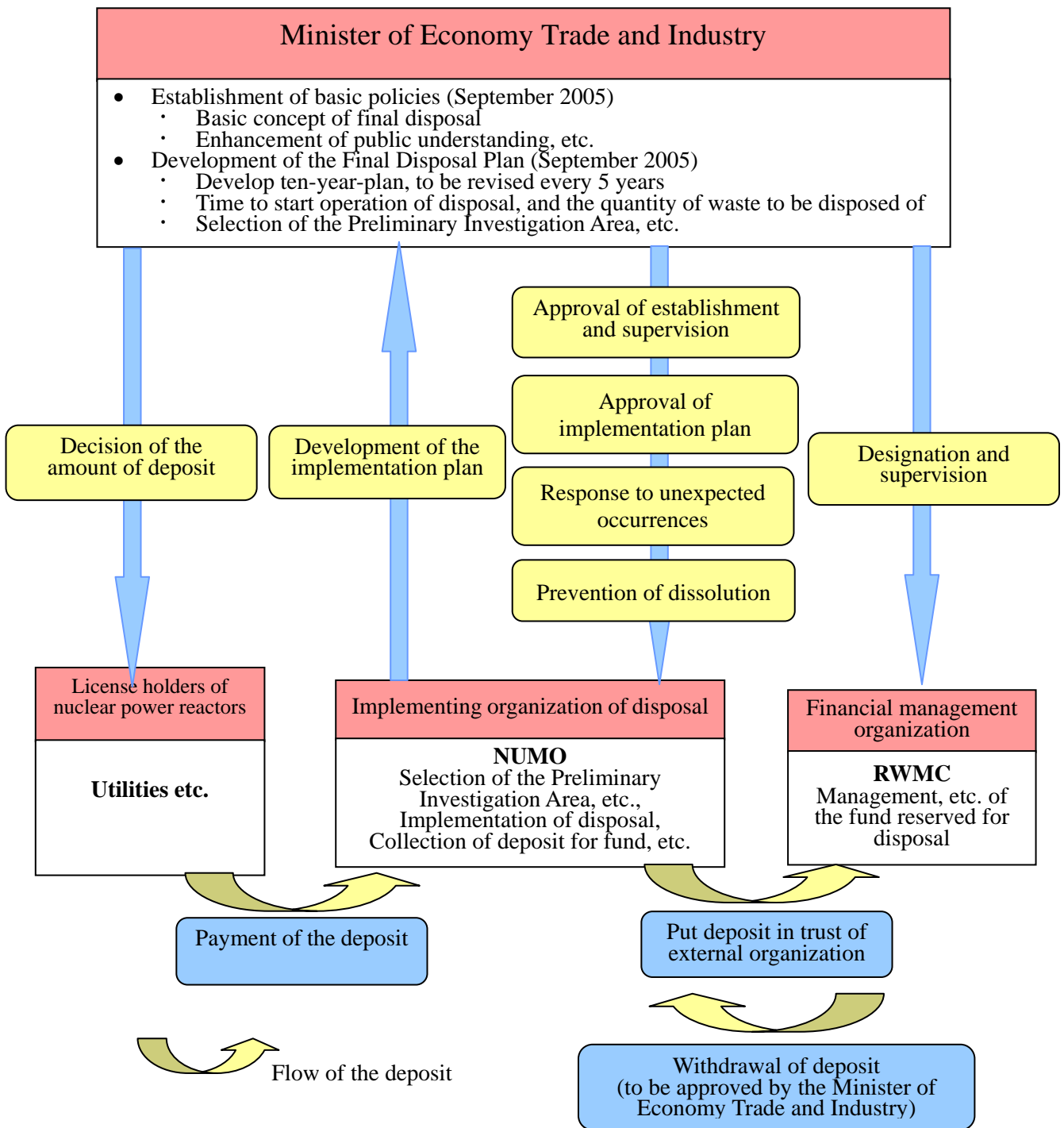


Figure E.2-2 Basic Scheme on the Final Disposal of Specific Radioactive Wastes

Table E.2-1 Major Safety Regulatory Guides, etc.

For light water nuclear power reactor facilities, etc.	
Siting	- Regulatory Guide for Reviewing Nuclear Reactor Siting Evaluation and Application Criteria
Design	<ul style="list-style-type: none"> - Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities - Regulatory Guide for Reviewing Classification of Importance of Safety Functions for Light Water Nuclear Power Reactor Facilities - Regulatory Guide for Reviewing Seismic Design of Nuclear Power Reactor Facilities - Regulatory Guide for Reviewing Fire Protection of Light Water Nuclear Power Reactor Facilities - Regulatory Guide for Reviewing Radiation Monitoring in Accidents of Light Water Nuclear Power Reactor Facilities - Fundamental Policy to be Considered in Reviewing of Liquid Radioactive Waste Treatment Facilities - Dry cask storage of spent fuels at nuclear power stations
Safety evaluation	<ul style="list-style-type: none"> - Regulatory Guide for Reviewing Safety Assessment of Light Water Nuclear Power Reactor Facilities - Regulatory Guide for Meteorological Observation for Safety Analysis of Nuclear Power Reactor Facilities
Numerical guide for dose	<ul style="list-style-type: none"> - Regulatory Guide for the Annual Dose Target for the Public in the Vicinity of Light Water Nuclear Power Reactor Facilities - Regulatory Guide for Evaluating the Annual Dose Target for the Public in the Vicinity of Light Water Nuclear Power Reactor Facilities - Guide for Radiation Monitoring of Effluent Released from Light Water Nuclear Power Reactor Facilities
For research reactor, fast breeder reactor, advanced thermal reactor, etc.	
Research reactor	- Examination guide for safety design of water cooled research reactor facilities
	- Examination guide for safety evaluation of water cooled research reactor facilities
Fast breeder reactor	- Safety evaluation principles for fast breeder reactor
	- Reference dose for plutonium intake in relation to siting evaluation of reactors with plutonium contained fuel
Advanced thermal reactor	- Principles for safety evaluation of advanced thermal reactor demonstration reactor
Dismantling/decommissioning	- Basic philosophy to assure safety for dismantling nuclear reactor facilities

For nuclear fuel cycle facility	
	<ul style="list-style-type: none"> - Basic guide for safety examination of nuclear fuel facilities - Safety evaluation guide for uranium fuel fabrication facilities - Examination guide for specific uranium fuel fabrication facilities - Regulatory guide for licensing of reprocessing plants - Reference dose for plutonium intake in relation to siting evaluation of nuclear fuel facilities - Examination guide for uranium and plutonium mixed oxide fuel fabrication facility - Examination guide for spent fuel interim storage facility utilizing dry metal casks - Fundamental guidelines of licensing review of land disposal facility of low-level radioactive waste - Basic philosophy to assess safety of waste management facilities - Report of technical investigation for a spent fuel storage facility (interim storage facility) * - Report of technical investigation for a spent fuel storage facility (interim storage facility) using concrete casks
For technical capability	
	<ul style="list-style-type: none"> - The examination guide for technical capabilities of operators

Note: * is by the Nuclear and Industrial Safety Subcommittee, Advisory Committee for Natural Resources and Energy. Others are by the NSC.

Table E.2-2 Examples of Academic Society and Association Standards.

Guidelines and Rules of the Japan Electric Association

Number	Title
JEAC 4111-2003	Rules of Quality Assurance for Safety of Nuclear Power Plants
JEAC 4205-2000	In-service Inspection of Light Water Cooled Nuclear Power Plant Components
JEAC 4209-2003	Rules of Maintenance Management of Nuclear Power Plants
JEAC 4605-1992	Definitions of Engineered Safety Features and Related Systems of Nuclear Power Plants
JEAG 4101-2000	Guide of Quality Assurance for Nuclear Power Plants
JEAG 4102-1996	Guide of Emergency Measures for Nuclear Power Plants
JEAG 4204-2003	Guide for Quality Control of Nuclear Fuel for Nuclear Power Plants
JEAG 4207-2004	Ultrasonic Examination for In-service Inspection of Light Water Cooled Nuclear Power Plant Components
JEAG 4601-1987	Technical Guidelines for A seismic Design of Nuclear Power Plants
JEAG 4601-S-1984	Technical Guidelines for A seismic Design of Nuclear Power Plants: Classification and Allowable Stress
JEAG 4601-1991	Technical Guidelines for A seismic Design of Nuclear Power Plants: Supplement
JEAG 4603-1992	Guide for Design of Emergency Electric Power Supply Systems for Nuclear Power Plants
JEAG 4604-1993	Guide for Design of Plant Protection Systems for Nuclear Power Plants
JEAG 4606-2003	Guide for Radiation Monitoring for Nuclear Power Plants
JEAG 4607-1999	Guide for Fire Protection of Nuclear Power Plants
JEAG 4608-1998	Lightning Protection Guidelines for Nuclear Power Plants
JEAG 4609-1999	Application Criteria for Programmable Digital Computer System in Safety-Related System of Nuclear Power Plants
JEAG 4610-2003	Personal Dose Monitoring for Nuclear Power Plants
JEAG 4611-1991	Guide for Design of Instrumentation & Control Equipment with Safety Functions
JEAG 4612-1998	Guide for Safety Grade Classification of Electrical and Mechanical Equipment with Safety Functions
JEAG 4613-1998	Technical Guidelines for Protection Design against Postulated Piping Failures in Nuclear Power Plants
JEAG 4614-2000	Technical Guidelines on Seismic Base Isolation System for Structural Safety and Design of Nuclear Power Plants
JEAG 4615-2003	Guide for Design of Radiation Shielding for Nuclear Power Plants
JEAG 4616-2003	Technical Guide for Design of Base Structures for Dry Cask Storage Buildings
JEAG 4801-1995	Guide for Operating Manual of Nuclear Power Plants
JEAG 4802-2002	Guide for Education and Training for Nuclear power Plant Operator
JEAG 4803-1999	Guide for Operational Safety Preservation of Light Water Cooled Reactors

Guidelines and Rules of the Japan Society of Mechanical Engineers

Number	Title
JSME S NA1-2002	Standards for Nuclear Power Generation Equipment: Maintenance Standards (revised in 2002)
JSME S NB1-2001	Standards for Nuclear Power Generation Equipment: Welding Standards
JSME S NC1-2001	Standards for Nuclear Power Generation Equipment: Design and Construction Standards
JSME S ND1-2002	Standards for Nuclear Power Generation Equipment: Design Standards for Prevention of Piping Break
JSME S FA1-2001	Standards for Spent Fuel Storage Facility: Structural Standard for Metallic Cask

Guidelines and Rules of the Atomic Energy Society of Japan

Number	Title
AESJ-SC-P001:2002	Procedure of Probabilistic Safety Evaluation on Shutdown Condition of Nuclear Power Station
AESJ-SC-P002:2003	Evaluation Criteria of Fuel Integrity after Transient Boiling Transition for BWR
AESJ-SC-P003:2003	Performance Criteria of Wind Tunnel Test to obtain the effective height of Discharge Source
AESJ-SC-F004:2004	Fundamentals of the Safety Management of Criticality
AESJ-SC-F001:2000	Periodic Inspection Criteria of Cask for Spent Fuel, MOX fuel and High Level Radioactive Waste
AESJ-SC-F003:2002	Measurement method of Sorption Distribution Coefficient- Basic Procedure of Batch Method for Barrier Material of Near Surface Disposal
AESJ-SC-F002:2002, 2004	The safety design and inspection criteria of the metal cask for interim spent fuel storage facilities
AESJ-SC-R001:2003	The fundamental concept for the decommissioning of a research reactor

E.3 Regulatory Body (Article 20)

Each Contracting Party shall establish or designate a regulatory body entrusted with the implementation of the legislative and regulatory framework referred to in Article 19, and provided with adequate authority, competence and financial and human resources to fulfill its assigned responsibilities.

Each Contracting Party, in accordance with its legislative and regulatory framework, shall take the appropriate steps to ensure the effective independence of the regulatory functions from other functions where organizations are involved in both spent fuel or radioactive waste management and in their regulation.

E.3.1 Mandate of the Regulatory Bodies

The mandate of the regulatory bodies is to ensure public safety through securing safety of nuclear facilities, and their obligations are to implement the legislative and regulatory framework described in the report of Article 19. The regulatory bodies are responsible for conducting regulatory activities prescribed in the Reactor Regulation Law, the Radiation Hazards Prevention Law, etc. on the basis of the Atomic Energy Basic Law. Their organizations and assigned obligations are clearly defined in their respective establishment laws, and their financial resources are covered by the national budget.

The Minister of METI serves as the competent minister for safety regulation on activities concerning utilization of nuclear energy, and NISA administers the regulatory activities as a special organization for METI. The Minister of MEXT serves as the competent minister for the safety regulation over the nuclear utilization associated with science and technology and the utilization of radioisotopes (except medicines, etc.), etc., and the STPB administers the regulatory activities. The Minister of Health, Labor and Welfare governs the safety regulation concerning medical facilities as the competent minister, and the PFSB and the HPB administer the regulatory activities.

Regulatory body	Assigned Facilities and Activities
Nuclear and Industrial Safety Agency	Activities for utilization of nuclear energy. Namely, nuclear power reactor facilities and related nuclear fuel cycle facilities
Science and Technology Policy Bureau, Ministry of Education, Culture, Sports, Science and Technology	Utilization of nuclear power for science and technology, and utilization of radioisotopes etc. (except for medical supplies etc.). Namely, test and research reactor facilities, facilities handling radioisotopes, etc.
Health Policy Bureau and Pharmaceutical and Food Safety Bureau, Ministry of Health, Labor and Welfare	Activities at facilities for medical treatment and medical cares Namely, manufacturing, handling, storage and disposal of radiopharmaceuticals.

These regulatory bodies have clearly defined duties on safety regulation, and their independence is ensured both in legislation and in substance.

The NSC, consisting of members whom the Prime Minister appoints with consent of the Diet, observes and audits activities of these regulatory bodies (Regulatory Review), and establishes the basic policy for safety regulations therefore the consistency among the regulations is maintained. The consistency of the technical standards for prevention of radiation hazard is discussed at the Radiation Review Council.

E.3.2 The Structure of the Regulatory Body and Supporting Organizations

(1) Nuclear and Industrial Safety Agency (NISA)

The Minister of METI, as the competent minister stipulated in the Reactor Regulation Law and the Electric Utilities Industry Law, enforces the safety regulation over all activities on the utilization of nuclear energy including nuclear power generation, and NISA was established as a special organization of METI to administer the safety regulation, independently from the Agency of Natural Resources and Energy that promotes nuclear energy utilization.

The Minister of METI, as the competent minister, provided by the Reactor Regulation Law and the Electric Utilities Industry Law has the authority to examine the nuclear facilities when operators construct them whether its siting, structure and equipment conform to the requirements for the prevention of radiation hazards and if in the case of the licensee violate the laws, the minister has the authority to revoke the license.

Within NISA, there are eleven divisions that administer safety regulations for nuclear facilities associated with utilization of nuclear energy. The assigned duties of each of these divisions are illustrated in Table E.3-1. The Nuclear Safety Inspectors are assigned to resident positions at each nuclear facility, with duties to conduct the Nuclear Safety Inspection four times a year to confirm compliance with the Operational Safety Program by the operator, and to correspond to abnormal events when they occur. The locations of offices of the Nuclear Safety Inspectors are illustrated in Figure E.3-1.

The number of staff engaged in regulatory activities for nuclear safety including administration of NISA is about 300, which includes about 100 persons of Nuclear Safety Inspectors and Senior Officers for Nuclear Emergency who are resident at nuclear facilities.

Staff members who are in charge of nuclear safety regulation are required to have expertise in nuclear technology. Knowledgeable and experienced persons are constantly recruited from outside, and specialized and advanced education and training programs are implemented. Staff members are provided with opportunities to attend international meetings or take long-term assignments of working in international organizations, etc.

Moreover, NISA maintains and develops its ability, as well as contributes to improve international nuclear safety regulation, through exchange of technical experts and information on safety regulation and safety technology, under bilateral cooperation arrangements with foreign regulatory bodies and in the framework of multilateral cooperation (IAEA and OECD/NEA).

On the basis of METI Establishment Law, the Advisory Committee for Natural Resources and Energy is established, a subcommittee of which is the Nuclear and Industrial Safety Subcommittee that consults on policies on nuclear safety and safety of electric power as the terms of reference. The organization of the Subcommittee is illustrated in Table E.3-2. The experts in the Subcommittee are assigned based on their knowledge and experience in specialized fields including nuclear and thermal-hydraulic design, system design, seismic design, radiation control, radioactive waste disposal, etc., and when necessary, NISA consults experts on securing of safety.

The Public Information Law, enacted in April 2001, provides for disclosure of regulatory information on request, promoting transparency of activities on safety regulation. NISA, at the website, discloses information on licensing of nuclear facilities, accidents and failures, radiation control and activities of nuclear energy related councils. In April 2004, NISA established the Nuclear Safety Public Relations and Training Division, and stationed the Regional Public Relations Officers for Nuclear Safety in the areas where major nuclear facilities are located, to further strengthen its public relation activities including holding public meetings in local communities, distributing periodicals on activities of NISA, etc.

In October 2003, JNES was established as a supporting organization for NISA in ensuring safety in utilization of nuclear energy, and has 420 officers and staffs. The mission of JNES is

- to implement their duties effectively and rationally
- to contribute to the enhancement of nuclear safety regulation,
- to deliver safety information to the public by utilizing its expertise and
- to foster public confidence in the safety of nuclear energy.

JNES implements the following activities to accomplish the above mission:

- Inspection of nuclear facilities and reactor facilities, and other same kind of services;
- Safety analysis and evaluation of designs of nuclear facilities and reactor facilities;
- Activities to prevent occurrence of nuclear emergencies, to prevent progression of a nuclear emergency, and to recover from the nuclear disaster;
- Investigation, testing, research, and training concerning ensuring safety in utilization of nuclear power as energy.; and
- Collection, analysis and transmission of information relating to ensure nuclear safety.

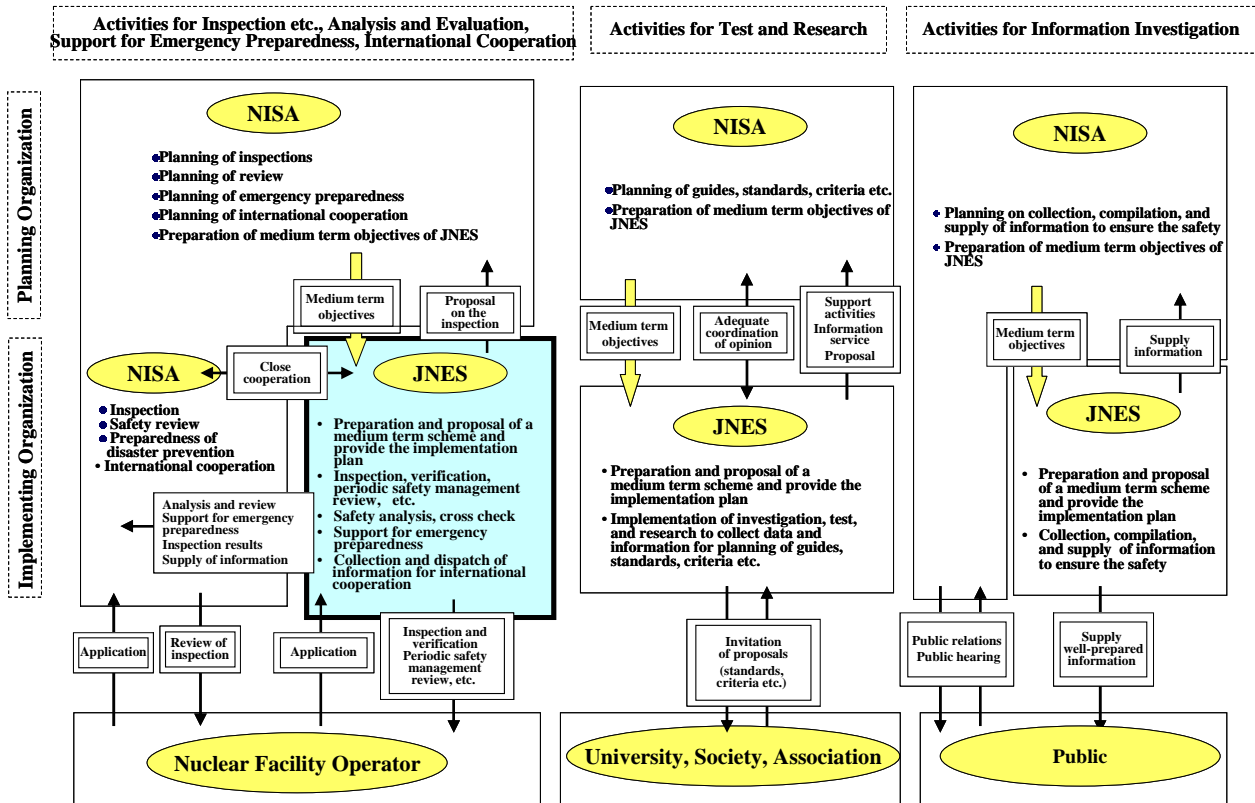
The framework for JNES to implement activities and the relation of JNES with NISA are as shown in the followings:

- NISA develops a plan on each activity based on the regulatory needs, and defines the medium-term objective in accordance with the Law of the General Rules for Incorporated Administrative Agency, and the Minister of METI assign it to JNES.
- JNES prepares a medium-term program to accomplish the medium-term objective, apply the program to the Minister of METI, and obtain the approval, then JNES prepares annual plan (fiscal year) in accordance with the medium-term program, notify the plan to the minister of METI and implement it.

The budget for JNES is consists of government budget, incomes from commission of inspections.

Allocation of Responsibilities Between NISA and JNES

NISA: Nuclear and Industrial Safety Agency
 JNES: Japan Nuclear Energy Safety Organization



(2) Science and Technology Policy Bureau (STPB), Ministry of Education, Culture, Sports, Science and Technology (MEXT)

The safety regulation concerning the activities around the nuclear utilization from a scientific and technological aspect and the utilization of radioisotopes (excluding medicines, etc.) is regulated by the Minister of MEXT as the competent minister, and is administered by the Science and Technology Policy Bureau (STPB).

With regard to the licensing of establishment of test and research reactor facilities and use of nuclear fuel materials under the Reactor Regulation Law and the radioisotope waste management which carried out as business under the Radiation Hazards Prevention Law, the Minister of MEXT has the authority to issue the respective licenses, after conducting an examination of the site, structure and equipment from the standpoint of nuclear disaster prevention. The Minister also has the authority to revoke the licenses under certain circumstances, such as the violation of applicable laws and regulations by the license holder.

STPB contains the Nuclear Safety Division, which has a further three offices. The assigned role of the divisions and offices are listed in Table E.3-1. Moreover, an inspector for the safety management of nuclear facility is assigned to resident position at each research reactor facilities and major fuel material use facilities, whose missions are to conduct examinations and inspections stipulated in the Reactor Regulation Law four times a year to confirm compliance with the Operational safety program and surveillance of reactor operation management, and to respond to an emergency situation. The locations of offices of Nuclear Safety Inspectors are illustrated in Figure E.3-1.

As to the education and training programs for the staff members in charge of nuclear safety regulations as well as the cooperation with international regulatory organizations, similar arrangements described in section (1) which NISA takes, are adopted, thereby contributing to the improvement of the capability of international nuclear safety regulation as well as to the improvement of the progress of the nuclear safety regulation in Japan.

The STPB holds advisory committee on nuclear safety regulation, etc. with an objective to contribute to the transparent and efficient administration of nuclear safety by MEXT. Under this committee, sub-committees are held, as listed in Table E.3-3, in order to consider the safety regulations for research reactor, etc, and for radiation under the jurisdiction of MEXT.

As to the activities of the STPB related to the safety regulation for the nuclear facility, Nuclear Safety Technology Center is designated as an organization for welding inspections of the nuclear facility under the Reactor Regulation Law, periodic inspections of the facilities for services of radioisotope waste management under the Radiation Hazards Prevention Law, etc.

(3) Ministry of Health, Labour and Welfare (MHLW)

The Ministry of Health, Labour and Welfare (MHLW) administer the safety regulations for radioactive medicines, the regulations for the protection against clinical radiation, and handling, etc. of radiopharmaceutical and medical equipment at medical institutions.

The PFSB regulates the production of radioactive medicines stand on the Regulations for structures and equipments for Pharmacies, etc. and the Regulations for Manufacturing and Handling of Radio Pharmaceuticals based on the Pharmaceutical Affairs Law, and the Independent Administrative Agency, Pharmaceuticals and Medical Devices Agency conducts periodic inspections of manufacturing plants that produce radioactive medicines. And, the PFSB also regulates entrustment of the disposal of radioactive pharmaceuticals.

The Compliance and Narcotics Division takes charge of preventive measures against the radiation hazard based on the standards for the structure and equipment, etc. in the case where the medical facility is equipped with an X-ray device, regulated by the Rules for the enforcement of the Medical Care Law, etc. This enforcement rule also provides standards for the storage, and disposal, etc. of clinical radioisotopes, etc.

E.3.3 Nuclear Safety Commission (NSC)

The NSC, which was established within the Cabinet Office under the Atomic Energy Basic Law, consists of five members who are appointed by the Prime Minister with the consent of the Diet. The chairperson is elected by mutual voting.

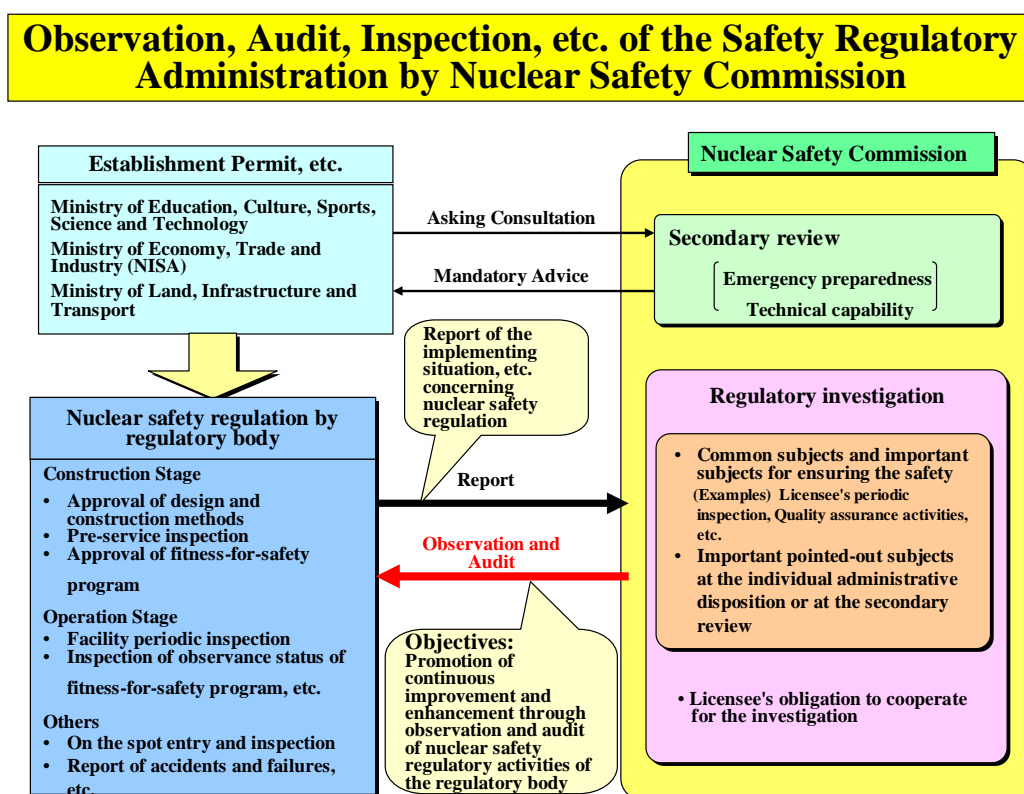
The NSC has the duties of planning, deliberation and decisions on matters that are related to ensuring safety of the utilization of nuclear energy, and establishes guidelines to be used for the safety examination. If the NSC deems it necessary as part of its assigned duties, the NSC can advise and require reporting from the heads of relevant administrative organization by way of the Prime Minister. Moreover the NSC can require the cooperation such as the submission of reports, statement of views, explanation etc. against the heads of relevant administrative organization if it is recognized as necessary.

When the regulatory body issues an establishment license for nuclear facility (excluding nuclear fuel material use facility and facility handling RI, etc.) based on the Reactor Regulation Law, the NSC may independently reexamine and review (what is called “double-checking system”) these validities for the inquiry requested by the competent minister on applicants’ technical ability, the location of relevant nuclear facilities, and measure for preventing the disaster of its structure and equipment, etc..

Even in construction and operational stage of the nuclear facility following their approval of licensing, the NSC receives quarterly reports from the regulatory body on the approval and changes of the Operational Safety Program, the compliance with the Operational Safety Program by the operator, results of the Periodical Inspection of Facility, etc. And the NSC independently monitors and reviews the adequacy of the regulatory activities by directly investigating an operator and a maintenance and inspection operator, if needed.

The NSC has a secretariat in the Cabinet Office. The Secretariat of the NSC is composed of the Secretary-General, the General Affairs Division, the Regulatory Guides and Review Division, the Radiation Protection and Accident Management Division, and the Subsequent Regulation Review Division, and has about 100 staffs. In the NSC, two Committees for Examination, eight Special Committees, and two Technical Advisory Bodies and others are organized, as shown in Table E.3-4, and discussing the relevant issues.

The special committee can organize, if necessary, the subcommittees under the special committee. The NSC opens to the public and permits the hearing of all deliberations of the special committees and subcommittees, and the contents are put under general inspection through the web-site of the NSC (<http://nsc.go.jp/>) and the Nuclear Energy Library.



E.3.4 Other Administrative Bodies

(1) The Atomic Energy Commission (AEC)

The AEC consists of the chairman and four other members appointed by the Prime Minister with the consent of the Diet.

The AEC has duties of planning, deliberation and decisions concerning the research, development and utilization of nuclear energy (excluding safety regulations).

The AEC has been preparing “the Long-Term Plan for Research, Development and Utilization of Nuclear Energy”, which describes the fundamental framework of nuclear policies etc. in Japan about every five years.

When the AEC deems it necessary as part of its assigned mandate, AEC has the authority to recommend and demand reports to the head of relevant administrative organization through Prime Minister, and the AEC also has the authority to request the cooperation including the submission of materials, statement of thought and explanation from the heads of relevant administrative organizations. Furthermore, before the regulatory body issues a license of establishing a nuclear facility (excluding fuel material use facility), the competent minister inquiries about the opinions of the AEC on whether the nuclear facility will be used for peaceful purposes, whether the plan of the applicant conform to the planned development or utilization of nuclear energy, and whether the applicant has an adequate financial resources to construct and maintain the nuclear facility.

(2) Radiation Review Council

The Radiation Review Council is established within MEXT under “the Law for Technical Standards of Radiation Hazards Prevention”. The mandate of the Radiation Review Council is to establish basic policies on technical standards for prevention of radiation hazards and to maintain consistency among related technical standards. The basic policy is that the radiation doses of occupational personnel and the general public be less than the dose that may cause radiation hazards. The council report to the consultation from the heads of the administrative organization concerning technical standards for prevention of radiation hazards, and state its opinion to the heads of administrative organization to keep consistency among technical standards.

The Radiation Review Council consists of a maximum of 20 members, and the Basic Committee composed of experts from different fields is established under the council.

(3) Others

As the establishment of a nuclear facility involves requirements of laws such as the Fire Protection Law, the Port Regulation Law, etc., the Fire Protection Agency, the Ministry of Land, Infrastructure and Transport, and other competent administrative bodies administer the related regulations.

The Basic Law for Emergency Preparedness, the Special Law of Emergency Preparedness for Nuclear Disaster and related regulations apply to a nuclear emergency. Administrative bodies having jurisdiction over these laws are described in Section F.5 (Article 25).

Table E.3-1 The Allocated Duties of Safety Regulation Related Divisions of Nuclear Facilities

1. Nuclear and Industrial Safety Agency, Ministry of Economy, Trade and Industry
(Director-General, Deputy Director-General, Inspectors, Senior Safety Examiner, Divisions, Offices; approximately 300 members for nuclear regulatory persons)

Policy Planning and Coordination Division	- Planning and coordination concerning the general policy of the NISA
Nuclear Safety Public Relations and Training Division	- Activities for public hearing and public relations concerning the nuclear safety - Administration of the Nuclear Safety Inspectors and Senior Specialists for Nuclear Emergency Preparedness - Training and education of personnel to gain and to improve their competency
Nuclear Safety Regulatory Standard Division	- Planning and coordination concerning technology and system to ensure the nuclear safety - Regulation of nuclear power reactors in the stage of research and development, etc.
Nuclear Safety Special Investigation Division	- Management of allegation and litigation concerning nuclear safety
Nuclear Power Licensing Division	- Regulation of commercial power reactors in the design and construction stage
Nuclear Power Inspection Division	- Regulation of commercial power reactors in the operation stage
Nuclear Fuel Transport and Storage Regulation Division	- Regulation of independent spent nuclear fuel storage facility - Regulation concerning transportation of nuclear fuel materials outside of sites(premises)
Nuclear Fuel Cycle Regulation Division	- Regulation concerning refining, processing, fabrication, and reprocessing facilities and activities.
Radioactive Waste Regulation Division	- Regulation of radioactive waste disposal, - Regulation on dismantling and decommissioning of nuclear installations including nuclear fuel cycle facilities - Regulation on monitoring for compliances with clearance level
Nuclear Emergency Preparedness Division	- Planning of nuclear emergency preparedness - Prevention and investigation of incidents and accidents in nuclear businesses - Administration of activities in nuclear emergency - Matters concerning physical protection
Electric Power Safety Division	- Regulation of turbine etc. - Environmental impact assessment

* In addition, Offices of Inspectors for Safety Management of Nuclear Installations are located throughout the country, where the Nuclear Safety Inspectors are stationed. The inspectors belong to Nuclear Power Inspection Div., Nuclear Safety Regulatory Standard Div., Nuclear Fuel Cycle Regulation Div., or Radioactive Waste Regulation Div.

2. Ministry of Education, Culture, Sports, Science and Technology; Science and Technology Policy Bureau
(Director-General, Deputy Director-General, Nuclear Safety Division, Offices; approximately 100 members in total)

Nuclear Safety Division	General management of Nuclear Safety Division
Nuclear Safety Division Office of Nuclear Regulation	Regulations for research reactor facility and fuel material use facility
Nuclear Safety Division Office of Radiation Regulation	Regulations for radioisotopes, etc.
Nuclear Safety Division Office of Emergency Planning and Environmental Radioactivity	Nuclear emergency measures Environmental radiation measures

* In addition, Offices of Inspectors for Safety Management of Nuclear Installations are located throughout the country, where Nuclear Safety Inspectors are stationed to perform safety inspections and belong to Office for Nuclear Regulation

3. Ministry of Health, Labour and Welfare

Pharmaceutical and Food Safety Bureau, General Affairs Division	Regulations concerning the entrustment of disposal of radioactive medicines, etc.
Pharmaceutical and Food Safety Bureau, Safety Division	Provision of preventive measures against the radiation hazard and regulations for the structure and equipment, etc. in the case where the medical facility is equipped with an X-ray device, etc.
Pharmaceutical and Food Safety Bureau, Compliance Division	Regulations for Manufacturing, etc. of Radioactive Medicines

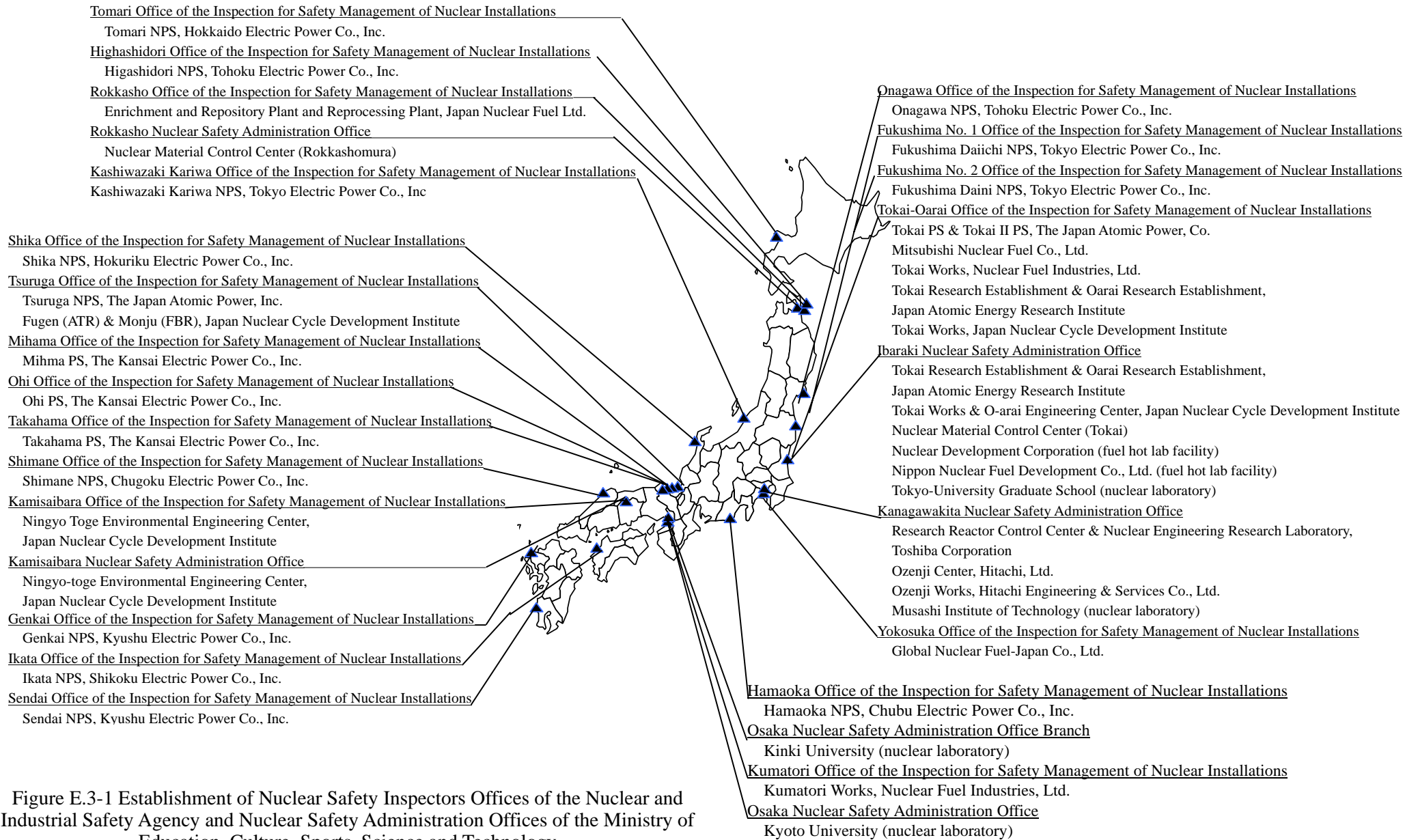


Figure E.3-1 Establishment of Nuclear Safety Inspectors Offices of the Nuclear and Industrial Safety Agency and Nuclear Safety Administration Offices of the Ministry of Education, Culture, Sports, Science and Technology

Table E.3-2 The Organization of the Nuclear and Industrial Safety Subcommittee

Basic Safety Policy Subcommittee.	- General matters securing safety
Nuclear Reactor Safety Subcommittee.	- Technical matters on commercial power reactors and power reactors at the stage of research and development
Nuclear Fuel Cycle Safety Subcommittee.	- Fabrication and reprocessing of nuclear fuel, storage of spent fuel, transportation of nuclear fuel material, and the technical standards
Decommissioning Safety Subcommittee.	- Decommissioning of nuclear installations*
Radioactive Wastes Safety Subcommittee.	- Securing safety of disposal and storage of radioactive wastes
Seismic and Structural Design Subcommittee.	- Technical matters on seismic safety and structural integrity of nuclear installations*
Nuclear Emergency Preparedness Subcommittee.	- Measures for incidents and failure, and general crisis management for emergencies of nuclear installations*and physical protection of nuclear material
INES Evaluation Subcommittee.	- INES Evaluation on incidents and accidents of nuclear installations*
Subcommittee. for the Convention on Nuclear Safety	- Matters related to the Convention on Nuclear Safety and international standards on nuclear safety
Electrical Power Safety Subcommittee.	- Securing safety of electrical power
Study Group on the Way of Inspection	- Matters concerning inspection system of nuclear power generation facilities and nuclear fuel cycle facilities
Subcommittee. for the Joint Convention on Radioactive Waste and Spent Fuel Safety	- Matters etc. related to the Convention on Joint Convention Radioactive Waste and Spent Fuel Safety
Subcommittee. for the Institution of Nuclear Safety Regulation	- Study of the legal system for the prevention of falsification of the self-controlled inspection record based on the investigation of the background of the falsification
Subcommittee. for fitness-for-service assessment etc. of nuclear power system	Study of the followings, in the case where a plant has cracks in a core shroud or reactor coolant re-circulation system piping: (1) Verification of validity in the check methods for core shroud etc. (2) Technical fitness-for-service assessment· judgment method (3) Fitness-for-service verification etc. of individual plant based on check result specifically
Study Group on Countermeasures for Aging	Clarification of basic standards, guides etc. for aging countermeasures Study on the way of rational inspection by the national government, etc.
Study Group on Use of Risk Information	Deliberation on "the Fundamental Concept for Use of "Risk-Information" to Nuclear Safety Regulations (proposal)", development of an implementation plan for use of risk-information, study on preparation etc. of guides for regulations

Table E.3-3 Subordinate Organization of Advisory Committee on Nuclear Safety Regulation, etc.

Subcommittee. on Safety Regulation for ITER	Directions for safety regulation of ITER
Subcommittee. on Safety Regulation for Research Reactors, etc.	Directions for safety regulation of research reactors, nuclear source materials, etc.
Subcommittee. on Safety Regulation for Radiation	Directions for radiation safety regulation

Table E.3-4 List of Special Committees within the NSC

Committee on Examination of Reactor Safety	- Matters concerning the safety of nuclear reactor facilities
Committee on Examination of Nuclear Fuel Safety	- Matters concerning the safety of nuclear fuel material
Emergency Technical Advisory Body	- Technical advice in emergency measures in case of occurrence of an accident or a failure that meet the given standard level in nuclear installation etc.
Emergency Technical Advisory Body for Disaster Prevention of Nuclear Carriers and Submarines	- Technical advices etc. for the emergency measures required in a case of actual or potential nuclear ship emergency
Special Committee for Nuclear Safety Standards and Guides	- Matters concerning safety standards and guides of reactors, nuclear fuel facilities, and other nuclear installations
Special Committee on Radioactive Wastes and Decommissioning	- Matters concerning the safety assurance in radioactive waste disposal - Matters concerning the safety assurance in decommissioning of nuclear installations
Special Committee on Safety Goal	- Establishment of safety goals
Special Committee on Radiation Protection	- Matters concerning the radiation protection considering domestic and foreign trends.
Special Committee on Safe Transport of Radioactive Materials	- Matters concerning the safety assurance in transportation of radioactive materials considering domestic and foreign trends.
Special Committee on Analysis and Evaluation of Nuclear Accidents and Failures	- Analysis and evaluation of domestic and foreign nuclear accidents and failures
Special Committee on Nuclear Safety Research	- Planning of nuclear safety research program - Investigation of implementation status of the nuclear safety research program - Evaluation of the nuclear safety research program
Special Committee on Nuclear Disaster	- The emergency preparedness in the vicinity of nuclear installations, etc.
Task Force for introduction of Safety Regulations Using Risk Information	- Review and analysis of the issue in introduction of safety regulations using risk information
Project Team on Safety Survey of Reprocessing Facilities	- The survey and analysis on the matters considered in the safety regulation activities during the stage of test operation of the Rokkasho reprocessing facility
Safety Investigation on Disposal of Specified Radioactive Wastes	- Technical matters concerning the safety assurance in the final disposal of high-level radioactive wastes

Blank

F. Other General Safety Provisions

Blank Page

Section F. Other General Safety Provisions

F.1 Responsibility of the Licence Holder (Article 21)

- 1. Each Contracting Party shall ensure that prime responsibility for the safety of spent fuel or radioactive waste management rests with the holder of the relevant licence and shall take the appropriate steps to ensure that each such licence holder meets its responsibility.**
- 2. If there is no such licence holder or other responsible party, the responsibility rests with the Contracting Party which has jurisdiction over the spent fuel or over the radioactive waste.**

F.1.1 Responsibility of the Licence Holder

The prime responsibility for the safety of nuclear facility and activities of spent fuel or radioactive waste management rests with the licence holder of the nuclear facility. That is, the licence holder is responsible for adopting necessary measures to fully meet the regulatory requirements stipulated either in the Reactor Regulation Law, the Electricity Utilities Industry Law or the Radiation Hazards Prevention Law, etc. at all of the stages of planning, establishment, operation and maintenance of the nuclear facility, as described in Sections G and H. In addition to meeting with regulatory requirements, the licence holder is required to make efforts for improving safety and reliability of the nuclear facility, through implementing education and training programs of personnel, preparing operation manuals, collecting, studying and sharing information on operating experience and applying it to design, operation and maintenance, adopting the latest progress in technology, performing safety research, and promoting quality assurance activities.

F.1.2 Steps to Ensure that Each Licence Holder Meets its Responsibility

Steps to ensure that each licence holder meets its responsibility are shown below. The details are described in Sections G and H.

The regulatory body regulates licence holders' all activities related to a nuclear facility in accordance with the regulations provided by the Reactor Regulation Law, the Electricity Utility Industry Law or the Radiation Hazards Prevention Law. Especially in the stage of establishment of a major nuclear facility, the competent minister examines the location, structure and the equipment are such that the occurrence of radiation hazards can be prevented, and issues the licence.

The regulatory body, on the basis of the Reactor Regulation Law or the Electricity Utilities Industry Law, conducts the Periodical Facility Inspection to confirm nuclear facility's compliance with the technical standards, and the Nuclear Safety Inspection to confirm licence holder's compliance with the Operational Safety Program. Also, it may conduct the On-the-Spot Inspection as necessary. In case the operator does not comply with the Operational Safety Program, the regulatory body has power to revoke the licence or order shutdown of the operation.

For the radioisotope waste management facilities subject to the Radiation Hazards Prevention Law, the regulatory body conducts the Periodical Inspection to confirm nuclear facility's compliance with the technical standards, and the Radiation Inspector conducts the On-the-Spot inspection of a use facility as necessary. In case the operator does not observe provisions of the Radiation Hazards Prevention Law, regulatory body has authority to revoke the licence or order shutdown of the operation.

In addition, on the basis of the Reactor Regulation Law and the Electricity Utilities Industry Law, the licence holder shall cooperate inquiry by the NSC when the NSC reconfirms the adequacy of the activities of the regulatory body

F1.3 Steps Taken against Absence of the License Holder

In Japan, the management of spent fuel and radioactive waste are subject to the licence issued under the Reactor Regulation Law or the Radiation Hazards Prevention Law. The laws include provisions on succession of a license or steps to be taken by liquidator or administrator in bankruptcy, ensuring safety of spent fuel management or radioactive waste management in such a case.

A license holder of radioisotope waste management facility issued under to the Medical Care Law etc. is allowed to close its operation only after it completes necessary measures for the closure of facility and activities stipulated by the law.

F.2 Human and Financial Resources (Article 22)

Each Contracting Party shall take the appropriate steps to ensure that:

- (i) Qualified staff are available as needed for safety-related activities during the operating lifetime of a spent fuel and a radioactive waste management facility;**
- (ii) Adequate financial resources are available to support the safety of facilities for spent fuel and radioactive waste management during their operating lifetime and for decommissioning;**
- (iii) Financial provision is made which will enable the appropriate institutional controls and monitoring arrangements to be continued for the period deemed necessary following the closure of a disposal facility.**

F.2.1 Human Resources of a Licence Holder to Maintain Major Nuclear Facilities

(1) Human Resources

When issuing establishment licence of a nuclear facility, the regulatory body confirms that the applicant possesses technical capability necessary to establish and operate it adequately, except for the reprocessing activities by JNC and JAERI, two national institutes established by legislation, then consults with the NSC (hereinafter called NSC). The NSC established "the Examination Guideline for the Technical Capability of Nuclear Operators" in May 2004, to conduct examination more objectively and rationally. The examination guide defines the technical capability as administrative capability of an organization to operate its facility and activities ensuring safety, in addition to the knowledge, technologies and skills possessed by the organization. The requirements in this guidelines are shown in Table F.2-1.

The Reactor Regulation Law provides that the applicant for a license attaches an explanation on its technical capability to the application format.

The operator of facilities licensed under the Radiation Hazards Prevention Law, before starting their facility operation, appoints the Supervisor of Radiation Protection and prepares the Internal Rules for Prevention of Radiation Hazards in which safety management of radioisotopes, work scope and organization of workers, and education and training programs are provided.

(2) Qualification of Personnel Engaged in Safety Activities

Any operator of facilities licensed under the Reactor Regulation Law appoints, and notifies the regulatory body of, a Chief Engineer of Reactors to supervise safety in the operation of a reactor facility, a Chief Nuclear Fuel Engineer to supervise safety in the operation of a nuclear fuel fabrication facility or a reprocessing facility, a Supervisor of Spent Fuel to supervise safety in the handling of spent fuel in a spent fuel storage facility and a Supervisor of Radioactive Waste to supervise safety in the handling of nuclear fuel materials etc. in radioactive waste management facilities.

Any operator of facilities licensed under the Radiation Hazards Prevention Law appoints, and notifies the regulatory body of, the Supervisor of Radiation Protection to supervise prevention of radiation hazards, before starting facility operation.

(3) Staff Training and Retraining

Any operator of facilities licensed under the Reactor Regulation Law is requested to provide for following items concerning training and education, in the Operational Safety Program.

- 1) matters relating to regulations and the Operational Safety Program
- 2) structure, performance and the operation of the facility
- 3) matters relating to radiation management
- 4) matters relating to the handling of nuclear fuel materials and material contaminated with nuclear fuel material
- 5) steps to be taken in the case of emergency

The regulatory body confirms the compliance of the license holder with the Operational Safety Program at the Nuclear Safety Inspection..

Any operator of facilities licensed under the Radiation Hazards Prevention Law is requested to provide education and training programs on the following items

- 1) radiation impact on human body
- 2) safe handling of radioisotopes
- 3) regulation relating to the prevention of radiation hazards due to radioisotopes
- 4) Internal Rules for Prevention of Radiation Hazards

F.2.2 Efforts for Ensuring Infrastructure of Human Resources

Nuclear regulatory bodies and nuclear power industry are making efforts for ensuring human resources now and in the future.

(1) Training of Experts in NISA

Staff members, who are in charge of nuclear regulation in NISA, are the Nuclear Officer for Nuclear Emergency, the Nuclear Safety Inspector, the Nuclear Facility Inspector, the Electric Structure Inspector, and the Safety Examiner. They are referred to as the "Nuclear Regulatory Staffs" hereinafter.

An Officer for Nuclear Emergency is stationed at each nuclear installation, guides and advises the license holder in preparing the Operator's Plan for Emergency Preparedness, and conducts duties necessary to prevent progression of nuclear emergency should it occur.

A Nuclear Safety Inspector is stationed at each nuclear installation, conducts the Nuclear Safety Inspection to confirm license holder's compliance with the Operational Safety Program, address incidents if they occur, and supervises management for use of a nuclear installation.

A Nuclear Facility Inspector or an Electric Equipment Inspector is dispatched from NISA head office, and conducts inspection activities, such as the Pre-Service Inspection, the Periodic Inspection of a nuclear installation and the Fuel Assembly Inspection, on the basis of the Reactor Regulation Law or the Electricity Utilities Industry Law, respectively.

Safety Examiners conduct the Safety Examination of a nuclear installation.

A Nuclear Regulatory Staff is required to have expertise in nuclear technology. The system of long term and multistage education and training programs necessary for improvement of his/her expertise is developed, taking account of his/her experience and of the nature of the facility to which he/she is assigned. Moreover, NISA started a Special Training Course on Quality Assurance of Nuclear Installation in 2002. Summary of training for nuclear safety regulation is shown in Fig. 11-1.

NISA has appointed six Special Inspection Instructors in December 2003. They advise inspectors for the Nuclear Safety Inspection, the Periodic Inspection, etc., instruct them to equalize the levels of inspections, and collect opinions and proposals from inspectors and license holders at the same time.

Furthermore, NISA maintains and develops its regulatory competence, as well as contributes to international safety regulation, through exchange of technical experts and information on safety regulation and safety technology, under bilateral arrangements with foreign regulatory bodies and in the

framework of multilateral cooperation (the IAEA and the OECD/NEA).

(2) Training of Experts in JNES

JNES, as well as NISA, develops training courses for its personnel, putting emphasis on inspection activities.

JNES's inspection activities include the Electric Equipment Inspection, the Nuclear Facility Inspection, the Welding Inspection, the Periodic Safety Management Review, the Welding Safety Management Review, the Safety Verification of Disposal Facility, the Safety Verification of Radioactive Waste Package, the Verification of Transportation Packaging, the Verification of Transportation Method and Verification of the Clearance Level. The Reactor Regulation Law or the Electricity Utilities Industry Law stipulates that each of these activities be conducted by qualified personnel. JNES prepares various training courses for staff members to get appropriate qualification in their respective activities. President of JNES assigns inspectors from those qualified personnel. Moreover, JNES encourages inspectors and examiners to participate in the school of external bodies, scientific seminars, etc. to enhance their expertise.

(3) Efforts by Nuclear Industry

Confronting shrinking and aging population of Japan, the nuclear industry has grave concerns in the succession of technology, expertise and experiences, and the generational gap. The first generation experts are in the age of retirement. Each organization in the industry has made various efforts including revitalization of research and development activity, practical use of IT technology, etc. The Japan Atomic Industrial Forum, Inc. established the "Subcommittee for Human Resources" consisting of senior managers in the industry and experts from outside, and studied on human resources in the future.

The subcommittee has made the following proposals in June 2003:

- Training and career development of experts,
 - Establishment of an industry's qualification system of nuclear maintenance and repair technicians
 - Simplification of organizations of maintenance work
 - Establishment of an engineering center to share resources of maintenance and repair technicians, and to share common training facilities
- Recruitment of expert in the future,
 - Establishment of a nuclear educational system, sharing common educational infrastructure

(4) Efforts by University and Research Institutes

The Tokyo University is due to establish a graduate school, in 2005, consisting of three courses of the "Nuclear Reactor Specialist Course", the "Nuclear Fuel Specialist Course", and the "Administrator Course".

Since 1958, JAERI has been operating training courses for engineers and technicians in radioisotope, radiation and nuclear technologies. Recently, JAERI started a course for nuclear emergency preparedness in close cooperation with national and local governments.

(5) Establishment of Professional Engineers System for Nuclear and Radiation Technologies

The Ministry of Education, Culture, Sports, Science and Technology decided to expand the existing Professional Engineers System, and established the nuclear and radiation technology department. Qualification test for the department started in 2004 fiscal year, and there were 21 successful candidates in the 2004 fiscal year.

The Nuclear and Industrial Safety Subcommittee of the Advisory Committee for Energy and Resources of the METI published, in July, 2001, a report titled "To Ensure Infrastructure of Nuclear Safety", which suggests directions to strengthen the institutional infrastructure, the knowledge-based infrastructure and the infrastructure of human resources.

F.2.3 Financial Resources and Financial Rules

In issuing establishment licence of a nuclear facility, except for nuclear fuel material use facility, the regulatory body, in accordance with the Reactor Regulation Law, confirms that the applicant for the license possesses necessary financial basis, then consults with the AEC.(hereinafter called NSC) The Reactor Regulation Law stipulates that applicant should submit financial documents attached to the application format. For example, an applicant for waste repository should attach such documents as the "Scheduled Date of the Commencement of Operation of Facility and Activities", the "Annual Plan for Acceptance and Disposal of Radioactive Wastes", the "Financial Plan and Estimated Annual Financial Balance" and the "Other Financial Matters" to the application format.

Electric utilities have deposited two internal reserves for reprocessing of spent fuel and for decommissioning, on the basis of the Ministerial Order established under the Electricity Utilities Industry Law.

The reserve of spent fuel reprocessing will pay for reprocessing expense subtracting the value of recovered uranium and plutonium. The amount of reserve by the end of March 2005 is about 3,100 billion yen by 10 electric utilities. As the Law on the Management of the Fund Reserved for Spent Fuel Reprocessing was enacted in May 2005, the internal reserve of electric utilities is to be transferred to an organization designated by the Minister of METI.

The reserves for decommissioning of nuclear power generation facilities will pay for the expense of dismantling and removal of commercial power reactor facilities, and the processing and disposal of the waste. The amount of reserve by the end of March 2005 is about 1,100 billion yen by 10 electric utilities.

In accordance with the Specified Radioactive Waste Final Disposal Act enacted in May 2000, operators of power reactor facilities deposit funds for disposal of high level radioactive waste to the Nuclear Waste Management Organization of Japan, the implementing body for disposal, who entrusts management of the fund to the Radioactive Waste Management Funding and Research Center. The Minister of METI, every year, notifies utilities of the amount of money to be deposited to the fund. The amount of deposit per vitrified package was 33,964,000 yen in the year of 2004. The amount of money for construction of depository in mid-2030s and disposal of about 40,000 vitrified packages of high level waste is estimated about 3 trillion yen.

Financial basis of a license holder of fuel material use is to be confirmed through procedures to approve the Operational Safety Program and the steps to be taken at the time of decommissioning.

Financial basis of the operator of radioisotope waste management facility licensed under the Radiation Hazards Prevention Law is to be confirmed through the Periodical Inspection, obligation to maintain the facility in compliance with technical standards, implementation of education and training programs, notification of the Internal Rules for Prevention of Radiation Hazards and the steps to be taken at the time of decommissioning.

Table F.2-1 Requirements in “The Examination Guideline for the Technical Capability of Nuclear Operators” established by the NSC on May 27, 2004

Guideline 1	Organization for Design and Construction
Guideline 2	Assurance of Engineers for Design and Construction
Guideline 3	Experience of Design and Construction
Guideline 4	Quality Assurance Activities in Design and Construction
Guideline 5	Organization for Operation and Maintenance
Guideline 6	Assurance of Engineers for Operation and Maintenance
Guideline 7	Experience of Operation and Maintenance
Guideline 8	Quality Assurance Activities in Operation and Maintenance
Guideline 9	Education and Training for Engineers
Guideline 10	Qualification of Personnel and their Disposition

Fig. 2-1 NISA's Training Courses on Nuclear Safety Regulation

	Training on nuclear safety regulation			Cross-cutting training
	Commercial power reactor	R&D reactor	Nuclear fuel cycle facility	Nuclear emergency preparedness, Crisis management
Meister Course	-Risk communication training for managers - Public-relations training for the Nuclear Safety Inspectors - Quality Assurance training for managers			
Senior expert Course	- Nuclear power generation (BWR, PWR), advanced - Inspection technique for inspectors	- Nuclear power generation (FBR), advanced - FBR sodium technical training		- Senior Officer for Nuclear Emergency, advanced - Senior Officer for Nuclear Emergency, on-site training - Off-site center desk-top drill - Emergency preparedness, emergency measures - Off-site center management - Off-site center functional group
	- Special training course on QA of nuclear installation - Special training course on QA of nuclear installation, advanced			- Senior Officer for Nuclear Emergency, basic - Nuclear Regulatory Staff training
Expert Course	- Nuclear Safety Inspector basic training			
	-Electric Structure Inspector (nuclear power) training	- Nuclear Facility Inspector, basic		
	-Nuclear power station risk assessment technology -Nuclear reactor safety design, basic			
	- Overseas training			
Beginners Course	- Radiation safety			
	- Basic Safety Regulation -Participation to the various basic courses by the Japan Atomic Energy Research Institute			

Each Contracting Party shall take the necessary steps to ensure that appropriate quality assurance programmes concerning the safety of spent fuel and radioactive waste management are established and implemented.

NISA, recognizing that one of the factors that led to the series of TEPCO falsification issues was TEPCO's lack of understanding on the importance of quality assurance system to ensure nuclear safety, integrated licensee's QA system into regulatory inspection, by the amendment of the Reactor Regulation Law enacted in October 2003, and confirms operator's compliance with it through the Nuclear Safety Inspection. The quality assurance activities at the major nuclear facilities except for research reactor facilities and fuel material use facilities, are described in the followings.

F.3.1 Regulatory Requirements on QA of Nuclear Installations

NISA's regulatory activities on major nuclear facilities, based on the Reactor Regulation Law and the Electricity Utility Industry Law, include licensing, approval of design and construction methods, pre-service inspection, periodical facility inspection, etc., covering from planning stage to operation stage. By the Reactor Regulation Law, an operator is required to integrate its quality assurance program into the Operational Safety Program. NISA approves the Operational Safety Program and confirms the operator's compliance with it through the Nuclear Safety Inspection.

The key points of QA activities are as follows.

- a) to involve top management,
- b) to be based on international standards on QA (ISO9001:2000),
- c) to improve them by Plan-Do-Check-Act cycle, and
- d) to establish an independent audit organization.

The Reactor Regulation Law stipulates that operator's QA program should include a) organization managing QA activities, b) plan for operational safety activities, c) implementation of operational safety activities, d) evaluation of operational safety activities, and e) improvement of operational safety activities.

Note) The term, operational safety activities, means activities necessary for maintenance of major nuclear facilities, use of major nuclear facilities, and shipment, storage and disposal of nuclear fuel materials or materials contaminated by nuclear fuel materials.

Operators prepare their QA program of the nuclear facilities and implement them, according to JEAC 4111-2003, "Rules of Quality Assurance for Safety of Nuclear Power Plants", which was developed by the Japan Electric Association (JEA) in autumn of 2003 based on the ISO9001:2000. NISA evaluated the standard and confirmed that it meets the regulatory requirements for nuclear facilities other than test and research reactors and use facilities.

The features of JEAC4111-2003 is as follows.

- i) It is based on ISO 9001:2000, being modified for user-friendliness.
- ii) It takes account of IAEA Safety Standards for Quality Assurance 50-C/SG-Q (1996).
- iii) The definitions of some terms are different from ISO 9001:2000, based on legal expression in national legislature.
- iv) Explanation is added on the terms, "product", "customer", and "quality", in the requirements of ISO 9000:2000.

The contents of JEAC4111-2003 are shown in Table F.3-1.

Moreover, NISA is studying to clarify requirements of quality assurance during not only operating stage but also construction stage in legislation.

F.3.2 Confirmation of Quality Assurance by NISA

(1) Examination of the Policy for QA at operation licensing

NISA requests the applicant to submit the “Policy for Quality Assurance” attached to the application format, and examines it.

(2) Examination of QA Program in Construction Stage

At the construction stage of a commercial power reactor facility, NISA requests the licence holder to submit the “Description on Quality Assurance Program” as specified in the Rules for the Electricity Utilities Industry Law, which describes license holder’s QA activities through detailed design, manufacturing, installation and functional tests, and examines it. Also, NISA confirms that license holder of nuclear power reactor oversees subcontractor's quality control, material control, etc. in appropriate procedures, in addition to its QA audit of primary contractor and primary contractor's own management of manufacturing process.

(3) Confirmation of QA Activities Throughout Service Life

NISA confirms QA activities of the license holder throughout service life of major nuclear facilities by the Nuclear Safety Inspection. Furthermore, at the commercial power reactor facility, NISA, at the Periodic Safety Management Review, examines adequacy of operator’s organization and methods for the Licensee's Periodic Inspection.

Table F.3-1 Table of contents, JEAC4111-2003
"Quality assurance for safety in nuclear power stations"

0. Introduction
1. Objectives
2. Scope of Application
3. Definition
4. Quality Management System
5. Manager's Responsibility
6. Management Control of Resources
7. Planning and Implementation of Works
8. Evaluation and Improvement

F.4 Operational Radiation Protection (Article 24)

Each Contracting Party shall take the appropriate steps to ensure that during the operating lifetime of a spent fuel or radioactive waste management facility:

- (i) the radiation exposure of the workers and the public caused by the facility shall be kept as low as reasonably achievable, economic and social factors being taken into account;**
- (ii) no individual shall be exposed, in normal situations, to radiation doses which exceed national prescriptions for dose limitation which have due regard to internationally endorsed standards on radiation protection; and**
- (iii) measures are taken to prevent unplanned and uncontrolled releases of radioactive materials into the environment.**

Each Contracting Party shall take appropriate steps to ensure that discharges shall be limited:

- (i) to keep exposure to radiation as low as reasonably achievable, economic and social factors being taken into account; and**
- (ii) so that no individual shall be exposed, in normal situations, to radiation doses which exceed national prescriptions for dose limitation which have due regard to internationally endorsed standards on radiation protection.**

Each Contracting Party shall take appropriate steps to ensure that during the operating lifetime of a regulated nuclear facility, in the event that an unplanned or uncontrolled release of radioactive materials into the environment occurs, appropriate corrective measures are implemented to control the release and mitigate its effects.

F.4.1 Summary of Laws, Regulations and Requirements on Radiation Protection

The national standards for radiation protection at nuclear facilities are prescribed by the Reactor Regulation Law, the Electric Utilities Industry Law, the Radiation Hazards Prevention Law, etc. and related government ordinances, ministerial ordinances, orders and notifications, and guidelines based on these laws. The recommendations of the International Commission on Radiological Protection (ICRP) are given due consideration and are incorporated into national legislation and regulation. The Radiation Review Council coordinates these technical standards in the laws and regulations on prevention of radiation hazards.

Ministerial ordinances include the Rules for Enrichment and/or Fuel Manufacturing, the Rules for Commercial Power Reactors, the Rules for Reactors at the Stage of Research and Development, the Rules for Research Reactors, the Rules for Spent Fuel Storage, the Rules for Spent Fuel Reprocessing, the Rules for Waste Disposal, the Rules for Waste Management and the Rules for Fuel Material Use on the basis of the Reactor Regulation Law, and the Rules for the Enforcement of the Law Concerning Radiation Hazards Prevention and other rules on the basis of the Radiation Hazards Prevention Law. These regulations prescribe area control for radiation protection, radiation control of personnel engaged in radiation activities in controlled areas, measurement and surveillance of radiation levels, monitoring of discharged radioactive materials, and maintenance of radiation control equipment. The Notification for Dose Limits on the basis of each of these rules prescribes dose limits and concentration limits of radioactive materials both inside controlled area and outside peripheral monitoring area, and dose limits and concentration limits of radioactive materials for personnel engaged in radiation work, and dose limits for personnel engaged in emergency activities.

In order to ensure compliance with these regulations, operators are required to prescribe in the Operational Safety program, 1) controlled areas, access controlled areas and peripheral monitoring area

and access control to these areas, 2) monitoring equipment at air ventilation and water discharge, 3) monitoring of dose, dose equivalent, concentration of radioactive materials in the air and density of radioactive materials on the surface of contaminated objects, and the decontamination, and 4) maintenance of radiation monitoring equipment. In examining application of a license for a nuclear facility, it is confirmed that the application conforms to the Examination Guides established by the NSC as well as the legislation and technical standards. In these guides, operators are required to reduce the radiation dose received by the public in the vicinity of the facility site as low as reasonably achievable.

F.4.2 National Requirements on Radiation Protection and the Implementation

(1) Allowable Dose Limits

1) Definition of Controlled Areas

The abovementioned rules and dose limit notifications define a controlled area as an area where dose of external radiation may exceed 1.3mSv for a period of three months, the concentration of radioactive material in the air, excluding natural background, may exceed the limit specified in the notification, or the density of radioactive material on the surface of contaminated objects may exceed the limit specified in the notification, and request operators to take necessary measures in the area.

2) Allowable Dose Limits for Occupational Exposure

The abovementioned rules and dose limit notifications provide for the allowable dose limits for occupational exposure listed in Table F. 4-1.

Table F.4-1 Dose limits for personnel engaged in radiation work

Items	Limits
1. Effective dose limits	
(1) Personnel engaged in radiation work	100mSv/5 years but do not exceed 50mSv/1 year
(2) Female personnel	In addition to the provision (1), 5mSv/3 months
(3) Pregnant female personnel	In addition to the provision (2), 1mSv for internal exposure during a period after her employer etc. gets to know her pregnancy until the childbirth
2. Equivalent dose limits	
(1) Eye lens	150mSv/1 year
(2) Skin	500mSv/1 year
(3) Pregnant female's abdominal region	2mSv during a period after her employer etc. gets to know her pregnancy until the childbirth
3. Dose limits for the personnel engaged in emergency radiation work	
(1) Effective dose limits	100mSv
(2) Equivalent dose limits for eye lens	300mSv
(3) Equivalent dose limits for skin	1Sv

3) Dose Limits for the Public

The abovementioned rules and dose limit notifications provide for the allowable dose limits for the public listed in Table F.4-2.

Table F. 4-2 Dose limits for the public

Items	Limits
Dose limits outside the peripheral monitoring area	
Effective dose	1mSv/year
Equivalent dose for eye lens	15mSv/year
Equivalent dose for skin	50mSv/year

(2) Numerical Guide to Reduce Dose to the Public in Vicinity and Discharge Control

At major nuclear facilities licensed on the basis of the Reactor Regulation Law, operators are required to keep the radiation dose received by the public in the vicinity of the facility low taking the ALARA principle, in addition to comply with dose limits and concentration limits of radioactive materials outside peripheral monitoring area due to the discharge of radioactive wastes.

For nuclear power reactors, the guidelines prepared by the NSC, "the Guidelines for the Dose Target Value in the Vicinity of the Light Water Nuclear Power Reactors", defines the target value for radiation doses received by the public in the vicinity of the facilities as 50 μ Sv per year due to the release of radioactive materials to the environment during normal operation. Operators establish the annual numerical discharge control guide that satisfies the above-mentioned target, put it in the Operational Safety Program, and obtain approval of the regulatory body.

For the reprocessing facility, fabrication facility, use facility, waste disposal facility, and waste management facility, the operators are required to reduce radiation doses based on the ALARA principle at the license examination. Operators define the control target value smaller than the dose limit of 1 mSv / year, put it in the Operational Safety Program, and obtain approval of the regulatory body. During the decommissioning, operators continue the radiation control, setting the control target value equivalent or lower than the value during operation.

The regulatory body approves the control target value, confirms compliance with the Operational Safety Program, and collects report from operators.

At radioisotope waste management facilities licensed on the basis of the Radiation Hazards Prevention Law, an operator, in addition to comply with concentration limits of gaseous and liquid discharge, makes efforts to keep dose at site boundary below 250 μ Sv / 3 months

(3) Measurement of Environmental Radiation

An operator of major nuclear facility licensed on the basis of the Reactor Regulation Law conducts radiation monitoring at the site vicinity during normal operation, assesses the impact upon the environment of the discharge of radioactive materials from the facility, and feedbacks the results in improving discharge control and facility management.

Local governments hosting nuclear facilities also monitor radiation level independently at the site vicinity to protect public health and safety.

Meanwhile, the NSC indicates fundamentals of the monitoring plan and its implementation and the evaluation of radiation dose in the Guide on Environmental Radiation Monitoring, in order to improve and standardize monitoring technology. Local governments and operators implement monitoring in accordance with the guide.

An operator of radioisotope waste management facility licensed on the basis of the Radiation Hazards Prevention Law monitors radiation level and measures contamination by radioactive materials at controlled area boundary, site boundary and any appropriate points.

F.4.3 Regulatory Control Activities

(1) Discharge Control of Radioactive Materials

The abovementioned rules provide that three-month-averaged concentration of radioactive materials in air outside peripheral monitoring area shall not exceed the concentration limits for discharge of gaseous radioactive waste, that three-month-averaged concentration of radioactive materials in water at the outside of the boundary of the peripheral monitoring area shall not exceed the concentration limits for discharge of liquid radioactive waste with a discharge facility, and that doses due to liquid discharge of radioactive wastes from reprocessing facilities monitored at the outlet to the ocean shall not exceed the dose limit. The rules also provide that operators shall immediately report to the competent minister when any of these limits are exceeded, and report within 10 days on details of the event and corrective measures taken.

(2) Control of Personal Exposure

The abovementioned rules require operators to keep records of doses to personnel engaged in radiation work.

F.4.4 Unplanned or Uncontrolled Releases

Operators of Nuclear Facilities, on the basis of abovementioned rules, shall prepare the Operational Safety Program and have them approved by the regulatory body, which provide that operators, in case of unplanned or uncontrolled release of radioactive materials, should take measures against the spread of contamination by nuclear fuel materials or radioisotopes and carryout decontamination work without delay.

And as an example, the Safety Examination Guide for Reprocessing Facility, which is used in safety examination of reprocessing facility with large inventory of radioactive materials, provides that fire and explosion due to fine metal particles from fuel cladding or organic solvent, criticality accident, leakage or loss of function due to damage or failure of equipment or piping, or spent fuel handling failure do not cause excessive exposure of radiation to the public.

When an unplanned or an uncontrolled release of radioactive materials initiates any specific events (Table F.5-1) defined in the Specific Law for Nuclear Emergency, emergency activities start according to the procedure, and the Prime Minister declares Nuclear Emergency if the initial event progresses and exceeds the predetermined level. Nuclear emergency will be described in detail in the ensuing section.

F.5 Emergency Preparedness (Article 25)

- 1. Each Contracting Party shall ensure that before and during operation of a spent fuel or radioactive waste management facility there are appropriate on-site and, if necessary, off-site emergency plans. Such emergency plans should be tested with appropriate frequency.**
- 2. Each Contracting Party shall take the appropriate steps for the preparation and testing of emergency plans for its territory insofar as it is likely to be affected in the event of a radiological emergency at a spent fuel or radioactive waste management facility in the vicinity of its territory.**

F.5.1 Laws, Regulations and Requirements for Nuclear Emergency Preparedness

The JCO Criticality Accident in September 1999 was a very serious accident when local residents were instructed for sheltering or evacuation for the first time in Japan, shattering basic premise of securing safety in promoting utilization of nuclear energy. Lessons learned from the accident clarified the special characteristics of nuclear emergency, which would demand quick initial response, coordinated cooperation among the national and local governments, strengthening of the national emergency preparedness and the clarification of operator's responsibilities. The Specific Law for Nuclear Emergency Preparedness (hereinafter referred to the Specific Law for Nuclear Emergency) was enacted in December 1999 and enforced in June 2000, addressing the special characteristics of nuclear emergency (note 1) mentioned above. The law was enacted within the legal framework already established by the Basic Law on General Emergency Preparedness, which had defined roles of the national government, local governments, etc. in emergencies such as earthquakes, typhoons, conflagrations and nuclear emergency.

The part of "Nuclear Emergency Preparedness" in the Basic Plan for Emergency Preparedness based on the Basic Law on General Emergency Preparedness, was extensively revised in accordance with the Specific Law of Nuclear Emergency, clarifying roles and responsibilities of the national government, local governments, and nuclear operators (note 2).

The NSC, taking into consideration the Specific Law for Nuclear Emergency and the lessons learned from the JCO Criticality Accident, revised the Emergency Preparedness Guidelines on technical and specialized matters for nuclear emergency in May 2000,

- to expand the scope for research reactors and nuclear fuel related facilities in addition to the nuclear power stations, reprocessing facilities, etc., and
- to include measures against the nuclear fuel material release and the nuclear criticality accident in addition to the noble gases and iodine release.

After that, the guidelines has been revised several times by the NSC,

- to amend the terms and the coefficient of dosage (Sv/Bq) for internal exposure, following the integration of ICRP1990 recommendations into national legislation (March 2001),
- to clarify responsibilities of medical professionals of the national government, local governments, operators, etc. feeding back the experience of medical treatment at the criticality accident (June 2001),
- to amend measures of the preventive use of stable iodine tablets taking account of scientific knowledge acquired by the long-term follow-up survey on atomic bomb survivors and the investigation into the Chernobyl accident (April 2002),
- to define the measures of the mental health at a nuclear emergency, taking account of the

- experiences at the criticality accident and at natural disasters such as seismic hazards (November 2002), and
- to define local plan for the emergency medical treatment system (July 2003).

In this section, emergency preparedness of main nuclear facilities in accordance with the Specific Law of Nuclear Emergency is described.

note 1) The term “nuclear emergency” means unusual release of radioactive materials or unusual radiation streaming outside of a nuclear facility, by operation of a nuclear reactor, fabrication, reprocessing and use of nuclear fuel materials, storage of spent fuels, management of nuclear fuel materials or the materials contaminated with nuclear fuel materials, and the accompanying shipment, and the term “nuclear disaster” means the damage caused by a nuclear emergency to the life, health or property of the public, according to the Specific Law of Nuclear Emergency.

note 2) The term “an operator” means a license holder for fuel manufacturing operation of nuclear reactors, spent fuel storage, reprocessing, radioactive waste disposal, or use of nuclear fuel materials, according to the Specific Law of Nuclear Emergency.

F.5.2 Nuclear Emergency Preparedness and the Emergency Measures

The nuclear emergency preparedness and the emergency measures concerning operators and major nuclear facilities in accordance with the Specific Law of Nuclear Emergency are as follows.

(1) Outline of Nuclear Emergency Preparedness at Major Nuclear Facilities (Fig. F.5-1)

Quick response and coordinated cooperation among related organizations are important in a nuclear emergency.

- The Specific Law of Nuclear Emergency defines specific initial events in a major nuclear facilities (see Table F.5-1), the occurrence of which the operator shall immediately notify the competent minister and the heads of related local governments of.
- The competent minister, receiving the notification, starts activities according to the procedure stipulated by the law. Staff with expertise in emergency measures will be sent to local governments on request. The Senior Officer for Nuclear Emergency collects information and coordinates activities preventing expansion of the events.
- When the competent minister recognizes that the specific initial event exceeds the predetermined level and has developed into an emergency, the minister immediately reports it to the Prime Minister.
- The Prime Minister declares “Nuclear Emergency”, and advises or directs related local governments on necessary measures such as sheltering, evacuation or preventive use of stable iodine tablets to be taken by them.
- The Prime Minister establishes the "Nuclear Emergency Response Headquarters" in Tokyo, which he will head, and the "Local Nuclear Emergency Response Headquarters".
- The NSC, when a nuclear emergency occurs, calls the Emergency Technical Advisory Body that consists of members from the NSC and the Investigation Committee for Emergency Measures and makes technical advices to the Prime Minister.
- Local governments establish their own emergency response headquarters.
- The national government, local governments and related operators etc. establish the "Joint Council for Nuclear Emergency Response" at the Off-Site Center in order to share information and coordinate their emergency measures.

(2) On-site and Off-site Nuclear Emergency Preparedness at Major Nuclear Facilities

Organizations related to nuclear emergency preparedness keep themselves always ready to collect and send information and start quick response against an emergency, and conduct exercises, disseminate knowledge and promote research on emergency preparedness. Outline of roles and

responsibilities of related organization are as follows.

1) On-Site Emergency Preparedness at Major Nuclear Facilities

When the operator detects abnormal release of radioactive material or abnormal level of radiation at a nuclear facility, it takes necessary measures to prevent progression of the event into an emergency.

The operator develops Operator's Plan for Nuclear Emergency Preparedness after consulting with related local governments, which provides for prevention of, emergency measures against, and post-emergency restoration of, a nuclear emergency, including on-site and off-site cooperation with other organizations. Especially, quick and accurate notification of occurrence of specific initial events to related organizations is a very important obligation of the operator.

Moreover, the operator is required to take part in comprehensive exercise with related organizations, and keep close contact with them.

2) Off-Site Emergency Preparedness of Major Nuclear Facilities

Roles and responsibilities of the national government and local governments in emergency preparedness are defined in the Specific Law of Nuclear Emergency and the Basic Plan for Emergency Preparedness. Each local government develops its own Local Plan for Emergency Preparedness. They conduct emergency environmental radiation monitoring, and recommend or instruct evacuation, sheltering or preventive use of stable iodine to the resident, receiving advice or direction from the Prime Minister.

(3) Responsibility of the Related Administrative Agencies concerning the Nuclear Emergency Preparedness

1) Responsibility of the National Government

The national government establishes following preparation to prevent occurrence of nuclear emergency and to take measures in emergency.

- The competent minister stations a Senior Officer for Nuclear Emergency in the vicinity of each nuclear facility, who guides and advise the operator in preparing Operator's Plan for Emergency Preparedness and, in emergency, takes necessary measures preventing progression of the emergency.
- The NSC, when a nuclear emergency occurs, calls the Emergency Technical Advisory Body that consists of members from the NSC and the Investigation Committee for Emergency Measures and makes technical advices on dissolution of nuclear emergency, change of area for emergency measures, and other technical matters to the Head of the Nuclear Emergency Preparedness Headquarter (the Prime Minister).
- The competent minister designates a facility in the vicinity of a nuclear facility as Off-Site Center to be used in an emergency. In case of an emergency, the national government, the local governments and the operator establish at the Off-Site Center the "Joint Council for Nuclear Emergency Response", in order to share information and to coordinate their activities. Off-Site Centers, located on the points shown in Fig. F.5-2, have communication equipment with the Prime Minister's Official Residence, the Cabinet Office, the Emergency Response Centers of NISA or MEXT and related local governments, and other necessary equipment.
- The Off-site Center is provided with equipment to monitor the environmental radiation level in the vicinity of the facility and display it on-line. Also, it is provided with equipment to display on-line information on accident condition in the nuclear facility, and information on accident progression predicted by ERSS (Emergency Response Support System).
- The national government establishes arrangements to initiate quick and coordinated activities

in an emergency.

- The national government conducts comprehensive nuclear emergency exercise once a year according to the plan prepared by the competent minister.

2) Responsibilities of Local Governments

The local governments are required to develop and revise Local Plan for Emergency Preparedness in accordance with Article 40 of the Basic Law on General Emergency Preparedness, consulting with the Prime Minister beforehand.

3) Operator's Responsibility

- The operator develops its own Operator's Plan for Nuclear Emergency Preparedness after consulting with related local governments, and submits it to the competent minister before the operation with nuclear fuel material loading to the nuclear facilities.
- The operator establishes on-site organization for nuclear emergency preparedness, and designates a Manager for Nuclear Emergency Preparedness who administers the organization.
- The Manager for Nuclear Emergency Preparedness shall notify specific initial events to the competent authorities.

F.5.3 Implementation of the Nuclear Emergency Countermeasure Exercises

Plans for Nuclear Emergency Preparedness are developed in the vicinity of each nuclear facility in accordance with the Specific Law for Nuclear Emergency, and an Off-Site Centers is located in the vicinity of each nuclear facility. Exercises of various levels are conducted to confirm the effectiveness of the emergency preparedness. The purpose of exercise includes 1) to enhance understanding of the nuclear emergency preparedness by responsible personnel of related organizations and local residents, and 2) to verify whether emergency measures function in predetermined way, and whether information sharing and cooperation among related organizations are adequate. Exercises cover communication, monitoring, decision making on emergency measures to be taken, sheltering or evacuation etc., ranging from large scale national exercise to operator's on-site exercise. Exercises in the past years are shown below.

(1) Exercise Planned by the National Government (Table F.5-2 (1))

The national government started nation-wide comprehensive exercises for nuclear emergency involving national and local governments, designated public organizations, operators of the nuclear facility and the local residents once a year, upon establishment of the Specific Law of Nuclear Emergency after the JCO Criticality Accident, increasing its involvement in exercises planned and executed mainly by local governments in the past. The exercise for power reactor facilities includes a scenario assuming core damage and relevant accident management activities.

Exercises implemented in 2003 and afterwards are as follows:

- On November 26, 2003, for the Unit No. 2 of Genkai Nuclear Power Station (Genkai-cho, Higashi Matsuura-gun, Saga Prefecture), a exercise was implemented under cooperation of the national government, Saga Prefecture and Nagasaki Prefecture, related municipalities, the Kyushu Electric Power Co., Inc., and related administrative agencies for general emergency, and about 9400 persons participated including local resident etc. This exercise was carried out over two prefectures and the NSC made advices through a teleconference from the Tokyo headquarter to the local headquarter for the first time.
- The exercise in 2004 fiscal year was scheduled to be implemented on November 1 and 2, 2004 at the Kashiwazaki-Kariwa Nuclear Power Station in Niigata Prefecture, but due to the Niigata Chuetsu Earthquake on October 23, it was cancelled.

The results of exercise have been evaluated and reflected to the items, method etc. of exercises after the upcoming year. The assessment methodologies are the participant's questionnaire, monitoring and evaluation by a third party agency, and external well-informed person's view.

(2) Exercise Planned by the NSC

The NSC implements exercise for improvement of the emergency communication system, and for activation of the Emergency Technical Advisory Body and improvement of its effectiveness.

(3) Exercise Planned by Local Governments (Table F.5-2 (2))

The Local Plan for Emergency Preparedness prescribes local exercise to be planned and conducted by local governments, which national government and the NSC support by sending expert staffs etc..

(4) Exercise Planned by Operators

The operators have conducted on-site exercises including establishment and operation of emergency response headquarters, communication, emergency environmental radiation monitoring, etc. based on Operator's Plan for Emergency Preparedness for each site about once per year. The operators conduct the exercise etc. involving accident management activities, to confirm its effectiveness.

The operator participates in the exercise planned and executed by the local government.

(5) Participation in International Nuclear Emergency Exercise

Japan participated in the Joint International Nuclear Emergency Exercise (JINEX1) held in May 2001 sponsored by the IAEA, learning lessons on cross border radiological emergency, and will participate in future international exercises.

F.5.4 Emergency in the Vicinity of the Territory

Japan is a contracting party to the Convention on Early Notification of a Nuclear Accident, and to the Conventions on Assistance in the Case of a Nuclear Accident or Radiological Emergency. The Ministry of Foreign Affairs has been designated as the authority for notification and the competent ministry for radiological emergency in the vicinity of the territory.

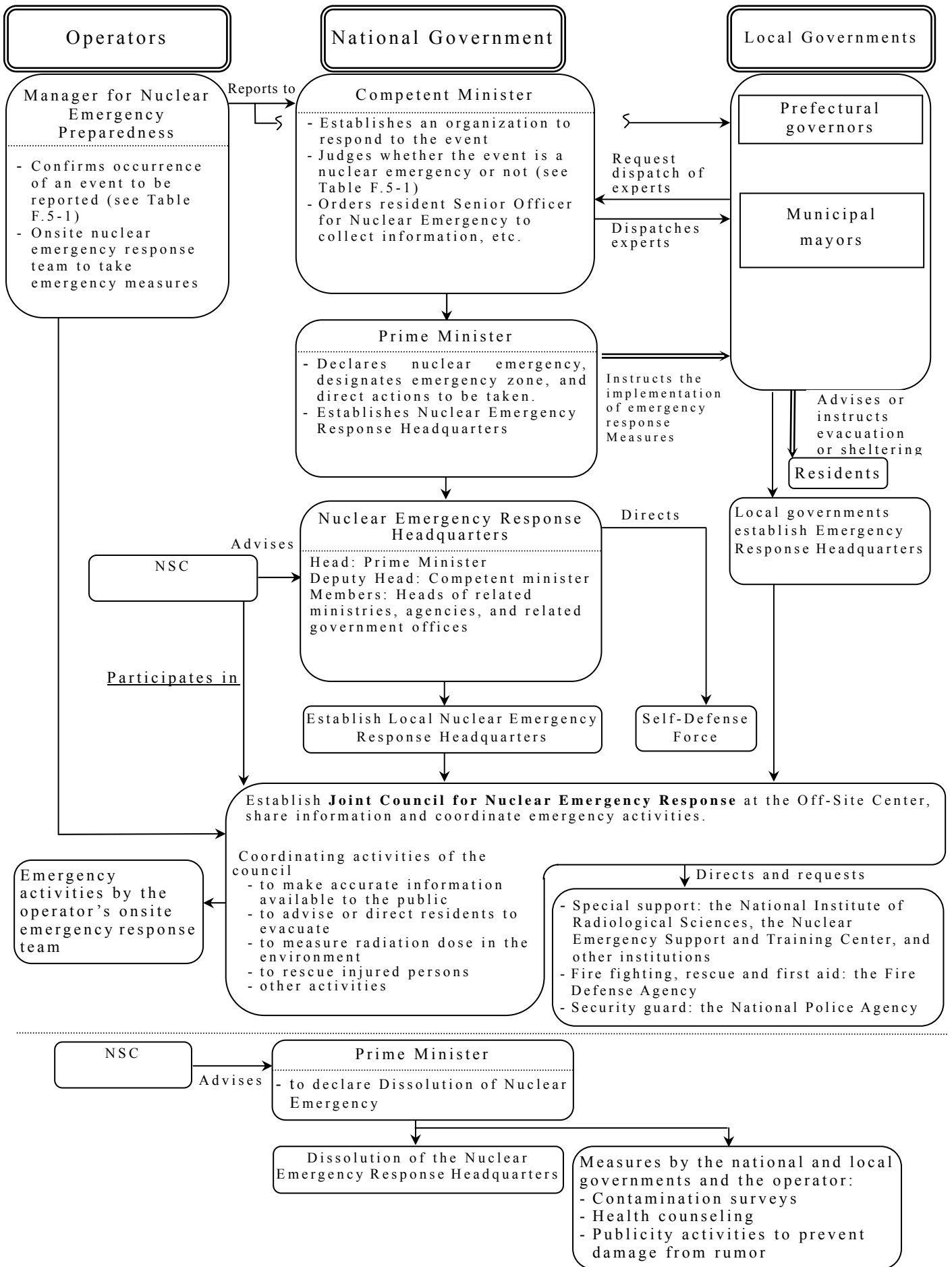


Fig. F.5-1 Measures Based on the Specific Law for Nuclear Emergencies

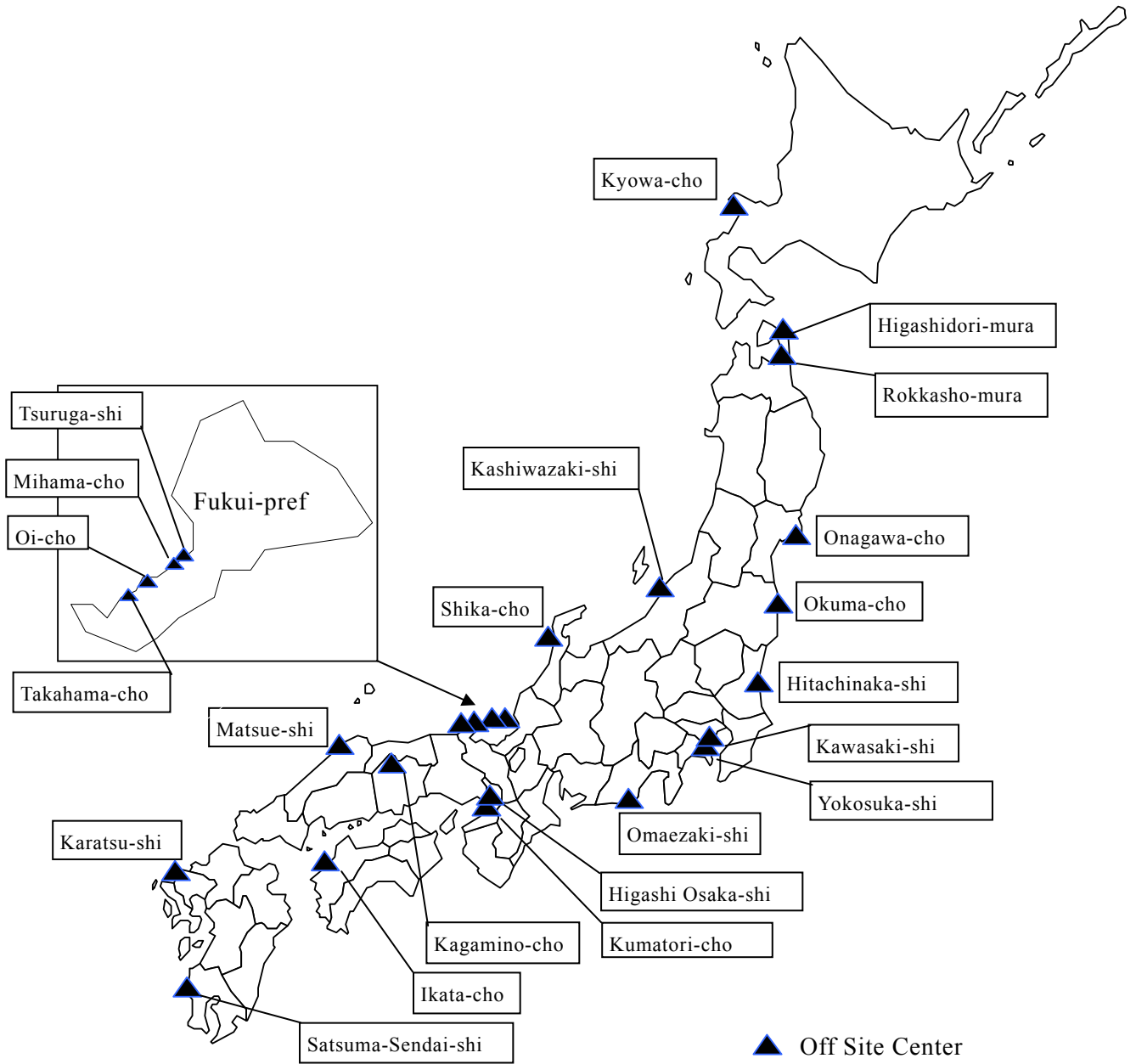


Fig. F.5-2 Off-Site Center Site

Table F.5-1 Main Specific Events, Nuclear Emergencies and Countermeasures Prescribed by the Specific Law for Nuclear Emergencies

	Events	Reporting Criteria for Operators and the Criteria for the Declaration of Nuclear Emergency	
Events to be reported by operators			<p>▼ Conditions whereby to judge the occurrence of a nuclear emergency</p>
	<p>a) Detection of radiation near site boundary</p> <p>b) Detection of radioactive material at exhaust pipes or other release points</p> <p>c) Detection of radiation or radioactive material due to fire or explosion, outside controlled area</p> <p>d) Individual events depending on the characteristics of nuclear facilities</p> <p>Examples:</p> <ul style="list-style-type: none"> - Failure of scram - Loss of reactor coolant - Loss of all AC power supplies - A decrease of spent fuel pool water level at a reprocessing facility 	<p>Exceeding 5μSv/h at one point for more than 10 minutes</p> <p>Exceeding 5μSv/h at more than two points at the same time</p> <p>The concentration of radioactive material remains at a level equivalent to exceeding 5μSv/h for more than 10 minutes, or radioactive material release at a level equivalent to exceeding 5μSv/h occurs.</p> <p>Radiation dose exceeding 50μSv/h</p> <p>Release of radioactive material equivalent to exceeding 5μSv/h</p> <p>Reactor shut down can not be achieved by usual neutron absorbers.</p> <p>Reactor coolant leakage that requires the activation of the emergency core cooling system (ECCS) occurs.</p> <p>All AC power supplies have been stopped for more than five minutes.</p> <p>The spent fuel pool water level has dropped to a level at which fuel assemblies are exposed.</p>	<p>Exceeding 500μSv/h at one point for more than 10 minutes</p> <p>Exceeding 500μSv/h at more than two points at the same time</p> <p>The concentration of radioactive material remains at a level equivalent to exceeding 500μSv/h for more than 10 minutes, or radioactive material release at a level equivalent to exceeding 5mSv/h occurs.</p> <p>Radiation dose exceeding 5mSv/h</p> <p>Release of radioactive material equivalent to exceeding 500μSv/h</p> <p>All reactor shutdown functions have been lost.</p> <p>All the ECCSs are unable to flood the reactor for cooling.</p> <p>All AC power sources have been lost and all core cooling functions have been lost.</p>
The national government's response	<p>The competent minister sends staff with expertise to local governments at their request.</p> <p>Resident Senior Officer for Nuclear Emergencies conduct necessary response operations.</p> <p>Related ministries and agencies will conduct the following activities in accordance with an inter-agency agreements:</p> <ul style="list-style-type: none"> - Officials from related ministries and agencies will come together to have a liaison conference for emergency response in Tokyo. - Designated parties will come together at the Off-Site Center to hold a liaison conference fielding emergency measures. 	<ul style="list-style-type: none"> - The competent minister confirms the occurrence of a nuclear emergency and reports it to the Prime Minister. - The Prime Minister declares Nuclear Emergency and takes the following action: - To advise or instruct the heads of related local governments to order residents to evacuate their homes or take shelter indoors; - To establish Nuclear Emergency Response Headquarters in Tokyo and Local Nuclear Emergency Response Headquarter at the appropriate Off-Site Center; and - To set up the Joint Council for Nuclear Emergency Response in order to exchange information between the national and local governments. 	

Table F.5-2 Nuclear Emergency Exercise

Planned by	Date	Nuclear Facility
(1) Exercise planned by National Government		
National Government	2000/10/28(Sat.)	The Chugoku Electric Power Co., Inc. Shimane Nuclear Power Station
National Government	2001/10/27(Sat.)	Hokkaido Electric Power Co., Inc. Tomari Power Station
National Government	2002/11/07(Thurs.)	The Kansai Electric Power Co., Inc. Ohi Power Station
National Government	2003/11/26(Wed.)	Kyushu Electric Power Co., Inc. Genkai Nuclear Power Station
(2) Exercise planned by Local Government (From April 2001 To March 31, 2005)		
Miyagi-pref.	2001/07/11(Wed.)	Tohoku Electric Power Co., Inc. Onagawa Nuclear Power Station
Ibaraki-pref.	2001/09/29(Sat.)	Japan Nuclear Cycle Development Institute Tokai Reprocessing Center
Kanagawa-pref	2001/10/25(Thurs.)	Global Nuclear Fuel-Japan Co., Ltd.
Okayama-pref.	2001/10/29(Mon.)	Japan Nuclear Cycle Development Institute Ningyo Toge Environmental Engineering Center
Ehime-pref.	2001/11/01(Thurs.)	Shikoku Electric Power Co., Inc. Ikata Power Station
Shimane-pref.	2001/11/07(Wed.)	The Chugoku Electric Power Co., Inc. Shimane Nuclear Power Station
Niigata-pref.	2001/11/20(Tues.)	The Tokyo Electric Power Co., Inc. Kashiwazaki Kariwa Nuclear Power Station
Saga-pref.	2001/11/26(Mon.)	Kyushu Electric Power Co., Inc. Genkai Nuclear Power Station
Fukushima-pref.	2001/11/28(Wed.)	The Tokyo Electric Power Co., Inc. Fukushima Daini Nuclear Power Station
Ishikawa-pref.	2002/01/11(Fri.)	Hokuriku Electric Power Co., Inc. Shika Nuclear Power Station
Kagoshima-pref.	2002/01/31(Thurs.)	Kyushu Electric Power Co., Inc. Sendai Nuclear Power Station
Shizuoka-pref.	2002/02/21(Thurs.)	The Chubu Electric Power Co., Inc. Hamaoka Nuclear Power Station
Fukui-pref.	2002/03/30(Sat.)	The Kansai Electric Power Co., Inc. Mihama Power Station
Miyagi-pref.	2002/09/03(Tues.)	Tohoku Electric Power Co., Inc. Onagawa Nuclear Power Station
Ibaraki-pref.	2002/09/30(Mon.)	Japan Nuclear Cycle Development Institute Oarai Engineering Center
Hokkaido	2002/10/25(Fri.)	Hokkaido Electric Power Co., Inc. Tomari Power Station
Ehime-pref.	2002/10/25(Fri.)	Shikoku Electric Power Co., Inc. Ikata Power Station
Kagoshima-pref.	2002/10/29(Tues.)	Kyushu Electric Power Co., Inc. Sendai Nuclear Power Station
Fukushima-pref.	2002/11/08(Thurs.)	The Tokyo Electric Power Co., Inc. Fukushima Daiichi Nuclear Power Station
Shimane-pref.	2002/11/08(Fri.)	The Chugoku Electric Power Co., Inc. Shimane Nuclear Power Station
Niigata-pref.	2002/11/09(Sat.)	The Tokyo Electric Power Co., Inc. Kashiwazaki Kariwa Nuclear Power Station
Ishikawa-pref.	2002/11/11(Mon.)	Hokuriku Electric Power Co., Inc. Shika Nuclear Power Station
Saga-pref.	2002/11/25(Mon.)	Kyushu Electric Power Co., Inc. Genkai Nuclear Power Station
Okayama-pref.	2002/11/26(Tues.)	Japan Nuclear Cycle Development Institute Ningyo-Toge Environmental Engineering Center
Aomori-pref	2002/12/18(Wed.)	Japan Nuclear Fuel Ltd. Reprocessing Plant
Nagasaki-pref	2003/01/30(Thurs.)	Kyushu Electric Power Co., Inc. Genkai Nuclear Power Station
Shizuoka-pref.	2003/02/03(Mon.) /04(Tues.)	The Chubu Electric Power Co., Inc. Hamaoka Nuclear Power Station
Ibaraki-pref	2003/9/30 (Tue.)	Japan Atomic Power Co., Inc. Tokai No. 2 Power Station
Hokkaido	2003/10/24 (Fri.)	Hokkaido Electric Power Co., Inc. Tomari Power Station

Ehime-pref	2003/10/27 (Mon.)	Shikoku Electric Power Co., Inc. Ikata Power Station
Aomori-pref	2003/10/28 (Tue.)	Japan Nuclear Fuel Ltd. Reprocessing Facility, Plutonium Refining Equipment
Niigata-pref	2003/10/29 (Wed.)	Individual drill (Emergency response by related administrative agencies in the Off-site Center)
Miyagi-pref	2003/10/29 (Wed.)	Tohoku Electric Power Co., Inc. Onagawa Nuclear Power Station
Fukui-pref	2003/11/15 (Sat.)	Japan Atomic Power Co., Inc. Tsuruga Power Station
Kanagawa-pref	2003/11/27 (Thurs.)	Toshiba Nuclear Technology Research Laboratory Nuclear Critical Assembly (NCA)
Fukushima-pref	2003/11/28 (Fri.)	The Tokyo Electric Power Co., Inc. Fukushima Daini Nuclear Power Station
Shimane-pref	2004/1/23 (Fri.)	The Chugoku Electric Power Co., Inc. Shimane Nuclear Power Station
Kagoshima-pref	2004/1/28 (Wed.)	Kyushu Electric Power Co., Inc. Sendai Nuclear Power Station
Okayama-pref	2004/2/20 (Fri.)	Japan Nuclear Cycle Development Institute Ningyo-toge Environmental Engineering Center, Homogenizing Equipment, Uranium Enrichment Prototype Plant
Ishikawa-pref	2004/3/23 (Tue.)	Hokuriku Electric Power Co., Inc. Shika Nuclear Power Station
Shizuoka-pref	2004/6/29 (Tue.)	Hamaoka Nuclear Power Station
Ibaraki-pref	2004/9/30 (Thurs.)	Japan Nuclear Cycle Development Institute Tokai Reprocessing Center
Shimane-pref	2004/10/8 (Fri.)	The Chugoku Electric Power Co., Inc. Shimane Nuclear Power Station
Miyagi-pref	2004/10/19 (Tue.)	Tohoku Electric Power Co., Inc. Onagawa Nuclear Power Station
Hokkaido-pref	2004/10/22 (Fri.)	Hokkaido Electric Power Co., Inc. Tomari Power Station
Ehime-pref	2004/10/26 (Tue.)	Shikoku Electric Power Co., Inc. Ikata Power Station
Saga-pref	2004/11/15 (Mon.)	Kyushu Electric Power Co., Inc. Genkai Nuclear Power Station, preliminary exercise
Aomori-pref	2004/11/16 (Tue.)	Tohoku Electric Power Co., Inc. Higashidoori Nuclear Power Station
Saga-pref	2004/11/22 (Mon.)	Kyushu Electric Power Co., Inc. Genkai Nuclear Power Station,
Fukushima-pref	2004/11/24 (Wed.)	The Tokyo Electric Power Co., Inc. Fukushima Daiichi Nuclear Power Station
Okayama-pref	2004/11/30 (Tue.)	Japan Nuclear Cycle Development Institute Ningyo-toge Environmental Engineering Center, Homogenizing Equipment, Uranium Enrichment Prototype Plant
Kagoshima-pref	2005/1/30 (Sun.)	Kyushu Electric Power Co., Inc. Sendai Nuclear Power Station
Aomori-pref	2005/2/16 (Wed.)	Japan Nuclear Fuel Ltd. Reprocessing Facility, Plutonium Refining Equipment

Each Contracting Party shall take the appropriate steps to ensure the safety of decommissioning of a nuclear facility. Such steps shall ensure that:

- (i) qualified staff and adequate financial resources are available;**
- (ii) the provisions of Article 24 with respect to operational radiation protection, discharges and unplanned and uncontrolled releases are applied;**
- (iii) the provisions of Article 25 with respect to emergency preparedness are applied; and**
- (iv) records of information important to decommissioning are kept.**

The AEC's Long-term Program states that nuclear facilities licensed on the basis of the Reactor Regulation Law should be decommissioned safely at the responsibility of their operators, with the understanding and support of the local community, and that the land, after decommissioning of commercial power reactors, is expected to serve as sites for new nuclear power plants again with the understanding of their communities.

The regulatory policy for dismantling or decommissioning of reactor facilities has been investigated and discussed, resulting as following three reports;

- (1) "Basic Philosophy to Assure Safety for the Dismantling Nuclear Reactor Facilities" (December 1985, Decision by the NSC, revised in August 2001),
- (2) " Aiming at Decommissioning of Commercial Nuclear Power Facilities " (January 1997, Nuclear Energy Subcommittee, Advisory Committee for Natural Resources and Energy),
- (3) "Philosophy for Safety Assurance and Safety Regulation on the Decommissioning of Commercial Power Reactor Facilities" (August 2001, Decommissioning Safety Subcommittee, Nuclear and Industrial Safety Subcommittee, Advisory Committee for Natural Resources and Energy).

Based on these reports, in order to ensure the safety during the decommissioning of commercial nuclear power reactors, the regulation was implemented by applying existing provisions in the Reactor Regulation Law, such as "notification of dismantling" or "modification of Operational Safety Program, by the operators.

So far, the decommissioning of reactor facilities was implemented at the Power Demonstration Reactor of the Japan Atomic Energy Research Institute (JPDR) and the Tokai Power Station of Japan Atomic Power Co. Inc., etc. and the development and application of dismantling technologies have been progressed, and the know-how for decommissioning have been accumulated through these processes.

Under such a circumstance, in October 14, 2004, the NSC pointed out, that "it is required to investigate the development of a graded approach in safety regulation system to cope with the progress of dismantling processes, as the main activities during the period after the cease of operation are safety management of spent fuels, dismantling works and the radiation control, and handling of radioactive wastes, and the regulatory experiences concerning dismantling and decommissioning of test and research reactors have been accumulated", as the conclusion of the regulatory activities investigation concerning the safety regulation system during the period after the cease of operation of reactor facilities.

The Decommissioning Safety Subcommittee has investigated appropriate regulatory system of decommissioning, based on the regulatory experiences on decommissioning of reactor facilities under the current system, aiming for amendment of legislations, with the principle of ensuring safety.

The investigation is conducted from view points of ensuring transparency of regulations, and graded regulatory approach to cope with the progress of the decommissioning process, the diversity of each facilities, reflecting the experiences of decommissioning, and development of technology in the near

future, and reported in "The Way of the Decommissioning Regulation of the Nuclear Facilities" (December 9, 2004)).

In this investigation, the Subcommittee recognized that the decommissioning of nuclear reactors is becoming a routine, and the amendment of legislation must cope with graded approach by regulatory body and clarification of the responsibilities of operators with the principle of ensuring safety, and it is considered to be important (i) to clarify the requirement in decommissioning regulations, (ii) to keep the transparency on procedures for the operators, and (iii) to obtain in the understanding and confidence of the national people and local residents on decommissioning regulations.

The Subcommittee proposed the way of decommissioning regulations, as;

- (1) replacing "dismantling notification by operator", to the "approval of the operator's decommissioning plan of dismantling processes, methods etc. by regulatory body",
- (2) implementation of the decommissioning as approved in the plan,
- (3) completion of decommissioning is confirmed by regulatory body
- (4) After the confirmation of the completion of decommissioning, operator can dismiss the operation license
- (5) the regulatory activities during the decommissioning process (example: Periodical Inspections, Nuclear Safety Inspections etc.) should be changed in accordance with the changes of the functions of the facilities and safety operation activities as the decommissioning is proceeded (graded regulatory approach)

In the proposal, it is stated that

- (1) The operator apply the decommissioning plan including process of decommissioning, methods of dismantling, method of managing the radioactive waste generated during the dismantling, the safety analysis, financial plan.
- (2) Regulatory body review the plan on the conformity with technical criteria and approve it.
- (3) The operator conduct the decommissioning in accordance with the decommissioning plan, usually the decommissioning takes a long time and consists of several steps, it is allowed to modify the program at the beginning of each step with the prospect that the completion of decommissioning is ensured, following the approval for the modification of decommissioning plan.

The amendment of the Reactor Regulation Law was enacted in May 2005, along with the proposal, and the associated detailed provisions are under preparation.

F.6.1 Human and Financial Resources

(1) Human Resources

Operators clarify, in the Operational Safety Program, safety organizations, responsibility and roles in decommissioning processes, and planning and implementation of relevant safety education programs necessary for managers and workers including subcontractors.

The regulatory body confirms the observance of the above-mentioned Operational Safety Program by the inspection (Nuclear Safety Inspection).

(2) Financial Resources

Electric utilities have deposited funds for decommissioning of commercial power reactor facilities using the Dismantling Reserve Funds.

F.6.2 Radiation Protection at the Decommissioning Stage

The regulations on radiation protection applied to nuclear facilities in operation, which is described at Article 24 (Section F.4), are also applicable to nuclear facilities in the process of being decommissioned.

F.6.3 Emergency Preparedness

The regulations on emergency preparedness applied to nuclear facilities in operation, which is described at Article 25 (Section F.5), are also applicable to nuclear facilities in the process of being decommissioned.

F.6.4 Keeping Records of Information Important to Decommissioning

The Reactor Regulation Law requests to keep important records such as inspection records, radiation control records, etc. even at decommissioning stage.

And other records specific to decommissioning such as each equipment or system being dismantled, schedule and method for dismantling it, etc. are required to be recorded and kept at the end of each dismantling process. .

Thus the regulatory body can confirm that the decommissioning has been appropriately completed ensuring safety and in compliance with the Decommissioning Plan of that facility by keeping records to show it.

Blank

G.Safety of Spent Fuel Management

Blank Page

Section G. Safety of Spent Fuel Management

The safety of spent fuel management is ensured in accordance with the regulatory framework explained in Section E.2.3. In other words, the safety management of spent fuel on a reactor facility site or a reprocessing plant site is regulated by the provisions of the Reactor Regulation Law concerning the establishment and operation of nuclear reactors or a reprocessing facilities. More specifically, spent fuel management facilities are regulated as associated facilities operated in the respective reactors or facilities. On the other hand, the safety management of spent fuel stored outside a reactor or a reprocessing plant site is regulated in accordance with the provisions for storage in the Reactor Regulation Law, and is regulated as specialized facilities concerning licensing, permission, approval and inspections. At present, there is no storage facility which is in operation, under construction or for which an application for licensing of construction has been filed.

Present regulations have been established assuming storage of spent fuels in water pools or metal dry casks at the sites of nuclear reactor facilities, in water pools at the sites of reprocessing facilities, and in metal, or concrete, dry casks at the specialized storage facilities.

Figure G.1 outlines the regulatory process concerning spent fuel storage facilities in comparison with the joint convention. A flow of regulations begins with an application for a license. The regulatory body grants an operator of a license for storage facility after the Safety Examination. Prior to construction of the installation, the regulatory body examines design and construction plan and approves them if they are acceptable. When construction of the facility requires prescribed welding process, the regulatory body confirms it through the Welding Inspections or the Welding Safety Management Inspections. Moreover, the regulatory body conducts the Pre-Service Inspections to make sure that the construction works are being carried out in accordance with the approved design and construction plan. The regulatory body requires the operator to establish the Operational Safety Program and approves it. The operator starts operation of the facility (excluding reactor facilities), after notifying the regulatory body of it.

After the facility started operation, the regulatory body conducts the Periodical Inspection of Facility to confirm the integrity of the facility, and the Nuclear Safety Inspection to confirm the operator's compliance with the Operational Safety Program.

The operator starts decommissioning after preparing a decommissioning plan describing the decommissioning processes, the financial plan, etc. and obtaining approval of it by the regulatory body. Decommissioning procedure finishes when the regulatory body confirms completion of the dismantling.

The Reactor Regulation Law and Regulations in accordance with the Law

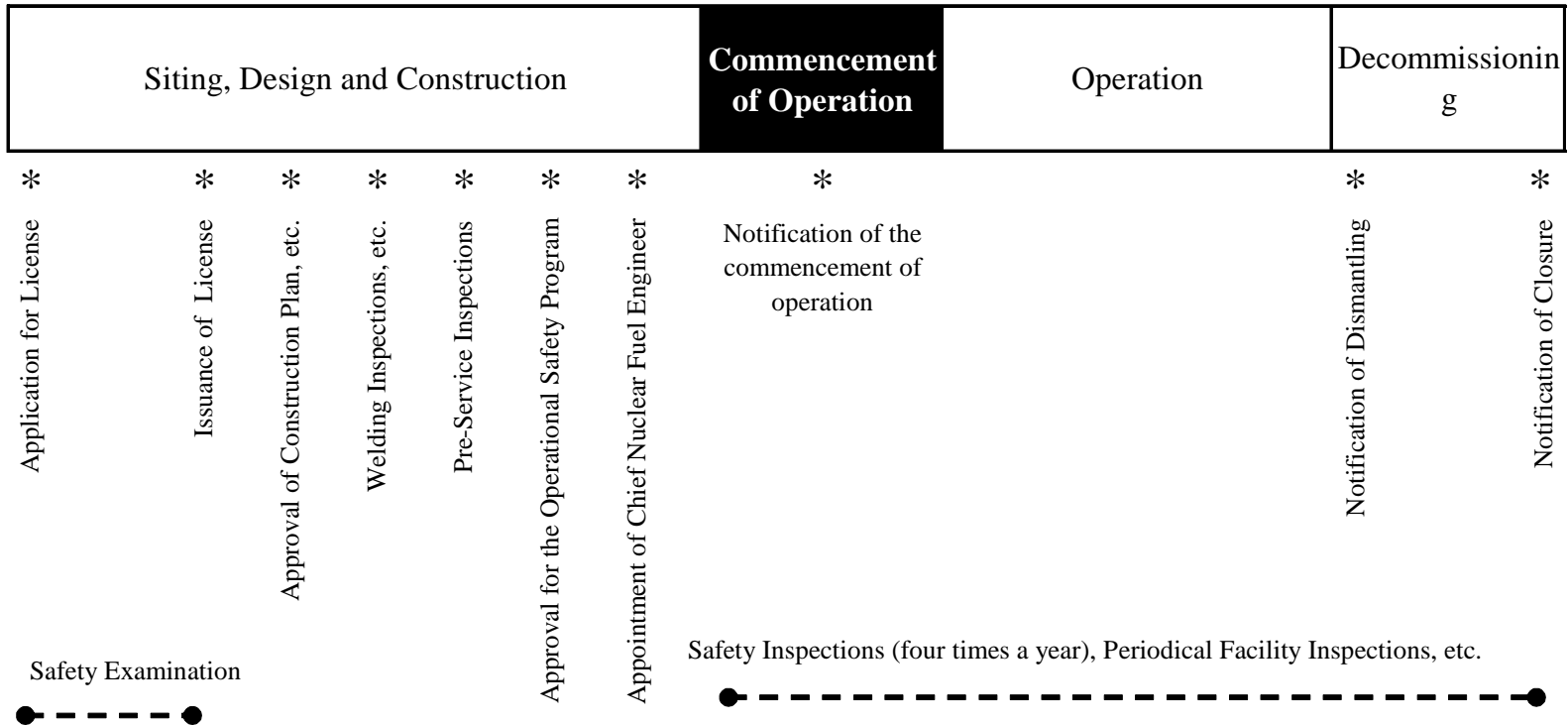


Fig. G.1 Regulatory Process for Spent Fuel Storage Facilities

G.1 General Safety Requirements (Article 4)

Each Contracting Party shall take the appropriate steps to ensure that at all stages of spent fuel management, individuals, society and the environment are adequately protected against radiological hazards.

In so doing, each Contracting Party shall take the appropriate steps to:

- (i) ensure that criticality and removal of residual heat generated during spent fuel management are adequately addressed;**
- (ii) ensure that the generation of radioactive waste associated with spent fuel management is kept to the minimum practicable, consistent with the type of fuel cycle policy adopted;**
- (iii) take into account interdependencies among the different steps in spent fuel management;**
- (iv) provide for effective protection of individuals, society and the environment, by applying at the national level suitable protective methods as approved by the regulatory body, in the framework of its national legislation which has due regard to internationally endorsed criteria and standards;**
- (v) take into account the biological, chemical and other hazards that may be associated with spent fuel management;**
- (vi) strive to avoid actions that impose reasonably predictable impacts on future generations greater than those permitted for the current generation;**
- (vii) aim to avoid imposing undue burdens on future generations.**

G.1.1 Prevention of Criticality and Removal of Residual Heat

Spent fuels are stored at facilities of commercial nuclear power reactor sites, etc. The guidelines established by the NSC (hereinafter called NSC) to be used at the examination of license applications require applicant to prevent criticality and to remove residual heat appropriately. Requirements in the “Safety Examination Guideline for the Spent Fuel Interim Storage Facility Using Metal Dry Casks” are shown in the Table G.1-1. The regulations under the Reactor Regulation Law, also, require operators to take necessary steps for preventing criticality and removing residual heat.

G.1.2 Minimization of Generation of Radioactive Waste in Spent Fuel Management

Minimization of radioactive waste generation is described in Section H.1.2.

G.1.3 Interdependencies Among Different Steps in Spent Fuel Management

As mentioned in Section E.2.6, operators are required to obtain licenses for operation at each step of spent fuel generation, storage and reprocessing, in accordance with the Reactor Regulation Law. A division of the regulatory bodies is clearly assigned the responsibility for each step, as described in Article 20 (Section E.3.2 and Table E.3-1)

G.1.4 Regulations for Radiation Protection

Radiation protection concerning safety of spent fuel management is described in Section F.4.

G.1.5 Consideration of Biological, Chemical and Other Hazards

The regulatory body, when issuing license to a major nuclear facility in accordance with the Reactor Regulation Law, conducts the Safety Examination to ensure that the location, structure and equipment of the facility are adequate to prevent hazards due to nuclear fuel material or materials contaminated by it.

G.1.6 Consideration of Impacts on Future Generations

As mentioned in Section B, the Government of Japan makes it a basis of its nuclear energy policy to establish a national nuclear fuel cycle in which spent fuel is reprocessed in order to make effective use of uranium resources. Spent fuel generated by nuclear power plant is considered as a useful recyclable fuel resource, so that it will be stored and managed safely until it is reprocessed.

G.1.7 Consideration of Burdens on Future Generations

The competent minister is required by the law to examine license application for a major nuclear facility to ensure that issuing license does not pose any impediment to the development and planned utilization of nuclear energy and that the applicant has a financial basis necessary for adequate operations.

Also, a reserve for reprocessing spent fuels is provided as described in F.2.3.

Table G.1-1 Examples of Requirements Concerning the Criticality and Residual Heat Removal Described in the Safety Examination Guidelines for the Spent Fuel Interim Storage Facility Using Metal Dry Casks

Guideline 8. Consideration for long-term storage etc.

The spent fuel interim storage facility should be designed to maintain the integrity of spent fuel assemblies and the integrity of the components that have fundamental safety functions throughout the design storage period by taking the following measures, in considerations of degradation etc. accompanied by the long-term storage.

1. Components of metal cask important to maintain fundamental safety functions should be designed not to lose required safety function maintaining required strength and performance by selecting materials that have sufficient reliability in the environments such as temperature and radiation during design storage period and to the degradation such as corrosion, creeping, and stress corrosion cracking under the above environments.
2. The metal cask should contain and store the spent fuel assemblies together with sealing inert gases.
3. The metal cask should be designed to be able to remove the decay heat from spent fuels in view of maintaining the integrity of spent fuel assemblies and the integrity of the components that have fundamental safety functions.
4. The storage building should be designed to be able to maintain the room temperature in the building low in view of the heat removal from the surface of a metal cask. And, it should be designed to be able to monitor that the room temperature in the storage building will not elevate to the unusual level.

Guideline 10. Criticality safety of a single metal cask

A single metal cask in the spent fuel interim storage facility should be designed to prevent the criticality in any case technically assumable under the condition that spent fuel assemblies are contained in the cask.

In case the internal basket shares the criticality prevention function, the metal cask should be designed to maintain the temperature within the range to keep the structural integrity of the basket throughout the design storage period.

Guideline 11. Criticality safety of multiple metal casks

The spent fuel interim storage facility should be provided with measures to prevent the criticality in any case technically assumable considering the neutron interference among metal casks in the facility.

Guidelines 12. Consideration for nuclear criticality accidents

In case a nuclear criticality accident could occur by operational error etc. at the spent fuel interim storage facility, appropriate measures for the unlikely event of nuclear criticality accident shall be taken.

However this guideline may not be applied in case of Guideline 10 and Guideline 11 are conformed and spent fuels are contained in the metal cask, since criticality could not physically occur.

G.2 Existing Facilities (Article 5)

Each Contracting Party shall take the appropriate steps to review the safety of any spent fuel management facility existing at the time the Convention enters into force for that Contracting Party and to ensure that, if necessary, all reasonably practicable improvements are made to upgrade the safety of such a facility.

G.2.1 Existing Spent Fuel Management Facilities

The regulatory body conducts following inspections on spent fuel management facilities associated to major nuclear facilities. On the basis of inspections conducted so far, none of spent fuel management facilities were found to require significant corrective actions to continue operation.

(1) Periodical Inspection of Facility

The regulatory body conducts the Periodical Inspection of Facility once a year (once every 13 months in the case of commercial power reactor facilities) to confirm if the performance of the facilities and equipment complies with the technical standards prescribed by laws and ordinances.

(2) Nuclear Safety Inspection

The regulatory body conducts the Nuclear Safety Inspection by a resident Nuclear Safety Inspector four times a year to confirm operators' compliance with the Operational Safety Program.

G.3 Siting of Proposed Facilities (Article 6)

Each Contracting Party shall take the appropriate steps to ensure that procedures are established and implemented for a proposed spent fuel management facility:

- (i) to evaluate all relevant site-related factors likely to affect the safety of such a facility during its operating lifetime;**
- (ii) to evaluate the likely safety impact of such a facility on individuals, society and the environment;**
- (iii) to make information on the safety of such a facility available to members of the public;**
- (iv) to consult Contracting Parties in the vicinity of such a facility, insofar as they are likely to be affected by that facility, and provide them, upon their request, with general data relating to the facility to enable them to evaluate the likely safety impact of the facility upon their territory.**

In so doing, each Contracting Party shall take the appropriate steps to ensure that such facilities shall not have unacceptable effects on other Contracting Parties by being sited in accordance with the general safety requirements of Article 4.

G.3.1 Evaluation of Site-Related Factors and Impact of Proposed Facilities

The regulatory body, when issuing a license to operate a nuclear facility in accordance with the Reactor Regulation Law, conducts the Safety Examination to ensure that siting and basic design of facility, equipments and components of a major nuclear facility are adequate to prevent hazards due to nuclear fuel material or materials contaminated with it. The Safety Examination Guidelines, used in the Safety Examination, require to evaluate external events at the site and its periphery of the proposed facility, and to evaluate radiological impacts to the public caused by the facility.

Examples of requirements in the Safety Examination Guidelines for Spent Fuel Interim Storage Facility Using Metal Dry Casks are shown in Table G.3-1.

G.3.2 Information Disclosure

Information on the safety of nuclear facilities, including application documents, is made available to the public at the Nuclear Energy Library and the Library of JNES. Moreover, the Public Information Law, enacted on April 1, 2001, provides for disclosure of administrative documents on request with some exception.

Furthermore, application documents submitted by applicants for licenses are disclosed for the public at the National Diet Library.

G.3.3 Relationship with Neighboring Countries

Being an insular country, Japan is located at a considerable distance from its neighboring countries. Therefore, as long as the safety of nuclear facilities is properly secured within Japan, nuclear facilities in the country are unlikely to have safety impacts on the neighboring countries. The Japanese government does not have it a rule to consult the neighboring countries about siting of nuclear facilities. The Japanese government provides neighboring countries with information on nuclear energy through bilateral consultation, etc.

Table G.3-1 Examples of Requirements Concerning Siting Described in the Safety Examination Guidelines for the Spent Fuel Interim Storage Facility Using Metal Dry Casks

Guideline 1. Basic conditions

The following events shall be investigated for the site and its surroundings of the spent fuel interim storage facility, and it shall be confirmed that the adverse conditions for ensuring safety does not exist.

1. Natural environment

- (1) Natural phenomena such as earthquake, tsunami, landslides, depression, typhoon, high tide, flood, abnormal cold weather, heavy snowfall.
- (2) Geological conditions and landform etc. such as ground conditions, soil bearing capacity, fault.
- (3) Meteorological conditions such as wind direction, wind velocity, waterfall.
- (4) Hydrological and hydraulic conditions of rivers, underground water, etc.

2. Social environment

- (1) Fire, explosion at a neighboring factory etc.
- (2) Missiles etc. by air craft crash, etc.
- (3) Conditions of land use in relation to food production such as agriculture, livestock farming, fishery industry and condition of population distribution etc.

Guideline 2. Normal conditions

The dose in normal condition of the general public due to the spent fuel interim storage facility shall be lower than the dose limit specified by the law and regulation, and it shall be as low as reasonably achievable.

Guideline 3. Accident conditions

Under the assumption of the occurrence of the maximum credible accident at the spent fuel interim storage facility, the general public shall not receive excessive radiation exposure.

1. Selection of accidents

In the design of the spent fuel interim storage facility, accidents, which occurrence is technically possible to be assumed in the worst case and is considered important in view of radiation exposure to the general public, shall be selected by thoroughly studying the possibility of occurrence of accidents that may significantly fail the fundamental safety functions of metal casks from the technical point of view considering aging of metal cask components by long term storage, such as:

- (1) Wrong operation etc. during transfer in the facility
- (2) Natural disaster etc.

2. Calculation of release amount of radioactive materials etc.

The release amount of radioactive materials etc. shall be calculated for each accident selected in accordance with the paragraph 1 above, applying -appropriate analytical model and parameters and setting appropriate conditions with safety margin, by thoroughly studying the followings:

- (1) Amount of leakage of radioactive materials from the fuel cladding
- (2) Integrity of metal casks concerning their confinement function and radiation shielding function
- (3) Number of metal casks to be assumed for leakage of radioactive materials
- (4) Conditions of atmospheric dispersion of radioactive materials
- (5) Period of release for the evaluation

3. Dose evaluation

It shall be confirmed that the general public does not receive excess radiation exposure from the dose even in case of the maximum credible accident, which is defined as an accident which effect to the general public is the maximum among accidents selected by the paragraph 1 as the result from the calculation in accordance with the paragraph 2 above. However, this evaluation are not required when there is no radiation exposure to the general public due to the accident selected by the paragraph 1.

G.4 Design and Construction of Facilities (Article 7)

Each Contracting Party shall take the appropriate steps to ensure that:

- (i) the design and construction of a spent fuel management facility provide for suitable measures to limit possible radiological impacts on individuals, society and the environment, including those from discharges or uncontrolled releases;**
- (ii) at the design stage, conceptual plans and, as necessary, technical provisions for the decommissioning of a spent fuel management facility are taken into account;**
- (iii) the technologies incorporated in the design and construction of a spent fuel management facility are supported by experience, testing or analysis.**

G.4.1 Limitation of Radiological Impacts on Individuals, Society and the Environment

The regulations under the Reactor Regulation Law provide that an applicant for a license for a nuclear facility, etc. should attach documents to the application, explaining: (i) meteorological conditions, the ground conditions, hydrological conditions, social environment, etc. at the site; (ii) safety design of the facility; (iii) radiation protection from nuclear fuel material (including spent fuel) and matters contaminated by it, and radioactive waste management; (iv) types, extent and possible consequences of postulated accidents at the facility initiated by operational error, equipment or system failure, earthquake, or a fire.

The regulatory body examines the application and attached documents to confirm that appropriate measures are taken in the design to meet requirements as mentioned in Section G.3.1.

The Reactor Regulation Law, its regulations and guidelines provide that operators shall take appropriate measures to prevent radiological hazards on individuals, society and the environment.

Examples of requirements in the Safety Examination Guidelines for Spent Fuel Interim Storage Facility Using Metal Dry Casks are shown in Table G.4-1.

The details about safety evaluation during an accident are described in Section G. 5.1.

The operators are required to prepare the Construction Plan, obtain approval of it by the competent minister and undergo the Welding Inspection and the Pre-Service Inspection during the construction of a nuclear facility at each construction process when related work is completed. The regulatory body confirms that the construction work has been carried out as approved and is consistent with the technical standards. The Pre-Service Inspection includes various inspections and tests ranging from the components structure, strength or leakage inspections to the functions and performance tests of the nuclear facility as a whole.

G.4.2 Conceptual Plans and Technical Provisions for Decommissioning

Procedures and technical provisions for decommissioning are described in Section F.6.

G.4.3 Steps to Support the Reliability of Technologies

Operators incorporate sufficiently time-tested domestic and foreign technologies in the design and construction of nuclear facilities.

The NSC has been promoting research on environmental radioactivity and the safety of nuclear facilities including radioactive waste management, with the aim of meeting possible expansion and

diversification of nuclear power development and utilization, as well as enhancing public understanding of them. Specifically, JAERI, JNES and other institutes are conducting research projects aimed at developing safety standards, guidelines and acceptance criteria in the Safety Examination. For example, JNES is promoting research programs on long-term integrity and analytical model of spent fuels in interim storage.

In the Safety Examination of nuclear facilities, the regulatory body confirms, by a third party analysis, the results of safety analyses made by an applicant.

Table G.4-1 Examples of Requirements Concerning Management of the Effects of Radiation to Individuals, Society and Environment Described in the Safety Examination Guidelines for the Spent Fuel Interim Storage Facility Using Metal Dry Casks

Guideline 4. Confinement function

The spent fuel interim storage facility shall be designed to confine radioactive materials in the limited area with the following measures.

1. The metal cask shall be designed to maintain the negative pressure in the space where spent fuel assemblies are contained throughout the design storage period.
2. The metal cask shall be designed to isolate the space where spent fuel assemblies are contained from outside of the cask with the multi-layered confinement structure at the lid portion. And its confinement function shall be possible to be monitored.
3. The metal cask shall be designed with considerations of the restoration capability of confinement function such as a design that the structure is made to be able to attach an additional lid to cope with unlikely event of confinement function at the lid.
4. The metal cask shall be designed to maintain the temperature of fuel claddings low throughout the design storage period in view of maintaining the integrity of fuel cladding.
5. The metal cask shall be designed to keep the temperature within the range to maintain the integrity of the structures throughout the design storage period in view of maintaining its confinement function.

Guideline 5. Radiation shielding

The spent fuel interim storage facility shall be appropriately shielded from radiation to lower the exposure dose of the general public due to irradiation by the direct and sky shine ray.

In addition, the sufficient radiation shielding shall be applied considering working conditions of radiation workers. In case the radiation shielding function is expected on the shielding material other than metal cask and in case concrete etc is used, the shielding material shall be designed to maintain the temperature to maintain low enough not to impair its radiation shielding capability.

Guideline 6. Radiation exposure control

1. Radiation exposure control in working environments
 - (1) In order to monitor and control working environments of radiation workers, the monitoring system and measuring equipment for dose rates etc. and alarm system for unusual rise of the dose rate should be prepared.
 - (2) The important information from the above-mentioned monitoring system and alarm system should be designed that the centralized monitoring is possible at an appropriate place.
2. Equipments, such as dosimeters required for individual exposure control for radiation workers should be prepared.
3. The control area of the spent fuel interim storage facility shall be designed so that appropriate access control etc. is possible, if needed, with appropriate classification of the area in accordance with the degree of dose rate and surface contamination density.

Guideline 7. Discharge control of radioactive wastes

The spent fuel interim storage facility should be designed so that the concentration of radioactive materials released to the environment is as low as reasonably achievable with appropriate treatment of radioactive wastes generated by the storage etc.

Guideline 8. Consideration for long-term storage etc.

The spent fuel interim storage facility should be designed to maintain the integrity of spent fuel assemblies and the integrity of the components that have fundamental safety functions throughout the design storage period by taking the following measures, in considerations of degradation etc. accompanied by the long-term storage.

1. Components of metal cask important to maintain fundamental safety functions should be designed not to lose required safety function maintaining required strength and performance by selecting materials that have sufficient reliability in the environments such as temperature and radiation during design storage period and to the degradation such as corrosion, creeping, and stress corrosion cracking under the above environments.
2. The metal cask should contain and store the spent fuel assemblies together with sealing inert gases.
3. The metal cask should be designed to be able to remove the decay heat from spent fuels in view of maintaining the integrity of spent fuel assemblies and the integrity of the components that have fundamental safety functions.
4. The storage building should be designed to be able to maintain the room temperature in the building low in view of the heat removal from the surface of a metal cask. And, it should be designed to be able to monitor that the room temperature in the storage building will not elevate to the unusual level.

Guideline 9. Radiation monitoring

The spent fuel interim storage facility should be provided with measures to monitor the concentration etc. of radioactive materials at the release path of radioactive wastes appropriately. Moreover, measures to monitor the dose rates, concentrations etc. of radioactive materials in the peripheral environment should be taken appropriately according to the potential release of radioactive materials.

Each Contracting Party shall take the appropriate steps to ensure that:

- (i) before construction of a spent fuel management facility, a systematic safety assessment and an environmental assessment appropriate to the hazard presented by the facility and covering its operating lifetime shall be carried out;**
- (ii) before the operation of a spent fuel management facility, updated and detailed versions of the safety assessment and of the environmental assessment shall be prepared when deemed necessary to complement the assessments referred to in paragraph (i).**

G.5.1 Systematic Safety Assessment and Environmental Assessment

The competent minister, when issuing a license for a nuclear facility on the basis of the Reactor Regulation Law, requires the applicant to explain meteorology, geology, hydrology and social environment of the site, and safety design of the facility, and examine them.

The Safety Examination Guides, used to examine an application documents, require the applicant to perform safety assessment on the maximum postulated accidents in each nuclear facilities prescribed in the guides, and confirm that these accidents do not cause excessive public exposure of radiation.

The Safety Examination Guides require operators of reactor facilities and reprocessing facilities, which contain large quantities of radioactive material, to perform both safety design assessment to confirm the adequacy of safety design of the facility, and siting assessment to assess the isolation of the facility from the public considering radiological hazards. In the safety design assessment, the guides require that postulated drop of a fuel assembly, in a water-pool-type spent fuel management facility attached to a power reactor facility, does not cause excessive public radiation exposure.

G.5.2 Updating of Assessments Before Operation of Facilities

The Reactor Regulation Law provides that nuclear operators shall apply for alteration of license, when it is necessary to incorporate the latest technical knowledge, and that they shall apply for alteration of design and construction method, when necessary.

G.6 Operation of Facilities (Article 9)

Each Contracting Party shall take the appropriate steps to ensure that:

- (i) the licence to operate a spent fuel management facility is based upon appropriate assessments as specified in Article 8 and is conditional on the completion of a commissioning programme demonstrating that the facility, as constructed, is consistent with design and safety requirements;**
- (ii) operational limits and conditions derived from tests, operational experience and the assessments, as specified in Article 8, are defined and revised as necessary;**
- (iii) operation, maintenance, monitoring, inspection and testing of a spent fuel management facility are conducted in accordance with established procedures;**
- (iv) engineering and technical support in all safety-related fields are available throughout the operating lifetime of a spent fuel management facility;**
- (v) incidents significant to safety are reported in a timely manner by the holder of the licence to the regulatory body;**
- (vi) programmes to collect and analyse relevant operating experience are established and that the results are acted upon, where appropriate;**
- (vii) decommissioning plans for a spent fuel management facility are prepared and updated, as necessary, using information obtained during the operating lifetime of that facility, and are reviewed by the regulatory body.**

G.6.1 Verification through Pre-service Inspection

An operator, in accordance with the Reactor Regulation Law or the Electric Utilities Industry Law, prepares the Construction Plan and submits it to the regulatory body for approval. Also, the operator undergoes the Pre-Service Inspection by the regulatory body at each construction process and at the end of all construction works, to verify that the construction is completed as approved and is consistent with the technical standards. Passing Pre-service inspections, the nuclear operator is allowed to commence operation of the facility.

G.6.2 Operational Requirements and Conditions

Before the operation of a nuclear facility, an operator, in accordance with the Reactor Regulation Law, notifies the regulatory body of an Operational Plan and prepares the Operational Safety Program, specifying methods of operation, inspection, radiation monitoring, quality assurance etc. and submits it to the regulatory body for approval. The Operational Safety Program shall specify operational limits, and the facility shall be operated and maintained in compliance with the program. Table G.6-1 shows the contents of the Operational Safety Program of the spent fuel interim storage facility. The competent minister, finding noncompliance with the operational requirements, orders the operator to take corrective measures.

An operator assigns a Chief Engineer of Reactor, a Supervisor of Nuclear Fuel Material or a Supervisor of Spent Fuel, who has passed national examinations, and is put in charge of overseeing safety in the operation of the nuclear facility.

G.6.3 Procedures and Conduct of Maintenance, Operation, Inspection, etc.

In accordance with the Reactor Regulation Law or the Electric Utilities Industry Law, operators, after

commencement of the operation of nuclear facilities, are required to undergo the Periodical Inspection of Facility and the Nuclear Safety Inspection.

(1) Periodical Inspection of Facility

The regulatory body conducts the Periodical Inspection of Facility once a year (once every 13 months in the case of commercial power reactor facilities) to see whether performance of the facilities and equipment complies with the technical standards prescribed by laws and ordinances.

(2) Nuclear Safety Inspection

The regulatory body stations a Nuclear Safety Inspector to each nuclear facility to conduct the Nuclear Safety Inspection four times a year to confirm operator's compliance with the Operational Safety Program and disclose the results to the public.

G.6.4 Technical Support throughout the Operation Lifetime

Throughout the operational lifetime of a nuclear facility, the regulatory body obtains engineering and technical advice from a committee, which is composed of experts on operational management, inspection and radiation control, and reflects it in the operation, maintenance and safety regulations as necessary.

METI promotes reliability test projects of main equipment and components, as well as various safety research programs. MEXT promotes safety research programs as part of nuclear science research.

Nuclear facility operators collect information on operating experience both domestic and abroad, and accumulate up-to-date technical information through their own development projects of technology and repair work.

Regulatory bodies and operators may obtain various technical supports from private institutes and organizations.

G.6.5 Reporting of Incidents and Failures

The Reactor Regulation Law or the Electric Utilities Industry Law requires operators to report to the regulatory body on incidents or failures at major nuclear facilities and measures taken against them. The reporting criteria prescribed in these laws for the spent fuel interim storage facility are shown in Table G.6-2. The regulatory body assesses the accident or failure using the International Nuclear Event Scale (INES) since August 1992. The regulatory body encourages operators to disseminate among them measures taken against incidents or failures to prevent recurrence.

G.6.6 Reflecting Operating Experience

Upon receipt of a report on an incident or a failure at a nuclear facility, the regulatory body immediately makes it public, and discloses the cause of it and measures to prevent recurrence when they are clarified. The regulatory body assesses each incidents or failures in detail to obtain lessons ensuring safety, soliciting advice from committee composed of experts on operation management, inspection and radiation control, and makes them reflected in the operation, maintenance and safety regulations as appropriate.

Supporting organizations to the regulatory bodies collect and analyze information on operating

experience of both domestic and foreign nuclear facilities, and provide information to related organizations. For example, JNES, a supporting organization to NISA, establishes a system to collect and analyze domestic and foreign information and reports the results promptly to NISA. NISA and JNES jointly established the “Safety Information Study Committee” to study information periodically and decide appropriate regulatory response and follow-up.

A mechanism is established to exchange information about incidents and failures through international organizations such as the IAEA and the OECD/NEA, as well as under bilateral cooperation agreements.

Electric utilities, as well as the Central Research Institute of Electric Power Industry (CRIEPI), collect and analyze both domestic and overseas information on operating experiences, and have established “NUCIA” (NUClearn Information Archives), a tool to share information with the public, which is operated on the Internet (<http://www.nucia.jp/>) since October 2003. Electric utilities exchange information on operating experience with overseas utilities through the Institute of Nuclear Power Operations (INPO) and the World Association of Nuclear Operators’ (WANO) Tokyo Center. Also, some electric utilities have information exchange agreements with electric utilities and reactor manufacturers in France, Germany, the United States, etc. Recognizing the importance of safety information sharing and safety culture throughout the nuclear power industry, related organizations jointly established a private institute “the NS Net” in December 1999. The NS Net performs peer review and other routine activities. The NS Net was merged into the Japan Nuclear Technology Institute (JANTI), which took over activities of the NS Net since April 2005, .

G.6.7 Decommissioning Plans and Updating of Information

As described in Section F.6, operators shall submit decommissioning plan describing dismantling method, disposal of nuclear fuel materials and articles contaminated by them, safety assessment, financial plan, etc. to the competent minister, and obtain approval of it. The operator conducts decommissioning in accordance with the approved plan. However, in order to make long term regulation more effective, the regulatory body allows operators to submit detailed plan for each decommissioning process just before start of the process concerned, through the application of alteration of the original plan.

Table G.6-1 Contents of the Operational safety program for the Spent Fuel Interim Storage Facility

1. The duties of personnel engaged in the operation and management of the spent fuel storage facility and organization
2. The following items with respect to the safety preservation education for radiation workers at the spent fuel storage facility
 - (1) Policy for the safety preservation education
(including preparation of education program)
 - (2) The contents of the safety preservation education as follows
 - 1) Relevant laws and the Operational safety program
 - 2) Constitution, performance and operation of the spent fuel storage facility
 - 3) Radiation management
 - 4) Handling of nuclear fuel materials and objects contaminated by them
 - 5) Measures to be taken in emergencies
 - (3) Other necessary items for the safety preservation education of the spent fuel storage facility
3. Operation of the equipment especially necessary to be managed in view of safety preservation.
4. Designation of controlled areas, and environment monitoring areas, and restriction of access to these areas
5. Discharge monitoring equipment
6. Monitoring of the dose, the dose equivalent, the concentration of radioactive materials and the density of radioactive materials on the surface of objects contaminated by radioactive materials, and the decontamination
7. Management of radiation measuring instruments and the method of radiation measurement
8. Patrols and checks of the spent fuel storage facility and their associated measures
9. Voluntary periodical inspections of the spent fuel storage facility
10. Receipt, delivery, transport, storage and other handling of spent fuels
11. Disposal of radioactive waste
12. Measures to be taken in emergency
13. Records on safety preservation of the spent fuel storage facility (including observance status)
14. Quality assurance of the spent fuel storage facility
15. Other necessary items for safety preservation of the spent fuel storage facility

Table G.6-2 Incident and Failure Reporting Standards at the Spent Fuel Interim Storage Facility

Upon the occurrence of any of the following events, operators of spent fuel storage facilities shall immediately give notice to that effect to the Minister of Economy, Trade and Industry, and shall report to the minister about the situation of the event and corrective actions taken within ten days of the event:

- (1) The spent fuel is stolen or its whereabouts is unknown;
- (2) A failure of the spent fuel storage facility is found (excluding a failure that cause minor affection on spent fuel storage);
- (3) The concentration of radioactive material in water on the boundary outside a peripheral monitoring area has exceeded the concentration limits provided in the Subparagraph (iv) of Article 36 due to the liquid radioactive waste release through discharge facilities;
- (4) Liquid spent fuel etc. has leaked outside the controlled area;
- (5) The spent fuel etc. has caused a leakage inside the controlled area, and remedial measures, such as declaration of off-limits and control of keys, have been newly taken at a place where leakage has occurred, or the leak has spread to outside of the controlled area;
- (6) Workers engaged in the radiation work have been exposed to radiation that exceeds or is likely to exceed the dose limits provided in Section 1 of Article 30 ; or
- (7) In addition to the events of the above paragraphs, a hazard to personnel (excluding minor hazards other than radiation hazards) has occurred or is likely to occur at the spent fuel storage facility.

Blank

H.Safety Radioactive Waste Management

Blank Page

Section H. Safety of Radioactive Waste Management

Safety of Radioactive waste management is ensured under the regulatory framework described in Section E.2.4. The management of radioactive wastes generated from fuel fabrication facilities, reactor facilities, reprocessing facilities etc. are regulated by the respective provisions in the chapters for corresponding respective facilities of the Reactor Regulation Law. The management of radioactive wastes generated from radioisotope use facilities, etc. is regulated by the Radiation Hazards Prevention Law.

The Reactor Regulation Law has provisions in corresponding chapter for the waste management facilities and activities which are divided to two categories. One is a waste disposal in near surface and intermediate depth repository and the other is a treatment and storage of radioactive wastes. The Radiation Hazards Prevention Law has provisions for the waste management services, which deal with repackaging, storage and near surface disposal of wastes.

The Reactor Regulation Law also provides that the radioactive wastes generated from a nuclear facility should be treated and stored inside the facility. High-level radioactive wastes(HLW) generated by contracting overseas reprocessing of Japanese spent fuel are returned to Japan and stored at the radioactive waste management facility of the Japan Nuclear Fuel Ltd. LLW generated by the reprocessing at overseas are also to be returned to Japan in the future.

In regard to the geological disposal of, HLW, safety regulations etc. are under development, and the open solicitation of candidate site for safe disposal of HLW for survey that is the first stage of selection process of the potential site is carrying out by Nuclear Waste Management Organization of Japan, in accordance with the procedure subscribed in the “Specific Radioactive Waste Final Disposal Act”(2000).

In regard to disposal of LLW, applicable laws and regulations have been prepared and the disposal has been under way. For some of LLW, and for some of the other LLW, they are subject to future development (Table B.3-2). This section describes about the regulations for the LLW, for which disposal is going on, especially for wastes with relatively lower or very low level radioactive waste.

Figure H.1 outlines the procedure of regulation on the near surface disposal of LLW generated from operation of nuclear reactor facilities in terms of the convention. The figure deals with both cases of wastes disposal, one with waste disposal of relatively lower radioactivity level and solidified in drum and disposed in a repository with engineered barriers such as concrete pits and the other with very low level radioactivity not solidified in drum and disposed in a repository without engineered barriers.

The former is a repository of the Low-Level Radioactive Waste Disposal Center of the Japan Nuclear Fuel Limited established in Rokkasho-mura in Aomori prefecture. As a case of latter is a disposal facility of Japan Atomic Energy Research Institute(JAERI), Tokai-mura, Ibaraki prefecture as a demonstrative on-site disposal experiment, where concrete wastes generated from dismantling of the Japan Power Demonstration Reactor(JPDR) of the JAERI have been disposed of.

The regulatory procedure starts with an application of a license by a waste disposal facility operator. The regulatory body carries out necessary examination and issue the license when the application is conformed with the regulation. The regulatory body confirms that the waste disposal facility and the safety operation measures to be taken are in compliance with the technical standards provided in the Reactor Regulation Law. After the confirmation by the regulatory body, the operator submits a notice of the start of operation and then starts operation.

After the start of operation, the regulatory body conducts the nuclear safety inspection four times a year. Other than this inspection, it conducts the confirmation prior to the disposal of waste packages that the waste packages are in compliance with technical criteria provided in the Reactor Regulation Law

(Safety Verification of Radioactive Waste Packages).

After completion of emplacement of waste packages in the repository, the open space between and surrounding the packages is filled with mortar as monolith in order to avoid leaving any voids. The repository is then covered its surface with soil. The regulatory body confirms that the cover with soil is in compliance with technical standards for waste disposal facilities etc. (Safety Verification of Disposal Facility).

The guides of the NSC “Fundamental Guidelines for Licensing Review of Land Disposal Facility of Low-Level Radioactive Waste” (issued in March 17, 1988, Partial revisions on January 7, 1993 and March 29, 2001) describes that stepwise management is applied to the waste disposal site until the radioactivity level become lower than the level on which the safety concern becomes negligible due to decay of radio-nuclides in the disposed wastes. The details of the management of the repositories with and without engineered barriers differ each other. The institutional control after closure of the repository can be terminated within a reasonable time period, provided that expected public exposure after the period due to the wastes disposed of can be such a low level as does not need any management for radiation control. At the end of the institutional control, the operator shall submit the notice of the termination of the license.

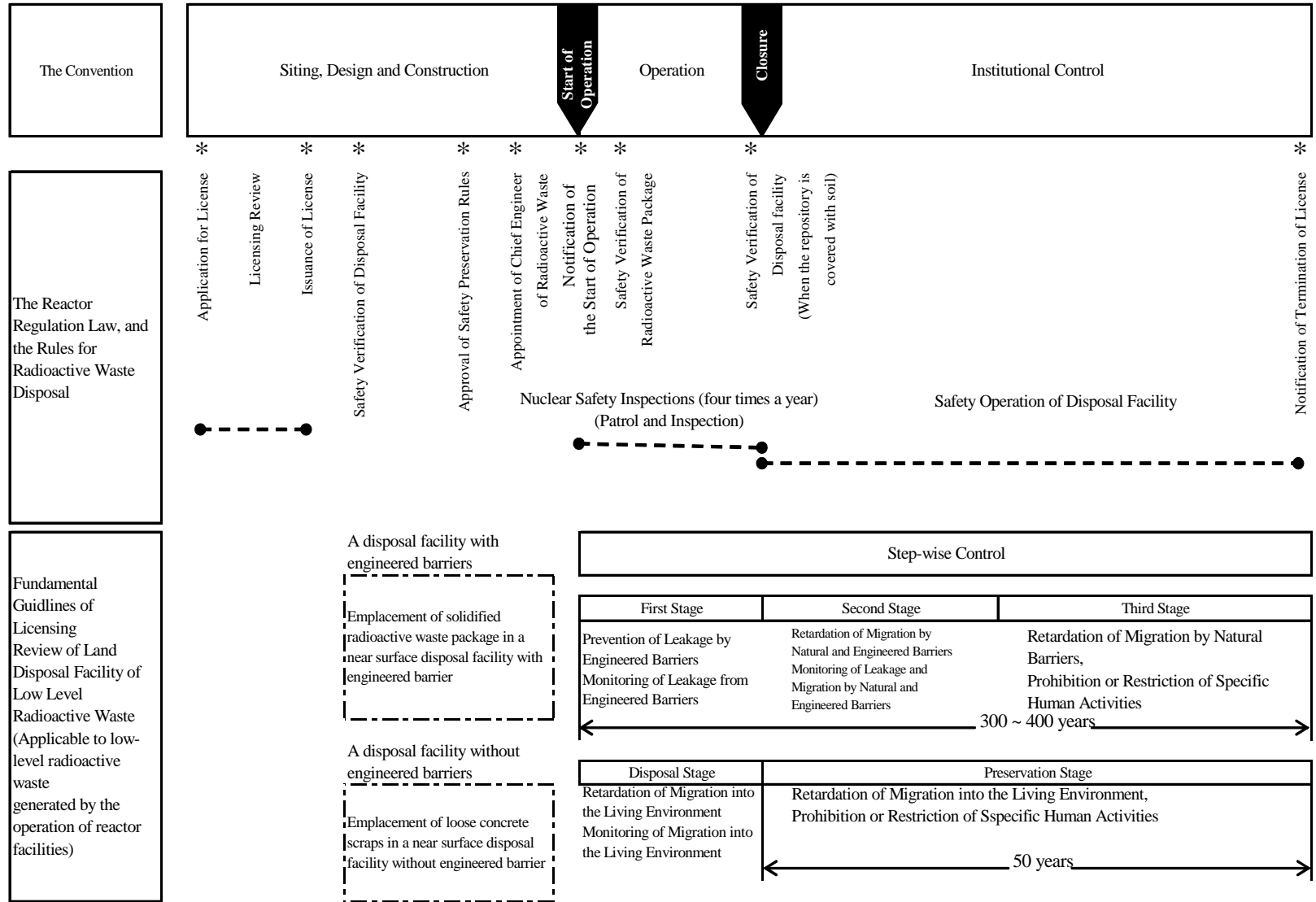


Figure H-1 Regulatory Process on LLW Disposal Facility

H.1 General Safety Requirements (Article 11)

Each Contracting Party shall take the appropriate steps to ensure that at all stages of radioactive waste management individuals, society and the environment are adequately protected against radiological and other hazards. In so doing, each Contracting Party shall take the appropriate steps to:

- (i) ensure that criticality and removal of residual heat generated during radioactive waste management are adequately addressed;**
- (ii) ensure that the generation of radioactive waste is kept to the minimum practicable;**
- (iii) take into account interdependencies among the different steps in radioactive waste management;**
- (iv) provide for effective protection of individuals, society and the environment, by applying at the national level suitable protective methods as approved by the regulatory body, in the framework of its national legislation which has due regard to internationally endorsed criteria and standards;**
- (v) take into account the biological, chemical and other hazards that may be associated with radioactive waste management;**
- (vi) strive to avoid actions that impose reasonably predictable impacts on future generations greater than those permitted for the current generation;**
- (vii) aim to avoid imposing undue burdens on future generations.**

H.1.1 Prevention of Criticality and Removal of Residual Heat

The regulatory body, when issuing a license in accordance with the Reactor Regulation Law, conducts a licensing review to ensure that the location, structure and equipment of a nuclear facility are adequate to prevent radiation hazards caused by nuclear fuel material or matters contaminated by it.

In the licensing review of a radioactive waste management facility, the regulatory body confirms that the appropriate measures are taken to prevent criticality and remove residual heat. The Rules for Reprocessing for Spent Fuel and the Rules for Management of Waste of Nuclear Fuel Materials or Those which are Contaminated Therewith provide that necessary measures for cooling should be taken when the fear for a significant over heat due to decay of radio-nuclides is anticipated or a report should be made when the fear for criticality is foreseen.

All radioactive wastes disposed in the repository in Japan are LLW, and any measures against their criticality or residual heat generation are not actually required to be taken into consideration.

Facilities approved under the Radiation Hazards Prevention Law do not necessitate any consideration of criticality or removal of residual heat because of the characteristics of the wastes they deal with.

H.1.2 Minimization of the Generation of Radioactive Waste

As mentioned in Section B.3, the Long-Term Program for Research, Development and Utilization of Nuclear Energy states that minimization and effective use of radioactive wastes are necessary, and it is required to promote researches and developments for this purpose.

Regarding construction of nuclear facilities under the Reactor Regulation Law, “the Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities” and the “Basic Guide for Safety Review of Nuclear Fuel Cycle Facilities”, require operators to keep public radiation exposure in normal operation as low as reasonably achievable(ALARA). Operators of nuclear facilities make efforts to reduce radio-nuclides concentrations in gaseous and liquid wastes to be discharged by means of filtration, absorption, and by decay in storage tanks for gaseous waste and filtration, ion exchange, or distillation for liquid waste. Solid waste is packed in metal drums, which are stored in dedicated storage pits. Before storing, solid waste is firstly sorted into several categories according to their characteristics, substances likely harmful to the integrity of waste packages are removed, and the volume is reduced by incineration and compaction. The operators are making efforts to reduce the amount of wastes.

Major nuclear facilities report their annual discharge of gaseous and liquid waste and annual generation, volume reduction, and the inventory as of the end of the fiscal year of solid waste to the regulatory body, which reports them to the NSC. These statistics are disclosed to the public.

Operators of radioisotope waste management facilities under the Radiation Hazards Prevention Law report to the regulatory body the amount of annual receipt and accumulated inventories of liquid and solid wastes in the fiscal year.

Furthermore, the development of technologies are carried out by the operator (licensee) to minimize the generation of radioactive waste, such as decontamination technology, melting treatment technology, and recycling technology of concrete scraps.

As mentioned in Section B, the NSC and Radioactive Waste Safety Subcommittee have shown the basic concept of the clearance level and its monitoring methods for compliance with clearance level for such as concrete and metal scraps, which account for a greater portion of waste from dismantling of nuclear facility. Under the circumstances the Reactor Regulation Law has been amended in May, 2005 and the clearance system has started its application. Waste below the clearance level needs not be dealt with as radioactive material and can be handled in the same manner as non-radioactive waste. The encouragement of recycling of the waste below the clearance level as far as technically and economically feasible is also emphasized in the basic concept.

H.1.3 Interdependencies among the Different Steps in Waste Management

Regulations concerning radioactive wastes in Japan provide that the licensees under the Reactor Regulation Law shall treat and store radioactive wastes inside their facilities in principle. Treating process and facilities are designed and used so that the waste packages produced are feasible for storage then disposal in the next step. This clearly means interdependencies among the different steps are appropriately taken into considerations. For those waste packages that were made during the period when the specification of land disposal was not defined, land disposal of them have become feasible after the verification of waste packages using the waste package data recorded and kept .

Based on the experiences above mentioned, the radioactive wastes under the Radiation Hazards Prevention Law are also assured their interdependencies with disposal method to be decided in the future.

H.1.4 Regulations for Radiation Protection

Criteria of radiation protection in safety of radioactive waste management described in Section F.4 have been developed according to the recommendations of International Commission on Radiological Protection (ICRP). One of the criteria specific to radioactive waste disposal facility is a dose criterion to be applied at the end of institutional control of a disposal facility. The “Fundamental Guidelines of Licensing Review of Land Disposal Facility of Low-Level Radioactive Waste” provide that “the institutional control should be completed within a reasonable time period, after which public exposure should

be kept at such a low level as does not need any control for radiation protection.” It describes that the dose lower than which does not need to be controlled is 10 $\mu\text{Sv}/\text{y}$, which is the exempt dose for regulations defined in the report of the Subcommittee on Basic Matters of Radiation Council “Dose Level for Regulatory Control Exemption at the Near Surface Disposal of Radioactive Solid Wastes” (1978). This value was defined by the Radiation Council based on the recommendations of ICRP, Standards of IAEA, etc.

H.1.5 Consideration of the Biological, Chemical and Other Hazards

The Reactor Regulation Law prescribes that nuclear facilities shall have their functions appropriately to prevent hazards due to nuclear fuel materials or materials contaminated with nuclear fuel materials. For this reason, regulations on radioactive wastes require operators to keep radiation effect on workers and the general public as low as reasonably achievable (ALARA) and also provide requirement to take risks caused by other than radiation into consideration. The “Rules for Management of Waste of Nuclear Fuel Materials or those which are Contaminated therewith” stipulates that explosive materials, corrosive materials and other hazardous materials shall not be disposed of in the repository. It is also stipulated that waste package shall not contain the materials harmful to the integrity of waste package and its details are defined in the “Notice on the Technical Details of Measures etc. for Disposal of Nuclear Fuel Materials etc.”. The materials that are likely to harm the integrity of waste package are:

- (1) explosive material or material that explosively reacts with water;
- (2) volatile material;
- (3) spontaneous-ignitable substance;
- (4) corrosive material; and
- (5) material that generates large volume of gases.

Radioactive wastes containing biologically harmful materials such as pathogen etc. generated at facilities using radioisotope shall be collected by the radioisotope waste management services operator after appropriate treatment by the generator himself for safety assurance.

H.1.6 Consideration of Impacts on Future Generations

As mentioned in Section B, the policy is stated that the current generation, who received the benefits of nuclear energy, should bear the responsibility of safe disposal of waste generated by the research, development and utilization of nuclear energy, and should pay continued efforts to that direction.

Radioactive waste generated from nuclear facilities is assumed to be transported to and disposed of in the repositories. For approval of a LLW disposal facility, the licensing review has been conducted in accordance with the Fundamental Guidelines of Licensing Review of Land Disposal Facility of Low-Level Radioactive Waste. This Guidelines describe that the long-term safety assurance of waste repository facility shall be ensured to avoid imposing excessive impacts on future generations.

And, for the licensing review of for the geological disposal of HLW of which guidelines etc. will be prepared in the future, “Policy for Safety Regulations Concerning Disposal of High-level Radioactive Wastes (First Report)” (November, 2000) by NSC states that basic policy is to confirm by the safety evaluation that the maximum dose evaluated for the general public shall be always lower than the radiation protection level defined in advance as the standard, thus the impact to the future generation shall be taken into account. In regard of the time period to be covered by safety assessment, the NSC’s report “Common Important Issues in Safety Regulation for Radioactive Waste Disposal” (June, 2004) states that necessary studies from the viewpoint of the safety regulation should be carried out referring preceded foreign examples, as the study has not yet duly progressed to date in Japan.

H.1.7 Consideration of Burdens on Future Generations

The Long-Term Program for Research, Development and Utilization of Nuclear Energy shows fundamental concept that the current generation receiving the benefits of nuclear energy has responsibility for safe disposal of radioactive wastes generated by research, development and utilization of nuclear energy.

In course of a review of a license application for a major nuclear facility, the regulatory body ensures that issuance of the license does not pose any impediment to the development and planned utilization of nuclear energy, and that the applicant has capacities necessary for an adequate facility operation.

In regard of HLW, as mentioned in Section B.3, the Specified Radioactive Waste Final Disposal Act was enacted in 2000. In accordance with this Final Disposal Act, the Nuclear Waste Management Organization of Japan (NUMO) was established as a sole implementing body responsible for HLW disposal, and the electric utilities deposit funds for disposal to NUMO, who entrusts the Radioactive Waste Management Funding and Research Center with management of the fund. The above law states that safety regulations on the disposal of designated radioactive waste is established as a separate law. Towards the establishment of the law, study on fundamental concepts such as principles of safety assurance, index and its standard values for safety assessment, period to be covered by safety assessment, safety assessment models and the parameters, methodology for establishing safety assessment scenario etc. is being progressed by the NSC.

H.2 Existing Facilities and Past Practices (Article 12)

Each Contracting Party shall in due course take the appropriate steps to review:

- (i) the safety of any radioactive waste management facility existing at the time the Convention enters into force for that Contracting Party and to ensure that, if necessary, all reasonably practicable improvements are made to upgrade the safety of such a facility;**
- (ii) the results of past practices in order to determine whether any intervention is needed for reasons of radiation protection bearing in mind that the reduction in detriment resulting from the reduction in dose should be sufficient to justify the harm and the costs, including the social costs, of the intervention.**

H.2.1 Existing Radioactive Waste Management Facilities

The regulatory body conducts following inspections on radioactive waste management facilities respectively. At present time, on the basis of the results of the Periodical Inspections of Facilities, the Nuclear Safety Inspections or On-the-Spot Inspections conducted, none of major radioactive waste management facilities were found to be required of significant corrective action to continue operation.

(1) Major Nuclear Facilities under the Reactor Regulation Law

1) Periodical Inspections of Facilities

The regulatory body conducts periodical inspections of major nuclear facilities (excluding nuclear fuel material use facilities and waste disposal facilities) once a year (every 13 months in the case of commercial power reactor facilities) to confirm if performance of the facilities and equipment complies with the technical standards prescribed by laws and ordinances.

2) Nuclear Safety Inspections

The regulatory body conducts the Nuclear Safety Inspections by resident Nuclear Safety Inspectors four times a year to confirm for compliancy of operators with the Operational Safety Program.

(2) Radioisotope Waste Management Facilities under the Radiation Hazards Prevention Law

1) Periodical Inspections

The regulatory body conducts the periodical inspections of facilities once within three years to confirm if the performance of the facilities and equipment complies with the technical standards prescribed by laws and ordinances.

2) On-the-Spot Inspections

The regulatory body dispatches the radiation inspectors to conduct On-the-Spot Inspections if necessary.

H.2.2 Examination of the Results of Past Practices

As a result of review it is found that the past practices caused neither radioactive wastes nor nuclear facilities that require any intervention for reasons of radiation protection.

In Japan, there are small amount of waste rock and mill tailings generated by past activities (test and research) as shown below. (*1)

- Tunnel prospections and mining and milling tests carried out in Ningyo Toge area, Okayama prefecture from 1957 to 1978.
- Tunnel prospections carried out in Togo area, Tottori prefecture from 1958 until 1962.
- Tunnel prospections, solution mining test, and earth sciences research of geologic environment carried out in Tono area, Gifu prefecture from 1972 until 2003.

These sites are managed as cessation mine under the Mine Safety Law. The amounts of waste rock and mill tailings are shown in the following table.

The amounts of waste rock and mill tailings

Area	Classification	Volume
Ningyo Toge mine	waste rock	about 330000 m ³
	mill tailings	about 34000 m ³
Togo mine	waste rock	about 35000 m ³
Tono mine	waste rock	about 10000 m ³

For radiation protection, these sites are managed under the Mine Safety Law so as not to exceed 1 mSv/year at the boundary of peripheral monitoring area.

The operator related to these sites is Japan Nuclear Cycle Development Institute(Kamisaibara-son, Tomata-gun, Okayama prefecture and Toki city, Gifu prefecture) and researches and examinations on permanent measures of the waste rock and mill tailings are being carried out by the operator.

(*1) As these waste rock and mill tailings are not defined as radioactive wastes in Japan, these materials are out of scope of the Convention in accordance with Article 2 of the Convention. However the status of these wastes are reported here in accordance with Paragraph 70 of the Summary Report JC / RM.1 / 06 / Final version (. . . . In relation to uranium mining and milling wastes, Contracting Parties with such wastes agreed to include them in their National reports. . . .).

H.3 Siting of Proposed Facilities (Article 13)

1. Each Contracting Party shall take the appropriate steps to ensure that procedures are established and implemented for a proposed radioactive waste management facility:

- (i) to evaluate all relevant site-related factors likely to affect the safety of such a facility during its operating lifetime as well as that of a disposal facility after closure;**
- (ii) to evaluate the likely safety impact of such a facility on individuals, society and the environment, taking into account possible evolution of the site conditions of disposal facilities after closure;**
- (iii) to make information on the safety of such a facility available to general public;**
- (iv) to consult Contracting Parties in the vicinity of such a facility, insofar as they are likely to be affected by that facility, and provide them, upon their request, with general data relating to the facility to enable them to evaluate the likely safety impact of the facility upon their territory.**

2. In so doing, each Contracting Party shall take the appropriate steps to ensure that such facilities shall not have unacceptable effects on other Contracting Parties by being sited in accordance with the general safety requirements of Article 11.

H.3.1 Evaluation of Site-related Factors and Impact of Proposed Facilities

The regulatory body, when issuing license for operation of a major nuclear facility in accordance with the Reactor Regulation Law and its ordinances and rules, conducts a licensing review to ensure that siting and the basic design etc. of facility, equipments and components of the facility are adequate to prevent hazards due to nuclear disaster. The regulatory body uses regulatory guides in the licensing review.

The Basic Guide for Safety Review of Nuclear Fuel Cycle Facilities, which is a regulatory guide commonly applied to nuclear fuel fabrication, spent fuel reprocessing, use of nuclear fuel material. under the Reactor Regulation Law defines that sites shall satisfy the following conditions:

- Basic conditions: No event liable to induce large accident is likely to occur at and near a proposed site of the nuclear fuel cycle facility and there have also been very few events deemed liable to propagate disaster.
- Condition during normal operation: Radiation dose to which the general public may be exposed during normal operations of a proposed nuclear fuel cycle facility are kept ALARA.
- Condition on an accident: The maximum postulated accidents at the proposed nuclear fuel cycle facility should not cause excessive exposure to the general public.

These requirements are fundamentally the same as those described in the “Basic Philosophy to Assess Safety of the Radioactive Waste Management Facilities”, which is a safety review guideline for treating and storage of wastes as an independent services and those described in the “Fundamental Guideline of Licensing Review of Land Disposal of Low-Level Radioactive Waste”, which is a safety review guidelines for disposal facilities.

The “Fundamental Guideline of Licensing Review of Land Disposal of Low-Level Radioactive Waste “ states on the basic condition “no deriving events to induce a large accident is likely to occur at and near the site of the waste disposal facility, and very few events to expand disaster when an accident occurs.” Specifically, it is required to confirm by the safety review that there is no obstacle to ensuring

the safety of the facility taking following events into consideration:

(1) Natural phenomena

- 1) Natural events such as earthquake, tsunami, landslide, depression, typhoon, high tide, flood, abnormal cold wave, heavy snowfall.
- 2) Geological conditions and landform such as ground conditions, soil bearing capacity, fault.
- 3) Meteorological conditions such as wind direction, wind velocity, precipitation.
- 4) Hydrological and hydraulic conditions of rivers, groundwater, etc.

(2) Social phenomena

- 1) Fire, explosion at a neighboring factory etc.
- 2) Condition of use of river water, groundwater etc., conditions of land use etc. in relation to food production such as agriculture, livestock farming, fishery, and condition of population distribution etc.
- 3) Natural resources such as coal, ore etc.

The regulatory body, when approving operation of a radioisotope waste management facility in accordance with the Radiation Hazards Prevention Law, conducts safety review to confirm the descriptions in the application are in compliance with the siting conditions, standards on facility, technical standards etc, provided in the Radiation Hazards Prevention Law and related regulations and standards, and approves when the application is confirmed appropriate. It is provided that facilities should be located at a site where landslide and inundation are unlikely to occur, that main structures should be fireproof or fire-resistant, and that facility should be equipped with shielding walls for radiation protection.

H.3.2 Evaluation of Site-related Factors and Impact of Disposal Facilities After Closure

Post closure safety evaluation of disposal facilities is described in Section H.5.2.

H.3.3 Information Disclosure

License application documents and related information are open to the public at the Nuclear Energy Library and the Nuclear Library of JNES unless reasons for non-disclosure exist. The official documents are open to the public upon request made in accordance with the Law on the Disclosure of Information held by Administrative Agency, which came into force on April 1, 2001, unless reasons for non-disclosure apply.

Furthermore, license application documents and related other documents are also available to the public at the National Diet Library.

Official documents containing information about the safety of radioisotope waste management facilities licensed under the Radiation Hazards Prevention Law are also available to the public upon request in accordance with the Law on the Disclosure of Information held by Administrative Agency, unless reasons for non-disclosure apply.

H.3.4 Relationship with Neighboring Countries

Being an islands country, Japan is located at a considerable distance from its neighboring countries. And then, as long as the safety of nuclear facilities is properly secured within Japan, nuclear facilities in the country are highly unlikely to have impacts on the neighboring countries safety. Therefore the Japanese government does not have a rule to consult the neighboring countries about siting of nuclear facilities. The Japanese government provides neighboring countries with information on the status of the nuclear

energy of Japan through bilateral consultation, etc.

H.4 Design and Construction of Facilities (Article 14)

Each Contracting Party shall take the appropriate steps to ensure that:

- (i) the design and construction of a radioactive waste management facility provide for suitable measures to limit possible radiological impacts on individuals, society and the environment, including those from discharges or uncontrolled releases;**
- (ii) at the design stage, conceptual plans and, as necessary, technical provisions for the decommissioning of a radioactive waste management facility other than a disposal facility are taken into account;**
- (iii) at the design stage, technical provisions for the closure of a disposal facility are prepared;**
- (iv) the technologies incorporated in the design and construction of a radioactive waste management facility are supported by experience, testing or analysis.**

H.4.1 Limitation of Radiological Impacts on Individuals, Society and the Environment

The regulations under the Reactor Regulation Law provide that the application for a license for a nuclear facility should be attached with documents explaining: (i) site conditions such as meteorological conditions, the ground conditions, hydrological conditions, a social environment, and so on; (ii) safety design of the facility; (iii) radiation protection from nuclear fuel materials (including spent fuel) or materials contaminated with nuclear fuel materials, and radioactive waste management; (iv) types, extent and possible consequences of postulated accidents at the facility initiated by an operational error, an equipment or system failure, an earthquake, or a fire.

The regulatory body, in accordance with the Reactor Regulation Law and its subordinate ordinances and rules and regulatory guides. It confirms the conformity of the application and attached documents to the Basic Guide for Safety Review of Nuclear Fuel Cycle Facilities as mentioned in Section H.3.1. on the basic specification, conditions during normal operations and conditions in an accident.

The Basic Guide requires the following measures to manage possible radiological effects on individuals, the society and the environment:

- Confinement function: the facility shall be capable to confine radioactive materials in the limited area.
- Radiation shielding: appropriate radiation shielding shall be provided for working conditions of radiation workers.
- Radiation exposure control: monitoring and control measures of radiation exposure for radiation workers shall be appropriate.
- Discharge control of radioactive wastes: the radio-nuclides released to the environment shall be as low as reasonably achievable with appropriate treatments of radioactive wastes generated
- Consideration for storage etc.: the dose equivalent in the site peripheral area due to storage etc. of radioactive materials shall be as low as reasonably achievable.
- Radiation monitoring: measures to monitor the concentration of radio-nuclides at the release path of radioactive wastes and measures to monitor the dose in the peripheral environment should be taken.
- Criticality safety: (omitted)
- Consideration for earthquake: classification of the facilities based on the importance of the safety should be applied to the seismic design, and the facility should be designed so as to sufficiently

withstand the design seismic force considering site conditions.

- Consideration for natural phenomena other than earthquake: The facilities important to safety are designed so as to withstand the most severe natural force from natural phenomena other than earthquake taking into consideration of past record and survey at and near the site area.
- Consideration for fire and explosion: nuclear fuel cycle facilities in which a fire or an explosion may occur should be provided with appropriate measures to prevent the occurrence of them, to prevent spreading in case of an unlikely event of fire or explosion, and to control excessive release of radioactive materials outside of facility.
- Consideration for loss of electric power: nuclear fuel cycle facilities should be provided with appropriate measures for responding to loss of outside electric power.
- Consideration for transfer of radioactive materials: appropriate measures should be taken for maintaining confinement function, radiation shielding etc. for transfer of radioactive materials inside of a nuclear fuel cycle facility.
- Consideration for accident: measures for accidents, such as alarm, communication and evacuation of workers should be appropriate.
- Consideration for shared use: facilities, equipments, systems and so on of a nuclear facility important to safety should not be shared with other facilities when loss of the safety function is possible by the share.
- Applicable codes and standards: design, construction or inspection of the facilities important to safety should be based on appropriate standards.
- Consideration for inspection, repair etc.: the facilities important to safety of a nuclear fuel cycle facility should be able to be inspected, tested, maintained and repaired with appropriate methods according to facilities importance to safety.

The details about the review of the safety assessment of a facilities on an accident are described in Section H. 5.1.

The operator of major nuclear facility other than fuel material use facilities and waste disposal facilities, under the Reactor Regulation Law or the Electricity Utilities Industry Law, is required to submit a plan of a facility construction to the competent minister for approval, and has to have welding inspections of vessels and pipes of the facility and pre-service inspections of facility at each stage of construction and at the completion of the construction work. The regulatory body confirms that the construction work has been carried out as approved construction plan and that the facility satisfies the technical standards. Pre-service inspections include various investigations and tests ranging from structure, strength and leakage of individual components to the functions and performance of the whole facility.

The operator of nuclear fuel material use facility has to have welding inspections, when necessary, and also has to have facility inspections by the regulatory body at each construction stage and at the completion of the construction work. The regulatory body confirms that the facility satisfies the technical standards.

In regard of the disposal facility, the Reactor Regulation Law does not have a provision for welding inspection. It has a provision on the “Safety Verification” of the facility(Fig. H-1) for those on the approval of construction plan and the pre-service inspections.

The license application to be submitted to the competent minister for a radioisotope waste management services under the Radiation Hazards Prevention Law must be accompanied by an explanatory statement setting forth the method of waste management and the locations, structures and equipments of waste repackaging facilities and waste storage facilities and waste management facilities. The provisions concerning the location, structure and equipment of each facility require the applicant, in order to restrain possible radiological effects, to ensure that shielding walls, other shields, ventilation equipments, and drainage equipments are consistent with the following technical standards prescribed by laws and ordinances:

- (1) shielding walls and other shields are capable of preventing occupational personnel engaged in radiation work, and on-site and off-site personnel from the radiation exposure doses of exceeding the respective dose limit;
- (2) ventilation equipment is capable of keeping the concentration of radioisotopes in the air at frequently entered places in working rooms and at the exhaust outlets below the respective specified concentration limits;
- (3) drainage equipments are capable of keeping the concentration of radioisotopes in draining water below the specified concentration limit; and
- (4) the surface radioactive nuclides concentration of materials contaminated with radioisotopes in a working room is to be kept below the limit of surface contamination density.

The operator issued with a license for the radioisotope waste management services is obligated to take Pre-Service Facility Inspections by the regulatory authority and obtain its confirmation that the facilities comply with these technical standards.

H.4.2 Procedure and Technical Provisions for Decommissioning

Procedure for the decommissioning of nuclear facilities under the Reactor Regulation Law is described in Section F.6.

Operator of a radioisotope waste management services licensed under the Radiation Hazards Prevention Law shall, when terminating its services, submit the notice to the competent minister in accordance with the law and related regulations. The operator shall take measures to transfer or dispose of radioactive waste, and to decontaminate radioisotopes within 30 days after the notice. If necessary, the competent minister has an authority to order the operator to implement measures to prevent radiation hazards

H.4.3 Technical Provisions for the Closure of Disposal Facilities

The Rules for Waste Disposal Facility provide technical requirements for the waste disposal facilities and waste packages under the Reactor Regulation Law to be satisfied to ensure pre-and post-closure safety of the disposal facility Table H.4-1 shows an outline of the technical requirements for waste disposal facility.

Furthermore, the Fundamental Guidelines for Licensing Review of Land Disposal of Low-Level Radioactive Waste, issued by the NSC, describes on the institutional control period after the closure of the facility that the institutional control should be completed within a reasonable time period, after which public exposure should be kept at such a low level as does not need any control for radiation protection.

H.4.4 Steps to Support the Reliability of Technologies

Operators incorporate commonly applied technologies in domestic and overseas on the design and construction of nuclear facilities.

Since 1976, the NSC has been promoting research on the safety of nuclear facilities, environmental radioactivity and radioactive waste (the safety research). To respond to the possible expansion and diversification of nuclear power development and utilization, the NSC has utilized the results of the safety research in the establishment of safety policy, basic principles, and various standards and guidelines.

Since fiscal year 2001, the relevant organizations have been conducting researches related to the areas of near surface disposal, geological disposal, and clearance level, contributing to the establishment of standards for the disposal of radioactive waste (see Table B.3-2). Subjects of the researches include, in

the area of near surface disposal, researches on the migration of radio-nuclides and the safety assessment for disposal of radioactive wastes from Radioisotopes use facilities and research facilities, and, in the area of geological disposal, researches on the long-term stability of the geological environment and on the long-term behavior of the engineered barriers and surrounding bedrock, and, in the area of clearance level, research on verification methods of clearance level of the wastes generated from decommissioning of nuclear facilities.

In addition to the above described researches, intensive researches and developments on geological disposal of HLW have been conducted by the government and related organizations allocating the roles as described in the Long-Term Program for Research, Development and Utilization of Nuclear Energy (2000). The researches and developments consist of researches needed for safety regulations of final disposal of HLW and safety assessment, basic researches such as the geo-scientific study on the geological environment of deep underground and researches and developments for technological improvement of reliability of geological disposal technologies. Especially, two underground research facilities programs being conducted by Japan Nuclear Cycle Development Institute, one is with granite and the other with young argillaceous sediments, are expected to be the programs not only for the above mentioned researches and developments but also for promotion of better understanding of general public in Japan about geological disposal of HLW.

Table H.4-1 The Technical Requirements for Waste Disposal Facilities

- (1) The cumulative amount of each radionuclides contained in all of radioactive waste packages emplaced in the disposal facility shall not exceed the amount of each radionuclide described in the license application;
- (2) Disposal facility shall be well drained off before start of emplacement, and rainwater shall be prevented to leak into the disposal facility after the start of emplacement;
- (3) Dispersion of radioactive material outside the site shall be prevented when non-solidified concrete scraps and other loose solids are emplaced;
- (4) Disposal facility shall be tightly filled in with soil etc. leaving no voids in the facility when emplacement is completed;
- (5) Explosives, corrosives, and other hazardous materials shall not be emplaced in disposal facility;
- (6) Surface of disposal facility, after emplacement is completed, shall be covered with soil less permeable to water than soil surrounding the disposal facility; so that the wastes disposed of and equipments(engineered barriers) placed in the disposal facility will not be exposed easily, and
- (7) Engineered barrier, if any, shall meet following requirements:
 - Outer concrete partitions of the facility shall be structurally strong enough to withstand self weight, soil pressure, and seismic force;
 - Outer concrete partition shall be taken anti-corrosion measures against surface water, groundwater and soil; and
 - Appropriate measures shall be taken against destruction of outer and inner concrete partitions and leakage of radioactive material, if necessary.

Source: Article 6 of the Rules for Management of Waste for Nuclear Fuel Materials or Those which are Contaminated Therewith

H.5 Assessment of Safety of Facilities (Article 15)

Each Contracting Party shall take the appropriate steps to ensure that:

- (i) before construction of a radioactive waste management facility, a systematic safety assessment and an environmental assessment appropriate to the hazard presented by the facility and covering its operating lifetime shall be carried out;**
- (ii) in addition, before construction of a disposal facility, a systematic safety assessment and an environmental assessment for the period following closure shall be carried out and the results evaluated against the criteria established by the regulatory body;**
- (iii) before the operation of a radioactive waste management facility, updated and detailed versions of the safety assessment and of the environmental assessment shall be prepared when deemed necessary to complement the assessments referred to in paragraph (i).**

H.5.1 Systematic Safety Assessment and Environmental Assessment

The competent minister, when issuing a license for a nuclear facility under the Reactor Regulation Law, requires the applicant to submit a license application accompanied with documents explaining meteorology, geology, hydrology and social environment of the site, and safety design of the facility, and reviews them.

The regulatory guides, used to review a license application documents, require the applicant to perform safety assessment on the maximum postulated accidents of each nuclear facility prescribed in the guides, and to confirm that these accidents do not cause any excessive public exposures of radiation.

The regulatory guides require the applicant of a license for a reactor facility or reprocessing facility, which contains a large quantity of radioactive material, to perform both safety assessments to confirm the adequacy of safety design of the facility and safety assessment of candidate site to assess the isolation between the facility and the public from the point of view of radiation safety on postulated accidents. In the series of safety design assessments, the guides require to confirm that assumed damages to radioactive waste management equipments does not cause any excessive public exposures of radiation.

The competent minister, when issuing a license for a radioisotope waste management facility under the Radiation Hazards Prevention Law, requires the applicant to assess the shielding design and the radio-nuclides concentrations in the air and drainage at the boundary of the site, and confirms that the concentrations do not exceed the limits specified in the regulations.

H.5.2 Assessment for the Period following Closure of a Disposal Facilities

The concept on the management period of disposal facilities is prescribed in the Fundamental guideline for Licensing Review of Land Disposal of Low-Level Radioactive Waste established by NSC.

Radio-nuclides in LLW are mainly short-lived radio-nuclides, and they decay their radioactivity with time. For this reason, the control of the facility should be completed within a reasonable time period, after which public exposure should be kept at such a low level as does not need any control for radiation protection. Cobalt-60, Cesium-137 etc. in the wastes as the important radioactive nuclides for radiation protection of waste disposal facility decay to below 1/1000 to 1/10000 after 300 to 400 years, and the radioactivity in the wastes disposed of will become very small. For this reason, the period of about 300 years to 400 years is cited as a “institutional control period” referring to examples of foreign countries. And, in the case of the disposal facility

without engineered barrier, as the disposed waste is non-solidified concrete etc. with low radioactivity level, disposal stage and the following about fifty years of preservation stage is cited as the “institutional control period”.

The details of management of disposal facility are described in Section H.7.2.

H.5.3 Updating of Assessments Before Operation of Facilities

The Reactor Regulation Law provides that, when there are changes of the description of the license application or major changes of the facility design are needed, the operator shall apply for the alteration of the application for a license for a waste disposal facility or the facility design and construction method and they shall be approved by the competent minister.

The Radiation Hazards Prevention Law also requires operators to apply for alteration to the license application, when necessary, and it shall be reviewed again by the authority.

H.6 Operation of Facilities (Article 16)

Each Contracting Party shall take the appropriate steps to ensure that:

- (i) the licence to operate a radioactive waste management facility is based upon appropriate assessments as specified in Article 15 and is conditional on the completion of a commissioning programme demonstrating that the facility, as constructed, is consistent with design and safety requirements;**
- (ii) operational limits and conditions, derived from tests, operational experience and the assessments as specified in Article 15 are defined and revised as necessary;**
- (iii) operation, maintenance, monitoring, inspection and testing of a radioactive waste management facility are conducted in accordance with established procedures. For a disposal facility the results thus obtained shall be used to verify and to review the validity of assumptions made and to update the assessments as specified in Article 15 for the period after closure;**
- (iv) engineering and technical support in all safety-related fields are available throughout the operating lifetime of a radioactive waste management facility;**
- (v) procedures for characterization and segregation of radioactive waste are applied;**
- (vi) incidents significant to safety are reported in a timely manner by the holder of the licence to the regulatory body;**
- (vii) programmes to collect and analyse relevant operating experience are established and that the results are acted upon, where appropriate;**
- (viii) decommissioning plans for a radioactive waste management facility other than a disposal facility are prepared and updated, as necessary, using information obtained during the operating lifetime of that facility, and are reviewed by the regulatory body;**
- (ix) plans for the closure of a disposal facility are prepared and updated, as necessary, using information obtained during the operating lifetime of that facility and are reviewed by the regulatory body.**

H.6.1 Verification through Pre-Service Inspection

An operator (excluding operators of the waste disposal facility and users of nuclear fuel materials etc.), in accordance with the Reactor Regulation Law shall prepare a document explaining the design and construction method etc. and submit it to the regulatory body for approval. Also, the operator takes Pre-Service Inspection of the regulatory body at each of the construction and at the end of all construction works, to verify that the construction is completed as approved and meets the technical requirements. Passing the Pre-Service Inspections, the operator is permitted to commence operation of the facility.

An operator of the waste disposal facility, in accordance with the Rules for Waste Disposal Facility, takes Pre-Service Inspection, the Safety Verification of Disposal Facility by the regulatory body at a prescribed construction process.

An operator of nuclear fuel materials use facility takes the inspection on construction of the facility etc. that handle more than specified amount of special nuclear fuel materials, and is not permitted to use the facility unless it passes the inspection.

An operator of the facility of the radioisotope waste management services licensed under the Radiation

Hazards Prevention Law takes the Facility Inspections by the regulatory body and the operator is not permitted to commence operation of the facility unless it passes the inspections.

H.6.2 Operational Requirements and Conditions

An operator approved under the Reactor Regulation Law shall take necessary measures on safe operation for maintenance of the facility, operation of the equipment, and transport, storage and disposal of wastes. Before the start of operation, the operator is required to prepare Operational Safety Program and submit it to the regulatory body for approval. The program shall define methods of operation of the facility, inspection for maintenance of the facility, radiation monitoring, quality assurance etc.. It shall specify concrete operational conditions, and the facility shall be operated and maintained in compliance with them. Table H.6-1 shows the contents of the Operational Safety Program of a waste disposal facility. The operator shall undergo the inspection on the compliance of the program by the regulatory body (Nuclear Safety Inspection) four times a year. When a periodical facility inspection once a year finds that the performance of the facility does not conform to the technical criteria defined by the applied laws and regulations or that the facility does not conform to the operational conditions, the regulatory body orders the operator to take necessary measures on safe operation such as cessation of use, modification or repair of the facility, designation of operational method of the equipment etc.

An operator of major nuclear facility shall assign a manager for physical protection to manage the activities for physical protection of nuclear fuel materials thoroughly. And, the operator shall assign a qualified staff of Reactor, a qualified staff of Nuclear Fuel Material, a qualified staff of Spent Fuel or a qualified staff of Radioactive Waste among the qualified staff of Nuclear Fuel Material or qualified staff of Reactor under the Reactor Regulation Law.

Operator licensed under the Radiation Hazards Prevention Law, before the start of operation, prepares the Internal Rules for Prevention of Radiation Hazards specifying details of inspections, radiation monitoring and treatment of radioactive wastes, and notifies it to the regulatory body. The Internal Rules shall specify operational requirements, and the facility shall be operated and maintained in compliance with them. Table H.6-2 shows the details of the Internal Rules.

Also, operator assigns, among qualified staff, a Supervisor of Radiation Protection who is in charge of overseeing prevention of radiation hazards in operation of facility.

H.6.3 Procedures of Operation and Updating of Assessment of a Disposal Facility

In accordance with the Reactor Regulation Law, the Electric Utilities Industry Law, or the Radiation Hazards Prevention Law, the operator of a nuclear facility, during the operation of the nuclear facility, is required to undergo the following inspections respectively.

(1) Nuclear Facilities under the Reactor Regulation Law

1) Periodical Facility Inspection

The regulatory body conducts Periodical Facility Inspections (excluding disposal facilities) once a year (every 13 months in the case of commercial power reactor facilities) to inspect the conformity of the performance of the facilities and equipment complies with the technical criteria defined by the law and its regulations etc.

2) Nuclear Safety Inspection

The regulatory body posts Nuclear Safety Inspectors to each nuclear facility to conduct the Nuclear Safety Inspection four times a year to confirm the compliance with the Operational

Safety Program and the results is open to the public.

3) Safety Verification of Radioactive Waste Packages

The regulatory body conducts the Safety Verification of Radioactive Waste Packages each time when waste packages are emplaced in disposal facilities. Actually, the Japan Nuclear Energy Safety Organization conducts the verification as designated from the regulatory body. Table H.6-3 shows the technical criteria used in the Safety Verification of Radioactive Waste Packages generated from reactor facilities.

For the purpose of updating assessment of a disposal facility, the regulatory body, in accordance with the Rules for Waste Disposal Facility, conducts the Safety Verification of Disposal Facility once again at the time when the facility is covered with soil and closed. In the verification, the regulatory body confirms compliance with the technical criteria, one of which prescribes that the cumulative amount of radioactivity of each radioactive nuclide contained in all of radioactive waste packages emplaced in the disposal facility shall not exceed the amount of radioactivity of each radioactive nuclide described in the license application.

The operator, in accordance with the Rules for Waste Disposal Facility, keeps records of disposal, including the results of the Safety Verification of Disposal Facility, until the waste disposal is terminated.

(2) Facility of Radioisotope Waste Management Services under the Radiation Hazards Prevention Law

1) Periodical Inspection

The regulatory body conducts Periodical Facility Inspections every three years to inspect if the performance of the facilities and equipments complies with the technical criteria.

2) On-the-Spot Inspection

The regulatory body sends Radiation Inspectors to the facility to conduct On-the-Spot Inspections as necessity arises.

H.6.4 Technical Support throughout the Operating Lifetime

Throughout the operating lifetime of a nuclear facility, the regulatory body obtains engineering and technical advices from advisory committees, which are composed of experts on operational management, inspection and radiation control, and these advices are reflected in the operation, maintenance and safety regulation as necessary. The regulatory body also carry out the necessary study based on the advises to prepare the safety regulations for future disposal of HLW and the low-level radioactive wastes with relatively higher radioactivity .

The NSC, as described in Section H.4.4, has been promoting researches on the safety(the safety research) of radioactive waste disposal, which have been conducted by JAERI, JNC and other institutes.

Meanwhile, the operators are collecting information on the operation experience both domestic and overseas, and accumulating the up-to-date technological knowledge through their own development project or maintenance activities.

H.6.5 Characterization and Segregation of Radioactive Waste

The Reactor Regulation Law provides disposal method based on the properties and types of radioactive waste as follows:

- (1) Gaseous radioactive waste:
 - 1) Discharge through ventilation facilities; or
 - 2) Store in tanks capable of preventing radiation hazards.
- (2) Liquid radioactive waste:
 - 1) Discharge through discharge facilities (including those for discharge into ocean);
 - 2) Store in liquid waste storage tanks capable of preventing radiation hazards;
 - 3) Solidify or enclose in a container, which shall be stored in a storage facility capable of preventing radiation hazards;
 - 4) Incinerate in an incinerator capable of preventing radiation hazards; or
 - 5) Solidify in a solidification facility capable of preventing radiation hazards.
- (3) Solid Radioactive Waste:
 - 1) Incinerate in an incinerator capable of preventing radiation hazards;
 - 2) Solidify or enclose in a container, which shall be stored in a storage facility capable of preventing radiation hazards;
 - 3) Difficult to be disposed of by the method 2) such as large machines or radioactive wastes waiting for decay of radioactivity shall be stored in a storage facility capable of preventing radiation hazards; or
 - 4) Emplace in a disposal facility in accordance with the technical criteria on waste disposal facilities and waste packages.

The Ordinance for Enforcement of the Reactor Regulation Law classifies radioactive waste generated from reactor facilities to be disposed of into five categories as is shown in Table H.6-4, and prescribes upper bounds of radioactivity of each radionuclide for each category.

The Radiation Hazards Prevention Law provides disposal method based on the properties and types of radioactive waste as follows:

- (1) Gaseous Radioactive Waste:
 - 1) Treat or discharge through ventilation equipments.
- (2) Liquid Radioactive Waste:
 - 1) Treat or discharge through discharge facilities;
 - 2) Enclose in a container or solidify with concrete or other solidifying material in a container at a solidification facility, and the container shall be stored in a storage facility;
 - 3) Incinerate in an incinerator; or
 - 4) Solidify with concrete or other solidifying material in a solidification facility.
- (3) Solid Radioactive Waste:
 - 1) Incinerate in an incinerator;
 - 2) Enclose in a container or solidify with concrete or other solidifying material in a container at a solidification facility, and the containers shall be stored in a storage facility; or
 - 3) Radioactive wastes such as large machines, which are very difficult to be enclosed in a container, shall be stored in a storage facility with special measures preventing spread of contamination.

H.6.6 Reporting of Incidents and Failures

The Reactor Regulation Law or the Electric Utilities Industry Law requires operators to report to the regulatory body about the situation of and the measures taken for incidents or failures occurred at major nuclear facilities. The criteria on reporting prescribed in these laws for waste disposal facility are shown in Table H.6-5. The regulatory body is further encouraging operators to feedback the measures to prevent a recurrence to other nuclear facilities as well.

Operators of the facility of radioisotope waste management services subject to the Radiation Hazards Prevention Law, in accordance with the law, also report to the regulatory body about the details of major incidents occurred at the facilities and countermeasures taken. Table H.6-6 shows the reporting criteria under the Radiation Hazards Prevention Law.

In Japan, incidents and failures have been evaluated according to the International Nuclear Event Scale (INES) since August 1992.

H.6.7 Reflecting Operating Experience

Upon receipt of a report on an incident at a major nuclear facility, as noted in the preceding section, the regulatory body immediately announces it to the public and also announces the causes for the incident and measures to be taken to prevent similar incidents when they become available. The regulatory body fully examines the information about the incidents occurred at nuclear facilities and makes effort to extract and draws the lessons to be learned from the incident with soliciting advices from committees composed of experts on operational management, inspection and radiation control. The regulatory body applies the lessons learned to the operation and maintenance or safety regulations where appropriate.

The regulatory body entrusts its supporting organization to collect and analyze information about operating experience both at domestic and overseas nuclear facilities, and to provide information to relevant organizations. For example, NISA entrusts JNES to establish the system to collect and evaluate domestic and overseas safety information, and the results are shared with JNES and NISA and periodical surveyed by jointly established "Safety Information Deliberation Committee" for the appropriate application of them to regulations and for the follow-up of it.

The regulatory body has international mechanism to share information on incidents and accidents through international organizations, such as the IAEA and the OECD/NEA, as well as under bilateral cooperation agreements with the foreign organizations.

Meanwhile, electric utilities are collecting and analyzing information about operating experience both domestic and overseas by themselves and through CRIEPI. They have established an internet library "the Nuclear Information Archives (NUCIA)" to share the domestic safety information among the general public. The NUCIA deals with the domestic safety information including that of minor events from commercial power reactor facilities and has been open through Internet (<http://www.nucia.jp>) since October, 2003. Also they have international mechanisms to exchange information through Institute of Nuclear Power Operation(INPO) and World Association of Nuclear Operators(WANO) Tokyo Center. Some of electric utilities have information exchange agreements with electric utilities or reactor manufacturers in France, Germany, the United States and other countries. Recognizing the importance of sharing safety information and nurturing safety culture throughout the nuclear industry, related organizations jointly established a private institute "NS Net" in December 1999. The NS Net performs peer reviews and other routine activities. NS Net became a part of Japan Nuclear Technology Institute (JANTI) since April, 2005 and is continuing its activities.

H.6.8 Preparation of Decommissioning Plan of Nuclear facilities

As described in Section F.6, the operator of a nuclear facility under the Reactor Regulation Law shall prepare a decommissioning plan for the facility and shall obtain an approval by the regulatory body.

An operator of the facility of radioisotope waste management services licensed under the Radiation Hazards Prevention Law, in order to terminate the services, shall take measures such as transfer of radioisotopes in its possession, decontamination of materials contaminated by radioisotopes, and disposal of contaminated materials, and shall report to the regulatory body about the measures taken.

H.6.9 Preparation of Plans for the Closure of Disposal Facilities

The operator of a waste disposal facility, when applying for a license, is required to submit a plan for closure of the disposal facility, plan for post-closure management which includes the expected period for the institutional control, and an approval by the regulatory body. The operator, when closing a disposal facility, are requested to take the Safety Verification of Disposal Facility by the regulatory body, as mentioned in Section H.4.3.

Table H.6-1 Contents of the Operational Safety Program for Radioactive Waste Disposal Facility

1. Duties and organization of personnel engaged in management of the radioactive waste disposal facility
2. Safety education for personnel engaged in radiation work at the disposal facility concerning:
 - (1) Safety education policy (including its implementation plan);
 - (2) Details of safety education concerning:
 - 1) related laws, regulations and the Operational Safety Program;
 - 2) structure, performance and operation of disposal facility;
 - 3) radiation control;
 - 4) handling of nuclear fuel material and materials contaminated with nuclear fuel material; and
 - 5) emergency preparedness;
 - (3) Other necessary matters concerning safety education;
3. Measures to be taken for safe operation of disposal facility taking account of attenuation of radioactivity by decay;
4. Establishment of a controlled area, a peripheral monitoring area and preservation area of a disposal facility, and restriction of access to these areas;
5. Gaseous and liquid discharge monitoring equipment;
6. Monitoring of dose, dose equivalent, radioactive material concentration and surface contamination by radioactive materials, and decontamination;
7. Management of radiation measurement equipment and measuring method;
8. Patrol and inspection of disposal facility and measures to be taken after patrol and inspection;
9. Receipt, transport, storage and handling of radioactive waste;
10. Emergency preparedness;
11. Records of the safe operation of disposal facility (including compliance with the Operational Safety Program); and
12. Quality assurance for waste disposal facility
13. Other matters necessary for the safe operation of disposal facility.

Source: Article 20 of the Rules for Waste Disposal of Nuclear Fuel Materials or Those which are Contaminated Therewith

Table H.6-2 Examples of Details of the Internal Rules for the Prevention of Radiation Hazards

1. Duties and an organization of personnel engaged in the handling of radioisotopes, etc.
2. Duties and an organization of the Supervisor of Radiation Protection and other personnel engaged in the management of safety in the handling of radioisotopes, etc.
3. Appointment of a person acting in place of a Supervisor of Radiation Protection
4. Maintenance and management of radiation handling facilities
5. Inspections of radiation handling facilities (or a controlled area)
6. Use of radioisotopes, etc.
7. Repacking, storage, transport and disposal of radioisotopes, etc.
8. Measurement, recording and preservation of records of radiation doses and contamination with radioisotopes
9. Education and training necessary for the prevention of radiation hazards
10. Medical examinations
11. Measures needed for the health of persons who have been suffered or are suspected to have been suffered from radiation hazards
12. Keeping and maintenance of records on the storage or disposal of radioisotopes, etc.
13. Emergency measures to be taken on an earthquake, a fire and other disaster (excluding those measures mentioned in 14)
14. Emergency measures in case of danger
15. Reporting of situation of radiation control
16. Other matters necessary for the prevention of radiation hazards

Table H.6-3 Outline of Criteria Concerning Waste Packages

- (1) Waste packages shall be solidified in containers;
- (2) Radioactive concentration shall not exceed the maximum radioactive concentration as applied.
- (3) Surface concentration of radioactive material shall be in compliance with laws and regulations;
- (4) Waste packages shall not contain any material that impairs its integrity;
- (5) Waste packages shall have the strength to withstand a load at emplacement;
- (6) Waste packages shall be free from noticeable damage; and
- (7) Waste packages shall have markers for collation.

Source: Paragraph 2 of Article 8 of the Rules for Waste Disposal of Nuclear Fuel Materials or Those which are Contaminated Therewith

Table H.6-4 Classification of Radioactive Wastes from Reactor Facilities
and the Concept of Disposal

<ol style="list-style-type: none">1. Radioactive wastes generated at reactor facilities:<ol style="list-style-type: none">(1) Radioactive wastes solidified in containers, and(2) Metal radioactive wastes whose openings are sealed or otherwise processed.2. Radioactive wastes from dismantling of reactor facilities including concrete scrap, reinforcing bars and other materials solidified in containers;3. Radioactive wastes generated at reactor facilities not solidified in containers;4. Radioactive concrete scraps and other wastes from dismantling reactor facilities;5. Radioactive wastes generated at reactor facilities, such as reactor internals, to be disposed of at intermediate depth disposal facility:<ol style="list-style-type: none">(1) Wastes solidified in containers; and(2) Other solid wastes.

The regulations provide for the radioactive nuclide upper bounds for each category 1 through 5 (See Section B.5).

Category 1 and Category 2 are for near surface disposal of waste disposal facility with engineered barrier.

Category 3 and Category 4 are for near surface disposal without engineered barrier

Category 5 is for disposal to intermediate depth (the level deep enough to the use of underground generally considered). (See Subsection B.3)

Source: Article 13-9 of the Ordinance for the Enforcement of the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors

Table H.6-5 The Incidents Reporting Criteria at Disposal Facilities under the Reactor Regulation Law

<p>Upon occurrence of any of the following incidents, the operator of a disposal facility shall immediately give notice to the regulatory body, and report within ten days on the details of the incidents and corrective measures taken:</p> <ol style="list-style-type: none"> 1. Theft or loss of nuclear fuel material; 2. Failures of a disposal facility that disturb waste disposal work as special measures are needed for repair of the failure; 3. Failures of a disposal facility that disturb waste disposal work as a result of loss or potential loss of confinement function of nuclear fuel materials etc. in the limited area, radiation shielding function to prevent radiation hazards by external radiation, or fire or explosion protection function in a waste disposal facility; 4. Abnormal condition of discharge of gaseous radioactive wastes at ventilation facility or discharge of liquid radioactive wastes from a discharge facility due to failures of a disposal facility or other unexpected events; 5. Atmospheric radio-nuclides concentrations by radiation monitoring outside peripheral monitoring area exceeding limit provided by Subparagraph (iv) of Article 19 because of discharge of gaseous radioactive waste; 6. Radio-nuclides concentrations in discharge by radiation monitoring at the outer boundary of peripheral monitoring area exceeding limits provided by Subparagraph (vi) of Article 19 ; 7. Leakage of nuclear fuel materials, etc. outside the controlled area; 8. Leakage of nuclear fuel materials, etc. inside the controlled area due to a failure of disposal facility or other unexpected events excluding following cases (excluding the case when the measures such as access control or key control for the area related to the leakage or when the leaked material spreads outside the controlled area); <ol style="list-style-type: none"> (1) When the leaked liquid nuclear fuel materials etc. does not spread outside the curb readily installed around the equipment for prevention of spreading of leakage; (2) The function of ventilation related to the area of the leakage of gaseous nuclear fuel materials etc. is maintained appropriately; (3) The amount of radioactivity of leaked nuclear fuel materials etc. is very small or the degree of leakage is minor. 9. Effective dose by radiation exposures of personnel in the controlled area exceeding or likely to exceed dose limits of 5 mSv for radiation workers and 0.5 mSV for non-radiation workers due to a failure of a disposal facility or other unexpected events; 10. Radiation exposures of radiation workers exceeding or likely to exceed the dose limits specified in Subparagraph 1 of Article 15-1; or 11. Any other hazards to personnel occurring or likely to occur at the facility (excluding minor non-radiation hazards).

Source: Paragraph 2 of Article 27 of the Rules for Waste Disposal of Nuclear Fuel Materials or Those which are Contaminated Therewith

Table H.6-6 The Incident and Failure Reporting Criteria in accordance with the Radiation Hazards Prevention Law

Upon the occurrence of any of the following events, operators shall immediately give notice on the occurrence of the events to the Minister of MEXT and report to the minister in ten days about the details of the events and measures taken:

1. Theft or loss of radioisotopes has occurred;
2. Radioisotopes, etc. have abnormally leaked;
3. Occupational personnel engaged in radioisotope handling have been exposed to radiation that has exceeded or is likely to exceed the effective dose limits or the equivalent dose limits; or
4. Other radiation hazards have occurred or are likely to occur.

Source: Paragraph 1 of Article 39, of the Ordinance for the Enforcement of the Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc.

H.7 Institutional Measures after Closure (Article 17)

Each Contracting Party shall take the appropriate steps to ensure that after closure of a disposal facility:

- (i) records of the location, design and inventory of that facility required by the regulatory body are preserved;**
- (ii) active or passive institutional controls such as monitoring or access restrictions are carried out, if required; and**
- (iii) if, during any period of active institutional control, an unplanned release of radioactive materials into the environment is detected, intervention measures are implemented, if necessary.**

H.7.1 Records Keeping of Waste Disposal Facilities

Operators shall keep and preserve records of the waste disposal facilities for a period of time as prescribed by laws and regulations. The operator shall keep records of:

- radioactive waste packages emplaced in the disposal facility (results of the Safety Verifications of Radioactive Waste Package and Disposal Facility, type and quantity of waste disposed of, amount of radioactive materials in the waste, date of disposal, location of disposal);
- radiation control (concentration of radio-nuclides in the released air and discharge water, dose equivalents in the controlled area and the peripheral monitoring area, concentration of radio-nuclides contained in the underground water etc.);
- maintenance;
- incidents at the disposal facility;
- rainfall;
- groundwater level; and
- safety education; and documents related to quality assurance and planning, implementation, evaluation and improvement in accordance with the quality assurance program.

H.7.2 Implementation of Institutional Controls

The Fundamental Guidelines of Licensing Review of Land Disposal Facility of Low-Level Radioactive Waste issued by the NSC require that operators of disposal facilities should, in accordance with the ALARA principle, manage a disposal facility taking account of types and radioactivity levels of waste disposed of, until the radioactivity of waste disposed of in a near surface disposal facility decays with time to the level as low as it poses no safety hazards to the public (hereinafter referred to as Step-wise Control).

The regulatory body requests a license applicant for waste disposal to submit a plan for step-wise management and examines the conformity to the requirements specified in the Fundamental Guidelines of Licensing Review of Land Disposal Facility of Low-Level Radioactive Waste. The Step-wise Control required by the above guidelines is as follows.(Figure H-1)

(1) A disposal facility with engineered barrier (*1):

- 1) The First Stage:

In a disposal facility, a peripheral monitoring area where access is controlled, and a disposal facility preservation area where patrol and inspection are conducted, are established. Leakage of radioactive materials out of engineered barrier (*2) is monitored, and if leakage occurs remedial measures are taken. (Monitoring and prevention of leakage from engineered barriers)

2) The Second Stage:

In a disposal facility a peripheral monitoring area where access is controlled, and a disposal facility preservation area where patrol and inspection are conducted, are established. Leakage of radioactive materials out of engineered barrier with groundwater to the biosphere is monitored. (Monitoring of leakage and migration from engineered barrier, and retardation of migration by natural barrier (*3) and engineered barrier)

3) The Third Stage:

A disposal facility preservation area where patrol and inspection are conducted is established. Farming and other specific human activities in this area are restricted or prohibited. (Retardation of migration by natural barrier, and prohibition or restriction of specific human activities)

*1: The case that wastes solidified in a container etc. are disposed of in a near surface disposal facility with engineered barrier.

*2: "Engineered barrier" is an artificial structure such as the concrete pit, filling materials such as soil and sand for open space between and around waste packages emplaced, and monolithically consolidated waste packages for prevention and reduction of leakage from the wastes disposed of into the biosphere.

*3: "Natural barrier" is the soil etc. surrounding engineered barrier or waste packages and is expected to retard migration of radioactive materials leaked from the wastes disposed of into the biosphere.

(2) A disposal facility without engineered barrier (*4)

1) The Disposal Stage:

A peripheral monitoring area where access is controlled, and a disposal facility preservation area where patrol and inspection are conducted, are established. Leakage of radioactive materials out of disposal facility with groundwater to the living environment is monitored. (Retardation and monitoring of migration into the biosphere)

2) The Preservation Stage:

A disposal facility preservation area where patrol and inspection are conducted is established. Farming and other specific activities in this area are restricted or prohibited (Retardation of migration into the biosphere, and prohibition or restriction of specific activities)

*4: The case that wastes such as concrete not solidified in a container etc. are disposed of in a near surface disposal facility without engineered barrier.

The control period is supposed to last 300 to 400 years for a disposal facility with engineered barrier referring to foreign cases. And, in the case of disposal without engineered barrier, as the disposed waste is non-solidified concrete etc. with low radioactivity level, disposal stage and the following preservation stage of about fifty years are regarded as the "institutional control period".

H.7.3 Intervention Measures if Necessary

When issuing a license, the regulatory body requests the operator to take following measures during each stage of institutional control.

In the First Stage, if a leakage of radioactive material from engineered barriers is detected, the operator should immediately repair the barriers to prevent leakage. In the Second Stage, the operator should monitor leakages from engineered barriers and, if necessary, take measures to retard migration of radioactive material. At the same time, the operator should conduct patrol and inspection of the disposal facility and, if necessary, restore the cover soil and others. In the Third Stage, the operator should conduct patrol and inspection to prevent any action specified in regulations, and, if necessary, restore the soil cover and others.

Blank Page

I. Transboundary Movement

Blank Page

Section I. Transboundary Movement (Article 27)

1. Each Contracting Party involved in transboundary movement shall take the appropriate steps to ensure that such movement is undertaken in a manner consistent with the provisions of this Convention and relevant binding international instruments. In so doing:
 - (i) a Contracting Party which is a State of origin shall take the appropriate steps to ensure that transboundary movement is authorized and takes place only with the prior notification and consent of the State of destination;
 - (ii) transboundary movement through States of transit shall be subject to those international obligations which are relevant to the particular modes of transport utilized;
 - (iii) a Contracting Party which is a State of destination shall consent to a transboundary movement only if it has the administrative and technical capacity, as well as the regulatory structure, needed to manage the spent fuel or the radioactive waste in a manner consistent with this Convention;
 - (iv) a Contracting Party which is a State of origin shall authorize a transboundary movement only if it can satisfy itself in accordance with the consent of the State of destination that the requirements of subparagraph (iii) are met prior to transboundary movement;
 - (v) a Contracting Party which is a State of origin shall take the appropriate steps to permit re-entry into its territory, if a transboundary movement is not or cannot be completed in conformity with this Article, unless an alternative safe arrangement can be made.
2. A Contracting Party shall not licence the shipment of its spent fuel or radioactive waste to a destination south of latitude 60 degrees South for storage or disposal.
3. Nothing in this Convention prejudices or affects:
 - (i) the exercise, by ships and aircraft of all States, of maritime, river and air navigation rights and freedoms, as provided for in international law;
 - (ii) rights of a Contracting Party to which radioactive waste is exported for processing to return, or provide for the return of, the radioactive waste and other products after treatment to the State of origin;
 - (iii) the right of a Contracting Party to export its spent fuel for reprocessing;
 - (iv) rights of a Contracting Party to which spent fuel is exported for reprocessing to return, or provide for the return of, radioactive waste and other products resulting from reprocessing operations to the State of origin.

The electric utilities in Japan have concluded reprocessing contracts with British and French firms and have exported 7100 tons of spent fuel between 1969 and 2001. They, in return, receive new nuclear fuel material recovered from the spent fuel and vitrified packages (HLW) generated in the reprocessing. Eight hundred and ninety-two vitrified packages were sent back to Japan between 1995 and March 2005 and the remaining packages will be returned in the next ten-odd years. As they started constructing a reprocessing plant at Rokkasho-Mura in Aomori Prefecture in 1993, there would be no plan to export more spent fuel after 2002, with an exception of the US produced fuel for research reactor (which should be returned under the bilateral agreement between Japan and the US.)

I. 1 Transboundary Movement

I. 1. 1 Steps to Ensure Prior Notification and Consent of the State of Destination

For the export of the spent fuel or the radioactive waste, the Foreign Exchange and Foreign Trade Control Law provides that an applicant should apply for and obtain the Export Permit from the Minister of METI. This Export Permit should be applied once it is confirmed that the authorities of the State of destination recognized the administrative and technical capacity of the importer.

I. 1. 2 Steps to Ensure Transboundary Movement Subject to International Obligations

Japanese domestic laws, such as the Ship Safety Law, etc, have incorporated obligations under the IAEA Regulations for the Safe Transport of Radioactive Materials and relevant international conventions on each mode of transport, such as International Convention for the Safety of Life at Sea (SOLAS), etc.

I. 1. 3 Consent as a State of Destination

After being notified by a State of origin of a transboundary movement to Japan of the spent fuel or the radioactive waste, the government of Japan decides whether it gives consent to the transport, and notifies its decision to the State of origin.

Japan expressed that, upon notification from a State of origin, it would consent to the import of returned radioactive waste as long as such transport would comply with the safety regulation of Japan.

I. 1. 4 Confirmation of the Capacity of a State of Destination

The Foreign Exchange and Foreign Trade Control Law provides that an exporter should apply for and obtain the Export Permit from the Minister of METI for the export of the spent fuel or the radioactive waste. The Minister of METI issues the Export Permit after confirming the general conditions of safety of the country of destination such as its regulatory structure, the membership in relevant international agreements, and the administrative and technical capacity of the importing body. In other words, the export shall be permitted only if it is confirmed that importing body has administrative and technical capacity of management of spent fuel and radioactive waste.

I. 1. 5 Steps to Permit Re-entry in case of Uncompleted Transboundary Movement

The Import Trade Control Order allows, as special exemption, re-entry of exported goods, in case of uncompleted transboundary movement so long as original characteristics and configuration of exported goods are preserved, and the other case of the exemption is a transport accident. Re-entry of exported spent fuel and radioactive waste is allowed by that provision.

I. 2 Steps to Ban Shipment to a Destination South of Latitude 60° South

The Foreign Exchange and Foreign Trade Control Law provides that an applicant should apply for and obtain the Export Permit from the Minister of METI for the export of the spent fuel or the radioactive waste. The Export Permit shall not be granted for the export of spent fuel or radioactive waste to a destination south of latitude 60 degrees south for storage or disposal.

J. Disused Sealed Sources

Blank Page

Section J. Disused Sealed Sources (Article 28)

- 1. Each Contracting Party shall, in the framework of its national law, take the appropriate steps to ensure that the possession, remanufacturing or disposal sealed sources takes place in a safe manner.**
- 2. A Contracting Party shall allow for reentry into its territory of disused sealed sources if, in the framework of its national law, it has accepted that they be returned to a manufacturer qualified to receive and possess the disused sealed sources.**

J.1 The infrastructure for regulatory control

In order to regulate radioactive sources, the Law Concerning Prevention of Radiation Hazards due to Radioisotope etc. (June 10, 1957 Law of No. 167), (In short, Radiation Hazards Prevention Law) has been enacted, which provides, in essence, that those intending to use radioisotopes etc. must obtain the license from the Minister of Education, Culture, Sports, Science and Technology (In short, MEXT). There are about 5000 licensees and each licensee is responsible for the safety of the sources. All the sources are under proper management and control.

The competent regulatory authority is MEXT. MEXT has been carrying out safety review and on-the-spot inspection.

The objective of Radiation Hazards Prevention Law is to prevent radiation hazards to radiation workers and the public when radiation or radioisotopes are used. It is recognized that Radiation Hazards Prevention Law has been functioning effectively as stated below.

- (1) The person who uses more quantities of radioactive sources than specified shall apply to MEXT for license, or notify MEXT.
- (2) Radiation Hazards Prevention Law provides technical criteria and requirements, such as criteria relating to the use of facilities, dose limits for radiation workers, etc. For example, the licensee is required, from the point of radiation safety, to: 1) be equipped with lock in all facilities for uses, storage and disposal of radioisotopes; 2) install walls or fences for restrict to entry at the boundary of controlled area and the facility of liquid waste disposal; 3) restrict access to controlled area without permission of supervisor of the facility. These safety measures will effectively work also for security, such as physical protection.
- (3) Licensee is responsible for annually reporting to MEXT regarding facility management. MEXT carries out inspections of the facility if needed, and check that the management is in conformity with the license.

As a result of this strict regulation system as described above, there has been no incident, such as excess exposure to the public by “orphan sources”.

J.2 Management of radioactive sources at the end of their life cycles

The licensee is regulated by law to hand over radioactive sources only to license holders who are authorized to receive and use the sources, and the disused radioactive sources are by practice handed over from the licensees to specific licensees. Licensees have obligation to report the results of such handover to MEXT when they stop using the sources.

The licensee has a responsibility to do an annual inventory check of both sealed and unsealed radioactive sources and to report the results to MEXT.

Many sources are imported from foreign countries and the sources with long half-life and high activity are sent back to the original foreign manufactures.

Regarding the distribution of radioisotopes and sealed sources in Japan, one supplier (Japan Radioisotope Association) carries out consistently from distribution and delivery of almost all radioactive sources to recovery of disused radioactive sources.

Radiation Hazards Prevention Law provides for penalty and clarifies licensee have the responsibility for safe control of the radioactive sources.

As the result of this, there have been no incidents of serious radiation hazard involving radioactive sources or serious radiation hazard involving orphan sources until now.

J.2.1 Criteria for the Storage of Disused Sealed Radioactive Sources

In Japan, Radiation Hazards Prevention Law lays down technical criteria relating to storage sealed sources as stated below.

- (1) Sealed sources shall be put in containers and stored in storage pits or bins.
- (2) Seals sources shall not be stored in quantities exceeding storage capacity.
- (3) Appropriate measures, such as 1) installing a shield, 2) distancing personnel from sealed sources, and 3) shortening the time during which personnel may be exposed to radiation, shall be taken in order to prevent personnel engaged in handling of radioactive substances from being exposed to radiation exceeding the effective dose limit.
- (4) Appropriate measures, such as immobilizing storage bins, shall be taken in order to prevent containers storing sealed sources from being carried from one place to another without permission.
- (5) Appropriate measures, shall be taken in order to keep the activity concentration in the air of

radioisotopes in storage facilities from exceeding the concentration limit.

- (6) Personnel shall be prohibited from eating, drinking or smoking in a place where an oral and inhalation intake may occur.
- (7) Appropriate measures shall be taken to prevent surface contamination from exceeding the surface contamination limit.
- (8) Radioactive contaminated substance whose surface concentration exceeds one-tenth of the surface concentration limit shall not be taken out from the controlled area without permission.
- (9) Appropriate measures shall be taken in order to prevent unauthorized persons from entering the controlled area.

J.2.2 Reentry of Returning Sealed Sources

As long as a manufacturer has license and meets the regulations specified in the Radiation Hazards Prevention Law, reentry of approved type of sealed sources returning from abroad are allowed within the license of storage capacity. In this case, the manufacturer intending to possess or renew returned sealed sources is required to store them in accordance with the above mentioned storage criteria.

J.2.3 Response to Missing Radioactive Sources

In case of loss of any radioactive source, the licensee shall immediately report the matter to the police and MEXT. While MEXT orders the licensee immediately to search the sources, the police carry out criminal investigations, if the loss relates to criminal acts.

MEXT is now in preparation of notification system for evaluated rating of radioactive source events based on the additional guidance of the International Nuclear Event Scale (INES) that will be submitted in near future.

J.2.4 Response to Orphan Sources

When the lost sources are found, the police and the fire service immediately take an initial action including setting of exclusion area, radiation survey and immediate assessment of the situation. MEXT requests the discoverer(s) of the sources that safety measures should be taken and also dispatch a radiation inspector to confirm that the safety measure has been properly taken. These orphan sources that have been found are to be recovered by the experts.

J.2.5 Detection for Orphan Sources

About 30 percent of the operators of scrap metal recycle industry voluntarily carry out radiation monitoring with gate type monitors or portable monitors. At the gateway of almost all the blast furnace or electric furnace steel companies, which use such scrap metal, carry out radiation monitoring on acceptance of the scrap metal for use.

The steel industry and the scrap metal recycle industry are voluntarily taking measures such as development of manuals and training courses to cope with the discovery of orphan sources.

The Customs conducts inspections to detect such sources by having set up radiation measurement equipment and X-ray machines in main ports

J.2.6 Response to Accident Relating Radioactive Sources

In case of accidents involving radioactive sources, the police and the fire service perform initial response immediately on notification. MEXT dispatches radiation inspectors to advise the licensee to take suitable measures.

J.2.7 Progress in Establishing a National Register of Radioactive Sources

Users of radioactive source must obtain licenses of MEXT, or submit notification to MEXT by Radiation Hazards Prevention Law, and MEXT as the regulatory body oversees and verify the radioactive sources used by the licensees as follows.

Before Use:

Those who intend to use radioactive sources must apply for license to MEXT. In this application, the applicant has to indicate the nuclide, its radioactivity and the number for each radioactive source.

After the beginning of use:

The licensee must perform an annual inventory check of radioactive sources, the result of which should be included in the annual report of facility management. This report includes not only all the sealed sources including Category 1 and 2 sources but also all the unsealed sources, and MEXT verifies the consistency with the relevant license application. In case of disused sources, MEXT asks the licensee for the report that the licensee has handed over the sources to another licensee.

MEXT requests no information by the above report regarding the source ID number and the

manufacturer, etc. The regulatory authority, however, will know such information of source ID number and the manufacturer, etc. as a result of the fact that, in Japan only one supplier imports and delivers category 1 and 2 sources to the domestic users.

From now on, the regulatory authority is considering establishing the system of national registry of sealed sources including source ID number and the manufacturer, etc. at least for category 1 and 2 sources, taking into consideration consistency with source registration systems in other countries.

Blank

K. Planned Activities to Improve Safety

Blank Page

Section K. Planned Activities to Improve Safety

(1) Preparation of Laws and Ordinances

There are safety examination guidelines and legislations, etc. to be prepared for safety regulations of radioactive waste management from now on, such as disposal of high level radioactive wastes, disposal of low-level radioactive wastes with a comparatively high radioactivity level, disposal of uranium wastes, disposal of wastes containing transuranic nuclides, and the value of materials not requiring treatment as radioactive wastes. These are shown in Table B.3-2 as the status of activities concerning preparation of regulation on radioactive waste disposal.

Moreover, the "Law for Saving and Management of the Reserve Funds for Reprocessing etc. of Spent Fuels from Nuclear Power Generation" was enacted in May 2005, but related legislations etc. are under preparation at this moment.

The NSC and the related regulatory bodies continue to study and prepare these safety examination guidelines and legislations etc.

(2) Steps to Support Reliability of Technology

For management of radioactive wastes, especially for disposal, it is important to improve its safety and reliability of disposal technologies.

Therefore, regulatory bodies continuously obtain specialist's engineering and technical advices and reflect them in operation and maintenance and safety regulations, as needed, for operation management, inspection and radiation management during the operation time period. Safety researches are conducted based on regulation needs of the Nuclear and Industrial Safety Agency;

On the other hand, operators continuously promote to buildup the newest technical information by collection of the internal and external information on operational experiences, technological developments by self-finance, maintenance and repair activities, etc.

For researches and developments for reliability improvement, the implementing body continues to takes charge of technical development on geological disposal of high-level radioactive wastes, aiming at safe operation and improvement for profitable and efficient final disposal, and the national government and agencies concerned implement researches and developments necessary for establishing safety regulations and safety evaluation for final disposal, fundamental researches and developments such as scientific investigation of deep layer, etc., and technical developments etc. for reliability improvement of geological disposal technologies. Especially, the Japan Atomic Energy Agency (JAEA) promotes researches and developments for confirmation of the reliability of geological disposal technologies and establishment of safety evaluation methods at the two deep layer research facilities proceeding for the granite and sedimentary rock, the Quantitative Assessment Radionuclide Migration Experimental Facility, etc. And also, these deep layer research facilities are planned and expected to facilitate not only as the place of research and development of geological disposal, but also as a place to deepen understanding of the research and development for the geological disposal in Japan.

Since fiscal year 1976, the NSC has been promoting research projects concerning the safety of environmental radioactivity and radioactive waste at nuclear installations. The products of these safety research projects have been reflected in the formulation of various standards and guidelines, including principles such as safety policy and basic ideas, standards on specific means of achieving safety, and specific guidance.

The Committee, in developing the research programs on the safety, decided the "Important Research Programs on the Nuclear Safety" in July 2004 to develop the "Basic Guidelines for Safety

Examination”, which defines indicators for the safety evaluation and their reference values, etc., before selection starts for the detailed investigation area, which is shown in the “classification of basic concepts for disposal and status of activities preparing for relevant regulations” (Table B.4-2) for disposal of radioactive wastes and the “Fundamental Concept on the Safety Regulations for Disposal of High-Level Radioactive Wastes (the first report)”, and to develop the “Safety Examination Guidelines” before the safety examination starts incorporating the new knowledge according to circumstances. The report "Important Research Programs" indicates, as safety researches on radioactive wastes and decommissioning field to be conducted intensively in five years starting 2005, two researches to promote the study about environmental requirements or basic guidelines for selection of the detailed investigation area, etc. of the construction site for the disposal facility of high-level radioactive wastes and the study for developing the fundamental concept for safe operation of processing and disposal of high beta and gamma wastes, TRU wastes, uranium waste etc.

Moreover, in July 2003, the Radioactive Wastes Safety Subcommittee, Nuclear and Industrial Safety Subcommittee, Advisory Committee for Natural Resources and Energy showed the important research tasks which should be investigated from now on in the “Toward Ensuring Foundation for the Safety Regulation of High-Level Radioactive Waste Disposal”, and those tasks will be promoted by the supporting organization for safety regulations, the Japan Nuclear Energy Safety Organization, as a center, utilizing the results of researches of all organizations including the above-mentioned deep layer research facilities, and the outcomes will be reflected in the preparation of the future safety regulation system.

Annex 1 :
Legislations and Guidelines

Blank Page

Annex 1 : Legislations and Guidelines Table of Contents

I. Long-Term Program for Research, Development and Utilization of Nuclear Energy (Excerpt)	1
II. LEGISLATIONS, GUIDES, ETC.	4
Preface	4
1. Atomic Energy Basic Law (Excerpt)	7
2. Law for Establishment of the Atomic Energy Commission and the Nuclear Safety Commission(Excerpt)	7
3. Law for Technical Standards of Radiation Hazards Prevention (Excerpt)	7
4. Law for Establishment of the Ministry of Economy, Trade and Industry(Excerpt)	7
The Rules for Organization of the Ministry of Economy, Trade and Industry(Excerpt)	7
5. Law for Establishment of the Ministry of Education, Culture, Sports, Science and Technology	11
(1) Law for Establishment of the Ministry of Education, Culture, Sports, Science and Technology (Excerpt)	11
(2) Ordinance for Organization of the Ministry of Education, Culture, Sports, Science and Technology (Excerpt)	12
(3) The Rules for Organization of the Ministry of Education, Culture, Sports, Science and Technology (Excerpt)	12
6. Law for Establishment of the Ministry of Health, Labour and Welfare	13
(1) Law for Establishment of the Ministry of Health, Labour and Welfare (Excerpt)	13
(2) Ordinance for Organization of the Ministry of Health, Labour and Welfare (Excerpt)	13
7. The Law for Japan Nuclear Energy Safety Organization	14
8. The Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors...	15
(1) The Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Excerpt)	15
(2) The Rules for Waste Repository for Nuclear Materials or Materials Contaminated with Nuclear Materials (Excerpt)	44
(3) The Rule for Waste Management of Nuclear Fuel Materials etc. Outside of the Factory or Premises (Excerpt)	56
9. The Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc.	58
(1) The Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc. (Excerpt)	58
(2) Ordinance for the Enforcement of the Law Concerning Prevention from Radiation Hazards Due to Radioisotopes, etc. (Excerpt)	74
(3) The Rules for the Enforcement of the Law Concerning Prevention from Radiation Hazards Due to Radioisotopes, etc. (Excerpt)	76
10. Electricity Utilities Industry Law	95
(1) Ministry Ordinance concerning Reserve Fund for Dismantling Nuclear Power Facilities	95
11. Basic Law on General Emergency Preparedness	97
12. Special Law of Nuclear Emergency Preparedness	97
13. Specified Radioactive Waste Final Waste management Act (Excerpt)	97
14. The Law for Deposit and Management of the Reserve Fund for Spent Fuel Reprocessing and so forth in the Nuclear Power Generation	103
15. Guides	109
(1) Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities (Excerpt)	109
(2) Basic Guide for Safety Review of Nuclear Fuel Cycle Facilities (Excerpt)	109
(3) Radioactive Waste Processing and Disposal Policy	111
(4) Basic Concept for Safety Regulations for Land Disposal of Low Level Solid Radioactive Wastes.	112

(5)Fundamental Guidelines for Licensing Review of Land Disposal Facility for Low-Level Radioactive Waste (Excerpt).....	112
(6)Clearance levels in Main Nuclear Facilities (Excerpt)	116
(7)On Methods of Monitoring for Compliances with clearance levels for reactor facilities (Excerpt)...	120
(8)On Clearance Levels for Heavy Water Reactors and Fast Neutron Reactors (Excerpt).....	123
(9)Philosophy for Safety Assurance and Safety Regulations for the Decommissioning of Commercial Power Reactor Facilities (Excerpt)....	125
(10)Safety Examination Guideline for the Spent Fuel Interim Storage Facility Using Metal Dry Casks.....	127

I. LONG-TERM PROGRAM FOR RESEARCH, DEVELOPMENT AND UTILIZATION OF NUCLEAR ENERGY (EXCERPT)

(Atomic Energy Commission, November 24, 2000)

Part I: The Current Status of Research, Development and Utilization of Nuclear Energy, and Future Plans

2. Nuclear Fuel Cycle

2-2. Significance of the Nuclear Fuel Cycle for Japan

From the state of the world, and the situation in Japan in particular, it is apparent that diverse efforts must be made over the long term to secure a steady supply of energy through technological means.

Nuclear power generation contributes to economic efficiency, supply stability and the environmental acceptability of Japan's energy supply systems. Nuclear fuel cycle technologies have the potential to improve further on these attributes, and to permit the benefits of nuclear power generation to be enjoyed for a longer period of time. Technology for reprocessing spent fuel, rather than directly disposing of it, and recovering plutonium and uranium for use as fuel, require facilities enabling nuclear material control as well as safety control, in light of the nature of such technology, which is to chemically treat material with high radioactivity and separate plutonium and other elements, necessitating, therefore, a great deal of facility investment. On the other hand, such technology economizes on uranium resources and improves supply stability. It is, therefore, appropriate to basically reprocess spent fuel and make effective use of plutonium, uranium and other elements, while securing safety and nuclear non-proliferation. Taking economic efficiency into account, Japan should make the reprocessing of spent fuel and the use of recovered plutonium and uranium its basic policy, considering the geographical and resource conditions of the country.

(omission)

In the use of plutonium through the reprocessing of spent fuel, there are concerns about safety and nuclear proliferation, and doubts about economy and the economic efficiency of research and development investment. In order, therefore, to promote the use of plutonium, it is important to ensure safety, and to dedicate effort to explaining the concept to the people, focusing on securing a stable supply of energy. It is equally important, at the same time, to actively carry out promotional activities to enhance understanding on the part of the international community of Japan's policy on the use of plutonium, and to reiterate to the world Japan's philosophy of firmly adhering to the peaceful uses of nuclear power and its systems.

(omission)

Part II : Future Prospects for Research, Development and Utilization of Nuclear Energy

Chapter 3: Nuclear Power Generation and the Nuclear Fuel Cycle

1. Basic Policy

The present generation, which enjoys the benefits of nuclear power, has the obligation to do its utmost for the safe disposal of radioactive waste resulting from the research, development and utilization of this energy source. Accordingly, continued efforts will be exerted to achieve steady progress in the proper disposal of such waste.

3. Nuclear Fuel Cycle Projects

3-4. Reprocessing of Spent Fuel from Light Water Reactors

Spent fuel from light water reactors in Japan, with the exception of a portion contracted out to the Tokai Reprocessing Facility of the Japan Nuclear Cycle Development Institute, has been reprocessed by overseas contractors. Meanwhile, taking into account various relevant factors, specifically the demand for domestic reprocessing, private Japanese nuclear operators conceived the Rokkasho-mura Spent Fuel Reprocessing Plant based on the operational experience accumulated at the Tokai Reprocessing Facility, and on technologies and experience in countries advanced in the reprocessing field. The parties are now pushing forward with construction of the plant in order to have it in commercial operation by 2005.

Mainly from the viewpoint of securing fuel cycle independence, Japan intends in principle to reprocess all spent fuel domestically from now on, and the private nuclear operators are expected to make steady progress with the construction and operation of the Rokkasho-mura facility, the first commercial-scale reprocessing plant in Japan, so that commercial reprocessing technology will be firmly established domestically. As long as the reprocessing plant and intermediate storage projects progress smoothly and on schedule, it is unlikely that an overseas reprocessing option will be needed. In dealing with this topic, it is also important for Japan to consider reactions in the countries facing the sea lanes used for the

transportation of nuclear materials.

(omission)

3-5. Intermediate Spent Fuel Storage

Intermediate storage of spent fuel provides an adjustable time period until the fuel is reprocessed and thus lends an element of flexibility to the nuclear fuel cycle as a whole. In Japan, a law concerning intermediate storage was enacted in 1999, and the private sector is now making preparations for commercial operation of storage facilities by 2010. It is expected that an implementing entity capable of properly operating and managing these facilities will carry out the project in the years ahead under the basic principle of securing safety.

(omission).

4. Treatment/Conditioning and Disposal of Radioactive Wastes

Radioactive waste is generated primarily at nuclear power plants and nuclear fuel cycle facilities (including waste returned from abroad after spent fuel reprocessing under contract), but some does come from universities, research institutes, medical institutions and other facilities. Such waste should be safely treated/ conditioned and disposed of by the generators. The government should provide guidance to or regulate the generators to ensure that the treatment/conditioning and disposal are carried out properly and safely.

4-1. Commitment to Waste Disposal

Some low-level radioactive waste from nuclear power plants has already been buried underground. Based on studies of methods of disposal, a basic policy has been presented on the disposal of other radioactive waste, excluding uranium waste, the disposal of which is now under investigation and discussion.

As to radioactive waste for which no specific disposal plan has yet been proposed, it is essential that the generators and other interested parties formulate and implement a specific plan through sufficient consultation and cooperation so that they can promptly start safe, efficient treatment/conditioning and disposal. During the implementation of the plan, the government should support the interested parties' efforts, whenever necessary, to prevent waste disposal problems from adversely affecting the development and utilization of nuclear energy.

Since radioactive waste varies greatly in its level of radioactivity and in the type of radioactive material contained, arrangements should be made to classify the waste by method of disposal, regardless of the facility from which it comes, and take specific measures for its treatment/conditioning and disposal.

(1) Waste for Geological Disposal

Radioactive waste having relatively high radioactivity and containing large amounts of radioactive materials with a long half-lives should be disposed of by a method capable of securing safety for a long period of time, so that the living environment will not be affected. This requires the use of geological disposal, which, after providing engineering barriers to prevent radioactive materials from leaking out, buries the waste in stable underground zones several hundred meters deep, which serves as a natural barrier.

(High-Level Radioactive Waste)

Japan's policy is that high-level radioactive waste remaining after the recovery of plutonium, uranium and other useful materials from spent fuel by reprocessing should be solidified in a stable form and, after being stored for 30 to 50 years for cooling, buried under the ground by the geological disposal method. Vitrified high-level radioactive waste is already stored at a repository in Rokkasho-mura, Aomori Prefecture. According to the "Final Disposal of Designated Radioactive Waste Program," which was issued on October 2, 2000, under the Law on Final Disposal of Designated Radioactive Waste, "final disposal will start sometime in the latter half of the 2030's."

In selecting disposal sites, an important factor is gaining understanding and support from residents concerned. In order to do so, it is important to ensure transparency through thorough information disclosure. The government, electric utilities and the implementing entity, a leading player in site selection, should perform each duty with proper role sharing and mutual cooperation. For this purpose, the government should clarify the political significance of final disposal and its efforts to secure safety, and endeavor to obtain understanding from residents. It should also provide all necessary systems and setups for coexistence between the planned disposal facility and the local community; while the utilities and others having basic responsibility as the waste generators should carry out activities to gain public understanding of the disposal project, with cooperation from the implementing entity and the government, and should work actively with the implementing entity in selecting disposal sites.

(omission)

(Radioactive Waste Other than High-Level Waste)

In addition to high-level radioactive waste, some other radioactive waste also requires geological disposal. As that waste varies widely in its chemical and physical properties, it is important for waste generators and other interested parties to closely cooperate with one another in carrying out research and development of waste treatment and disposal technologies to pave the way for reasonable disposal of this waste, taking into consideration the diversity of its properties and making use of the results of research and development efforts for the disposal of high-level radioactive waste.

(Partitioning and Transmutation Technology)

The technology to separate radioactive materials with long half-lives contained in high-level radioactive waste and convert them into short-lived or non-radioactive, stable materials using a reactor or an accelerator is still at an early stage of research and development, but it should be able to contribute to reducing the burden of waste treatment and disposal, and to effective utilization of available resources. Research and development activities for partitioning and transmutation technology should be carried out based on periodic assessments, in coordination with the development of nuclear fuel cycle technology as a whole. It should be borne in mind that commercialization of partitioning and transmutation technology will not eliminate the need for geological disposal of radioactive waste.

(2) Waste for Disposal with Institutional Control

Radioactive waste whose radioactivity attenuates to a sufficiently low level as to no longer affect the living environment within a period for which institutional management is realistic can be safely disposed of in the ground at a relatively shallow depth, usually by combining engineering and natural barriers, and, after disposal, managing it properly according to its radioactivity. Even waste containing radioactive materials with long half-lives can be safely disposed of by the same method and with the same post-disposal management if the concentration of such materials is low enough.

From now on, therefore, specific measures should be taken to pave the way for disposal of low-level radioactive waste, other than that which the nuclear power plants have already begun disposing of in concrete vaults. In implementing these measures, a study should be conducted not only on the disposing of waste at different sites based on its place of origin, but on disposing of waste by two or more disposal methods at the same site, and on disposing of waste subject to the same disposal method at the same site, regardless of its place of origin.

4-2. Decommissioning of Nuclear Facilities

Such nuclear installations as commercial power reactors, test and research reactors, and nuclear fuel cycle facilities, should be decommissioned when the time comes at the responsibility of their operators, under the basic principle of securing safety while gaining the local community's understanding and support. It is expected that the land, after the decommissioning of commercial power reactors, will serve as sites for new nuclear power plants, again with the understanding of their communities.

4-3. Reduction of Waste Generation and Promotion of its Effective Use

Steps should be taken to reduce the amount of waste generated and to recycle/reuse it. Research and development to those ends should be actively pushed forward. Interested parties and the competent authorities should jointly conduct an extensive study on the uses of such waste and the development of systems for that purpose, including satisfactory safety checks. Waste with a radioactivity concentration below the "clearance level" need not be dealt with as radioactive material, and may be handled in the same way as conventional waste in respect of safety. In principle, it is important to recycle waste to the fullest extent practical and reasonable.

(omission)

II. LEGISLATIONS, GUIDES, ETC.

Preface

1. Atomic Energy Basic Law (Excerpt)

Text is the same as Annex 3.1(A3.1 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention. (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention

2. Law for Establishment of the Atomic Energy Commission and the Nuclear Safety Commission

(1) Law for Establishment of the Atomic Energy Commission and the Nuclear Safety Commission (Excerpt)

Text is the same as Annex 3.2(A3.1 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention

Additional description concerning this National Report follows in the next sections.

(2) Rules for Nuclear Safety Commission Secretariat Organization (Excerpt)

Text is the same as Annex 3.2(A3.3 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention

3. Law for Technical Standards of Radiation Hazards Prevention(Excerpt)

Text is the same as Annex 3.6(A3.36page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention

4. Law for Establishment of the Ministry of Economy, Trade and Industry

Text is almost the same as Annex 3.3(A3.3 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention Additional description concerning this National Report follows in the next sections.

(1) Law for Establishment of the Ministry of Economy, Trade and Industry (Excerpt)

(2) Ordinance for Organization of Ministry of Economy, Trade and Industry (Excerpt)

(3) The Rules for Organization of Ministry of Economy, Trade and Industry (Excerpt)

5. Law for Establishment of the Ministry of Education, Culture, Sports, Science and Technology

(1) Law for Establishment of the Ministry of Education, Culture, Sports, Science and Technology (Excerpt)

(2) Ordinance for Organization of the Ministry of Education, Culture, Sports, Science and Technology (Excerpt)

(3) The Rules for Organization of the Ministry of Education, Culture, Sports, Science and Technology (Excerpt)

6. Law for Establishment of the Ministry of Health, Labour and Welfare

(1) Law for Establishment of the Ministry of Health, Labour and Welfare (Excerpt)

(2) Ordinance for Organization of the Ministry of Health, Labour and Welfare (Excerpt)

7. Law for Establishment of Japan Nuclear Energy Safety Organization

8. The Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors

Text is almost the same as Annex 3.5(A3.10 page) of National Report of Japan for Third

Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention Additional description concerning this National Report follows in the next sections.

- (1) The Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Excerpt)**
- (2) The Ordinance for Enforcement of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Excerpt)**
- (3) The Rules for Establishment, Operation, etc. of Nuclear Power Reactors (Excerpt)**
- (4) The Rules for Waste Disposal facility Business for Nuclear Materials or Materials Contaminated with Nuclear Materials (Excerpt)**
- (5) The Rule for Disposal of Nuclear Fuel Materials etc. Outside of the Factory or Place of Business (Excerpt)**

9. The Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc.

- (1) The Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc. (Excerpt)**
- (2) Ordinance for the Enforcement of the Law Concerning Prevention from Radiation Hazards Due to Radioisotopes, etc. (Excerpt)**
- (3) The Rules for the Enforcement of the Law Concerning Prevention from Radiation Hazards Due to Radioisotopes, etc. (Excerpt)**

10. Electricity Utilities Industry Law (Excerpt)

Text is the same as Annex 3.9(A3.39 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention

- (1) Ministry Ordinance concerning Reserve Fund for Dismantling Nuclear Power Facilities**

11. Basic Law for General Emergency Preparedness

Text is the same as Annex 3.10(A3.69 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention.

- (1) Basic Law for General Emergency Preparedness (Excerpt)**
- (2) Ordinance for the Enforcement of the Basic Law on General Emergency Preparedness (Excerpt)**
- (3) Basic Plan for Emergency Preparedness (Summary)**

12. Special Law for Nuclear Emergency Preparedness (Excerpt)

Text is the same as Annex 3.10(A3.73 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention

- (1) Special Law for Nuclear Emergency Preparedness (Excerpt)**
- (2) Ordinance for the Special Law of Nuclear Emergency Preparedness (Excerpt)**

13. Specified Radioactive Waste Final Disposal Act (Excerpt)

14. The Law for Deposit and Management of the Reserve Fund for Spent Fuel Reprocessing and so forth in the Nuclear Power Generation.

15. Guides, Etc.

- (1) Examination Guide for Safety Design of Light Water Nuclear Power Reactor Facility (Excerpt)**

Text is the same as Annex 3.13 (3)(A3.84 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this

convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention.

- (2) Basic Guide for Safety Review of Nuclear Fuel Cycle Facilities (Excerpt)**
- (3) Radioactive Waste Processing and Disposal Policy**
- (4) Basic Concept Concerning Safety Regulations for Land Disposal of Low Level Solid Radioactive Wastes**
- (5) Guides for Safety Examination for the Radioactive Waste Disposal Facility (Excerpt)**
- (6) Clearance levels in Main Nuclear Facilities (Excerpt)**
- (7) On Methods for Certification of Clearance Levels for Reactor Facilities (Excerpt)**
- (8) On Clearance Levels for Heavy Water Reactors and Fast Neutron Reactors (Excerpt)**
- (9) Basic Concepts for Safety Assurance and Safety Regulations for Decommissioning of Commercial Power Reactor Facilities (Excerpt)**
- (10) Safety Examination Guideline for the Spent Fuel Interim Storage Facility Using Metal Dry Casks**

1. Atomic Energy Basic Law (Excerpt)

(Law No.186, December 19, 1955)

Latest Revision: Law No. 178, December 12, 2002

Text is the same as Annex 3.1(A3.1 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention.

2 Law for Establishment of the Atomic Energy Commission and the Nuclear Safety Commission

Text is the same as Annex 3.2(A3.1 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention.

Additional description concerning this National Report follows in the next sections.

Law for Establishment of the Atomic Energy Commission and the Nuclear Safety Commission (Excerpt)

(Law No. 188, December 19, 1955)

Latest Revision: Law No. 178, December 18, 2002

Article 13

1. Nuclear Safety Commission (hereinafter called NSC) may advise the Director/s of relevant governmental organization/s to take appropriate measures necessary, based on the investigation performed concerning the allegation registered in accordance with the provision of Article 66-2. first paragraph of Reactor Regulation Law.

3 Law for Technical Standards of Radiation Hazards Prevention (Excerpt)

(Law No.162, May 21, 1958)

Latest Revision: Law No.160, December 22, 1999

Text is the same as Annex 3.6(A.36 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention

4 Law for Establishment of the Ministry of Economy, Trade and Industry

Text is almost the same as Annex 3.3(A3.3 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention

Additional description concerning this National Report follows in the next sections.

The Rules for Organization of the Ministry of Economy, Trade and Industry (Excerpt)

(Ministerial Order No. 1 of Ministry of Economy, Trade and Industry, January 6, 2001)

Latest Revision: Ministerial Order No. 59 of Ministry of Economy, Trade and Industry, April 1, 2004

Chapter 2. External Agencies

Section 1. Agency of Natural Resources and Energy

Subsection 2. Specific Agency

Title 1. Establishment of Specific Assignments etc.

(Deputy Director-General and Director-General for Safety Examination)

Article 261. Three Deputy Director-General and one Deputy Director-General for Safety Examination shall be assigned in the Nuclear and Industrial Safety Agency.

2. Upon official orders, the Deputy Director-Generals shall participate in activities for planning and projecting of the matters important to the assigned affairs of the Nuclear and Industrial Safety Agency and shall manage the related affairs.

3. The Director-General for Safety Examination shall manage the assigned duties and affairs concerning to the examination on the important items regarding to regulations for the nuclear related business of refining, processing, storing and disposing of wastes and commercial nuclear power reactors (hereinafter referred to as “nuclear business, etc.”), upon official orders.

Title 2. Establishment of Divisions etc.

(Divisions Established in the Nuclear and Industrial Safety Agency)

Article 262. The following fifteen Divisions shall be established in the Nuclear and Industrial Safety Agency:

Policy Planning and Coordination Division;
Nuclear Safety Public Relations and Training Division;
Nuclear Safety Regulatory Standard Division;
Nuclear Safety Special Investigation Division;
Nuclear Power Licensing Division;
Nuclear Power Inspection Division;
Nuclear Fuel Cycle Regulation Division;
Nuclear Fuel Transport and Storage Regulation Division;
Radioactive Waste Regulation Division;
Nuclear Emergency Preparedness Division; and
Electric Power Safety Division.

(Other divisions, omitted)

(Assigned Affairs of the Policy Planning and Coordination Division)

Article 263. The Policy Planning and Coordination Division shall manage the assigned affairs as shown in the followings:

1. Matters relating to the secrecy;
2. Matters relating to the positions, appointment and dismissal, salary, punishment, service and other personnel affairs, and education and training of personnel (excluding the affairs assigned to Nuclear Safety Administration Division) in the Nuclear and Industrial Safety Agency;
5. Matters relating to the deliberation and transmission of proposal of laws, ordinances and orders, and other official documents, etc.;
6. Matters relating to disclosure to the public of such information possessed at the Nuclear and Industrial Safety Agency;
7. Matters relating to the general coordination concerning to the assigned duties of the Nuclear and Industrial Safety Agency;
8. Matters relating to examination of administration performed by the Nuclear and Industrial Safety Agency;
9. Matters relating to public relation (excluding matters assigned to Nuclear Safety Public Relations and Training Division);
10. Matters relating to the organization and members of the Nuclear and Industrial Safety Agency;
- omission -----
19. Matters relating to projecting and planning, and promoting of the fundamental policy for ensuring nuclear safety and industry safety of nuclear energy and other energy utilization (excluding matters assigned to Nuclear Safety Regulatory Standard Division);
20. Matters relating to overall coordination of matters concerning to the law-suits on the assigned affairs of the Nuclear and Industrial Safety Agency (excluding matters assigned to Nuclear Safety Special Investigation Division);
21. Matters relating to the organization and general management of an incorporated administrative agency, Japan Nuclear Energy Safety Organization;
22. Matters relating to international cooperation concerning to regulating and ensuring the safety of nuclear business, etc.;
23. Matters relating to the international cooperation concerning to ensuring the safety in nuclear energy

utilizations;

24. Matters relating to overall coordination of international cooperation concerning the assigned affairs of the Nuclear and Industrial Safety Agency; and
25. Matters relating to the general affairs of the Advisory Committee for Energy and Resources assigned to Nuclear and Industrial Safety Agency.

(Assigned Affairs of Nuclear Safety Public Relations and Training Division)

Article 264. *The Nuclear Safety Public Relations and Training Division shall manage the affairs as shown in the followings:

1. Matters relating to the public relations to ensure the nuclear safety;
2. Matters relating to communication and coordination of the affairs on the Nuclear Safety Inspectors and Senior Specialists for Nuclear Emergency;
3. Matters relating to the budgets and numbers of Nuclear Safety Inspectors and Senior Specialists for Nuclear Emergency;
4. Matters relating to the training and education necessary to occupational works of Nuclear Safety Inspectors, Senior Specialists for Nuclear Emergency and other personnel who engage in the affairs for ensuring nuclear safety; and
5. Matters relating to the examination and license certificate for the Chief Engineer of Reactors and Chief of Nuclear Fuel Management.

(Assigned Affairs of Nuclear Safety Regulatory Standard Division)

Article 265. Nuclear Safety Regulatory Standard Division shall manage the affairs as shown in the followings:

1. Matters relating to planning, projecting and promotion of the fundamental policy concerning technical matters to ensure the nuclear safety;
2. Matters relating to collection, analysis, and supply of information on securing safety concerning nuclear business etc.;
3. Matters relating to the overall coordination of affairs concerning enforcement of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Law No. 166, 1957, hereinafter referred to as "Reactor Regulation Law");
4. Matters relating to overall coordination of affairs concerning reporting to NSC provided in Article 72-3 of the Reactor Regulation Law, and making communication with NSC; and
5. Matters relating to the Rules for Nuclear Power Generation Facilities Concerning Nuclear Power Reactors at the Stage of Research and Development (except matters concerning affairs provided in Article 270, Subparagraph (ii) and (iii), Article 271, Subparagraph (ii) and (iii), and Article 273, Subparagraph (i) and (ix)), and others for ensuring safety (excluding matters relating to international cooperation) of these facilities (excluding matters assigned to Nuclear Safety Public Relations and Training Division, Nuclear Safety Special Investigation Division, and Nuclear Emergency Preparedness Division)

(Assigned Affairs of Nuclear Safety Special Investigation Division)

Article 266. Nuclear Safety Special Investigation Division shall manage the affairs as shown in the followings:

1. Matters relating to declarations provided in Article 66-4, Paragraph 1 of of the Reactor Regulation Law;
2. Matters relating to the overall coordination of affairs concerning notification provided in Article 67, Paragraph 1 and 2 of the Reactor Regulation Law; and
3. Matters relating to overall coordination of affairs concerning to the law suits for ensuring nuclear safety.

(Assigned Affairs of the Nuclear Power Licensing Division)

Article 267. The Nuclear Power Licensing Division shall manage the affairs as shown in the followings:

1. Matters relating to the licensing for establishment and transfer of the commercial nuclear power reactors;
2. Matters relating to the succession of the title of commercial nuclear power reactor establishers;
3. Matters relating to the licensing of construction plan of nuclear power generating facilities (except turbine and auxiliary boiler, same as in Paragraph 5) in the commercial nuclear power reactors;
4. Matters relating to the licensing for design of nuclear fuel materials in the commercial nuclear power reactors; and
5. In addition to the above defined items, the items related to the Rules for Nuclear Power Generation Facilities of Commercial Power Reactors (except the items related to the affair provided in the each

subparagraph of the following articles: Article 270, Subparagraph (ii) and (iii), Article 271, Subparagraph (ii) and (iii), and Article 273, Subparagraph (ix)), and others for ensuring safety (except matters relating to international cooperation) of these facilities (except the assigned affairs of Nuclear Safety Public Relations and Training Division and Nuclear Emergency Preparedness Division).

(Assigned Affairs of Nuclear Power Inspection Division)

Article 268. The Nuclear Power Inspection Division shall manage the affairs as shown in the followings:

1. Matters relating to the inspections of the nuclear power installations of commercial nuclear power reactors based on the Electric Utilities Industry Law and the regulation by orders based on the law (except affairs assigned to the Electric Power Safety Division);
2. Matters relating to the inspections for the nuclear fuel materials of the commercial nuclear power reactors;
3. Matters relating to the operation plan of commercial nuclear power reactors;
4. Matters relating to the approval of the safety preservation rules concerning to the commercial nuclear power reactors;
5. Matters relating to the inspection of the compliance with safety preservation rules concerning to the commercial nuclear power reactors;
6. Matters relating to the Chief Engineer for Reactors concerning to the commercial nuclear power reactors; and
7. Matters relating to the reporting that defined Article 67, Paragraph 1 and Paragraph 2 of the Regulation of Commercial Nuclear Power Reactors (except the assigned affairs of the Nuclear Emergency Prepared.

(Assigned Affairs of the Nuclear Fuel Cycle Regulation Division)

Article 269. The Nuclear Fuel Cycle Regulation Division shall manage the affairs as shown in the followings:

1. Matters relating to regulations of nuclear milling business (except the assigned affairs in the next article Paragraph2 and Paragraph 3 and article269 Paragraph 2) and others for ensuring safety (except matters relating to international cooperation) of this business (except matters relating to the Nuclear Safety Administration Division. and the Nuclear Emergency Preparedness Division).
2. Matters relating to regulations (except the fuel fabrication business relating assigned affairs in the next article Paragraph2 and Paragraph 3 and article269 Paragraph 2) of nuclear fuel fabrication business (except the fuel fabrication business relating to advanced reactor) and others for ensuring safety (except matters relating to international cooperation) of this business (except matters relating to the Nuclear Safety Administration Division. And the Nuclear Emergency Preparedness Division).
3. Matters relating to regulations (except the fuel fabrication business relating assigned affairs in the next article Paragraph2 and Paragraph 3 and article269 Paragraph 2) of reprocessing business and others for ensuring safety (except matters relating to international cooperation) of this business (except matters relating to the Nuclear Safety Administration Division. and the Nuclear Emergency Preparedness Division).

(Assigned Affairs of Nuclear Fuel Transport and Storage Regulation Division)

Article 270. Nuclear Fuel Transport and Storage Regulation Division shall manage the affairs as shown in the followings:

1. Matters relating to regulations of nuclear fuel storage business (except the assigned affairs in the next article Paragraph2 and Paragraph 3 and article269 Paragraph 2) and others for ensuring safety (except matters relating to international cooperation) of this business (except matters relating to the Nuclear Safety Administration Division. and the Nuclear Emergency Preparedness Division)
2. Matters relating to transportation defined in Article 59-2 of the Nuclear Regulation Law.
3. Matters relating to affairs contracted storage defined in Article 60 of the Nuclear Regulation Law

(Assigned Affairs of Radioactive Waste Regulation Division)

Article 271. Radioactive Waste Regulation Division shall manage the affairs as shown in the followings:

Radioactive Waste Regulation Division shall manage the affairs as shown in the followings:

1. Matters relating to regulations of waste disposal business (except the assigned affairs in the previous article Paragraph2) and others for ensuring safety (except matters relating to international cooperation) of this business (except matters relating to the Nuclear Safety Administration Division. and the Nuclear Emergency Preparedness Division)
2. Matters relating to safety verification of waste disposal defined in Article 58-2 of the Nuclear Regulation Law.
3. Matters relating to decommissioning of facilities related to nuclear fuel fabrication, nuclear fuel storage, and reprocessing business and facilities related to reactors.
4. In addition to the matters defined above, matters for ensuring nuclear safety of radioactive waste (except matters relating to the Policy Planning and Coordination Division and the Nuclear Emergency Preparedness Division).

(Assigned Affairs of the Nuclear Emergency Preparedness Division)

Article 272. The Nuclear Emergency Preparedness Division shall manage the affairs as shown in the ;s:

- 5 Matters relating to projecting and planning, and promoting of the policy concerning to the nuclear emergency;
- 6 Matters relating to the investigation and prevention of the nuclear accidents and incidents.
- 7 Matters relating to the physical protection;
- 8 Matters relating to overall coordination of the assigned affairs concerning to ensuring nuclear safety in response to nuclear emergency (as provided in Article 2, Paragraph 2 of the Special Law of Emergency Preparedness for Nuclear Disaster, Law No. 156, 1999) and other incidents; and
- 9 Matters relating to enforcement of the Special Law of Emergency. Preparedness for Nuclear Disaster.

(Assigned Affairs of the Electric Power Safety Division)

Article 273. The Electric Power Safety Division shall manage the affairs as shown in the followings:

1. Matters relating to construction, maintenance and operation of the electric equipment (limited to turbines and auxiliary boilers for the nuclear power reactors);
--- omitted ---
8. Matters relating to the investigation on the environmental preservation of the area influenced by establishment of the hydraulic generating power installation, the fossil generating power installation and the nuclear power installation; and
9. Matters relating to the welding safety management inspection for the machinery and equipment of the fossil generating power installation and the nuclear power installation.

5. Law for Establishment of the Ministry of Education, Culture, Sports, Science and Technology

(1) Law for Establishment of the Ministry of Education, Culture, Sports, Science and Technology (Excerpt)

(Law No. 96, July 16, 1999)

(Latest Revision: Law No. 148, December 7, 2001)

Chapter 2. The establishment of the Ministry of Education, Culture, Sports, Science and Technology and its duties and assigned affairs

Section 2. Assigned duties and assigned affairs of the Ministry of Education, Culture, Sports, Science and Technology

(Assigned Duties)

Article 3. The Ministry of Education, Culture, Sports, Science and Technology shall engage in enhancement of education of creative talented people of plentiful humanity with a nucleus of educational advancement and promotion of lifelong, promotion of arts and sciences, sports, and cultures, and overall promotion of scientific technologies, and in appropriate implementation of civil services for religion as duties.

(Assigned Affairs)

Article 4. In order to achieve assigned duties as described in the preceding article, the Ministry of Education, Culture, Sports, Science and Technology shall administer the following affairs.

- omission -

70. Matters relating to the regulations for nuclear reactors for testing and research, and nuclear reactors in the research and development stage (except those for generation of electricity), matters relating to the regulations for use of nuclear source materials and nuclear fuel materials, and other matters to ensure those safety.

71. Scientific technological matters to ensure nuclear safety.

72. Matters relating to prevention of radiation hazards.

73. Matters relating to monitoring and measurement of radioactivity levels for recognition.

- omission -

Chapter 3. The functions and agencies established in the main office of the ministry

Section 2. Council, etc.

Subsection 1. Establishment

Article 6.

- omission -

2. The councils other than those specified in the preceding paragraph for the Ministry of Education, Culture, Sports, Science and Technology established in the main office of the ministry as specified in other laws shall be as follows:

The Radiation Review Council
The Evaluation Commission incorporated Administrative agency

Subsection 4. The Radiation Review Council

Article 18. The Radiation Review Council shall be as specified in the Law for Technical Standards of Radiation Hazards Prevention (Law No. 162, 1958, including orders based on the Law

(2) Ordinance for Organization of the Ministry of Education, Culture, Sports, Science and Technology (Excerpt)

(Government Ordinance No. 251, June 7, 2000)

(Latest Revision: Ordinance No. 4, January 17, 2002)

(Assigned Affairs of the Science and Technology Policy Bureau)

Article 7. The Science and Technology Policy Bureau shall administer the following affairs:

- omission -

20. Matters relating to the regulations for nuclear reactors for testing and research, and nuclear reactors in the research and development stage (except those for generation of electricity), matters relating to the regulations for use of nuclear source materials and nuclear fuel materials, and other matters to ensure those safety.

21. Scientific technological matters to ensure nuclear safety.

22. Matters relating to prevention of radiation hazards (except matters assigned to the Research Promotion Bureau).

23. Matters relating to monitoring and measurement of radioactivity levels for recognition.

- omission -

26. Matters relating to the general affairs of the Science and Technology Council (except the matters relating to the Ocean Development Subcommittee and the Geodesy Subcommittee) and the general affairs of the Radiation Review Council.

(Director-General for Policy Coordination and Deputy Director-General)

Article 14. One Director-General for Policy Coordination and nine Deputy Director-Generals shall be assigned in the Office for Minister's Secretariat.

- omission -

3. Upon official orders, the Deputy Director-Generals shall participate in activities for planning and projecting of the matters important to the assigned affairs of the Ministry of Education, Culture, Sports, Science and Technology and shall manage the related affairs.

(3) The Rules for Organization of the Ministry of Education, Culture, Sports, Science and Technology (Excerpt)

(Ministerial Order No. 1, January 6, 2001)

(Latest Revision: Ministerial Order No. 22, April 1, 2002)

Subsection 5. Science and Technology Policy Bureau

(Office for Nuclear Regulation, Office for Emergency Planning and Environmental Radioactivity and Office for Radiation Regulation, and Director for Safeguards, Director for Safety Examination, Director for Nuclear Safety Inspection, Director for Nuclear Facility Operation, Director for Radiation Protection Policy and the Senior Specialist for Environmental Radioactivity Surveys)

Article 50. The Office for Nuclear Regulation, the Office for Emergency Planning and Environmental Radioactivity and Office for Radiation Regulation shall be established, and one Director for Safeguards, one Director for Safety Examination, one Director for Nuclear Safety Inspection, one Director for Nuclear Facility Operation, one Director for Radiation Protection Policy and one Senior Specialist for Environmental Radioactivity Surveys shall be assigned in the Nuclear Safety Division.

2. The Office for Nuclear Regulation shall manage the assigned affairs relating to the regulations for nuclear reactors for testing and research, and nuclear reactors in the research and development stage (except those for generation of electricity) (hereinafter termed "Nuclear Reactor Facilities" in this article), matters relating to use of nuclear source materials and nuclear fuel materials, and matters relating to ensure those safety (except matters relating to the enforcement of the Special Law of Emergency Preparedness for Nuclear disaster (Law No. 156, 1999).

3. The Director shall be assigned in the Office for Nuclear Regulation.

4. The Office for Emergency Planning and Environmental Radioactivity shall manage the affairs as shown in the following:

(i) Matters relating to the enforcement of the Special Law of Emergency Preparedness for Nuclear disaster;

- (ii) Matters relating to radioactivity investigation in the circumference and the other places of nuclear facilities (except the matters assigned to the Office for Nuclear Regulation, and the matters relating to the enforcement of the Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc. (Law No. 167, 1962);
 - (iii) Matters relating to prevention of hazards due to large release of radioactive materials and the radiation (except the matters assigned to the Research Promotion Bureau and the matters assigned to the Office for Nuclear Regulation, and the matters relating to the enforcement of the Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc.;
 - (iv) Matters relating to coordination of countermeasures to be taken by related administrative agencies for prevention of hazards by the radioactive fallout;
 - (v) Matters relating to monitoring and measurement of radioactive levels for recognition.
5. The Director shall be assigned in the Office for Emergency Planning and Environmental Radioactivity.
6. The Office for Radiation Regulation shall manage the affairs relating to the enforcement of the Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc.
7. The Director shall be assigned in the Office for Radiation Regulation.
- omission -
9. Upon official orders, the Director for Safety Examination shall participate in activities for planning and projecting of the matters important to the safety review for nuclear reactor facilities and nuclear fuel material use facilities.
10. Upon official orders, the Director for Nuclear Safety Inspection shall guide and control affairs relating to operations control and site inspection of nuclear reactor facilities and nuclear fuel material use facilities.
11. Upon official orders, the Director for Nuclear Facility Operation shall participate in activities for planning and projecting of the matters important to control of safety preservation of nuclear reactor facilities and nuclear fuel material use facilities.
12. Upon official orders, the Director for Radiation Protection Policy shall participate in activities for planning and projecting of the specific matters of affairs relating to the enforcement of the Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc.
13. Upon official orders, the Senior Specialist for Environmental Radioactivity Surveys shall participate in activities for affairs important to radioactivity investigation in the circumference and the other places of nuclear facilities (except the matters assigned to the Office for Nuclear Regulation, and the matters relating to the enforcement of the Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc.), and shall participate in activities for affairs important to coordination of countermeasures to be taken by related administrative agencies for prevention of hazard due to the radioactive fallout and monitoring and measurement of radioactivity levels for recognition.

6. Law for Establishment of the Ministry of Health, Labour and Welfare

(1) Law for Establishment of the Ministry of Health, Labour and Welfare (Excerpt)

(Law No.97 July 16, 1999)

(Latest Revision: Law 192, December 20, 2002)

(Assigned Affairs)

Article 4. In order to achieve assigned duties as described in the preceding article, the Ministry of Health, Labor and Welfare shall administer the following affairs:

11. Matters relating to improvement of medical system.

13. Matters relating to public health nurses, midwives, nurses, dental hygienists, radiation technicians, dental technicians, clinical laboratory technicians, health laboratory technicians, physical therapists, occupational therapists, orthoptists, clinical engineers, artificial limb fitters, emergency life guards, speech therapists, and other medical staffs.

31. Matters relating to securing of the quality, efficacy, and safety of drugs, quasi-drugs, cosmetics, medical devices, and other sanitary products.

(2) Ordinance for Organization of the Ministry of Health, Labour and Welfare (Excerpt)

(Government Ordinance No.252 June 7, 2000)

(Latest Revision: Government Ordinance No.275 June 25, 2003)

(Assigned Affairs of the Health Policy Bureau)

Article 4. Health Policy Bureau shall administer the following affairs:

5 Matters relating to safety in hospitals, clinics, and maternity clinics.

7 Matters relating to public health nurses, midwives, nurses, dental hygienists, radiation technicians, dental technicians, clinical laboratory technicians, health laboratory technicians, physical therapists, occupational therapists, orthoptists, clinical engineers, artificial limb fitters, emergency life guards, speech therapists, and other medical staffs (excluding those matters assigned to other Bureaus).

(Assigned Affairs of the Pharmaceutical and Food Safety Bureau)

Article 6. Pharmaceutical and Food Safety Bureau shall administer the following affairs:

1. Matters relating to securing of the quality, efficacy, and safety of drugs, quasi-drugs, cosmetics, medical devices, and other sanitary products.

7 The Law for Japan Nuclear Energy Safety Organization

(Law No. 179, December 18, 2002)

Contents

Chapter I. General Rules (Article 1 - Article 6)

Chapter II. Executives and Personnel (Article 7 - Article 12)

Chapter III. Duties etc. (Article 13 - Article 15)

Chapter IV. Miscellaneous Provisions (Article 16 - Article 18)

Chapter V. Penal Provisions (Article 19 - Article 20)

Supplemental Provisions (Omitted)

Chapter I. General Rules (Article 1 - Article 6)

(Purpose)

Article 1. This Law is enacted for the purposes of providing such items as the name, the objectives of the Japan Nuclear Energy Safety Organization (hereinafter referred to as "the Organization") and the scope of duties provided by the Organization.

(Definition)

Article 2. "Nuclear facilities" in this law means the refining facilities defined in Subparagraph (ii) of Paragraph 2 of Article 3 of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Law No. 166, 1957, hereinafter referred to as "the Reactor Regulation Law"), the fabrication facilities defined in Subparagraph (ii) of Paragraph 2 of Article 13 of the Reactor Regulation Law, the spent fuel storage facilities defined in Subparagraph (ii) of Paragraph 2 of Article 43-4 of the Reactor Regulation Law, the reprocessing facilities defined in Subparagraph (ii) of Paragraph 2 of Article 44 of the Reactor Regulation Law, and the waste disposal facility and the waste interim storage facilities defined in Subparagraph (ii) of Paragraph 2 of Article 51-2 of the Reactor Regulation Law.

2. "Reactor facilities" in this law means the reactors defined in Subparagraph (I) and (iv) of Paragraph 1 of Article 23 of the Reactor Regulation Law and their related facilities (in Paragraph 4, referred to as "reactor").

3. "Nuclear business" in this law means the refining business defined in Paragraph 1 of Article 3 of the Reactor Regulation Law, the fabrication business defined in Paragraph 1 of Article 13 of the Reactor Regulation Law, the spent fuel storage business defined in Paragraph 1 of Article 43-4 of the Reactor Regulation Law, the reprocessing business defined in Paragraph 1 of Article 44 of the Reactor Regulation Law, and the disposal business defined in Paragraph 1 of Article 51-2 of the Reactor Regulation Law.

4. "Nuclear disaster" in this law means those ones that would be caused by the operation of nuclear business or by the operation of reactors among the nuclear disasters defined in Subparagraph (I) of Article 2 of the Special Law of Emergency Preparedness for Nuclear Disaster (Law No. 156, 1999).

(Name)

Article 3. The name of the Incorporated Administrative Agency established in accordance with this law and the Law of the General Rules for Incorporated Administrative Agency (Law No. 103, 1999, hereinafter referred to as "the Law of the General Rules"), as provided in Paragraph 1 of Article 2 of the Law of the General Rules, shall be the Japan Nuclear Energy Safety Organization.

(Purpose of the Organization)

Article 4. The purpose of the Japan Nuclear Energy Safety Organization (hereinafter, referred to as "Organization") is to maintain the bases for ensuring the safety for utilization of energy produced by the nuclear power through performing the inspections of nuclear facilities and reactor facilities, the analysis and evaluation of the safety concerning the design of nuclear facilities and reactor facilities and other safety-related services.

(Scope of Duties)

Article 13. The Organization shall perform the following duties to achieve the purposes provided in Article 4:

- (i) Inspection of nuclear facilities and reactor facilities and others similar to those;
- (ii) Analysis and evaluation of the safety concerning design of nuclear facilities and reactor facilities;
- (iii) Duties on prevention of nuclear disasters, prevention of possible expansion of the nuclear disaster and the restoration from the nuclear disaster;
- (iv) Investigation, testing, research, and training for ensuring the safety of utilizing energy of the nuclear power (referred to as "ensuring safety" in the following subparagraph);
- (v) Collecting, classifying and providing of information for ensuring safety; and
- (vi) Duties that are accompanied with the ones described in each of the preceding subparagraphs.

2. The Organization, in addition to the duties described in the preceding paragraph, shall perform the following duties:

- (i) Entry and inspection, questioning and taking samples pursuant to the provisions of Paragraph 1 through Paragraph 3 of Article 68 of the Reactor Regulation Law; and
- (ii) Entry and inspection pursuant to the provisions of Paragraph 1 through Paragraph 3 of Article 107 of the Electricity Utilities Industry Law (Law No. 170, 1964).

3. The Organization, in addition to the duties provided in the preceding two paragraphs, may perform tasks for ensuring safety of the nuclear energy, so far as no obstacle takes place in performing any duties provided in the preceding two paragraphs, in response to the request of national administrative agencies.

8. The Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors

(1) The Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Excerpt)
(Law No. 166, June 10, 1957)
Latest Revision: Law No.179, December 18,2002
(Latest Revision: Law No. 44, May 20, 2005)

The amended provisions of this law, including decommissioning procedures, confirmation of radioactivity concentration, prohibition of sea disposal, etc., are described with underlines as follows focusing on the related articles to the national report of Japan for the Convention. In addition, many revised provisions are common to the following chapters: Chapter 2: Regulations concerning refining, Chapter 3. Regulations concerning nuclear fuel fabrication, Chapter 4: Establishment of a reactor, etc., Chapter 4-2. Regulations concerning spent fuel storage, Chapter 5: Spent Fuel Reprocessing, Chapter 5-2: Radioactive waste disposal, Chapter 6: Regulations concerning nuclear facility operator etc. In order to avoid repetition of description, the amended provisions of Chapter 4: Establishment of a reactor represents and ones of other chapters are omitted, in principle.

(Objectives)

Article 1. This Law, in accordance with the objectives of the Atomic Energy Basic Law (Law No. 186, 1955), is enacted for the purposes of providing the necessary regulations on the facility and activities, the fabricating facility and activities, the spent fuel storage facility and activities, the spent fuel reprocessing facility and activities and the radioactive waste disposal facility and activities, as well as on the establishment and operation of reactors, and also for the purpose of providing necessary regulations on the uses of internationally regulated substances to execute the agreements or other international arrangements concerning the research, development and use of atomic energy, in order to ensure that the uses of nuclear source material, nuclear fuel material and reactors are limited to peaceful ones and carried out in a planned manner, and at the same time, to ensure the public safety by preventing the hazards due to these materials and reactors and protecting nuclear fuel material.

Chapter 2. Regulations Concerning Refining Facility and activities

(Authorization of facility and activities)

Article 3. Any person who wishes to operate a refining facility and activities shall obtain the authorization of the Minister of Ministry of Economy Trade and Industry (hereinafter referred to as “the Minister of METI”)as provided for in the government ordinance.

(Measures accompanying decommissioning of facility and activities)

Article 12-6. When a refining facility operator intends to terminate the operation of the facility and activities, the operator shall take measures for dismantling the milling facility, transferring the nuclear fuel materials possessed by the operator, decontaminating contamination with nuclear fuel materials, disposal of materials contaminated with nuclear fuel materials, and others provided in the Order by the METI (hereinafter referred to as “decommissioning” in this article and the next article).

2. When a refining facility operator intends to perform decommissioning, the operator shall develop a plan for the decommissioning (hereinafter referred to as “decommissioning plan”) as provided by Order by the METI in advance, and shall obtain an approval of the Minister of METI.

3. When a refining facility operator intends to alter the decommissioning plan approved in accordance with the preceding paragraph, the operator shall obtain an approval as provided in the Order by the METI. However, this does not apply to the minor alteration defined in the Order by the METI.

4. When the Minister of METI recognizes that the decommissioning plan related to the application for the approval of the preceding two paragraphs meet criteria defined in the Order by the METI, the Minister of METI shall approve the application of the preceding two paragraphs.

5. When the refining facility operator has made minor alterations of the decommissioning plan, which was approved in accordance with Paragraph 2, in accordance with the proviso of Paragraph 3 defined in the Order by the METI, the operator shall report the alteration to the Minister of METI.

6. The refining facility operator shall perform decommissioning in accordance with the approved decommissioning plan of Paragraph 2 (the altered plan when the alteration has been approved or reported in accordance with Paragraph 3 or the preceding paragraph).

7. The Minister of METI can order the refining facility operator who performed decommissioning violating the provision of the preceding paragraph to take necessary measures to prevent radiation Hazards from nuclear fuel materials or materials contaminated with nuclear fuel materials.

8. When decommissioning is completed, the refining facility operator shall obtain confirmation that the results comply with criteria defined in the Order by the METI by the Minister of METI.

9. When the refining facility operator has obtained confirmation provided in the preceding paragraph, the authorization of Paragraph 1 of Article 3 shall lose the effect.

(Measure accompanying revocation of authorization)

Article 12-7 In the case of revocation of the authorization as a refining facility operator in accordance with the provision of Article 10, or dissolution or death of the refining facility operator and in the case of the absence of succession in accordance with the provision of Paragraph 1 of Article 8 or Paragraph 1 of Article 9, the former refining facility operator etc. (the refining facility operator who had the authorization revoked in accordance with the provision of Article 10, or the liquidator or trustee in bankruptcy, or the person who is to take charge of the inheritance in the place of the inheritor of the dead refining facility operator in the case of dissolution or death of the refining facility operator and the absence of succession in accordance with the provision of Paragraph 1 of Article 8 or Paragraph 1 of Article 9, the same hereinafter) shall still be considered as the refining facility operator as to application of the provision in Article 11

through Article 12-5 (including penal provisions concerning these provisions) until the confirmation in accordance with the provision of Paragraph 9 of the preceding article is authorized.

2. The former refining facility operator etc. shall develop decommissioning plans in accordance with the provisions as provided in the Order by the METI and submit an application for approval to the METI within the period defined in the Order by the METI from the day of the revocation of the authorization in accordance with the provision of Article 10 or the day of dissolution or death of the refining facility operator.

3. The former refining facility operator etc. shall not perform the decommissioning until the approval of the preceding paragraph is obtained.

4. When the former refining facility operator etc. intends to alter the decommissioning plan approved in accordance with Paragraph 2, the operator etc. shall obtain an approval as provided in the Order by the METI. However, this shall not apply to the minor alteration defined in the Order by the METI.

5. When the Minister of METI recognizes that the decommissioning plan related to the application for the approval of Paragraph 2 and the preceding paragraph meet criteria of Paragraph 4 of the preceding article defined in the Order by the METI, the Minister of METI shall authorize the approval provided in Paragraph 2 and the preceding paragraph.

6. When the former refining facility operator etc. has made minor alterations of the decommissioning plan, which was approved in accordance with Paragraph 2, in accordance with the proviso of Paragraph 4 defined in the Order by the METI, the operator etc. shall report the alteration to the Minister of METI.

7. The former refining facility operator shall perform decommissioning in accordance with the approved decommissioning plan of Paragraph 2 (the altered plan when the alteration has been approved or reported in accordance with Paragraph 4 or the preceding paragraph).

8. The Minister of METI can order the former refining facility operator etc. who performed decommissioning violating the provision of the preceding paragraph to take necessary measures to prevent radiation hazards from nuclear fuel materials or materials contaminated with nuclear fuel materials.

9. When decommissioning is completed, the former refining facility operator etc. shall obtain confirmation that the results comply with criteria of Paragraph 8 of the preceding Article defined in the Order by the METI by the Minister of METI.

Chapter 3. Regulations Concerning Nuclear Fuel Fabrication Facility and activities

(Licensing for facility and activities)

Article 13. Any person who wishes to operate a nuclear fuel fabrication shall obtain the license of the Minister of METI as provided for in the government ordinance.

(Inspection Prior to Usage)

Article 16-3. Any nuclear fuel fabrication facility operator shall not use fabrication facilities until they have been passed the inspection of the competent minister as to the construction work (except for welding in the fabrication facilities defined in Paragraph 1 of next Article in which welding is performed - same in the following paragraph) and performance of the fabrication facilities, as provided by the order of the competent ministry. The same apply to the fabrication facilities when they are modified.

2. The performance inspection is considered as passed when the fabrication facilities conform to each of the following items.

(i) That the construction work has been done in accordance with the design and methods of construction provided for in the preceding article.

(ii) That their performance is, in accordance with the technical standards provided by the order of the competent ministry.

3. The Minister of METI shall, as provided by the Ordinance of METI, make the Japan Nuclear Energy Safety Organization (hereinafter referred to as “the Organization”) to perform a part of inspections described in Paragraph 1.

4. When the Organization performed a part of inspection under the provisions of the preceding paragraph, the Organization shall promptly, as provided by the Ordinance of METI, notify the Minister of METI of the results of inspection.

(Periodical Inspection of Installation)

Article 16-5. Any nuclear fuel fabrication facility operator shall, according to the order of the competent ministry, pass the annual inspection on the performance of those fabrication facilities designated by government ordinance once a year.

2. The Periodical inspection provided for in the preceding paragraph shall be made as to whether or not the performance of the fabrication facilities is in conformity with the technical standards provided by the order of the competent ministry.

3. The Minister of METI shall, as provided by the Ordinance of METI, make the Organization to perform a part of inspection described in Paragraph 1.

4. When the Organization performed a part of inspection under the provisions of the preceding paragraph, the Organization shall promptly, as provided by the Ordinance of METI, notify the Minister of METI of the results of inspection.

Chapter 4 Regulations Concerning Establishment, Operation, etc. of Nuclear Reactors

Article 23. Any person who wishes to establish a nuclear reactor shall obtain the license of the Minister as provided for in the government ordinance in accordance with the classification of nuclear reactors set out in the following subparagraphs:

(i) Nuclear reactors for the purpose of electrical generation (to the exclusion of those coming under any of the following three subparagraphs; hereinafter referred to as "commercial power reactors"): Minister of Economy, Trade and Industry;

(ii) Nuclear reactors for the purpose of electrical generation as specified by government ordinance as reactors in the stage of research and development: Minister of Economy, Trade and Industry;

2. Any person who wishes to obtain the license under the preceding paragraph shall present to the competent minister (minister specified in the government ordinance in accordance with the classification of nuclear reactors in the preceding paragraph) an application containing the following items:

(i) The name and the address and, in case of a juridical person, the name of its representative;

(ii) The purpose for which reactors are to be used;

(iii) The type, the thermal power and the number of reactors;

(iv) The name and the address of the factory or the premises where reactors are to be established;

- (v) The location, structure and equipment of reactors and their attached facilities (hereinafter referred to as "reactor facilities");
- (vi) The construction plan of reactor facilities;
- (vii) The type of nuclear fuel material to be used in reactors and the annual amount scheduled for use; and
- (viii) The method of disposal of spent fuel.

3. The Minister of Economy, Trade and Industry plans to enact, amend or repeal the Government ordinance relating to subparagraph (iv) of paragraph 1, they must hear and pay due respect, in advance, to the opinions of the Atomic Energy Commission and the NSC (hereinafter called " the AEC" and "the NSC").

Article 24. When an application for the license under Paragraph 1 of the Article 23 is rendered, the competent minister shall not give the license unless he recognizes that the application comes under each of the following subparagraphs:

- (ix) That reactors will not be used for non-peaceful purposes;
- (x) That the license will cause no hindrance to the planned development and utilization of atomic energy;
- (xi) That the applicant (including the shipbuilding facility operator, if the reactor is to be installed in a ship) has technical ability and financial position sound enough to establish reactors, and has such technical ability as to operate them competently; and
- (xii) That the location, structure and equipment of reactor facilities are such that they will cause no hindrance to the prevention of the hazard by nuclear fuel material (including spent fuel, and so in the following), by materials contaminated by unclear fuel material (including fission products, and so in the following) and by reactors.

2. In giving license under Paragraph 1 of the preceding Article, the competent minister shall hear and respect, in advance, the opinion of the AEC with respect to the application of standards specified in Subparagraph (i), Subparagraph (ii) and Subparagraph (iii) (regarding the portion related to the financial position only) of the preceding paragraph, and the opinion of the NSC with respect to the application of standards specified in Subparagraph (iii) (regarding the portion related to the technical ability only) and Subparagraph (iv) of the said paragraph.

(Ineligibility for the License)

Article 25. No person who comes under one of the following subparagraphs shall be given the license under Article 23, Paragraph 1:

- (i) A person whose license under Article 23, Paragraph 1 has been revoked as provided in the rule of Article 33, Paragraph 2 and whom two years have not yet elapsed from the day of the revocation;
- (ii) A person who has been condemned to the penalty heavier than the fine for violation of the rules of this Law or the Orders based on this Law, and for whom two years have not yet elapsed after having executed or suspended to execute the penalty;
- (iii) A legally incompetent person; and
- (iv) A juridical person any of whose executive officers comes under one of the preceding subparagraphs.

(License and Report of the Change Etc.)

Article 26. When a reactor establisher wishes to change any items provided in Article 23, Paragraph 2, Subparagraph (ii), Subparagraph (iii), Subparagraph (iv), Subparagraph (v) or Subparagraph (viii), he shall obtain the permission of the competent minister, as provided by the government ordinance provided that this is not applicable to the case provided in Subparagraph (iv) of the said paragraph, where only the name of a factory or a premises is to be changed.

2. When a reactor establisher has changed any items provided for in Article 23, Paragraph 2, Subparagraph (i), Subparagraph (vi) or Subparagraph (vii), except case provided for in Article 32, Paragraph 1, he shall report the change to the competent minister within thirty days of the day of the change. This shall also apply to the matters provided for in Subparagraph (iv) of the said paragraph, where only the name of a factory or a premises has been changed.

4. The provisions of Article 24 shall apply mutatis mutandis to the permission under Paragraph 1.

(Approval of Design and Construction Methods)

Article 27. Any reactor establisher shall, as provided by the order of competent ministry, (the order issued by competent minister: same as in this chapter) obtain the permission of the competent minister, with respect to the design and method of construction of the reactor facilities (except for welding in the reactor facilities defined in Article 28-2, Paragraph 1 in which welding is performed, same in the following paragraph and Paragraph 3) before starting of the construction. This shall also apply to the modification of the reactor facilities.

2. When any reactor establisher wishes to change the design and method of construction of the reactor facilities for which the approval provided on the preceding paragraph has been obtained, they shall obtain the approval of changes by the competent minister, as provided by the order of the competent ministry; this shall not apply to any of the minor changes provided by the order of the competent ministry.

3. The competent minister shall give the approval provided for in the preceding two paragraphs, if he recognizes that the design and method of construction relevant to the application for approval provided for in the preceding two paragraphs satisfy each of the following subparagraphs:

- (i) The design and method of construction have been given approval based on Article 23, Paragraph 1 or Article 26, Paragraph 1 or have been reported according to the provisions of Paragraph 2 of the said article; and
- (ii) The design and method of construction are in conformity with the technical standards defined by the order of the competent ministry.

4. When a reactor establisher has made minor changes for the design and methods of construction of nuclear facilities, which was approved in accordance with Paragraph 1, in accordance with the proviso of Paragraph 2, the reactor establisher shall report the alteration to the competent minister.

(Inspection Prior to Usage)

Article 28. Any reactor establisher shall not use reactor facilities until they have been passed the inspection of the competent minister as to the construction work (except for welding in the reactor facilities defined in Paragraph 1 of Article 28-2 in which welding is performed - same in the following paragraph) and performance of the reactor facilities, as provided by the order of the competent ministry. The same apply to the reactor facilities when they are altered.

2. The performance inspection is considered as passed when the reactor facilities conform to each of the following items.

- (i) That the construction work has been done in accordance with the design and methods of construction approved defined in Paragraph 1 of the preceding article (the altered design and methods of construction when the alteration has been approved or reported in accordance with Paragraph 2 or Paragraph 4 of the said article).
- (ii) That their performance is, in accordance with the technical standards provided by the order of the competent ministry.

3. The provisions described in Paragraph 3 and Paragraph 4 of Article 16-3 shall be applied with necessary modifications to the inspection described in Paragraph 1 (limited to those relevant to commercial power reactors or reactors described in Subparagraph (iv) of Paragraph 1 of Article 23).

(Method of Welding and Inspection)

Article 28-2. A reactor vessel and other reactor facility in which welding is performed shall be inspected by the competent minister specified by the order of the competent ministry, and the reactor establisher may not use the reactor facility until it passes the inspection. However, this shall not be applied to the cases specified in Paragraph 4 and the cases specified by the order of the competent ministry.

2. A person who wishes to receive the inspection mentioned in the above paragraph, he must obtain the approval of the competent minister concerning the method of welding according to the order of the competent ministry.

3. The inspection mentioned in paragraph 1 shall be considered as passed if the welding satisfies each of the following subparagraphs:

- (i) That the welding has been carried out according to the method approved as provided for in the previous paragraph; and
- (ii) That the welding is in conformity with the technical standards defined by the order of the competent ministry.

4. The reactor facility involving welding defined in Paragraph 1, which has been imported, shall be inspected by the competent minister concerning welding specified by the order of the competent ministry, and the establisher may not use the reactor facility until it passes the inspection.

5. The inspection mentioned in the preceding paragraph shall be considered as passed if the welding is in conformity with the technical standards mentioned in item 2 of Paragraph 3.

(Periodical Inspection of Installation)

Article 29. Any reactor establisher shall, according to the order of the competent ministry, pass the annual inspection on the performance of those reactor facilities designated by government ordinance once a year. However, this shall not apply to the reactor approved in accordance with Paragraph 2 of Article 43-3-2, excluding the cases provided by the order of the competent ministry.

2. The Periodical inspection provided for in the preceding paragraph shall be made as to whether or not the performance of the reactor facilities is in conformity with the technical standards provided by the order of the competent ministry.

3. The provisions described in Paragraphs 3 and Paragraph 4 of Article 16-5 shall be applied with necessary modifications to the inspection described in Paragraph 1 (limited to those relevant to commercial power reactors or reactors described in Subparagraph (iv) of Paragraph 1 of Article 23).

(Operation Plan)

Article 30. As provided by the order of the competent ministry (Ministry of Education, Culture, Sport, Science and Technology (herein after called MEXT) and METI), for the nuclear reactor as defined by Article 23, paragraph 1, item 3 with the purpose of electricity generation, any reactor establisher is required to prepare an operation plan for the nuclear reactor which he establishes, and submit it to the competent minister (Minister of MEXT and Minister of METI, for the nuclear reactor as defined by Article 23, Paragraph 1, item 3 with the purpose of electrical generation). The same applies to the case when the plan is modified. However, this shall not apply to the reactor approved in accordance with Paragraph 2 of Article 43-3-2, excluding the cases provided by the order of the competent ministry.

(Merger)

Article 31. In case of a merger of juridical persons who are reactor establishers (except in case of a merging a juridical person who is a reactor establisher with a juridical person who is not a reactor establisher, with where the juridical person who is a reactor establisher continues to exist), when the approval of the competent minister has been obtained for the merger, the juridical person who is to continue to exist after the merger, or the juridical person who has been establisher by the merger shall succeed to the status of the reactor establisher.

2. The provisions of Article 24, Paragraph 1, Subparagraph (i), Subparagraph (ii) and Subparagraph (iii) and Paragraph 2, and Article 25 shall apply mutatis mutandis to the permission as provided in the preceding paragraph.

3. The provision of Paragraph 3 and Paragraph 4 of Article 16-5 shall apply with necessary modifications to the inspection of Paragraph 1 (limited to inspections related to commercial power reactors and nuclear reactors described in Subparagraph (iv) of Paragraph 1 of Article 23).

(Inheritance)

Article 32. In case of an inheritance with regard to a reactor establisher, the inheritor shall succeed to the status of the reactor establisher.

2. The inheritor who has succeeded to the status of the reactor establisher described in the preceding paragraph, shall report the inheritance to the competent minister with the documents to prove the inheritance within thirty days of the day of the inheritance.

(Revocation of the License Etc.)

Article 33. When a reactor establisher does not begin reactor operation without justifiable reason within the period as provided in the order of competent ministry, or continuously suspended reactor operation of one year or more, the competent minister may revoke the license as provided in Article 23, Paragraph 1.

2. When a reactor establisher comes under one of the subparagraphs, the competent minister may revoke the license under Article 23, Paragraph 1 or order the suspension of operation for a period not exceeding one year:

- (i) When a reactor establisher comes under one of the Subparagraph (ii), Subparagraph (iii), and Subparagraph (iv) of Article 25;
- (ii) When he has changed the items for which he should have obtained the license specified in the provisions of Article 26, Paragraph 1 without the license;
- (iii) When he violated the order based on the rules of Article 36;
- (iv) When he has violated the rules of Article 37, Paragraph 1 or Paragraph 4, or the order based on the provisions of Paragraph 3 of the said Article;
- (v) When he has violated the order based on the rules of Article 43;

- (vi) When he has violated the provisions as provided in Article 43-2, Paragraph 1;
- (vii) When he has violated the order provided in Article 12-2, Paragraph 3 that is applied mutatis mutandis to Article 43-2, Paragraph 2; or
- (viii) When he has violated the provisions of Article 12-2, Paragraph 4 that is applied mutatis mutandis to Article 43-2, Paragraph 2.
- (ix) When he has violated the provisions of Article 43-3, Paragraph 1.
- (x) When he has violated the order provided in Article 12-5 that is applied mutatis mutandis to Article 43-3, Paragraph 2.
- (xi) When the reactor is decommissioned violating the provision provided in Paragraph 1 of Article 43-3-2.
- (xii) When the provision of Paragraph 2 of Article 43-3-2 has been violated.
- (xiii) When the provision of Paragraph 2 of Article 58 has been violated, or the order defined in Paragraph 3 of the said article has been violated.
- (xiv) When the provision in Paragraph 2 of Article 59 has been violated, or the order defined in Paragraph 4 of the said article has been violated.
- (xv) When the provision in Paragraph 2 of Article 59-2 has been violated.
- (xvi) When the provision in Paragraph 1 or Paragraph 4 of Article 61-8 has been violated, or the order defined in Paragraph 3 of the said article has been violated.
- (xvii) When the conditions in Paragraph 1 or Paragraph 2 of Article 62-2 have been violated.
- (xviii) When the provision of Article 6 of the Law on Compensation for Nuclear Damage has been violated
- (xix) When the order defined in the provisions of Paragraph 4 of Article 7, Paragraph 5 of Article 8, Paragraph 7 of Article 9, or Paragraph 6 of Article 11 of the Special Law of Emergency Preparedness for Nuclear Disaster has been violated.

(Records)

Article 34. Any reactor establisher shall, as provided by the order of the competent ministry, record items provided by the order of the competent ministry concerning the operation of the reactor and other uses of the reactor facilities, and keep this record at the factory or the premises.

(Measures for Safety Operation and the Protection of Specified Nuclear Fuel Material)

Article 35. Any reactor establisher or foreign nuclear ship operator shall, as provided by the order of the competent ministry, take necessary safety operation measures concerning the following items:

- (i) Maintenance of reactor facilities;
- (ii) Operation of reactors; and
- (iii) Transportation, spent fuel storage or disposition of nuclear fuel material or material contaminated by nuclear fuel material. (Transportation and disposition shall be restricted to transportation and disposition to be carried out in the factory or the premises where reactor facilities are installed. The same applies to Paragraph 1 of the following Article).

2. Any reactor establisher, when disposing of nuclear fuel material or material contaminated by nuclear fuel material outside the factory or the premises where reactor facilities are installed, shall take the necessary measures for safety operation, as provided by the order of the competent ministry.

(Suspension of the Use of Facilities, Etc.)

Article 36. When the competent minister recognizes that the performance of reactor facilities is not in conformity with the technical basis provided for in Article 29, Paragraph 2, or the measures for the

maintenance of reactor facilities, or the operation of reactors, or the transportation, spent fuel storage or disposal of nuclear fuel material or material contaminated by nuclear fuel material, are in violation of the provisions of the order of the competent ministry or ministry of land and transportation based on the rules of Paragraph 1 of the preceding Article, he may order any reactor establisher to suspend use, to remodel, to repair or to move reactor facilities, or to take necessary safety operation measures such as the limitation of the operating condition of reactors.

2. When the competent minister recognizes that measures for the physical protection are in violation of the order of the competent minister based on Paragraph 2 of the preceding Article, he may order the reactor establisher to take remedial measures.

(Operational Safety Program)

Article 37. Any reactor establisher shall, as provided by the order of the competent ministry, establish the Operational Safety Program (including the rules on the safety education on operation of the reactor, the same as in this article) and obtain the approval of the competent minister before starting the operation of reactors. This shall also apply to the alteration of it.

2. The competent minister shall not give the approval under the preceding paragraph, when he deems that the safety operational program is not enough to prevent radiation hazards by nuclear fuel material, material contaminated by nuclear fuel material or reactors.

3. When the competent minister deems it necessary to prevent radiation hazards by nuclear fuel material, material contaminated by nuclear fuel material, or reactors, he may order any reactor establisher to alter their Operational Safety Program.

4. Any reactor establisher and his employees shall observe the Operational Safety Program.

5. Any reactor establisher shall, according to the order of the competent ministry, be inspected regularly by the competent minister of the compliance to the requirement of the preceding paragraph

(Transfer of Reactors)

Article 39. Any person who wishes to receive reactors or whole facilities including reactors from any reactor establisher shall obtain the permission of the competent minister, as provided by government ordinance.

3. The rules of Article 24 and Article 25 shall apply mutatis mutandis to the permissions under the two preceding paragraphs.

4. A person who, with the permission under Paragraph 1, has received reactors or whole facilities including reactors from a reactor establisher shall succeed to the status of the reactor establisher.

(Chief Engineer of Reactors)

Article 40. Any reactor establisher shall, as provided by the order of the competent ministry, appoint the chief engineer of reactors among the persons who have a certificate of the chief engineer of reactors described in Paragraph 1 of the following article, to make him supervise safety operation concerning the operation of reactors.

2. When any reactor establisher has assigned the chief engineer of reactors described in the provisions of the preceding paragraph, they shall report the notification to the competent minister within thirty days of the day of the notification. This shall also apply to the dismissal of him.

(Certificate for the Chief Engineer of Reactors)

Article 41. The Minister of MEXT and the Minister of METI shall grant a certificate of the chief engineer of reactors to a person who comes under one of the following subparagraphs:

(i) A person who has passed the qualification test of the chief engineer of reactors executed by the

Minister of Education, Culture, Sports, Science and Technology and the Minister of Economy, Trade and Industry; or

(ii) A person whom Minister of MEXT and the Minister of METI recognize as provided by the government ordinance, to have knowledge and experience equal to or more than those person provided for in the preceding paragraph.

2. The Minister of MEXT and the Minister of METI may not to grant a certificate for the chief engineer of reactors to a person who comes under one of the following subparagraphs.

(i) A person who has been ordered to return his certificate of the chief engineer of reactors provided for in the provisions of the following paragraph, and for whom one year has not yet elapsed from the day ordered to return; or

(ii) A person who has been condemned to the penalty heavier than the fine for violation of the rules of this Law or the order based on this Law, or has been executed the penalty or suspended the execution of it, and for whom two years have not yet elapsed after having executed or suspended to execute the penalty.

3. When a person who has been granted a certificate of the chief engineer of reactors has violated the rule of this Law or the order on this Law, The Minister of MEXT and the Minister of METI may order him to return his certificate.

4. The subjects, the procedures or other details of the qualification test for the chief engineer of reactors provided for in Paragraph 1, Subparagraph (i), and the procedure for granting and returning certificate of the chief engineer of reactors shall be provided by the order of Ministry of MEXT and Ministry of METI.

(Duties of the Chief Engineer of Reactors, Etc.)

Article 42. The chief engineer of reactors shall be faithful in the discharge of his duties.

2. Any person who is engaged in the operation of reactor shall obey the instructions for the safety operation given by the chief engineer of reactors.

(Order to Dismiss the Chief Engineer of Reactors)

Article 43. When the chief engineer of reactors has violated the rules of this Law or the order based on this Law, the competent minister may order any reactor establisher to dismiss him.

(Measures accompanying decommissioning of reactor)

Article 43-3-2 When a reactor establisher intends to decommission the reactor operation, the reactor establisher shall take measures for dismantling the reactor, transferring the nuclear fuel materials possessed by the reactor establisher, decontaminating contamination with nuclear fuel materials, disposal of materials contaminated with nuclear fuel materials, and others provided in the Order by the competent ministry (hereinafter referred to as “decommissioning” in this article and the next article).

2. When a reactor establisher intends to perform decommissioning, the reactor establisher shall develop a plan for the decommissioning (hereinafter referred to as “decommissioning plan”) as provided by the order of the competent ministry in advance, and shall obtain an approval of the competent ministry.

3. Provisions of Paragraph 3 through Paragraph 9 of Article 12-6 shall be applied with necessary modifications to the decommissioning by the reactor establisher.

(Measure accompanying revocation of license)

Article 43-3-3 In the case of revocation of the authorization as the reactor establisher in accordance with provision of Paragraph 1 or Paragraph 2 of Article 33, or dissolution or death of the reactor establisher and the absence of succession in accordance with the provision of Paragraph 1 of Article 31 or Paragraph 1 of

Article 32, the former reactor establisher etc. (the reactor establisher who had the authorization revoked in accordance with provision of Paragraph 1 or Paragraph 2 of Article 33, or the liquidator or trustee in bankruptcy, or the person who is to take charge of the inheritance in the place of the inheritor of dead reactor establisher in the case of dissolution or death of reactor establisher and the absence of succession in accordance with the provision of Paragraph 1 of Article 31 or Paragraph 1 of Article 32, the same hereinafter) shall still be considered as the reactor establisher as to application of the provisions in Article 29, Article 34 through Article 36, Article 37, Article 40 and Article 42 through Article 43-3 (including penal provisions concerning these provisions) until the confirmation in accordance with the provision in Paragraph 9 of Article 12-7 that is applied with necessary modifications to Paragraph 4.

2. The former reactor establisher etc. shall develop decommissioning plans in accordance with the provisions as provided in the order of competent ministry and submit an application for approval to the competent minister within the period defined in the order of the competent ministry from the day of the revocation of the authorization in accordance with the provision of Paragraph 1 or Paragraph 2 of Article 33, or the day of dissolution or death of the reactor establisher.

3. The former reactor establisher etc. shall not perform the decommissioning until they obtain the approval of the preceding paragraph.

4. The provisions of Paragraph 4 through Paragraph 9 of Article 12-7 shall be applied with necessary modifications to decommissioning of the former reactor establisher etc., and the provision of Paragraph 4 of Article 22-9 shall be applied with necessary modifications to the former reactor establisher etc.

Chapter 4-2. Regulations concerning spent fuel storage

(Licensing for facility and activities)

Article 43-4. Any person who wishes to operate a spent fuel (applied only to those generated from operation of commercial power reactors and from those reactors provided by government ordinance as the reactors that might generate spent fuel more than the capacity of spent fuel storage facility) storage (excluding the storage by reactor establisher and spent fuel reprocessing plant operator, at the storage facility (applied only to those capacity is greater than that was provided by governmental ordinance (hereinafter referred to as spent fuel storage facility) of reactor facility of spent fuel reprocessing facility) shall obtain the license of the Minister of METI as provided for in the government ordinance.

Chapter 5. Regulations concerning spent fuel reprocessing

(Authorization of facility and activities)

Article 44. Any person other than Japan Nuclear Cycle Development Institute and Japan Atomic Energy Research Institute (limited to the case when the facility and activities of spent fuel reprocessing is approved in accordance with Paragraph 2 of Article 229 of the Law for Japan Atomic Energy Research Institute (Law No. 92, 1956), the same in this chapter) who wishes to operate a spent fuel reprocessing facility shall obtain the authorization of the Minister of METI as provided for in the government ordinance.

Chapter 5-2. Regulations Concerning the Radioactive Disposal

(Licensing for Facility and activities)

Article 51-2. Any person who intends to carry on the radioactive waste management facility and activities falling under any of the following subparagraphs (excluding operations which are conducted by refining operators, nuclear fuel fabrication operators, reactor establishers, spent fuel storage facility operator,

operators of foreign nuclear vessel, spent fuel reprocessing plant operators and persons who have obtained licenses provided in Paragraph 1 of Article 52 at their refining facilities, nuclear fuel fabrication facilities, reactor facilities, spent fuel reprocessing facilities or waste management facilities defined in Subparagraph (ix) of Paragraph 2 of the said article which is accompanied to the use facilities defined in the Subparagraph (vii) of the said paragraph) shall obtain the license of the Minister of the METI by each type of radioactive waste management described in the following subparagraphs, as provided by the Government Ordinance:

- (i) The final disposal of nuclear fuel materials or materials contaminated with nuclear fuel materials by the methods provided by the Government Ordinance (hereinafter referred to as " Waste Repository Disposal"); or
- (ii) The management of nuclear fuel materials or materials contaminated with nuclear fuel materials, for the purpose of preventing radiation hazards and other type of management or conditioning provided by the Government Ordinance, during the period from the beginning of disuse until disposal at disposal facility, or other final disposal is made, (hereinafter referred to as "Waste Management").

2. Any person who wishes to obtain the license described in the preceding paragraph shall submit to the Minister of METI an application containing the following subparagraphs:

- (i) The name and the address and, in the case of a juridical person, the name of its representative;
- (ii) The name and the location of the premises at which the waste disposal facility and its related facilities (hereinafter referred to as "Waste Disposal facility") or the waste management equipments and its related facilities (hereinafter called "Waste Management Facility") will be established;
- (iii) The characteristic and quantity of the nuclear fuel materials or materials contaminated with nuclear fuel materials that are to be disposed/processed/stored of;
- (iv) The location, structure and equipment of the Waste Disposal facility or the Waste Management Facility and the method of disposal/processing/storing;
- (v) The planned timing of the alterations to the measures that should be taken for the safety operation of Waste Repository Disposal according to the decay of radioactivity; and
- (vi) The plan for the construction of the Waste Disposal facility or the Waste Management Facility.

3. When the Minister of MEXT, the Minister of METI, and the Minister of MLIT plan to enact, amend or repeal the Government Ordinance relating to Subparagraph (i) of Paragraph 1, they must hear and pay due respect, in advance, to the opinions of the AEC and the NSC.

(Criteria for License)

Article 51-3. When an application for the license under Paragraph 1 of the preceding article is rendered, the Minister of METI shall not give the license unless the he recognizes that the application comes under all of the following subparagraphs:

- (i) The license will cause no hindrance to the execution of the planned development and utilization of nuclear energy;
- (ii) The applicant has technical abilities and financial foundations enough to operate the facility and activities competently; and
- (iii) The location, structure and equipment of the Waste Disposal facility or the Waste Management Facility are such that they will cause no hindrance to the prevention of the hazard from nuclear fuel materials or

materials contaminated with nuclear fuel materials.

2. In giving a license described in Paragraph 1 of the preceding article, the Minister of METI shall hear and respect, in advance, the opinion of the AEC with respect to the application of standards specified in Subparagraph (i) and Subparagraph (ii) (regarding the portion related to the financial foundation only) of the preceding paragraph, and the opinion of the NSC with respect to the application of standards specified in Subparagraph (ii) (regarding the portion related to the technical capability only) and Subparagraph (iii) of the said paragraph.

(Ineligibility for the License)

Article 51-4. No person who comes under one of the following subparagraphs shall be given the license described in Paragraph 1 of Article 51-2:

- (i) A person whose license described in Paragraph 1 of Article 51-2 has been revoked as provided in Paragraph 2 of Article 51-14 and two years have not yet elapsed from the day of the revocation;
- (ii) A person who has been condemned to the fine or heavier penalty for violation of the provisions of this Law or the Orders based on this Law, and for whom two years have not yet elapsed after the execution of or after the relief from the execution of the penalty;
- (iii) A legally incompetent person; or
- (iv) A juridical person any of whose executive officers comes under one of the preceding three subparagraphs.

(Licensing and Notification of the Alteration)

Article 51-5. When a person who has obtained the license described in Paragraph 1 of Article 51-2 (hereinafter referred to as "Radioactive Waste Management/Disposal Facility Operator") wishes to alter any matter described in Subparagraph (ii) through Subparagraph (v) of Paragraph 2 of the said article, the operator shall obtain the license of the Minister of METI, as provided by the Government Ordinance. However this shall not be applied to the alteration related to Sub-paragraph (ii) of the said paragraph where only the name of the premises is to be changed.

2. When a Radioactive Waste Management/Disposal Facility Operator has altered any items described in Subparagraph (i) or Subparagraph (vi) of Paragraph 2 of Article 51-2, except the case provided in Paragraph 1 of Article 51-11, the operator shall notify the alteration to the Minister of METI within thirty days of the day of the alteration. This shall also be applied to the alteration described in Subparagraph (ii) of the said paragraph where only the name of the premises has been altered.

3. The provisions of Article 51-3 shall be applied with conditions to the license described in Paragraph 1.

(Safety Verification of Waste Repository Disposal)

Article 51-6. A person who has obtained the license of Waste Repository Disposal Facility as provided in Paragraph 1 of Article 51-2 (hereinafter referred to as "Waste Repository Facility Operator") must obtain the safety verification by the Minister of METI, as provided by the Ordinance of METI, as to the conformity of the waste disposal facility and the conformity of the related safety measures with the technical standards provided by the Ordinance of METI.

2. When the Waste Repository Operator wishes to perform Waste Repository Disposal, the operator must obtain the safety verification by the Minister of METI, as provided by the Ordinance of METI, as to the conformity of the nuclear fuel materials or the material contaminated with nuclear fuel materials that is to be disposed of and the conformity of the safety related measures with the technical standards provided by

the Ordinance of METI.

3. The Minister of METI shall, as provided by the Ordinance of METI, make the Organization to perform a part of safety verifications described in Paragraph 1.

4. When the Organization performed a part of safety verifications under the provisions of the preceding paragraph, the Organization shall promptly, as provided by the Ordinance of METI, notify the Minister of METI of the results of Safety verification.

(Approval of Design and Construction Methods)

Article 51-7. Any person who has obtained the license of Waste Management Facility as provided in the provisions of Paragraph 1 of Article 51-2 (hereinafter referred to as "Waste Management Facility Operator") shall, as provided by the Ordinance of METI, obtain the approval of the Minister of METI, with respect to design and construction methods of the Waste Management Facility provided by the Government Ordinance (hereinafter referred to in this chapter, as "Specific Waste Management Facility") (excluding the method of welding in the specific disposal facility defined in Paragraph 1 of Article 51-9 in which welding is performed, same in the following paragraph and Paragraph 3 before starting the construction of the specific disposal facility. This shall also be applied to the alteration of the specific disposal facility.

2. When the Waste Management Facility Operator wishes to change design and construction methods of the specific disposal facility for which the approval described in the preceding paragraph has been obtained, the operator must obtain the approval of the Minister of METI, as provided by the Ordinance of METI. This shall not be applied to any of the minor alterations provided by the Ordinance of METI.

3. The Minister of METI shall give the approval described in the preceding two paragraphs, if the Minister recognizes that design and construction methods relevant to the application for approval described in the preceding Paragraph 2 satisfies any one of the following subparagraphs:

- (i) The design and construction method have been the one that was given approval as provided in the provisions of Paragraph 1 of Article 51-2 or Paragraph 1 of Article 51-5 or have been the one that was notified in accordance with the provisions of Paragraph 2 of the said article; and
- (ii) The design and construction methods conform to the technical standards provided by the Ordinance of METI.

(Pre-service Inspection)

Article 51-8 Any Waste Management Facility Operator shall not use the Specific Waste Management Facilities until they clears the inspection of the Minister of METI as to the construction work (excluding welding in the Specific Waste Management Facilities described in paragraph 1 of following article in which welding is performed, same in the following paragraph) and the performance of the Specific Waste Management Facilities, as provided by the Ordinance of METI, the same shall be applied to the alteration of specific disposal facilities.

2. The inspection described in the preceding paragraph shall be considered as passed if the Specific Waste Management Facility satisfies any one of the following subparagraphs:

- (i) The construction has been carried out in accordance with the method approved described in the previous article; and
- (ii) The performance is in conformity with the technical standards provided by the Ordinance of METI.

3. The provisions described in Paragraphs 3 and Paragraph 4 of Article 16-3 shall be applied with necessary modifications to the inspection described in Paragraph 1.

(Method and Inspection of Welding)

Article 51-9. A liquid waste tank for nuclear fuel materials or the materials contaminated with nuclear fuel materials and other Specific Waste Management Facilities provided by the Ordinance of METI in which welding is performed shall be inspected by the Minister of METI as provided by the Ordinance of METI, and the Waste Management Facility Operator may not use the Specific Waste Management Facility until it clears the inspection. However, this shall not be applied to the cases provided in Paragraph 4 and the cases provided by the Ordinance of METI.

2. A person who wishes to receive the inspection described in the above paragraph, the person must obtain the approval of the Minister of METI concerning the method of welding as provided by the Ordinance of METI.

3. The inspection described in Paragraph 1 shall be considered as passed if the welding satisfies any one of the following subparagraphs:

(i) Welding has been carried out in accordance with the method approved as provided in the previous paragraph; and

(ii) Welding is in conformity with the technical standards provided by the Ordinance of METI.

4. The Specific Waste Management Facility that has been imported and fabricated by welding as defined in Paragraph 1 shall be inspected by the Minister of METI concerning the weld as provided by the Ordinance of METI, and the disposal facility operator shall not use the Specific Waste Management Facility until it clears the inspection.

5. The inspection described in the preceding paragraph shall be considered as passed if the welding is in conformity with the technical standards described in Subparagraph (ii) of Paragraph 3.

(Periodical Inspection of Facilities)

Article 51-10. Any Waste Management Facility Operator is subject to periodical inspection, as provided by the Ordinance of METI, carried out by the Minister of METI at intervals which are not less than one year, with respect to the performance of those Specific Waste management Facilities provided by the Government Ordinance.

2. Such inspection as described in the preceding paragraph shall be carried out to determine whether or not the performance of the Specific Waste Management Facilities is in conformity with the technical standards as provided by the Ordinance of METI.

3. The provisions described in Paragraphs 3 and Paragraph 4 of Article 16-5 shall be applied with necessary modifications to the inspection described in Paragraph 1.

(Notification of the Commencement of Facility, etc.)

Article 51-11. Any Radioactive Waste Management /Disposal Facility Operator when he is either starting, suspending, or resuming his operation must notify it to the Minister of METI within 15 days from the date thereof.

(Merger)

Article 51-12. In the case of the merger of juridical persons as a Radioactive Waste Management /Disposal Facility Operator (excluding the case where a Radioactive Waste Management /Disposal Facility Operator is merged with a juridical person who is not a Radioactive Waste Management /Disposal Facility Operator, and became the successor), the juridical person who is the successor after the merger or the new juridical

person as the consequence of the merger shall succeed to the status of the Radioactive Waste Management /Disposal Facility Operator when he obtains the approval of the Minister of METI as to the merger.

2. The provisions of subparagraphs from (i) to (ii) of Paragraph 1 of Article 51-3, Paragraph 2 of the said article, and those of Article 51-4 shall be applied with necessary modifications to such approval described in the preceding paragraph.

(Inheritance)

Article 51-13. In the case of an inheritance with regard to a Radioactive Waste Management /Disposal Facility Operator, the inheritance shall succeed to the status of the Radioactive Waste Management /Disposal Facility Operator.

2. An inheritance of the status of Radioactive Waste Management /Disposal Facility Operator as provided in the provisions of the preceding paragraph must give notification to the Minister of METI, along with a paper certifying the fact, within 30 days from the date of succession.

(Revocation of the License etc.)

Article 51-14. When a Radioactive Waste Management /Disposal Facility Operator does not start operation, without a justifiable reason, within the period provided by the Ordinance of METI, or continues to suspend the operation for more than one year, the Minister of METI may revoke the license described in Paragraph 1 of Article 51-2.

2. When a Radioactive Waste Management /Disposal Facility Operator comes under one of the following subparagraphs, the Minister of METI may revoke the license described in Paragraph 1 of Article 51-2, or may order suspension of the operator's license for the period of not more than one year:

- (i) When the operator has come under one of the subparagraphs from (ii) to (iv) of Article 51-4;
- (ii) When the operator has carried out the matters without a license for which a license must be obtained as provided in the provisions of Paragraph 1 of Article 51-5;
- (iii) When the operator has violated the provisions of Article 51-6;
- (iv) When the operator has violated the order provided in the provisions of Article 51-17;
- (v) When the operator has violated the provisions of Paragraph 1, Paragraph 2 or Paragraph 5 of Article 51-18 or when he has violated the order provided in the provisions of Paragraph 4 of the said article;
- (vi) When the operator has violated the order provided in the provisions of Article 51-22;
- (vii) When the operator has violated the provisions of Paragraph 1 of Article 51-23;
- (viii) When the operator has violated the order based on the provisions of Paragraph 3 of Article 12-2 as applied with necessary modifications provided in Paragraph 2 of Article 51-23;
- (ix) When the operator has violated the provisions of Paragraph 4 of Article 12-2 as applied with necessary modification to provisions in Paragraph 2 of Article 51-23;
- (x) When the operator has violated the provisions of Paragraph 1 of Article 51-24;
- (xi) When the operator has violated the order provided in the provisions of Article 12-5 as applied with necessary modifications to Paragraph 2 of Article 51-24;
- (xii) When the operator has violated the provisions of Paragraph 2 of Article 58-2, or when the operator has violated the order provided in the provisions of Paragraph 3 of the said article;

- (xiii) When the operator has violated the provisions of Paragraph 2 of Article 59-2, or when the operator has violated the order provided in the provisions of Paragraph 4 of the said article;
- (xiv) When the operator has violated the provisions of Paragraph 2 of Article 59-3;
- (xv) When the operator has violated the provisions of Paragraph 1 or Paragraph 4 of Article 61-8, or when the operator has violated the order provided in the provisions of Paragraph 3 of the said article;
- (xvi) When the operator has violated the conditions of Paragraph 1 or Paragraph 2 of Article 62;
- (xvii) When the operator has violated the provisions of Article 6 of the Nuclear Liability Law; or
- (xviii) When the operator has violated the order provided in Paragraph 4 of Article 7, Paragraph 5 of Article 8, Paragraph 7 of Article 9 or Paragraph 6 of Article 11 of the Special Law of Emergency Preparedness for Nuclear disaster.

(Records)

Article 51-15. Any Radioactive Waste Management /Disposal Facility Operator shall, as provided by the Ordinance of METI, record the items provided by the Ordinance of METI concerning the operation of Waste Repository Disposal or Waste Management Facility and keep this record at the premises.

(Measures for Safety Operation and the Protection of Specific Nuclear Fuel Materials)

Article 51-16. Any Waste Repository Operator shall, as provided by the Ordinance of METI, take necessary measures for safety operation concerning the following subparagraphs, according to the decay of radioactivity of nuclear fuel materials or materials contaminated with nuclear fuel materials:

- (i) Maintenance of Waste Disposal Facilities;
- (ii) Operation of the Waste Disposal Equipment; and
- (iii) Transport or disposal of nuclear fuel materials or materials contaminated with nuclear fuel materials (limited to the transport or disposal in the premises where the Waste Disposal facility is located).

2. Any Waste Management Facility Operator shall, as provided by the Ordinance of METI, take necessary safety measures concerning the following subparagraphs:

- (i) Maintenance of Waste Management Facilities;
- (ii) Operation of waste management equipments; and
- (iii) Transport or waste management of nuclear fuel materials or materials contaminated with nuclear fuel materials (limited to the transport or waste management in the premises where the Waste Management Facility is located).

3. Any Waste Management Facility Operator who handles specific nuclear fuel materials at the premises equipped with Waste Management Facilities shall, if provided by the Government Ordinance, take protection measures as provided by the Ordinance of METI.

(Suspension of Use of Facilities etc.)

Article 51-17. When the Minister of METI deems that the performance of Waste Management Facilities is not in conformity with the technical standards described in Paragraph 2 of Article 51-10, or that measures concerning the maintenance of Waste Disposal Facilities or Waste Management Facilities, and concerning the operation of Waste Management Equipments, or for the transport or Waste Management (limited to the transport or Waste Management in the premises where the Waste Disposal facility or Waste Management

Facility is located) of nuclear fuel materials or the materials contaminated with nuclear fuel materials are in violation of the provisions of the Ordinance of METI based on the provisions of Paragraph 1 or Paragraph 2 of the preceding article, the Minister may order the Radioactive Waste Management /Disposal Facility Operator to suspend use, remodel, repair or move the Waste Disposal Facilities or the Waste Management Facilities, to specify methods for the operation of the Waste Management Equipments, or to take other measures necessary for safety operation.

2. When the Minister of METI deems that the protection measures are in violation of the provisions of the Ordinance of METI based on Paragraph 3 of the preceding article, he may order the Waste Management Facility Operator to take corrective measures etc.

(Operational Safety Program)

Article 51-18. Any Waste Repository Operator shall, as provided by the Ordinance of METI, establish operational safety program (including the provisions to the safety operation education for the handling of nuclear fuel materials, the same applies in this article) defining the measures that should be taken for the safety operation of Waste Repository Disposal corresponding to the decay of radioactivity and obtain the approval of the Minister of METI before starting operation. This shall also be applied to the alteration of it.

2. Any Waste Management Facility Operator must, as provided by the Ordinance of METI, establish Operational Safety Program and obtain the approval of the Minister of METI before starting operation. This shall also be applied to the alteration of it.

3. The Minister of METI shall not give the approval described in the preceding two paragraphs, when he deems that the Operational Safety Program is not satisfactory in preventing fully the hazards due to nuclear fuel materials or the materials contaminated with nuclear fuel materials.

4. When the Minister of METI deems it necessary for the sake of the prevention of hazards due to nuclear fuel materials or materials contaminated with nuclear fuel materials, the Minister may order the Radioactive Waste Management/Disposal Facility Operator to alter the Operational Safety Program.

5. The Radioactive Waste Management/Disposal Facility Operator and its employees shall observe the Operational Safety Program.

6. Any Radioactive Waste Management/Disposal Facility Operator shall be inspected regularly by the Minister of METI as provided by the Ordinance of METI of the conformity with the requirements of the preceding paragraph.

7. The provisions of Paragraph 2 through 8 of Article 12 shall be applied with necessary modifications to the inspection described in the preceding paragraph.

(Transfer of the Waste Disposal Facility)

Article 51-19. Any person who wishes to receive the waste disposal facility or the whole facilities including the waste disposal facility from a Waste Repository Operator shall obtain the license of the Minister of METI, as provided by the Government Ordinance.

2. The provisions of Article 51-3 and Article 51-4 shall be applied with necessary modifications to the licensing provided in the preceding paragraph.

3. A person who, with the license provided in Paragraph 1, has received the waste disposal facility or the whole facilities including the waste disposal facility from a waste repository operator shall succeed to the status of the waste repository operator with respect to the relevant the waste disposal facility.

(Supervisor of Radioactive Wastes)

Article 51-20. Any Radioactive Waste Management/Disposal Facility Operator shall, as provided by the Ordinance of METI, appoint the Supervisor of Radioactive Wastes who supervises the maintenance of safety operation concerning the handling of nuclear fuel materials or materials contaminated with nuclear fuel materials, and this person must have a certificate of the Supervisor of Nuclear Fuel Materials provided in Paragraph 1 of Article 22-3 or otherwise be qualified in accordance with the Ordinance of METI,

2. When any Radioactive Waste Management/Disposal Facility Operator has appointed the Supervisor of Radioactive Wastes in accordance with the provisions of the preceding paragraph, the Operator shall notify the appointment to the Minister of METI within thirty days from the day of the appointment. This shall also be applied to the dismissal of him.

(Duties of the Supervisor of Radioactive Wastes)

Article 51-21. The Supervisor of Radioactive Wastes shall be faithful in the discharge of his duties related to the handling of nuclear fuel materials or materials contaminated with nuclear fuel materials in the Waste Repository Disposal or Waste Management.

2. Any person who is engaged in the handling of nuclear fuel materials or materials contaminated with nuclear fuel materials in the Waste Repository Disposal or Waste Management shall obey the instructions for the safety operation given by the Supervisor of Radioactive Wastes.

(Order to Dismiss the Supervisor of Radioactive Wastes)

Article 51-22. When the Supervisor of Radioactive Wastes has violated the provisions of this Law or the order based on this Law, the Minister of METI may order the Radioactive Waste Management/Disposal Facility Operator to dismiss him.]

Chapter 6. Regulations for Nuclear Facility Operators etc.

(Safety Verification of Waste Management)

Article 58. The refining facility operator, nuclear fuel fabrication facility operator, reactor establisher, spent fuel storage facility operator, spent fuel reprocessing plant operator, and waste disposal facility operator and user (including former refining facility operator etc., former nuclear fuel fabrication facility operator etc., former reactor establisher etc., former user etc., hereinafter referred to as “nuclear facility operator etc.” shall take necessary measures to safety operation when nuclear facility operator etc. dispose of nuclear fuel materials or materials that are contaminated with nuclear fuel materials outside of factory or premises (including nuclear ship, referred to as “factory etc.” in Paragraph 1 of the next article, Paragraph 1 of Article 59-2 and Paragraph 1 of Article 61-2) installed usage facility, milling facility, nuclear fuel fabrication facility, reactor facility, spent fuel storage facility, spent fuel reprocessing facility, waste repository facility or waste management facility or usage facility in accordance with the provisions as provided in the order by the competent ministry (the order by the minister described in the following subparagraphs in accordance with the division of nuclear facility operator etc.. in accordance with following each subparagraph, the same, hereinafter in this article).

(i) Refining facility operator, nuclear fuel fabrication facility operator, spent fuel storage facility operator, spent fuel reprocessing plant operator and waste disposal facility operator (including former refining facility operator etc., former nuclear fuel fabrication facility operator etc., former spent fuel storage facility operator etc., and former spent fuel reprocessing plant operator etc. and former waste disposal facility operator etc.); Minister of METI

(ii) User (including former user etc.); Minister of MEXT

(iii) Reactor establisher (including former reactor establisher etc.); Ministers defined in the subparagraphs of Paragraph 1 of Article 23 in accordance with the division of reactor described in the subparagraph concerned.

2. In the case corresponding to the previous paragraph, and when it corresponds to the case that prevention of hazards due to nuclear fuel materials or materials contaminated with nuclear fuel materials are necessary as provided in governmental ordinance, nuclear facility operator etc. needs confirmation by competent minister of the steps concerning the waste disposal are in conformance to the provisions in governmental ordinance that is applied to the previous paragraph.

3. In the case corresponding to the first paragraph, competent minister may order the suspension of waste disposal or other steps that is necessary to the safety operation when the minister recognize that the steps by nuclear facility operator etc. for the process/store/disposal of nuclear fuel materials or materials contaminated with nuclear fuel materials are in violation to the provisions in governmental ordinance that are applied to the first paragraph.

(Monitoring for Conmliances with clearance level.)

Article 61-2. A nuclear facility operator etc. can obtain confirmation by the competent minister in accordance with the provisions in the order of the competent ministry (the order by the ministers defined in the subparagraphs of Paragraph 1 of Article 23 in accordance with the division of reactor described in the subparagraph concerned (hereinafter referred to as “competent minister” in this article), the same, hereinafter in this article) that radioactive concentrations contained in materials and other materials used at facility etc. do not exceed criteria that require measures to be taken for prevention of hazard from radiation defined in the order of the competent ministry.

(i) Refining facility operator, nuclear fuel fabrication facility operator, spent fuel storage facility operator, spent fuel reprocessing plant operator and waste disposal facility operator (including former refining facility operator etc., former nuclear fuel fabrication facility operator etc., former spent fuel storage facility operator etc., and former spent fuel reprocessing plant operator etc. and former waste disposal facility operator etc.); Minister of METI

(ii) User (including former user etc.); Minister of MEXT

(iii) Reactor establisher (including former reactor establisher etc.); Ministers defined in the subparagraphs of Paragraph 1 of Article 23 in accordance with the division of reactor described in the subparagraph concerned.

(iv) Foreign nuclear ship operator; Minister of MLIT

2. A person who intends to obtain the confirmation described in the preceding paragraph shall measure and evaluate the radioactivity concentration of radioactive materials contained in the materials to be monitored the compliances with clearance level in accordance with measurement and evaluation methods for the radioactivity concentration approved by the competent minister as provided by the order of the competent ministry, and submit an application describing the results and the other documents defined by the order of the competent ministry.

3. Materials monitored of the compliance with clearance leves by the competent minister in accordance with Paragraph 1 shall be treated as materials not being contaminated with nuclear fuel materials as to application of this law, the Law for Processing and Cleaning of Waste (Law No.137, 1970) and other legislations as provided by the government order.

4. Minister of METI shall make the Organization perform a part of monitoring of Paragraph 1 for refining facility operator, nuclear fuel fabrication facility operator, specific reactor establisher (establishers of commercial power reactors and reactors stipulated in Subparagraph (iv) of Paragraph 1 of Article 23, the same, hereinafter in this paragraph), spent fuel storage facility operator, spent fuel reprocessing plant operator and waste disposal facility operator (including former refining facility operator etc., former nuclear fuel fabrication facility operator etc., former reactor establisher etc. (limited to specific reactor establisher), former spent fuel storage facility operator etc., and former spent fuel reprocessing plant operator etc. and former waste disposal facility operator etc.) in accordance with the provisions of the Order by the METI.

5. When the Organization has performed a part of monitoring in accordance with the provision provided in the preceding paragraph, the Organization shall notify the Minister of METI of the results in accordance with the provisions as provided in the Order by the METI, without delay.

Chapter 6-3. Welding Inspection etc. Performed by the Organization

(Welding Inspection Performed by the Organization)

Article 61-24. The Minister of METI shall make the Organization to perform the inspection described in Paragraph 1 and Paragraphs 4 of Article 16-4, Paragraph 1 and Paragraphs 4 of Article 28-2 (limited to the portion related to commercial power reactors and reactors described in Subparagraph (iv) of Paragraph 1 of Article 23 and the associated facilities), Paragraph 1 and Paragraphs 4 of Article 43-10, Paragraph 1 and Paragraphs 4 of Article 46-2 and Paragraph 1 and Paragraphs 4 of Article 51-9.

2. The Minister of MEXT may, as provided by the Ministerial Order of MEXT, make the Organization to perform the inspection described in Paragraph 1 or Paragraph 4 of Article 28-2 (limited to the portion related to reactors described in Subparagraphs 3 and 5 of Paragraph 1 of Article 23 and the associated facilities) or Paragraph 1 of Article 55-3.

(Verification of disposal performed by Organization)

Article 61-25. The Minister of METI shall make the Organization perform the verification of Paragraph 2 of Article 51-6 and Paragraph 2 of Article 58 (limited to the part related to the person described in Subparagraph (i) and Subparagraph (iii) of Paragraph 1 of said Article (limited to the part related to commercial power reactors and reactors described in Subparagraph (iv) of Paragraph 1 of Article 23)).

2. The Minister of MEXT may make the Organization perform the verification of Paragraph 2 of Article 58 (limited to the part related to the person described in Subparagraph (ii) and Subparagraph (iii) of Paragraph 1 of said Article (limited to the part related to reactors described in Subparagraph (iii) and Subparagraph (v) of Paragraph 1 of Article 23)) in accordance with Order of the MEXT.

(Restriction of sea disposal)

Article 62. Sea disposal of nuclear source materials or nuclear fuel materials or materials contaminated with these materials shall not be allowed. However this shall not apply to the case necessary to ensure the safety for human lives, ships, aircraft or artificial marine structures.

2. “Sea disposal” in the preceding paragraph means the disposal of materials from ship, aircraft or artificial marine structure to sea, or incineration of materials at ship, aircraft or artificial marine structure for the purpose of disposal, however, it excludes the disposal of the materials that are generated by the operation of ship, aircraft, artificial marine structure or their equipment from the ship, aircraft or artificial marine

structure to sea, and it excludes incineration of the materials that are generated by the operation of ship, aircraft, artificial marine structure or their equipment at the ship, aircraft or artificial marine structure for the purpose of disposal.

(Conditions of the Authorization or the License)

Article 62-2. Except as established in the following paragraphs, the conditions may be attached to the authorization or the license provided by this Law.

2. In the licensing of Paragraph 1, Article 23, necessary condition to observe international commitment in relation to the limitation of utilization and transfer of international restricted material may be attached.

3. The conditions of the preceding two paragraphs shall be confined to the minimum necessary to ensure the enforcement of the items concerning the authorization or the license, and shall not be such that they may obligate unreasonably the persons who wish to obtain the authorization or license.

(Report to competent ministers etc.)

Article 62-3 Nuclear facility operator etc. (including the user of nuclear source materials, hereinafter the same in this article) shall, when an accident that causes human hazards (including an accident that could human hazards), failures at the milling facility, nuclear fuel fabrication facility, reactor facility, spent fuel storage facility, spent fuel reprocessing facility, waste repository facility, waste management facility or usage facility etc. or facility related to use of nuclear source materials (referred to as the “milling facility etc.”, hereinafter in this article) and other events defined in the order by the competent ministry (the order by the minister defined in the following subparagraphs in accordance with the division of nuclear facility operator etc. in accordance with following subparagraph concerned, the same, hereinafter in this article) or (order by the Cabinet Office, in the case of the notification being notified in accordance with the provisions of Paragraph 5 of Article 59), hereinafter the same in this article) concerning the milling facility etc. has occurred, report the situation of the event and other items defined in the order by the competent ministry to the competent minister (Prefectural Public Safety Commissions, in the case of the notification being notified in accordance with the said paragraph) in accordance with the provisions of the order by the competent ministry without delay.

(i) Refining facility operator, nuclear fuel fabrication facility operator, spent fuel storage facility operator, spent fuel reprocessing plant operator and waste disposal facility operator (including former refining facility operator etc., former nuclear fuel fabrication facility operator etc., former spent fuel storage facility operator etc., and former spent fuel reprocessing plant operator and former waste disposal facility operator); Minister of METI (Minister of METI and Minister of MLIT in the case of shipment provided in Paragraph 1 of Article 59 and Minister of MLIT in the case of shipment by ships or aircraft)

(ii) User (including former user etc.); Minister of MEXT (Minister of MEXT and Minister of MLIT in the case related to shipment provided in Paragraph 1 of Article 59, and Minister of MLIT in the case of shipment by ships or aircraft)

(iii) Reactor establisher (including former reactor establisher etc.); The minister defined in accordance with the division of reactor described in each subparagraph of Paragraph 1 of Article 23 (as for the case concerning the shipment provided in Paragraph 1 of Article 59, the minister defined in the each subparagraph of Paragraph 1 of Article 23 and Minister of MLIT, and as for the case concerning shipment by ships and aircraft, Minister of MLIT)

(iv) Foreign nuclear ship operator; Minister of MLIT

(v) User of nuclear source materials; Minister of MEXT

(Emergency Measures)

Article 64. With respect to the nuclear fuel material, the material contaminated with nuclear fuel material or the reactor which is possessed by a reactor establisher, a nuclear facility operator, etc., (hereinafter referred to as "nuclear facility operators" in this Article), and any person who has been entrusted with transportation or storage by those persons, when there is a possibility of accident by nuclear fuel material, material contaminated with nuclear fuel material or a reactor through earthquake, fire or any other disaster, or when such accident has actually occurred, they shall take the emergency measures at once, as provided by the order of the competent ministry.

2. Any person who has discovered the situation provided for in the preceding paragraph shall inform it to a police officer or a maritime security officer.

3. When the minister of MEXT, minister of METI or minister of MLIT considers it urgently necessary for the purpose of preventing hazards due to nuclear fuel material, the material contaminated with nuclear fuel material or reactors, in the case stated in Paragraph 1, he may order such persons as mentioned in the said paragraph, in accordance with the division of nuclear facility operators mentioned in the following items, to suspend the use of reactor facilities; to change the place where nuclear fuel material or the material contaminated with nuclear fuel material is located; or to take other measures necessary to prevent hazards from nuclear fuel material, the material contaminated with nuclear fuel material or reactors.

(i) The person who has been entrusted with transportation or storage by a radioactive waste disposal facility operator or those: the Minister of METI.

(ii) Reactor establishers and the person who is entrusted to transportation: the minister established in the item corresponding to the division of the reactor according to the item no. of paragraph 1 of Article 23.

(Notification of Termination of License)

Article 65. When a radioactive waste disposal facility operator terminate his operation and when a reactor establisher terminate operation of reactors relevant to the concerned license, the waste disposal facility operator shall notify the termination to the competent minister as provided in the Ordinance of the competent ministry.

(Measures accompanying the revocation of license, decommissioning of facility and activities)

Article 66. A reactor establisher or waste disposal facility operator whose authorization has been revoked, in accordance with the provisions of Article 33 shall, as provided by the order of the competent ministry, take measures to transfer nuclear fuel material to decontaminate contamination with nuclear fuel material or to dispose of nuclear fuel material or the material contaminated with nuclear fuel material, or to transfer internationally regulated substances (except nuclear fuel material).

4. When the competent minister recognizes that the measures taken by the persons defined in Paragraph 1 of Article 4 shall not be appropriate, he may order the persons defined in said paragraph to take the following measures.

(i) Measures necessary for the prevention of hazards due to nuclear fuel material, the material contaminated with nuclear fuel material or reactors.

(Rule for Administrative Process)

Article 66-2. The Organization shall define rules for implementation of administrative process (hereinafter

referred to as “rules of administrative process”) of inspection etc. (which means inspections and verifications, as well as a part of inspections and verifications, described in the following subparagraphs, the same shall be applied hereinafter.) before starting operation concerning inspection etc., and shall notify this to the minister as provided in the subparagraph concerned (hereinafter referred to as “the competent minister” in this Article and Article 68-2). The same shall be applied when the Organization intends to modify them.

- (i) A part of inspections provided in Paragraph 3 of Article 16-3 (including the case where the said paragraph is applied with necessary modifications to Paragraph 3 of Article 28, Paragraph 3 of Article 43-9, Paragraph 3 of Article 46 and Paragraph 3 of Article 51-8) and Paragraph 3 of Article 16-5 (including the case where the said paragraph is applied with necessary modifications to Paragraph 3 of Article 29, Paragraph 3 of Article 43-11, Paragraph 3 of Article 46-2-2 and Paragraph 3 of Article 51-10); the Minister of METI
- (ii) Inspections provided in Paragraph 1 of Article 61-24; the Minister of METI
- (iii) Inspections provided in Paragraph 2 of Article 61-24; the Minister of MEXT
- (iv) A part of verifications provided in Paragraph 3 of Article 51-6; the Minister of METI
- (v) Verifications provided in subparagraphs of Paragraph 1 of Article 61-25; the Minister of METI
- (vi) Verifications provided in subparagraphs of Paragraph 2 of Article 61-25; the Minister of MEXT
- (vii) Verifications provided in subparagraphs of Paragraph 1 of Article 61-26; the Minister of METI
- (viii) Verifications provided in subparagraphs of Paragraph 2 of Article 61-26; the Minister of MEXT
- (ix) Verifications of Article 61-27; the Minister of MLIT

2. The competent minister may order to modify the rules of notification provided in the preceding paragraph where the minister deems the said rules of administrative process is not in conformity to perform the inspection etc. appropriately and assuredly.

3. Items to be defined in the rules of administrative process shall be provided by the order of competent ministry (which means the order by the competent minister, the same shall be applied to the following article).

(Persons to Perform the Inspection etc.)

Article 66-3. When the Organization performs the inspection etc., the Organization shall make the qualified person provided by the order of competent ministry to perform the said administrative process

(Allegation to Competent Minister etc.)

Article 66-4 The employee of any refining facility operator, nuclear fuel fabrication facility operator, reactor establisher, spent fuel storage facility operator, spent fuel reprocessing plant operator, and waste disposal facility operator may allege the fact of violation when any reactor establisher violates the law or the order based on the law to competent minister or NSC.

2. The refining facility operator, nuclear fuel fabrication facility operator, reactor establisher, spent fuel storage facility operator, spent fuel reprocessing plant operator, and waste disposal facility operator shall not dismiss or act against him for his allegation.

(Collection of Reports)

Article 67. The minister of MEXT, minister of METI, minister of MLIT or prefectural public

safety commissions may request refining facility operator, nuclear fuel fabrication facility operator, reactor establisher, spent fuel storage facility operator, spent fuel reprocessing plant operator, and waste disposal facility operator, as far as necessary for the enforcement of this Law, to produce reports on his operations, as provided by the government ordinance, in accordance with the division of nuclear facility operators listed in the items of Paragraph 3 of Article 64.

2. Other than the request of the report as provided in the previous paragraph, the minister of MEXT, minister of METI, minister of MLIT may request refining facility operator, nuclear fuel fabrication facility operator, reactor establisher, spent fuel storage facility operator, spent fuel reprocessing plant operator, and waste disposal facility operator, as far as necessary for the enforcement of this Law, to produce reports on his maintenance and inspection activity done to the facility, as recognized as necessary to prevent the hazards due to reactor, nuclear fuel material and material contaminated with nuclear fuel.

3. The Minister of MEXT, the Minister of METI or the Minister of MLIT may, as far as necessary for the enforcement of this Law, make the Organization to submit reports concerning their operation in accordance with divisions of inspection etc. described in subparagraphs of Paragraph 1 of Article 66-2.

4. The Minister of MEXT, the Minister of METI or the Minister of MLIT can, as far as necessary for enforcement of the provision of Paragraph 1 of Article 61-2, make the captain of ship and other persons involved necessary report, in addition to the collection in accordance with the provision of Paragraph 1 and the preceding paragraph.

(Nuclear Facility Inspector and Nuclear Safety Inspector)

Article 67-2. Nuclear Facility Inspectors and Nuclear Safety Inspectors are assigned in the MEXT and the METI.

2. Nuclear Facility Inspectors assigned in the MEXT shall engage in the inspection provided in Article 28 through Article 29, and Nuclear Facility Inspectors assigned in the METI shall engage in the inspection provided in Article 28 through Article 29 or Article 51-8 through Article 51-10.

3. Nuclear Safety Inspectors assigned in the MEXT shall engage in the inspection provided in Paragraph 5 of Articles 37, and Nuclear Safety Inspectors assigned in the METI shall engage in the inspection provided in Paragraph 5 of Articles 37 or Paragraph 6 of Articles 51-18.

4. The necessary matters concerning the number and qualification of Nuclear Facility Inspectors and Nuclear Safety Inspectors shall be defined by the Government Ordinance.

(Entry and Inspection, Etc.)

Article 68. The minister of MEXT, minister of METI, minister of MLIT or prefectural public safety commissions may cause their officials, as far as necessary for the enforcement of this Law (for the enforcement of this Law according to the division of nuclear facility operators listed in the items of Paragraph 3 of Article 64, to enter the offices, factories or premises so as to examine their books, documents and other necessary matters, ask questions of persons concerned, and take samples of nuclear source material, nuclear fuel material and other necessary materials in the minimum of amount required for test.

2. The minister of MEXT, minister of METI or minister of MLIT may cause their officials, as far as necessary for the enforcement of this law (for the enforcement of the provisions of Paragraph 1 of Article 28-2 related to commercial power reactors and their related facilities : the Minister of METI), to enter the offices factories, or the premises of the persons who conduct welding of the facilities specified in Paragraph 1 of Article 28-2 so as to examine their books, documents and other necessary matters and ask questions of

persons concerned.

5. Competent minister may cause their officials, as far as necessary for the enforcement of this Law (for the enforcement of this Law according to the division of nuclear facility operators listed in the items of Paragraph 3 of Article 64, to enter the offices, factories or premises so as to examine their books, documents and other necessary matters, ask questions of persons concerned.

6. The authority provided for in the provisions from Paragraph 1 through Paragraph 4 shall not be construed as having been granted for the purpose of criminal investigation.

7. Competent minister may cause the Organization officials, as far as necessary for the enforcement of this Law (for the enforcement of this Law according to the division of nuclear facility operators listed in the items of Paragraph 1 of Article 66-2, to enter the offices, factories or premises so as to examine their books, documents and other necessary matters, ask questions of persons concerned and take samples.

8. Competent minister may instruct the Organization of place of entry inspection and items when he entrust the entry inspection to the.

9. The Organization shall report the inspection result to competent minister when the Organization implemented the inspection provided in paragraph 7 in accordance with the instruction

10. When officials of the Organization make entrance in accordance with the provisions of the preceding three paragraphs, they shall carry their identification cards with them and show them when requested by persons concerned.

11. The authority as provided in Paragraph 1 through Paragraph 5 shall not be considered as having been granted for the purpose of criminal investigation.

(Order to the Organization)

Article 68-2. Competent minister may order the work to the Organization, when he recognize it is necessary to implement the work concerning the inspection and the work provided in paragraph 7 of previous Article appropriately.

(Statement of Dissatisfaction, etc.)

Article 70. Persons, who are dissatisfied with disposition concerning inspection for safeguards implemented by the designated organization for implementation of the safeguard inspection etc. in accordance with the provisions of this Law, or disposition or inaction concerning inspections or safety verifications performed by the Organization, may request for reconsideration based on the Law of Administrative Tribunals (Law No. 160, 1962) to the Minister of MEXT for disposition made by the designated organization for implementation of the safeguard inspection etc. or to the minister as provided in the following subparagraphs in accordance with the divisions of inspections or verifications provided in subparagraphs concerned:

- (i) Inspections provided in Paragraph 1 of Article 61-2: the Minister of METI
- (ii) Inspections provided in Paragraph 2 of Article 61-24: the Minister of MEXT
- (iii) Verifications provided in subparagraphs of Paragraph 1 of Article 61-25: the Minister of METI
- (iv) Verifications provided in subparagraphs of Paragraph 2 of Article 61-25; the Minister of MEXT
- (v) Verifications provided in subparagraphs of Paragraph 1 of Article 61-26: the Minister of METI
- (vi) Verifications provided in subparagraphs of Paragraph 2 of Article 61-26: the Minister of MEXT

(vii) Verifications of Article 61-27: the Minister of MLIT

2 and 3. (Omitted)

(Report to the NSC)

Article 72-3. The Minister of Economy, Trade and Industry shall report to NSC quarterly of the licensing and inspection activity done concerning to the matters shown in the followings, in previous quarter, if necessary, he may ask the opinion of NSC, he will take necessary measures to prevent hazard due to reactor, nuclear fuel material and material contaminated with nuclear fuel material:

- (i) Approval of the Operational Safety Program and its alteration provided in Paragraph 1 of Article 12, Paragraph 1 of Article 22, Paragraph 1 of Article 37, Paragraph 1 of Article 43-20, Paragraph 1 of Article 50, Paragraph 1 and Paragraph 2 of Article 51-18 and Paragraph 1 of Article 56-3;
- (ii) Approval of Design and Construction Methods provided in Paragraph 1 and Paragraph 2 of Article 16-2, Paragraph 1 and Paragraph 2 of Article 27, Paragraph 1 and Paragraph 2 of Article 43-8, Paragraph 1 and Paragraph 2 of Article 45 and Paragraph 1 and Paragraph 2 of Article 51;
- (iii) Pre-service Inspection provided in Paragraph 1 of Article 16, Paragraph 1 of Article 28, Paragraph 1 of Article 43-9, Paragraph 1 of Article 46, Paragraph 1 of Article 51-8, and Paragraph 1 of Article 55-2;
- (iv) Welding inspection provided in Paragraph 1 of Article 16-4, Paragraph 1 of Article 28-2, Paragraph 1 of Article 43-10, Paragraph 1 of Article 46-2, Paragraph 1 of Article 51-9, and Paragraph 1 of Article 55-3; and
- (v) Periodic facility inspection provided in Paragraph 1 of Article 16-5, Paragraph 1 of Article 29, Paragraph 1 of Article 43-11, Paragraph 1 of Article 46-2, and Paragraph 1 of Article 51-10,

2. The Minister of MEXT, the Minister of METI or the Minister of MLIT shall report to the NSC as provided in orders of MEXT, orders of METI and orders of MLIT about nuclear fuel materials or the material contaminated with nuclear fuel materials, or the prevention of disaster due to nuclear reactors, in a situation to enforce this law, in addition to the report in accordance with the provision of the preceding paragraph.

Article 72-4 Refining facility operator, nuclear fuel fabrication facility operator, reactor establisher, spent fuel storage facility operator, spent fuel reprocessing plant operator, and waste disposal facility operator must cooperate NSC, when it conducts investigation concerning items relating the report which is filed in accordance with provisions of paragraph 1 and 2 of previous Article.

(Exception from application)

Article 73. The provisions of Article 27, 28 and 29 shall not apply to the commercial power reactors which are the reactor facilities which are to be inspected by the provisions of the Electricity Utilities Industry Law (Law No.170,1964) and the order based on that Law.

Chapter 8 Penal Provisions

Article 77. Any person who comes under one of the following subparagraphs shall be condemned to penal servitude of not more than 3 years and/or the fine of not more than three million yen;

- (ii) A person who violates the order of revocation of the license in accordance with the provision of

Paragraph 2 of Article 51-2.

- (iv) A person who has established reactors without the license under Article 23, Paragraph 1;
- (v) A person who has violated the order of suspension of operation of reactors provided for in Article 33, Paragraph 2; and
- (vi) A person who has received a reactor or whole facilities (including a nuclear ship) including a reactor without obtaining the permission provided for in Article 39, Paragraph 1, or a nuclear ship without obtaining permission provided in Paragraph 2 of the said Article.
- (vii-3) A person who operates waste repository or waste management without obtaining the approval described in Paragraph 1 of Article 51-2.
- (vii-4) A person who inherited the facility as a whole which contains a waste repository or a waste repository without obtaining the approval described in Paragraph 1 of Article 51-19

Article 78. Any person who comes under one of the following items shall be condemned to penal servitude of not more than 1 year and/or to the fine of not more than one million yen:

- (ii) Persons who violated the provision of Paragraph 1 of Article 37, or Paragraph 1 or Paragraph 2 of Article 51-18;
- (iii) Persons who violated the order described in the provision of Paragraph 3 of Article 37 or Paragraph 4 of Article 51-18;
- (iv) A person who resisted, hindered or refused the entry and inspection or submittal of samples defined in the provision of Paragraph 6 of Article 12 (including when apply with necessary modifications to Paragraph 6 of Article 37 or Paragraph 7 of Article 51-18), or did not state to the question or made a false statement;
- (v) A person who violated the provision of three Paragraph 1s of the 43rd article, or 24 Paragraph 1s of the 51st article
- (viii) A person who resisted, hindered or refused the inspection in accordance with the provision of Paragraph 1 of Article 29 or Paragraph 1 of Article 51-10;
- (x) A persons who changed matters described in Subparagraph (ii) through Subparagraph (v) and Subparagraph (viii) of Paragraph 2 of Article 23 without obtaining an approval in accordance with the provision of Paragraph 1 of Article 26 for matters described in the same paragraph;
- (xi) A person who altered or retained matters described in Paragraph 1 of Article 26-2 without obtaining an approval in accordance with the same paragraph;
- (xii) A person who violated the provision of Paragraph 1 of Article 28 or Paragraph 1 or Paragraph 4 of Article 28-2 in use of a reactor facility;
- (xiii) A persons who violated the provision of Paragraph 1 of Article 40;
- (xx) A person who changed matters described in Subparagraph (ii) through Subparagraph (v) of Paragraph 2 of Article 51-2 without obtaining an approval in accordance with the same paragraph for matters for which an approval is required in accordance with the provision of Paragraph 1 of Article 51-2;
- (xxi) A persons who violated the provision of Paragraph 1 of Article 51-8 or Paragraph 1 pr Paragraph 4 of Article 51-9, in use of a waste management facility;
- (xxii) A person who violated the provision of Paragraph 1 of Article 51-20;
- (xxv) A person who violated the provision of Article 61;

- (xxvii) A persons who violated the provision of Paragraph 1 of Article 64, or violated the order in accordance with the provision of Paragraph 3 of the said article;
- (xxviii) A person who violated the provision of Paragraph 2 of Article 66-2;
- (xxix) A person who did not report defined in Paragraph 1 of Article 67 or made a false report;
- (xxx) A person who resisted, hindered or refused the entry, inspection or submittal of samples defined in the provision of Paragraph 1 of Article 68, or did not state to the question or made a false statement;

Article 81. When a representative of a juridical person, or an agent or any other employee of a juridical person or of a person has violated the provisions in the following subparagraphs with respect to the facility and activities of the juridical person or the person, the juridical person shall be punished with such fines provided in the respective subparagraph or the person shall be punished with such fine described in the respective items, in addition to the punishment of the actual offender:

- (i) Subparagraph 2, Subparagraph 4 (excluding the part concerning persons who established nuclear reactors described in Subparagraph (iii) or Subparagraph (v) of Paragraph 1 of Article 23 (hereinafter referred to as the "establisher of test and research reactors", in this article), or from Subparagraph (vi) to Subparagraph (vii-4) of Article 77: monetary penalty of 300 million yen or less;
- (ii) Subparagraph (ii) (excluding the part concerning establishers and users of test and research reactors), Subparagraph (iii) (excluding the part concerning establishers and users of test and research reactors), Subparagraph (iv) (excluding the part concerning establishers and users of test and research reactors), Subparagraph (viii) (excluding the part concerning establishers and users of test and research reactors), Subparagraph (x) (excluding the part concerning establishers and users of test and research reactors), Subparagraph (xi), Subparagraph (xii) (excluding the part concerning establishers and users of test and research reactors), Subparagraph (xx), Subparagraph (xxi), Subparagraph (xxviii) (excluding the part concerning establishers and users of test and research reactors), Subparagraph (xxix) (excluding the part concerning establishers and users of test and research reactors), or Subparagraph (xxx) (excluding the part concerning establishers and users of test and research reactors) of Article 78: monetary penalty of 100 million yen or less; and
- (iii) Article 77 (excluding the part concerning the provision described in Subparagraph (i)), Article 78 (excluding the part concerning the provision described in the preceding subparagraph), Article 79, or Article 80: monetary penalty defined in these articles.

(2) The Rules for Waste Repository of Nuclear Materials or Materials Contaminated with Nuclear Materials (Excerpt)

(Ordinance No. 1 of the Prime Minister's Office, January 13, 1988)

(Latest Revision: Ordinance No. 21 of the METI, March 17, 2003)

(Definition)

Article 1. The meaning of the terms used in this ministerial order are after that of the terms used in the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (hereinafter referred to as "the Law")

2. In this ministerial order, the meaning of terms falling under any of the following subparagraphs shall be as defined in the following respective subparagraphs concerned:

- (i) "Radiation" means the radiation specified in Paragraph 5 of Article 3 of the Atomic Energy Basic Law or electron beams or X-rays of energy less than one mega electron volt (eV) other than the natural radiation;
- (ii) "Radioactive Waste" means nuclear fuel materials or materials contaminated with nuclear fuel materials (hereinafter referred to as "nuclear fuel materials etc." which is in the line of disposal;
- (iii) "Controlled Areas" means the place installed with waste disposal facilities where there is a

possibility of hazard that the dose equivalent due to external radiation may exceed the limit provided by the Minister of METI, that the concentration of radioactive materials in the atmosphere (excluding radioactive materials contained in the natural air or water, the same, hereinafter) may exceed the level of concentrations provided by the Minister of METI, or that the density of radioactive materials on the surface of materials contaminated with radioactive materials may exceed the level of density provided by the Minister of METI;

(iv) "Peripheral Monitoring Area" means the disposal facility and the peripheral area (excluding the controlled area), and the outside of which there is no possibility of the dose equivalent at any location exceeding the limit of the dose equivalent provided by the Minister of METI;

(v) "Repository Preservation Area" means a place which needs management especially for maintenance of a waste disposal facility other than the controlled area; and

(vi) "Personnel Engaged in Radiation Work" means personnel engaged in the preservation of waste disposal facilities, transfer or m of nuclear fuel material etc. in controlled areas,

(License Application for Waste Repository Business)

Article 2. Pursuant to Paragraph 2 of Article 51-2 of the Law, the application for the license shall be described in accordance with the following subparagraphs:

(i) For the characteristic and quantity of the nuclear fuel materials etc. defined in Subparagraph (iii) of Paragraph 2 of Article 51-2 of the Law, the maximum radioactivity concentration and the total amount of radioactivity shall be described for each type and quantity of radioactive wastes, and for each type of radioactive materials contained in the radioactive waste concerned for waste repository disposal;

(ii) The location, structure and equipment of a waste disposal facility defined in Subparagraph (iv) of Paragraph 2 of Article 51-2 of the Law shall be described under the following divisions:

1. Location of the waste disposal facility;
2. General structure of the waste disposal facility;
3. Structure of buildings;
4. Structure and equipment of the waste disposal facility;
5. Structure and equipment of the receiving facility for radioactive wastes;
6. Equipment of the radiation control facility; and
7. Structure and equipment of other associated facility of the waste disposal facility:
 - (1) Discharge facility of gaseous waste;
 - (2) Discharge facility of liquid waste;
 - (3) Waste management facility of solid waste; and
 - (4) Other main items.

(iii) The disposal method defined in Subparagraph (iv) of Paragraph 2 of Article 51-2 of the Law shall be described in accordance with the following divisions:

- A. Outline of waste repository disposal method; and
- B. Process flow sheet indicating waste repository disposal procedures.

(iv) For the planned timing of the alterations described in Subparagraph (v) of Paragraph 2 of Article 51-2 of the Law, each timing shall be made for alterations or discontinuance of the peripheral monitoring area established according to the decay of radioactivity and measures to be taken provided in Article 17 respectively shall be described; and

(v) For the construction plan described in Subparagraph (vi) of Paragraph 2 of Article 51-2 of the Law, the construction sequence and schedule of the waste disposal facility shall be described.

2. Business plans and other documents to be attached to the application described in the preceding paragraph and as provided by the Ordinance of METI, provided in Paragraph 2 of Article 13-8 of the Ordinance for the Enforcement of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (hereinafter referred to as "the Ordinance") shall be as described in the following subparagraphs:

(i) Business plans describing the following items:

- A. Planned starting date of the waste repository business;
- B. Receiving plans and planned waste repository disposal quantities of radioactive wastes by business years after the year including the starting date of the waste repository business;
- C. Financial plans and estimated balance of the business; and
- D. Other items that explain clearly the soundness of financial position enough for the waste repository business.

(ii) The expository documents related to the technical capability for the waste repository disposal describing the following items:

- A. The summary of waste repository disposal methods based on patent rights and other rights of technologies or special technologies, or other corresponding equivalents;
- B. The personal history of main engineers; and
- C. Other items related to the technical capability for the waste repository disposal.

(iii) Expository documents on the meteorological, ground, hydraulic, seismic, social environment and other conditions of the location where the waste disposal facility is to be installed;

(iv) A 1:50,000 map for the area covering the distance of 5 km from the center of the location where the

waste disposal facility is to be installed;

(v) Expository documents related to the safety design of the waste disposal facility (including layout drawings of main equipment);

(vi) Expository documents related to the management of the radiation exposure to be caused by nuclear fuel materials, and to the disposal of the radioactive waste;

(vii) Expository documents related to the types, levels, impacts, etc. of waste disposal facility accidents to be assumed to occur in the event of operational error of the waste disposal facility, of the failure of the machinery or devices, or by the flood, earthquake, fire, etc.;

(viii) When the business is carried on actually, expository documents on the outline of the business; and

(ix) In the case of a juridical person, the articles of association or the endowment, names and the personal history of the directors of the board, the abridged copies of the register and the recent inventory, balance sheet and profit and loss statement.

3. The number of submission of the application described in Paragraph 1 shall be one original and two duplicates.

(License Application for Alterations)

Article 3. The license application for alterations provided in Paragraph 2 of Article 13-11 of the Ordinance, shall be described in accordance with the following subparagraphs:

(i) For the matters of alteration defined in Subparagraph (iii) of Article 13-11 of the Ordinance, in the case of alteration of the characteristic and quantity of the nuclear fuel materials etc. described in Subparagraph (iii) of Paragraph 2 of Article 51-2 of the Law, the type and quantity of radioactive wastes for waste repository disposal and the maximum radioactivity concentration and the total amount of radioactivity for each type of radioactive materials contained in the radioactive waste to be disposed of in the waste disposal facility, in the case of alteration of the location, structure and equipment of the waste disposal facility defined in Subparagraph (iv) of Paragraph 2 of Article 51-2 of the Ordinance, the date of alterations shall be described according to divisions as indicated in the Subparagraph (ii) of Paragraph 1 of the Law, in the case of alteration of the method of disposal defined in Subparagraph (iv) of Paragraph 2 of Article 51-2 of the Law, it shall be described according to divisions as indicated in the Subparagraph (iii) of Paragraph 1 of the preceding article, and in the case of alteration of the planned timing of the alterations defined in Subparagraph (v) of Paragraph 2 of Article 51-2 of the Law, each timing of alterations or discontinuance of the peripheral monitoring area established according to the decay of radioactivity or measures to be taken provided in Article 17; or

(ii) For the construction plan defined in Subparagraph (v) of Article 13-11 of the Ordinance, the construction sequence and schedule shall be described.

2. The application in the preceding paragraph must append the documents described in the following subparagraphs:

(i) Business plans describing the following items:

A. The planned timing of the alteration (in the case of alternation to matters listed in Subparagraph (iv) of Paragraph 2 of Article 51-2 of the Law and when suspend the waste repository business, the planned starting timing of the waste repository business using the waste disposal facility of the alternation concerned);

B. Receiving plans and planned waste repository disposal quantities of radioactive wastes by business years after the year including the date of the alternation (in the case of alternation to matters listed in Subparagraph (iv) of Paragraph 2 of Article 51-2 of the Law and when suspend the waste repository business, the starting date of the waste repository business using the waste disposal facility of the alternation concerned);

C. Financial plans and estimated balance of the business after the alternation; and

D. Other items that explain clearly the soundness of financial position enough for the waste repository business.

(ii) The expository documents related to the technical capability for the waste repository disposal concerned to the alternation describing the following items:

A. Patent rights and other rights of technologies, or waste repository disposal methods based on special technologies, or summary corresponding to those concerned to the alternation;

B. Personal histories of main engineers concerned to the alternation; and

C. Other items related to the technical capability for the waste repository disposal after the alternation.

(iii) Expository documents concerning the condition of the meteorological, ground, hydraulic, seismic, social environmental and other conditions of the location of the waste disposal facility concerned to the alteration;

(iv) A 1:50,000 map for the area covering the distance of 5 km from the center of the location where the waste disposal facility concerned to the alteration is to be installed;

(v) Expository documents related to the safety design of the waste disposal facility after the alteration (including layout drawings of main equipments);

(vi) Expository documents related to the management of the radiation exposure to be caused by nuclear fuel materials etc. and to the disposal of the radioactive waste; and

(vii) Expository documents related to the types, levels, impacts, etc. of waste disposal facility accidents to be assumed to occur in the event of operational error of the waste disposal facility, of the failure of the machinery or devices, or by the flood, earthquake, fire, etc after the alteration.

3. The number of submission of the application described in Paragraph 1 shall be one original and two duplicates.

(Application for Safety Verification of Waste Repository Disposal concerning the Waste Disposal facility etc.)

Article 4. Any person who intends to obtain the safety verification concerning the waste disposal facility, as provided in Paragraph 1 of Article 51-6 of the Law, shall submit an application of in the Form No. 1 as provided separately, with the documents indicated in the following subparagraphs to the Minister of METI:

(i) Design drawings, structure drawings, and design calculation reports of the waste disposal facility concerned, and for the waste disposal facility, documents and drawings to clarify the situation of geographical feature, geology, and underground water in the place of the waste disposal facility concerned;

(ii) Sketch drawings in the vicinity of the waste disposal facility concerned, and

(iii) Construction schedules and for the waste disposal facility, documents indicating the plan of waste repository disposal.

2. The number of submission of the application described in the preceding paragraph shall be one original and two duplicates.

(Implementation of Safety Confirmatin of Waste Repository Disposal concerning the Waste Disposal facility etc.)

Article 5. The safety verification of waste repository disposal provided in Paragraph 1 of Article 51-6 of the Law shall be implemented on the indicated items of the following subparagraphs at the time provided in the said subparagraphs:

(i) Items for assembling of the waste disposal facility other than the radiation management facility; when dimensional measurement of main parts of each facility can be performed;

(ii) Items for assembling of the radiation management facility; when the facility is completed; and

(iii) Items other than those items described in the preceding two subparagraphs, when the waste disposal facility is backfilled, and when the Minister of METI recognizes appropriate.

(Technical Standards for Waste Disposal Facilities etc.)

Article 6. Technical standards provided in Paragraph 1 of Article 51-6 of the Law (hereinafter referred to as "technical standards for waste disposal facilities etc."), shall be as described in the following subparagraphs:

(i) The total amount of the radioactivity for each type of radioactive materials contained in the radioactive waste to be emplaced at the place of business where the waste disposal facility is constructed shall not exceed the total amount of radioactivity for each type of radioactive materials indicated on the application concerning the license as provided in the provisions of Paragraph 1 of Article 51-2 of the Law or Paragraph 1 of Article 51-5 of the Law, and the document which describe the conditions required for the license as provided in the provision of Paragraph 1 of Article 62 of the Law ("referred to as "the application etc.", hereinafter in this article and Article 8);

(ii) Before starting waste repository disposal, the stagnant water at the places for disposal in the waste disposal facility (when the waste disposal facility is demarcated with internal partition equipment of Subparagraph (iii) of the following article, the demarked area for the waste repository disposal, the same, hereinafter in this subparagraph) shall be removed, and measures shall be taken to prevent the infiltration of rain water etc. into the places concerned;

(iii) In the case of waste repository disposal of non-solidified concrete etc. described in Subparagraph (iii) of Paragraph 1 of Article 7, measures shall be taken to prevent the scattering of radioactive materials when there is a possibility that the materials may disperse out of the waste disposal facility;

(iv) The waste disposal facility shall be taken measures by filling up with the soil etc., so that a void does not remain after waste repository disposal is completed in the waste disposal facility concerned;

(v) Explosive materials, materials that corrode other materials remarkably, and other hazardous substances shall not be disposed of in the waste disposal facility;

(vi) The waste disposal facility where the disposal is completed, the surface shall be covered with the soil which permeability is not large compared with the surrounding soil of the waste disposal facility concerned, so that the disposed materials and the equipment installed in the waste disposal facility does not expose easily; and

(vii) Waste disposal facilities shall have the structure and equipment described in the application etc. other than those provided in the preceding subparagraphs.

2. In case where waste repository disposal is carry out by the method of installing an artificial barrier structure based on the description of an application etc., technical standards for the waste disposal facilities etc. shall be as described in the following subparagraphs, in addition to those provided in the preceding paragraphs:

(i) It shall be constructed following the methods provided by the Minister of METI for the prevention of radiation hazards;

- (ii) The artificial barrier structure shall be in conformity with the following requirements;
 - A. The structure shall be safe from the view point of yield strength against the self weight, earth pressure, seismic force, etc.; and
 - B. The measure shall be taken for the effective corrosion prevention to the quality of the surface water, underground water, and the soil.

(iii) The waste disposal facility, which area of opening exceeds 50 square meters or which disposal volume exceeds 250 cubic meters, shall be in conformity with the requirements of the preceding article, and for the prevention of radiation hazards, the place shall be demarcated so that one demarcated area shall not exceed about 50 square meters or one demarcated disposal volume exceed about 250 cubic meters by a method applied with the internal partition equipment provided by the Minister of METI;

(iv) When the waste repository disposal is carried out, the artificial barrier structure and the internal partition equipment described in Subparagraph (iii) shall be inspected at any time, and when there is a possibility of destruction of these equipments or leak of radioactive materials, required measures shall be taken to prevent destruction of these equipments, or leak of radioactive materials; and

(iii) Waste disposal facility where the waste repository disposal is completed, or where the place is demarcated by the internal partition equipment described in Subparagraph (iii), the demarcated area where the disposal is completed, shall be covered by the method provided by the Minister of METI for the prevention of radiation hazards as provided in Subparagraph (vi) of the preceding article, soon before covering with the soil.

3. Technical standards for waste disposal facilities etc., in the case of waste repository disposal of those radioactive wastes described in each subparagraph of Paragraph 1 of the following article (hereinafter referred to as "radioactive waste materials etc."), at a waste disposal facility based on the description of an application etc. by a method of solidification into one piece, shall be specified under the following subparagraphs in addition to those provided in Paragraph 1:

(i) It shall be constructed following the methods provided by the Minister of METI for the prevention of radiation hazards; and

(ii) Radioactive waste materials etc. solidified in one piece shall be in conformity with the requirements described in Subparagraph (ii) of the preceding Paragraph, and the volume shall not exceed about 500 cubic meters,

(Application for Safety Verification of Waste Repository Disposal Concerning Radioactive Waste Form etc.)

Article 7. Any person, who wishes to obtain the safety verification of waste repository disposal (excluding what the Designated Organization for Safety Verification of Waste Disposal performs) as provided in the provisions of Paragraph 2 of Article 51-6 of the Law, shall submit an application described in each subparagraph concerned to the Minister of METI according to the division of the radioactive waste falling under any of the following subparagraphs:

(i) Materials falling under Item A of Subparagraph (i) or Subparagraph (ii) of the table of Paragraph 1 of Article 13-9 of the Ordinance (hereinafter referred to as "radioactive waste form"): An application in the Form No. 2, as provided separately;

(ii) Materials falling under Item B of Subparagraph (i) of the table of Paragraph 1 of Article 13-9 of the Ordinance (hereinafter referred to as "large-sized metal radioactive waste form"): An application in the Form No. 3, as provided separately; and

(iii) Materials falling under Subparagraph (iii) or Subparagraph (iv) of the table of Paragraph 1 of Article 13-9 of the Ordinance (hereinafter referred to as "non-solidified concrete waste"): An application in the Form No. 4, as provided separately.

2. The application under each subparagraph of the preceding paragraph shall be attached with, for the waste repository disposal of radioactive waste form, the documents described in the Subparagraph (i) through Subparagraph (iii), Subparagraph (v), and Subparagraph (vi), for the waste repository disposal of large-sized metal radioactive waste form, the documents described in Subparagraph (i), the Subparagraph (iv) through Subparagraph (vi), for the repository disposal of wastes, such as non-solidified concrete waste, the documents described in Subparagraphs (i) and Subparagraph (v):

(i) The expository documents related to radioactive wastes to be emplaced;

(ii) The expository documents related to mechanical strength and sealing performance of containers for solidifying radioactive wastes;

(iii) The expository documents related to the quality of solidifying material;

(iv) The expository documents related to the details of processing method provided by Paragraph 3 of the following article as the Minister of METI shall describe

(v) The expository documents related to the methods for the radioactivity concentration measurement or determination etc. of radioactive wastes; and

(vi) The expository documents related to the method for mechanical strength measurement or determination etc. of radioactive waste form or large-sized metal radioactive waste form concerning the provisions of Subparagraph (v) of Paragraph 2 (including the case where it is applied with necessary modification concerning Paragraph 3 of the said Article) of the following article, and the results of the

mechanical strength.

3. The number of submission of the application described in Paragraph 1 shall be one original and two duplicates.

4. Any person, who wishes to obtain the safety verification of Paragraph 2 of Article 51-6 of the Law, shall submit an application to the Designated Organization for Safety Verification of Waste Disposal with the form that is approved by the Minister of METI.

(Technical Standards for Radioactive Waste Form etc.)

Article 8. Technical standards specified in Paragraph 2 of Article 51-6 of the Law shall be as provided in the following paragraph through Paragraph 4.

2. Technical standards of radioactive waste form shall be as described in the following subparagraphs:

(i) For the prevention of radiation hazards, radioactive wastes shall be solidified in the container using the methods provided by the Minister of METI;

(ii) The radioactivity concentration shall not exceed the maximum radioactivity concentration indicated in the application etc.;

(iii) The density of radioactive materials on the surface shall not exceed one tenth of the surface density limit specified in Item C of Paragraph 1 of Article 14;

(iv) Any materials with a possibility of spoiling the integrity of radioactive waste materials as designated by the Minister of METI shall not be contained;

(v) It shall have enough strength to bear the potential load that may be extended during waste repository disposal;

(vi) There shall be no marked damage; and

(vii) Waste form etc. shall be labelled with tag indicating the radioactive waste, tag indicating surface dose is exceeding the level designated by the Minister of METI if necessary, tag with serial number identifying the waste form as provided by Subparagraph (i) of Paragraph 1 of the preceding Article. These tag should use the method which does not disappear easily, and be marked at visible spot

3. The provisions of Subparagraph (ii) through Subparagraph (vii) of the preceding paragraph shall be applied as technical standards for large-sized metal radioactive waste form with necessary modifications, and the openings shall be treated by sealing or by other methods as provided by the Minister of METI for the prevention of radiation hazards. In this case, the wording "radioactive waste form" in Subparagraph (iv) and Subparagraph (vii) of Paragraph 4 of the said article shall be construed to mean "Large-sized metal radioactive waste form and the wording "Subparagraph (i) of Paragraph 1 of the preceding article" in the Subparagraph (vii) of the said paragraph to mean "Subparagraph (ii) of Paragraph 1 of the preceding article".

4. The provisions of Subparagraph (ii) of Paragraph 2 shall be applied as technical standards to wastes, such as non-solidified concrete waste with necessary modifications and the wastes shall be as described in the following subparagraphs:

(i) An explosive material shall not be included; and

(ii) The measure to compare with items described in the application corresponding to Subparagraph (iii) of Paragraph 1 of the preceding article shall be taken for the non-solidified concrete waste.

(Issuance of a Safety Verification Certification)

Article 9. The Minister of METI or the Designated Organization for Safety Verification of Waste Disposal shall issue a Safety Verification Certification when the Minister has implemented Safety Verification provided in the Article 51-6 of the Law.

(Application for Merger Approval)

Article 10. Any person, who wishes to obtain a merger approval provided in Paragraph 1 of Article 51-12 of the Law, shall submit an application which indicate items falling under any of the following subparagraphs with joint signs of the concerned persons to the Minister of METI:

(i) The name and the address and, the name of its representative;

(ii) The name and the address of the place of the waste repository business;

(iii) The name and the address and, the name of its representative of the juridical person who is to continue to exist after the merger, or the juridical person who has been established by the merger;

(iv) The method and conditions of the merger;

(v) The method and conditions of the merger;

(v) The reason of the merger; and

(vi) The date of the merger.

2. The documents falling under any of the following subparagraphs shall be attached to the application of the preceding paragraph:

(vii) Other items which explain clearly the soundness of financial position enough for the waste repository business.

(Records)

Article 13. For the record provided in Article 51-15 of the Law, items as listed in the upper column of the following Table (omitted) shall be recorded as listed correspondingly in the middle column of the following

Table for each business place, and shall be preserved for the time period as listed correspondingly in the lower column of the Table.

2. For the record items provided in the preceding paragraph, when those are difficult to measure directly, the said items may be replaced with records which may estimate indirectly the items concerned.

3. The dose equivalent described in Item B and Item C of the Subparagraph (ii) of the Table of Paragraph 1, and the radiation dose described in Item D and Item E of the said subparagraph shall be recorded as provided by the Minister of METI, respectively.

4. When the radiation dose of Item D of Subparagraph (ii) of the Table of Paragraph 1 is recorded, for the record of the exposure by inhalation of the air contaminated with radioactive materials out of the total radiation exposure, the situation of the exposure and the method of measurement shall be indicated collectively.

5. For the preservation period of the record of Item D through Item F of Subparagraph (ii) of the Table of Paragraph 1 shall be time periods until a waste repository business operator hands over the record to the agency designated by the Minister of METI when the person concerning the record is not a person engaged in the radiation work anymore, or when the time period which preserves the record exceeds five years.

6. The waste repository business operator shall submit a copy of the record described in Item D of Subparagraph (ii) of the Table of Article 1 to the person engaged in radiation work concerned to the record when the person leaves the work concerned.

(Access Control to the Controlled Area, etc.)

Article 14. Waste repository business operators shall define the controlled area and the peripheral monitoring area in accordance with the provisions of Paragraph 1 of Article 51-16 of the Law, and shall take measures in the area falling under any of the following subparagraphs. However, this shall not be applied where it is decided in the Safety Preservation Rules that the area is not defined that is approved or approved of alternation as provided in Paragraph 1 of Article 51-18 of the Law:

(i) The following measures shall be taken for the controlled area:

- A. It shall be demarcated with demarcating structures, such as walls or fences and shall be marked to distinguish from other places clearly, and measures shall be taken to control the access of people and entry keys according to the degree of danger, such as the radiation;
- B. Eating, drinking and smoking shall be forbidden in the area with a possibility for ingestion of radioactive materials;
- C. The density of surface radioactive materials on floors, walls, or other places with a possibility to be touched and contaminated with radioactive materials shall not exceed the surface density limits provided by the Minister of METI; and
- D. When people leaves from a controlled area or when goods are going to be carried out, the density of surface radioactive materials of wears such as clothes, footwear, etc. and the goods (when the goods are in containers or forms, the container or packaging) to be carried out shall not exceed one tenth of the surface density limits of Item C.

(ii) The following measures shall be taken for the peripheral monitoring area:

- A. Habitation of people shall be forbidden; and
- B. The boundary of the peripheral monitoring area shall be marked to limit the access to the area of people other than those who enter on business, by methods, such as fencing or marking. However this shall not be applied where it is clear that there is no possibility that people enter into the area concerned.

(Measures for Radiation Doses etc)

Article 15. Waste repository business operators shall take the measures for radiation doses etc. of the persons engaged in radiation work, falling under any of the following subparagraphs in accordance with the provisions of Paragraph 1 of Article 51-16 of the Law:

(i) Radiation doses of a person engaged in radiation work shall not exceed the dose limits provided by the Minister of METI; and

(ii) The concentration of radioactive materials in the air, of which persons engaged in radiation work breathes, shall not exceed the dose limits provided by the Minister of METI.

2. Irrespective of provisions of the foregoing paragraph, when unavoidable emergency situation, such as occurrence or possibility of occurrence of an emergency arises in the waste repository disposal, etc., persons engaged in radiation work, (for women, those who are diagnosed as pregnancy being impossible and those who offered the waste repository business operator by letter of a principle of no intention of pregnancy) may be engaged in the emergency work within the limits not exceeding the dose limits provided by the Minister of METI.

(Patrol and Inspection of Waste Disposal Facilities)

Article 16. In accordance with the provisions of Paragraph 1 of Article 51-16 of the Law, waste repository business operators shall make those who are engaged in the preservation of the waste disposal facility carry out patrol and inspection of the waste disposal facility once or more times every week as provided in the Safety Preservation Rules that is approved or approved of alteration provided in paragraph 1 of Article 51-18 of the Law.

(Preservation of Waste Disposal facility)

Article 17. In accordance with the provisions of Paragraph 1 of Article 51-16 of the Law, a waste repository business operator shall take the measures falling under any of the following subparagraphs in relation with preservation of the waste disposal facility where the waste repository disposal (emplacement) has been completed. However, this shall not be applied where it is decided in the Safety Preservation Rules that are approved or approved of alternation in accordance with the provision of Paragraph 1 of Article 51-18 of the Law, so that the measures as provided in the provisions of Subparagraph (i) and Subparagraph (ii) are not taken:

(i) When waste repository disposal is carried out by the method provided in Paragraph 2 or Paragraph 3 of Article 6, the leak of radioactive materials out of artificial barrier structures or radioactive waste materials etc. solidified in one piece shall be monitored, and when it is confirmed that there is a leak, repair of the artificial barrier structures and other necessary measures shall be taken to prevent a leak of radioactive materials promptly;

(ii) A repository preservation area shall be defined and the repository preservation area concerned shall be marked to distinguish from other places clearly, and measures for preserving the conditions of the waste disposal facility at the time of definition (excluding measures of the preceding subparagraph) shall be taken; and

(iii) In waste disposal facility, bulletin boards and other equipment shall be installed to display that it is a waste disposal facility and other items provided by the Minister of METI, kept in the legible conditions always, and rewritten promptly when change of items to be displayed occurs.

(Transportation within Business Places)

Article 18. In accordance with the provisions of Paragraph 1 of Article 51-16 of the Law, waste repository business operators shall take the measures falling under any of the following subparagraphs in relation with transportation of nuclear fuel materials within business places where waste disposal facilities are established:

(i) When nuclear fuel materials etc. are transported, they shall be enclosed in containers. However, this shall not be applied in any of the following cases:

A. When materials contaminated with nuclear fuel materials (restricted to materials of which concentration of radioactivity is not exceeding the limits provided by the Minister of METI) are transported with measures for the prevention of leak and scattering of radioactive materials and other hazards, provided by the Minister of METI; or

B. When materials, such as large mechanical equipment etc. contaminated with nuclear fuel materials and difficult to transport being enclosed in containers, are transported with measures for the prevention of hazards approved by the Minister of METI.

(ii) Containers described in the preceding subparagraph shall be in conformity with the following standards:

A. Dimension of each side of a rectangular parallelepiped circumscribing the container concerned is 10cm or more; and

B. It can be dealt with easily and safely, and there is no possibility of occurrence of cracks, damages, etc. by change of temperature and/or internal pressure, vibration, etc. expected during transportation.

(iii) The dose equivalent rate at the surface and 1m distance from the surface of the container which enclosed nuclear fuel materials etc. (when materials contaminated with nuclear fuel materials are transported without enclosing with a container in accordance with the provisions of the proviso of Subparagraph (i) described in Item A or Item B of the said subparagraph, materials contaminated with nuclear fuel materials concerned, hereinafter referred to as "transportation materials", or the vehicles, or other machines or instruments that transport nuclear fuel materials etc. (hereinafter referred to as "transportation equipment"), shall not exceed the dose equivalent rate provided by the Minister of METI, and the density of the radioactive material of the surface of the transportation materials shall not exceed one tenth of the surface density limits described in Item C of Subparagraph (i) of Article 14;

(iv) Transportation materials shall be loaded on the transportation equipment not to move, tumble, or fall during transportation,

(v) Nuclear fuel materials etc. shall not be loaded together with hazardous materials provided by the Minister of METI on the same transportation equipment;

(vi) In the transportation route of transportation materials, persons other than those who are engaged in the transportation or vehicles other than the vehicles used for the transportation shall be limited to enter into by methods such as providing marks and watch persons;

(vii) When transportation materials are transported with vehicles, the vehicles concerned shall run slowly, and when the transportation route is long, other vehicles shall accompany for safety preservation;

(viii) Those who have considerable knowledge and considerable experience of handling of nuclear fuel materials etc. shall accompany to superintend for safety preservation as necessary; and

(ix) Marks provided by the Minister of METI shall be attached to the appropriate place of transportation materials and the vehicles for transportation of the materials.

(Waste management in Business Places)

Article 19. In accordance with the provisions of Paragraph 1 of Article 51-16 of the Law, waste repository business operators shall take the measures falling under any of the following subparagraphs in relation with waste management of radioactive wastes carried out in the place of business where waste disposal facilities are installed:

(i) Waste management of radioactive waste shall be carried out under supervision of those who have knowledge required for waste management and radiation protection for waste management, and make those who are engaged in waste management works wear working clothes etc. at the waste management work;

(ii) When persons other than those who are engaged in the waste management work of radioactive waste into a waste management facility during the waste management activity of radioactive wastes, the persons shall follow the instructions of those who are engaged in the waste management work;

(iii) Gaseous wastes shall be disposed of by any of the following methods:

A. Discharge through ventilation facilities; or

B. Retain in a gaseous waste storage tank that is effective for the prevention of radiation hazards, and store.

(vi) When discharging by the method of the preceding Item A, the concentration of radioactive materials under ventilation shall be controlled as low as possible by filtering, decay radioactivity, dilution with a lot of air, etc. at the ventilation facilities. In this case, the concentration of radioactive materials in the air at the ventilation port, or at the exhaust monitoring equipment shall be monitored, so as not to exceed the concentration limits provided by the Minister of METI at outside boundary of peripheral monitoring area;

(v) Liquid wastes shall be disposed of by any of the following methods:

A. Discharge through discharge facilities;

B. Store in a liquid waste storage tank that is effective for the prevention of radiation hazards, and stored;

C. Enclose in a container or solidify in a container, and store in a storage facility that is effective for the prevention of radiation hazards;

D. Incinerate by an incineration facility that is effective for the prevention of radiation hazards

E. Solidify by a solidifying facility that is effective for the prevention of radiation hazards; or

F. Waste repository disposal in a waste disposal facility in accordance with the technical standards provided in Article 6 and Article 8.

(vi) When disposing by the method of the preceding Item A, the concentration of radioactive materials under discharge shall be made as low as possible by filtering, evaporation, adsorption by a ion exchange resin method etc., decay radioactivity, dilution by plenty of water, and other methods at the discharge facility. In this case, the concentration of radioactive materials in the underwater at the discharge port, or at the discharge water monitoring equipment, so as not to exceed the concentration limits at outside boundary of peripheral monitoring area provided by the Minister of METI;

(vii) When disposing by the method of Item C of Subparagraph (v), and when enclosing radioactive wastes in a container, the container concerned shall be in conformity with the following standards:

A. The structure shall have low permeability, corrosion resistant and low leakage of radioactive wastes;

B. There shall be no possibility of crack or damage; and

C. The lid of the container shall not be taken off easily.

(viii) When disposing by the method of Item C of Subparagraph (v), and when solidifying radioactive wastes in a container, the container used for solidifying the radioactive wastes shall be protective against dispersion or leakage of the radioactive waste;

(ix) When disposing by the method of Item C of Subparagraph (v), and when storing in a storage facility that is capable of prevention of radiation hazards, the following items shall be subjected:

A. When radioactive wastes are enclosed in a container, and are stored, the container concerned shall be wrapped with materials which are capable to absorb all of the enclosed radioactive wastes, or provided with a saucer which is capable to accommodate all of the wastes, when a crack or a damage arises to prevent spread of the contamination;

B. The container in which radioactive wastes were enclosed or solidified, shall be attached with marks that shows that the content is radioactive wastes, and a serial number corresponding to the radioactive waste whose recorded content based on the provisions of Article 13 shall be displayed to compare; and

C. Post up notes for administration and control of the disposal facility concerned in the place easily visible.

(x) When disposing by the method of Item F of Subparagraph (v), the concentration of radioactive materials in the underwater at the boundary of the outside of an peripheral monitoring area shall be controlled not to exceed the concentration limits of Subparagraph (vi) by monitoring the concentration of radioactive materials in the underwater of the peripheral monitoring area at the underwater monitoring facility; and

(xi) Solid wastes shall be processed and stored of by any of the following methods:

- A. Incinerate by an incineration facility that is effective for the prevention of radiation hazards;
- B. Enclose in a container or solidify in a container, and store in a storage facility that is effective for the prevention of radiation hazards, and dispose;
- C. Radioactive waste such as a large machine, which is very difficult to process by the method of Item B, shall be stored in a storage facility that is effective for the prevention of radiation hazards, and dispose; or
- D. Waste repository disposal in a waste disposal facility in accordance with the technical standards provided in Article 6 and Article 8.

(Safety Preservation Rules)

Article 20. Any person who wishes to obtain the approval of the Safety Preservation Rules as provided in Paragraph 1 of Article 51-16 of the Law, shall define the items falling under any of the following subparagraphs of the Safety Preservation Rules for every place of business for the approval, and shall submit the application describing the Safety Preservation Rules to the Minister of METI:

- (i) Matters concerning the duty assignment and organization of persons engaged in the management of the waste disposal facility;
- (ii) Matters concerning the safety preservation education to persons engaged in radiation work as follows:
 - A. Matters concerning implementation plans of a safety preservation education (including planning of an implementation plan);
 - B. Matters concerning the content of the safety preservation education are as follows:
 - (1) Matters concerning the relevant legislation and regulations, and Safety Preservation Rules;
 - (2) Matters concerning structures, performances, and operation of the waste disposal facility;
 - (3) Matters concerning the radiation management;
 - (4) Matters concerning the handling of nuclear fuel materials and the materials contaminated with nuclear fuel materials; and
 - (5) Matters concerning the measures that should be taken in the case of emergency.
 - C. Other matters necessary to the safety preservation education of the waste disposal facility.
- (iii) Matters concerning the measures that shall be taken for safety preservation of waste repository disposal according to the decay of radioactivity;
- (iv) Matters concerning the establishment of a controlled area, an peripheral monitoring area, and a repository preservation area, and entry restriction into these areas, etc.;
- (v) Matters concerning the ventilation monitoring facility and the discharge monitoring facility;
- (vi) Matters concerning the radiation doses, dose equivalents, concentrations of radioactive materials and density of radioactive materials on the surface of materials contaminated with radioactive materials, and decontamination;
- (vii) Matters concerning the administration and control of radiation measuring instruments, and methods of radiation measurement;
- (viii) Matters concerning patrols, inspections, and the measures accompanying these activities of a waste disposal facility;
- (ix) Matters concerning receiving, transportation, disposal and other handling activities of radioactive wastes;
- (x) Matters concerning the measures that should be taken in the case of emergency;
- (xi) Matters concerning the record concerning safety preservation (including conformity situation of safety preservation rules) of a waste disposal facility; and
- (xii) Other matters necessary to the safety preservation of a waste disposal facility.

2. The number of submission for the application described in the preceding paragraph shall be one original and two duplicates.

(Inspection of Conformity Situation of the Safety Preservation Rules)

Article 20-2. The inspection provided in Paragraph 6 of Article 51-18 of the Law shall be carried out four times every year.

2. The items provided by the Ordinance of METI of Paragraph 6 of Article 12 of the Law, to be applied with necessary modifications for Paragraph 7 of Article 51-18 of the Law, shall be as follows:

- (i) Entry to an office, a factory, or a place of business;
- (ii) Inspection of books, documents, facilities, the equipment, and other necessary materials;
- (iii) Questions to workers and other persons concerned; and
- (iv) Submittal of samples necessary of nuclear source materials, nuclear fuel materials, and materials contaminated with nuclear fuel materials (limited to the minimum quantity necessary for testing).

(License Application for Transfer of Waste Disposal facility)

Article 21. The entries in the application for the license for transfer provided in Article 13-15 of the Ordinance shall be made in accordance with the following subparagraphs:

- (i) The characteristic and quantity of the nuclear fuel materials etc. described in Subparagraph (iv) of Article 13-15 of the Ordinance, the type and quantity of the radioactive waste for the waste repository disposal, and the maximum radioactivity concentration and the total amount of radioactivity for each type of radioactive materials contained in the concerned radioactive waste shall be described;

(ii) The location, structure and equipment of the waste disposal facility and the methods of disposal described in Subparagraph (v) of Article 13-15 of the Ordinance shall be described in accordance with the divisions provided in Subparagraph (ii) and Subparagraph (iii) of Paragraph 1 of Article 2; and
(iii) The planned time of alterations described in Subparagraph (vi) of Article 13-15 of the Ordinance, the time of alteration or discontinuance of the peripheral monitoring area according to the decay of radioactivity or the measures provided in Article 17 shall be described, respectively.

2. The application described in the preceding paragraph shall be attached with the documents indicated in the following subparagraphs:

(i) The business plan containing the following items:

- A. Planned starting time of the waste repository disposal business;
- B. Receiving plans and planned waste repository disposal quantities of radioactive wastes by business years on and after the year including the starting date of the waste repository business;
- C. Financial plans and estimated balance of the business; and
- D. Other items which explain sound financial position clearly enough for the waste repository business.

(ii) The expository documents related to the technical capability for the waste repository disposal containing the following items:

- A. The summary of waste repository disposal methods based on patent rights and other rights of technologies or special technologies, or other corresponding equivalents;
- B. The personal history of main engineers; and
- C. Other items related to the technical capability for the waste repository disposal

(iii) The expository documents related to the safety design of the waste disposal facility (including the layout drawings of main equipment);

(iv) The expository documents related to the management of the radiation exposure to be caused by nuclear fuel materials etc. and the disposal of radioactive wastes;

(v) Expository documents related to the types, levels, impacts, etc. of waste disposal facility accidents to be assumed to occur in the event of operational error in the waste disposal facility, the failures of the machinery or devices, flood, earthquake and fire, etc.; and

(vi) When business is carried on actually, expository documents on the outline of the business.

(Appointment of Chief Engineers of Radioactive Wastes, etc.)

Article 22. Appointment of the Chief Engineer of Radioactive Wastes provided in Paragraph 1 of Article 51-20 of the Law shall be made for every place of business.

2. The qualification provided by the Ordinance of METI, provided in Paragraph 1 of Article 51-20 of the Law, shall be for those who have the license of the Chief Engineer of Nuclear Fuel Materials described in Paragraph 1 of Article 22-3 of the Law or the license of the Chief Engineer of Reactors described in Paragraph 1 of Article 41 of the Law.

(Measures in an Emergency)

Article 23. In accordance with the provision in Paragraph 1 of Article 64 of the Law, a waste repository business operator shall take the emergency measures provided in the following subparagraphs:

(i) When fire breaks out in the waste disposal facility, or when there is a possibility of fire reaching the waste disposal facility, every effort shall be made to extinguish the fire or to prevent its expansion and, at the same time, the situation shall be reported to the fire authorities;

(ii) When it is possible to transfer nuclear fuel materials to other locations, the materials shall be transferred to a safe location as necessary, and the entry shall be prohibited of persons other than those related by demarcating the periphery of the location with ropes, posts, etc., and by guards;

(iii) When there is a need to prevent the occurrence of radiation hazards, warning shall be made to persons present both within the waste disposal facility and its vicinity to evacuate;

(iv) When contamination with nuclear fuel materials etc. has taken place, its expansion shall be prevented and it shall be removed speedily;

(v) When there are persons who suffer or might suffer from radiation hazards, emergency measures shall be taken such as speedy rescue and evacuation; and

(vi) Other necessary measures shall be taken for the prevention of radiation hazards.

(Notification of Discontinuance of Business)

Article 24. When a waste repository business operator has discontinued his business, in accordance with the provisions of Paragraph 1 of Article 65 of the Law, the operator shall submit the documents containing the items falling under any of the following subparagraphs to the Minister of METI within 30 days after the day of the discontinuance:

(i) The name and the address and, in the case of a juridical person, the name of its representative;

(ii) The name and location of the place of business concerned with the discontinuance;

(iii) The date of the business license obtained;

(iv) The date of the business discontinued; and

(v) The reasons for the discontinuance.

2 The number of submission of the notification provided in the preceding paragraph shall be one original and two duplicates.

(Notification of Dissolution etc.)

Article 25. In the case of dissolution or death of a waste repository business operator, the liquidator, trustee in bankruptcy or the person who administrate the inheritance in the place of the inheritor, in the case of the absence of succession provided in provisions of Paragraph 1 of Article 51-12 of the Law or Paragraph 1 of Article 51-13 of the Law, respectively, in accordance with the provisions of Paragraph 3 of Article 65 of the Law, shall submit the documents containing the items falling under any of the following subparagraphs to the Minister of METI within 30 days after the day of the dissolution or death:

- (i) The name and the address and, in the case of a juridical person, the name of its representative;,
- (ii) The name and location of the place of business concerned with the dissolution or death;
- (iii) The date of the dissolution or death; and
- (iv) The reasons for dissolution.

2 The number of submission of the notification described in the preceding paragraph shall be one original and two duplicates.

(Measures Accompanied with Cancellation of the License etc.)

Article 26. The waste repository business operator whose license is cancelled in accordance with the provisions of Article 51-14 of the Law, the waste repository business operator who has discontinued the business, or in the case of dissolution or death of a waste repository business operator, the liquidator, trustee in bankruptcy or the person who administrate the inheritance for the inheritor in the case of the absence of succession provided in the provisions of Paragraph 1 of Article 51-12 of the Law or Paragraph 1 of Article 51-13 of the Law, in accordance with the provisions of Paragraph 1 of Article 66 of the Law, shall take measures to transfer nuclear fuel materials, to eliminate contamination with nuclear fuel material or to dispose of nuclear fuel materials etc., and shall deliver the radiation management records defined in Article 13 to the agency designated by the Minister of METI.

2. The measures provided in the preceding paragraph shall be taken within 30 days from the day of the revocation of license, the discontinuance of business, or dissolution or death.

3 The number of submission of the report provided in the provisions of Paragraph 3 of Article 66 of the Law shall be one original and two duplicates.

(Collection of Reports)

Article 27. The waste repository business operator shall prepare a report every year of the Form No. 5 as provided separately for every place of business covering the period from April 1 to March 31 of the next year for the annual radiation dose of the radiation workers, and the period from April 1 to September 30 and from October 1 to March 31 of the next year for others, and shall submit the report to the Minister of METI within 30 days after the lapse of the concerned period.

2. The waste repository business operator shall, in the case of coming under any of the following subparagraphs, report the case as such immediately, and the situation and the measures taken within 10 days to the Minister of METI:

- (i) When the nuclear fuel material has been stolen or is missing;
- (ii) When failures (excluding those such that troubles exerted on waste repository disposal are insignificant) have occurred in the waste disposal facilities;
- (iii) In the case of discharge of gaseous radioactive waste through the ventilation facilities, when the concentration of radioactive materials in the atmosphere outside the peripheral monitoring area exceeds the concentration limits specified in Subparagraph (iv) of Article 19;
- (iv) When the concentration of the radioactive material in water in the outer boundary of the peripheral monitoring area exceeds the concentration limits specified in Subparagraph (vi) of Article 19;
- (v) In the case of leakage of nuclear fuel materials etc. within the controlled area, when new measures such as human entry restriction into the leakage-related places and key control have been taken or when the leaked substances have spread outside the controlled area, or when nuclear fuel materials etc. has leaked out of the controlled area;
- (viii) When exposures of radiation workers exceed, or the exposures are possible to exceed the dose limits specified in Subparagraph (i) of Paragraph 1 of Article 15; or
- (viii) In addition to the preceding subparagraphs, when a human hazard at the waste disposal facility (excluding insignificant and non-radiation hazard) has occurred or is possible to occur.

(3) The Rule for Waste Management of Nuclear Fuel Materials etc. Outside of the Factory or Premises (Excerpt)

(Ordinance No. 56 of the Prime Minister's Office, December 28, 1978)

(Latest Revision: Ordinance No. 1 of the MEXT, METI and MLIT, March 17, 2003)

(Definition)

Article 1. In this ordinance, the meaning of terms falling under any of the following subparagraphs shall be as defined in the following respective subparagraphs concerned:

(i) Radioactive waste; Nuclear fuel materials or materials contaminated with nuclear fuel materials which is in the line of disposal; (*For disposal see Subparagraph (ii) of First Paragraph of Article 51-2 of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (hereinafter referred to as the "Law")*),

(ii) Waste management /disposal facility; The waste disposal facility and waste management equipments defined in Subparagraph (ii) Paragraph 2 of Article 51-2 of "Law", the waste management facilities defined in Subparagraph (ix) of Paragraph 2 of Article 52 of the Law, and the waste management facilities which are the associated facility of refining facilities defined in Subparagraph (ii) of Paragraph 2 of Article 3 of the Law, the associated facilities of fabrication facilities defined in Subparagraph (ii) of Paragraph 2 of Article 13 of the Law, the associated facilities of a nuclear reactor defined in Subparagraph (v) of Paragraph 2 of Article 23 of the Law (including the facilities concerning the foreign nuclear ship defined in Paragraph 1 of Article 23-2 of the Law), associated facilities of spent fuel storage facilities defined in Subparagraph (ii) of Paragraph 2 of Article 43-4 of the Law, and the associated facilities of reprocessing facilities defined in Subparagraph (ii) of Paragraph 2 of Article 44 of the Law,

(iii) Record; (omitted, means records defined in Article 13. of rules on waste disposal facility under the Law); and

(iv) Radiation; Radiation specified in Paragraph 5 of Article 3 of the Nuclear energy Basic Law or electron beams or X-rays of energy less than one mega electron volt (eV) other than the natural radiation.

(Measures Necessary for Safety Preservation, etc.)

Article 2. In accordance with the provisions of Paragraph 1 of Article 58-2 of the Law, users, refining business operators, fabrication business operators, reactor establishers, operators of foreign nuclear vessel, spent fuel storage business operator, reprocessing business operators, and radioisotope disposal operators (hereinafter referred to as "users etc.") shall take the measures falling under any of the following subparagraphs for radioactive wastes management performed out-side of use facilities, refining facilities, fabrication facilities, reactor facilities, spent fuel storage facilities, reprocessing facilities or waste disposal facilities, or the factory or place of business which installed the disposal facilities (including nuclear ships, the same, hereinafter):

(i) Radioactive waste, excluding the case provided in Subparagraph (iii), shall be disposed of in waste management /disposal facility that is effective for the prevention of radiation hazards;

(ii) When radioactive wastes are managed in accordance with the provisions of the preceding subparagraph, the copy of the records of the radioactive wastes concerned shall be issued to the user who installed the waste management /disposal facility concerned;

(iii) When users, refining business operators, fabrication business operators, reactor establishers, spent fuel storage business operator, reprocessing business operators, who have imported radioactive wastes, wish to manage the radioactive wastes concerned (including the container defined in Item A of the following subparagraph, and hereinafter referred to as "imported wastes"), they shall be managed in the waste management equipment (referred to as the waste management equipment defined in Subparagraph (ii) of Paragraph 2 of Article 51-2 of the Law for management defined in Subparagraph (i) of Article 13 of the Ordinance for the Enforcement of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors, the same, hereinafter), taking the measures necessary for safety preservation falling under the following subparagraph to Subparagraph (vi);

(iv) The imported wastes shall be in conformity with the following standards:

A. Those shall be as solidified in a container for the prevention of radiation hazards;

B. Types (including dimension, weight, strength, and generating power, the same in Item D of the following subparagraph) and quantity shall be those as manageable by the waste management equipment concerned;

C. The radioactivity concentration for each type of radioactive materials shall be controllable by the waste management equipment concerned;

D. The radioactive material shall be those as not disperse or leak easily; and

E. There shall be no severe damage.

(v) When imported wastes are managed at a waste management equipment, the documents concerned with the imported waste as described in the following items shall be developed, and shall be issued to the waste management business operator who has installed the concerned waste management equipment:

A. The method of solidification;

B. The name and the address and, in the case of a juridical person, the name of its representative, who

- has solidified the wastes;
 - C. The name and the location of factory or place of business concerned with the solidification;
 - D. Types and quantities; and
 - E. The radioactivity concentration for each type of radioactive material.
- (vi) A reference number shall be displayed at the easily visible place of the imported wastes using a method that does not disappear easily for comparison with the items described in the document of the preceding subparagraph; and
- (vii) The radiation dose of those who are engaged in disposal works shall not exceed the dose limits specified by the competent minister (the minister provided in each of the subparagraphs concerned according to the division of users etc. falling under the each subparagraphs of Paragraph 1 of Article 58-2 of the Law, the same, hereinafter).
2. When the items, which must be described in the documents in accordance with the provisions of Subparagraph (v) of the preceding paragraph, are recorded in electromagnetic methods (an electronic method, a magnetic method, and other methods which cannot be recognized by the consciousness of human-beings), and when the records concerned are issued in a form possible to be displayed immediately as necessary using the equipment such as a computer, the issue of the record concerned may be replaceable with the issue of documents describing the items concerned as provided in the said subparagraph.

(Application for Verification)

Article 3. Any person, who intends to obtain the safety verification (excluding cases that the designated safety verification organization provides) concerning the waste management as provided in Paragraph 2 of Article 58-2 of the Law (including the case to apply with necessary modification as provided in Paragraph 2 of Article 66 of the Law, the same, hereinafter), shall submit an application of Form No. 1 as provided separately with the documents indicated in the following subparagraphs to the competent minister:

- (i) The detailed expository documents of the imported wastes;
- (ii) The detailed expository documents of the method of solidification concerning the imported wastes;
- (iii) The expository documents of the method by which the strength of the imported wastes is determined;
- (iv) The expository documents of the method by which the generating power of the imported wastes is determined;
- (v) The expository documents of the method by which the radioactivity concentration of the imported wastes is determined;
- (vi) The expository documents of the containment of radioactive materials concerning the imported wastes; and
- (vii) The expository documents for the disposal equipment that is intended to use for the management of the imported wastes.

2. The number of submission of the application for the safety verification described in the preceding paragraph shall be one original and two duplicates.

3. Any person, who intends to obtain the safety verification implemented by the designated safety verification organization provided in Paragraph 2 of Article 58-2 of the Law, shall submit the application to the designated waste disposal verification agency as provided by the designated safety verification organization after obtaining the approval of the competent minister.

(Implementation of Safety Verification of Disposal)

Article 4. The safety verification of waste management defined in Paragraph 2 of Article 58-2 of the Law shall be carried out before the storage and processing of imported wastes at the waste management equipment.

(Grant of a Safety Verification Certificate)

Article 5. A competent minister or a designated safety verification organization shall grant a verification certificate when he has confirmed as provided in Paragraph 2 of Article 58-2 of the Law.

(Emergency Measures)

Article 6. In accordance with the provisions of Paragraph 1 of Article 64 of the Law (limited to the case where users manage radioactive wastes outside the factory or place of business), users etc. shall take emergency measures falling under any of the following subparagraphs:

- (i) In the case of arising the contamination with radioactive wastes, ropes or marks shall be provided around the place, and watches shall be stationed to prevent persons other than the persons concerned from entering;
- (ii) In the case of arising the contamination with radioactive wastes, the spread of contamination shall be prevented and the contamination shall be removed promptly;
- (iii) When there are persons who received or are possible to receive radiation hazards, emergency measures shall be taken for the persons such as rescue and evacuation; and
- (iv) Other necessary measures shall be taken for the prevention of radiation hazards.

(Collection of Reports)

Article 7. When users etc. dispose of radioactive wastes outside their factory or place of business in the case coming under any of the following subparagraphs, they shall report immediately about the case, and the situation of and the measures for the case within ten days to the competent minister:

- (i) When an unusual contamination with radioactive wastes arises,
- (ii) When exposure of those who are engaged in the disposal exceed r possible to exceed the dose limits specified in Subparagraph (vii) of Paragraph 1 of Article 2 arises; or
- (iii) When hazards to human (excluding insignificant and non-radiation hazards) arise or possible to arise other than the preceding two subparagraph.

9. The Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc.
(1) The Law Concerning Prevention from Radiation Hazards due to Radioisotopes, etc.
(Excerpt)

(Law No. 167, June 10, 1957)

Latest Revision: Law No. 87, July 26, 2005

Chapter I. General Provisions

(Purpose)

Article 1. It is the purpose of this Law, based on the Atomic Energy Basic Law (Law No. 186, 1955), to prevent from possible radiation hazards and to secure safety of the public, by regulating the use, sale, lease, waste management and others in which radioisotopes are handled and regulating the use of radiation generating devices, waste management and others in which the materials contaminated with radioisotopes are handled.

(License for Use)

Article 3. Persons intending to use radioisotopes (excluding those equipped on such certified radioisotope-equipped device provided in Paragraph 1 of the following article and those sealed and in quantities smaller than specified by the Government Ordinance in the said paragraph) or radiation generating devices shall, as provided in the Government Ordinance, obtain the license of the Minister of Education, Culture, Sports, Science and Technology (hereinafter referred to as "the Minister of MEXT). But this shall not be applied for use and storage followed notified devices with sign user specified to Paragraph 2 of Article 12-5, and specific notified devices with sign user specified to Paragraph 3 of Article 12-52. Persons intending to obtain the license as provided in the preceding paragraph shall submit to the Minister of MEXT an application including the following items:

- (i) The name or title and the address, and in the case of a legal person, the name of its representative;
- (ii) Types, seal status and quantity of radioisotopes or types, number and performance of the radiation generating devices;
- (iii) The purpose and method of the use;**
- (iv) The place of the use;
- (v) The location, structure and equipment of the facilities where radioisotopes, or radiation generating devices (hereinafter referred to as "use facilities") are to be used or installed;
- (vi) The location, structure, equipment and storage capacity of the facilities, where radioisotopes are to be stored (hereinafter referred to as "storage facilities"); and
- (vii) The location, structure and equipment of the facilities where radioisotopes and materials contaminated with radioisotopes are to be managed as waste (hereinafter referred to as "waste management facilities").

(Notification of Use)

Article 3-2. Persons intending to use radioisotopes without radioisotope provided in Paragraph 1 of said article shall, as provided in the Government Ordinance, notify in advance to the Minister of MEXT. But this shall not be applied for notified devices with sign user and specific notified devices with sign user.

- (i) The name or title and the address, and in the case of a legal person, the name of its representative;
- (ii) Types, seal status and quantity of radioisotopes;
- (iii) The purpose and method of the use;
- (iv) The place of the use;
- (v) The location, structure, equipment and storage capacity of the facilities

2. When a person who has made such a notification as described in the preceding paragraph (hereinafter referred to as "notified user") intends to change some of the particulars of Subparagraph (ii) through (v) of same paragraph shall report this in advance to the Minister of MEXT.

3. The notified user shall report this to the Minister of MEXT, in accordance with the Ordinance of MEXT, within 30 days from the day of alteration, when a notified user changed particulars of the provisions of Subparagraph 1 of Paragraph 1.

(Notification for User of Notified Devices with Sign)

Article 3-3.

- (i) The name or title and the address, and in the case of a legal person, the name of its representative;
- (ii) Certification number and number of devices of notified device with sign provided in Article 12-6;
- (iii) The purpose and method of the use.

2. The notified person (hereinafter referred to as "notified user of notified devices with sign ") shall report

this to the Minister of MEXT, in accordance with the Ordinance of MEXT, within 30 days from the day of alteration, when a notified person changed particulars of the provisions of each subparagraph of same paragraph.

(License for Selling and Leasing Service)

Article 4. Persons intending to sell or lease any radioisotope, shall in accordance with the Government Ordinance, obtain the license of the Minister of MEXT the following items. But this shall not be applied for seller or leaser of specific notified devices with sign.

- (i) The name or title and the address, and in the case of a legal person, the name of its representative;
- (ii) Types, seal status and quantity of radioisotopes;
- (iii) The location of the selling or leasing place.

2. Persons intending to obtain the license described in the preceding paragraph shall submit to the Minister of MEXT an application including the following items:

3. Notified seller or notified lesser shall report this to the Minister of MEXT, in accordance with the Ordinance of MEXT, within 30 days from the day of alteration, when a notified person changed particulars of the provisions of Subparagraph (i) of Paragraph 1.

(License for Radioisotope Waste Management Service)

Article 4-2. A person intending to be engaged in radioisotope waste management service for radioisotopes or materials contaminated with radioisotopes shall, as provided in the Government Ordinance, obtain the license of the Minister of MEXT.

2. A person intending to obtain the license described in the preceding paragraph shall submit to the Minister of MEXT an application including the following items:

- (i) The name or title and the address, and in the case of a legal person, the name of its representative;
- (ii) The location of radioisotope waste management service;
- (iii) The method of waste management;
- (iv) The location, structure and equipment of the facilities where radioisotopes and materials contaminated with radioisotopes are to be refilled or repacked (hereinafter referred to as "waste refilling facilities");
- (v) The location, structure, equipment and storage capacity of the facilities where radioisotopes and materials contaminated with radioisotopes are to be stored (hereinafter referred to as "waste storage facilities");
- (vi) The location, structure and equipment of the waste management facilities. and
- (vii) When the final disposal (hereinafter referred to as "waste disposal") of radioisotope or radioisotope contaminated materials by the methods provided by the Government Ordinance shall be as follows:
 - A. The characteristic and quantity of the radioisotope or radioisotope contaminated materials that are to be disposed;
 - B. The measures that should be taken for the safety preservation from radiation hazards according to the decay of radioactivity.

(Ineligibility Clause)

Article 5. A person coming under any of the following subparagraph shall not be granted the license described in Paragraph 1 of Article 3 or Paragraph 1 of the preceding article:

- (i) A person whose license has been revoked in accordance with the provisions of Paragraph 1 of Article 26, and to whom two years have not yet elapsed from the day of revocation;
- (ii) A person who has been fined or awarded the heavier punishment than penalty for violating the provisions of this Law or orders based on this Law, and to whom two years have not yet elapsed after his serving or having ceased to serve the sentence;
- (iii) A legally incompetent person; or
- (iv) A legal person that has a person who comes under one of the preceding three subparagraphs among its executives executing service.

2. A person coming under any of the following subparagraph may not be granted the license provided in Paragraph 1 of Article 3 or Paragraph 1 of the preceding Article:

- (i) A person coming under provisions of the Ordinance of MEXT as those who cannot take the measures necessary for the prevention of radiation hazards due to serious mental disability or a lunatic; or
- (ii) A legal person that has a person who comes under the preceding subparagraph among its executives executing service.

(Licensing Standards for Use)

Article 6. The Minister of MEXT shall not grant the license when an application for the license described in Paragraph 1 of Article 3 is submitted unless the Minister recognizes that the application is in conformity with each of the following subparagraph:

- (i) The location, structure and equipment of use facilities conform to technical standards provided by the Ordinance of MEXT;
- (ii) The location, structure and equipment of storage facilities conform to technical standards provided by the Ordinance of MEXT;
- (iii) The location, structure and equipment of waste management facilities conform to technical standards

provided by the Ordinance of MEXT; and

(iv) In addition, there is no fear of radiation hazards being caused by radioisotopes, materials contaminated with radioisotopes, or radiation generating devices.

(Licensing Standards for Selling and Leasing Service)

(Licensing Standards for Radioisotope Waste Management Service)

Article 7. When an application for the license in accordance with Paragraph 1 of Article 4-2 is submitted, the Minister of MEXT shall not grant the license unless the Minister recognizes that the application is in conformity with each of the following subparagraphs:

(i) The location, structure and equipment of waste refilling facilities conform to technical standards provided by the Ordinance of MEXT;

(ii) The location, structure and equipment of waste storage facilities conform to technical standards provided by the Ordinance of MEXT;

(iii) The location, structure and equipment of waste management facilities conform to technical standards provided by the Ordinance of MEXT; and

(iv) In addition, there is no fear of radiation hazards being caused by radioisotopes or materials contaminated with radioisotopes.

(Conditions for the License)

Article 8. Conditions may impose on the granting of the license described in Paragraph 1 of Article 3 or Paragraph 1 of Article 4-2.

2. The conditions as described in the preceding paragraph shall be restricted to the minimum required to prevent radiation hazards and shall be such as not to impose undue obligations on persons who obtain the license.

(Certificates of License)

Article 9. The Minister of MEXT shall issue a certificate of license when he has granted the license provided in Paragraph 1 of Article 3 or Paragraph 1 of Article 4-2.

2. The certificate of license to be issued, when the license has been granted described in Paragraph 1 of Article 3, shall contain the following items:

(i) The date and the number of the license;

(ii) The name or title and the address; and

(iii) The purpose of the use,

(iv) Types and the quantity of the radioisotopes, or types, the number and the performance of the radiation generating devices:

(v) The place of the use;

(vi) The capacity of the storage facilities; and

(vii) Conditions of the license;

3. The certificate of license to be issued, when the license has been granted under Paragraph 1 of Article 4-2, shall contain the following items:

(i) The date and the number of the license;

(ii) The name or title and the address;

(iii) The place of working place for radioisotope waste management service;

(iv) The method of the waste management; and

(v) The storage capacity of waste storage facilities,

(vi) In the licens concerning waste disposal, volume of disposal radioisotopes or disposal radioisotope contaminated materials;

(vii) License provision

4. The certificate of license shall not be transferred or lent to any other person.

(Alteration of Use facilities, etc.)

Article 10. When a person who has obtained such license as provided in Paragraph 1 of Article 3 (hereinafter referred to as "licensed user"), changed such particulars as provided in Subparagraph (i) of Paragraph 2 of the said article, the licensed user shall make notification, as in accordance with the Ordinance of MEXT, to the Minister of MEXT within thirty days from the day of alteration. In this case, if the licensed user changed the name, title or address, the licensed user shall submit the certificate of license for correction by the Minister of MEXT at the time of notification.

2. When a licensed user intends to change any such matters as provided in subparagraph (ii) through (vii) of Paragraph 3 of Article 3 (excluding those described in Paragraph 6), the licensed user shall, in accordance with the Government Ordinance, obtain the license of the Minister of MEXT. But this shall not be applied where the alteration is as minor provided by the Ordinance of MEXT.

3. The provisions of Article 6 and Article 8 shall be applied correspondingly to the license described in the preceding paragraph.

4. A licensed user, who intends to obtain the license to make alterations in accordance with the provisions of Paragraph 2, shall submit the certificate to the Minister of MEXT at the time of license application for such alterations.

5. When a licensed user intends to make such minor alterations as specified by provision in Paragraph 2,

the licensed user shall, as provided by the Ordinance of MEXT, notify the alterations in advance, with the certificate of license attached to the Minister of MEXT.

6. When a licensed user intends to alter such particulars provided in Subparagraph (iv), Paragraph 2 of Article 3, while making temporary use of radioisotopes in quantities smaller than as specified by the Government Ordinance, for non-destructive inspection and other purposes specified by the Government Ordinance, the licensed user shall, as provided by the Ordinance of MEXT, give notification of the alteration in advance to the Minister of MEXT.

(Alteration of Waste Management Facilities, etc.)

Article 11. When a person, who has obtained such a license as described in Paragraph 1 of Article 4-2 (hereinafter referred to as "radioisotope waste management service operator") changes any such particulars provided in Subparagraph (i) of Paragraph 2 of the said article, the operator shall, in accordance with the Ordinance of MEXT, notify the alteration to the Minister of MEXT within thirty days from the day of alteration.

2. When a radioisotope waste management service operator intends to change any items provided in Subparagraphs (i) through Subparagraphs (vi) of Paragraph 2 of Article 4-2, the operator shall, in accordance with the Government Ordinance, obtain the license of the Minister of MEXT.

3. The provisions of Article 7-2 and Article 8 shall be applied correspondingly to the license described in the preceding paragraph.

4. A radioisotope waste management service operator, who intends to obtain a license to make alterations in accordance with the provisions of Paragraph 2, shall submit the certificate to the Minister of MEXT at the time of license application for such alterations.

Chapter III. Obligations of the User, Seller, Lessor and Radioisotope Waste Management Service Operator, etc.

(Facility Inspection)

Article 12-8. When a specific licensed user (licensed user who use radioisotopes or licensed user who use radiation generator) has built a use facility, a storage facility, or a waste management facility (hereinafter referred to as far as the following article, as "use facility, etc."), or when the user has made alterations (with the exception of such minor alterations provided by the Ordinance of MEXT), with such a license as described in Paragraph 2 of Article 10, on the location, structure or equipment of a use facility, etc., or on the storage capacity of a storage facility, as provided by the Ordinance of MEXT, the user shall subject the use facility, etc. to the inspection of the Minister of MEXT or person who registered by the Minister of MEXT (hereinafter referred to as "registered inspection agency"), and shall not use the use facility, etc. until it has passed the inspection.

2. When a radioisotope waste management service operator has built a waste refilling facility, a waste storage facility or a waste management facility (hereinafter referred to as far as the following article, as "waste refilling facility, etc."), or when the radioisotope waste management service operator has made alterations (excluding such minor alterations provided by the Ordinance of MEXT), with such a license as described in Paragraph 2 of Article 11-2, on the location, structure or equipment of a waste refilling facility, etc., the operator shall subject the waste refilling facility, etc. to the inspection, as provided by the Ordinance of MEXT, to the inspection of the Minister of MEXT, and shall not use the waste refilling facility, etc. until after it has passed the inspection.

3. When the installation or the alteration of a use facility, etc., or a waste refilling facility, etc., upon inspection provided in the preceding three paragraphs (hereinafter referred to as "facility inspection"), conforms to the particulars of such a license as described in Paragraph 1 of Article 3, or in Paragraph 1 of Article 4-2, or of such a license for alteration as provided in Paragraph 2 of Article 10 or in Paragraph 2 of Article 11 (including conditions attached in accordance with the provisions of Paragraph 1 of Article 8 (including the case where the particulars are applied correspondingly to Paragraph 3 of Article 10 or Paragraph 3 of Article 11)), it shall be acceptable.

(Periodical Inspection)

Article 12-9. A specific licensed user shall, as provided by the Ordinance of MEXT, subject the use facility, etc. to the inspection of the Minister of MEXT for periods provided by the Government Ordinance.

2. A license radioisotope waste management operator shall, as provided by the Ordinance of MEXT, subject the waste refilling facility, etc. (except waste management facility as radioisotope disposal site) to the inspection the Minister of MEXT or registered inspection agency for periods in accordance with by the Government Ordinance.

3. Such inspections as described in the preceding three paragraphs (hereinafter referred to as "periodical inspections") shall be conducted as to whether or not the use facility, etc., the refilling facility, etc., or the waste refilling facility, etc. conform to the technical standards listed in Subparagraph (i) through Subparagraph (iii) of Article 6, in Subparagraph (i) through Subparagraph (iii) of Article 7, respectively.

(Periodical Confirmation)

Article 12-10. A specific licensed user or a radioisotope waste management service operator shall take a confirmation of the provided items as follows from the Minister of MEXT or person who registered by the Minister of MEXT (hereinafter referred to as "registered periodical confirmation agency"), as provided by

the Ordinance of MEXT for periods provided by the Government Ordinance.

(i) Measurement of quantities of radioisotopes and circumstances of contamination as provided by the paragraph 1 and 2 of article 20 of the Ordinance of MEXT, and making the record as provided by the paragraph 3 of same article, and preservation of the record.

(ii) Writing the books of the paragraph 1 or 3 of Article 2 by the way as provided by the paragraph 1 or 3 of the same article of the Ordinance of MEXT, and preservation as provided by the paragraph 4 of the same article of the Ordinance of MEXT.

(Obligation of Conformity with Standards of Use facilities, etc.)

Article 13. The licensed user shall maintain the location, structure and equipment of the user's facilities, storage facilities and waste management facilities so that they conform to the technical standards of Subparagraph (i) through Subparagraph (iii) of Article 6.

2. A notified user shall maintain the location, structure and equipment of storage facilities or equipment installed facilities in such a manner as to conform to the technical standards in accordance with the Ordinance of MEXT.

3. The license radioisotope waste management operator shall maintain the location, structure and equipment of the waste refilling facilities, waste storage facilities and waste management facilities so that they conform to the technical standards of Subparagraph (i) through Subparagraph (iii) of Article 7.

(Ordinance for the Conformity with Standards of Use Facilities, etc.)

Article 14. When the Minister of MEXT recognizes that the location, structure or equipment of a use facility, a storage facility or a waste management facility does not conform to the technical standards provided in Subparagraph (i) or Subparagraph (iii) of Article 6, the Minister may order the licensed user to remove, repair or modify the use facility, the storage facility or the waste management facility so as to make them conform to the technical standards appropriately

2. When the Minister of MEXT recognizes the location, structure or equipment of a storage facility does not conform to the technical standards described in Paragraph 2 of the preceding article, the Minister may order the notified user to remove, repair and modify the storage facility so that it may conform to the technical standards.

4. When the Minister of MEXT recognizes that the location, structure and equipment of a waste storage facility, a waste refilling facility or a waste management facility does not conform to the technical standards described in Subparagraph (i), Subparagraph (ii), or Subparagraph (iii) of Article 7-12, the Minister may order the license radioisotope waste management operator to remove, repair or modify the waste refilling facility, the waste storage facility or the waste management facility so as to make them conform to the technical standards. appropriately

(Standards of Use)

Article 15. When a licensed user or a notified user (hereinafter referred to as "license notified user") uses radioisotopes or radiation generator, the user shall take the measures necessary for the prevention of radiation hazards in accordance with technical standards provided by the Ordinance of MEXT.

2. When the Minister of MEXT recognizes that measures for the use of radioisotopes or radiation generating devices do not conform to such technical standards described in the preceding paragraph, the Minister may order the license notified user to modify the method of use or to take other measures necessary for the prevention of radiation hazards.

(Standards of Custody)

Article 16. When a license notified user (including persons who come under any one of Subparagraph (vi) through Subparagraph (viii) of Article 30 (hereinafter referred to as "license cancellation user"), the same shall be applied to the following paragraph, article through Article 19-2 and to Article 30-2) a license radioisotope waste management operator, a license radioisotope waste management operator (including persons who come under any one of Subparagraph (vi) through Subparagraph (viii) of Article 30 (hereinafter referred to as "license cancellation radioisotope waste management operator"), the same shall be applied to the following paragraph, article through Article 19-2 and to Article 30-2) intends to store radioisotopes or materials contaminated with radioisotopes, the license notified user and radioisotope waste management operator shall take the measures necessary for the prevention of radiation hazards in accordance with technical standards as provided by the Ordinance of MEXT.

2. When the Minister of MEXT recognizes measures for storage of radioisotopes or materials contaminated with radioisotope to be not conformable to such technical standards as described in the preceding paragraph, he or she may order the license notified user or the license radioisotope waste management operator to modify the method of storage or take other measures necessary for the prevention of radiation hazards.

3. Notified seller or notified lesser shall entrust storage of radioisotopes or radioisotope contaminated materials to license notified user.

(Standards of Transportation)

Article 17. When a license notified user, a license radioisotope waste management operator transports radioisotopes or materials contaminated with radioisotopes within the factory or service (in the case of the license notified user, the factory or service equipped with use facilities, storage facilities or waste management facilities, in the case of the license radioisotope waste management operator, the radioisotope

waste management place equipped with waste refilling facilities, waste storage facilities or waste management facilities, the same shall be applied hereinafter), the person shall take the measures necessary for the prevention of radiation hazards in accordance with technical standards provided by the Ordinance of MEXT.

2. When the Minister of MEXT, in such a case as described in the preceding paragraph, recognizes that measures for the transportation of radioisotopes or materials contaminated with radioisotopes does not conform to such technical standards as described in the said paragraph, he or she may order the license notified user or the license radioisotope waste management operator to cease the transportation or take other measures necessary for the prevention of radiation hazards.
(Verification of Transportation, etc.)

Article 18. When a license notified user, a notified seller, a notified lesser, a license radioisotope waste management operator, or a person commissioned with transportation by any of them (referred to as "license notified user, etc.") transports radioisotopes or materials contaminated with radioisotopes outside the factory or place of service (excluding when transporting by ship or by aircraft), the person shall take the measures necessary for the prevention of radiation hazards in accordance with technical standards provided by the Ordinance of MEXT (the Ordinance of the Minister of Land, Infrastructure and Transport in the case of transportation by rail, by track, by cable, by trackless car, by motor and by light vehicle, excluding measures concerning goods for transportation).

2. When such a case as described in the preceding paragraph comes under cases provided particularly by the Government Ordinance for the prevention of radiation hazards from radioisotopes and materials contaminated with radioisotopes, the license notified user, etc. shall, as provided by the Ordinance of MEXT, obtain the verification by the Minister of MEXT or of the Ordinance of the Minister of Land, Infrastructure, and Transport as to the conformity of the measures for transportation thereof with such technical standards as described in the said paragraph.

3. The license notified user, etc. may, in accordance with the Ordinance of MEXT, to obtain the approval of the Minister of MEXT in advance with regard to containers for transportation. In this case, the containers received the approval of the Minister of MEXT shall be considered to be satisfactory to the technical standards described in Paragraph 1 which relate to containers.

4. When the Minister of MEXT or the Minister of Land, Infrastructure, and Transport, in such a case as described in Paragraph 1, recognizes that measures for the transportation of radioisotopes and materials contaminated with radioisotopes does not conform to such technical standards as described in the said paragraph, the Minister may order the license notified user, etc. to cease the transportation or take other measures necessary for the prevention of radiation hazards.

6. The Prefectural Public Safety Commission, after receiving such notification as provided in the preceding paragraph, may give instructions in accordance the Cabinet Order, if it is considered to be necessary to prevent and secure safety of the public from radiation hazards, as to the date and the route of transportation and other matters provided by the Cabinet Order.

(Standards of Waste Management)

Article 19. When a license notified user, a license radioisotope waste management operator manages the waste of radioisotopes or materials contaminated with radioisotopes in the factory or place of service, the person shall take the measures necessary for the prevention of radiation hazards in accordance with technical standards specified by the Ordinance of MEXT.

2. When a license notified user, a license radioisotope waste management operator manages the waste of radioisotopes or materials contaminated with radioisotopes outside the factory or place of service, the person shall take the measures necessary for the prevention of radiation hazards in accordance with technical standards specified by the Ordinance of MEXT.

3. When the Minister of MEXT recognizes that measures for the waste management of radioisotopes or materials contaminated with radioisotopes do not conform to such technical standards as described in the preceding two paragraphs, he or she may order the license notified user, the license radioisotope waste management operator to cease the waste management or take other measures necessary for the prevention of radiation hazards.

4. Notified seller or notified lesser shall entrust waste management of radioisotopes or radioisotope contaminated materials to the license notified user or the license radioisotope waste management operator.

5. Others although set to the preceding paragraph, person who is going to waste notified devices with sign or specific notified devices with sign (hereinafter referred to as " notified devices with sign ") shall entrust to the licensed notified user or the license radioisotope waste management operator.

(Verification of Waste management)

Article 19-2. When a license notified user, a license radioisotope waste management operator manages the waste of radioisotopes or materials contaminated with radioisotopes outside the factory or place of service, and the waste management comes under cases provided by the Government Ordinance as the cases required in particular for the prevention of radiation hazards from radioisotopes and materials contaminated with radioisotopes, the person shall, as provided by the Ordinance of MEXT, obtain the verification by the Minister of MEXT as to the conformity of the measures for waste management thereof with such technical

standards as described in Paragraph 2 of the preceding article.

2. License radioisotope waste management operator intending to waste disposal shall, as provided by the Ordinance of MEXT, obtain the verification by the Minister of MEXT or person of registered by the Minister of MEXT as to the conformity of the measures for waste disposal thereof with such technical standards as described in Paragraph 1 of the preceding article in each case.

(Monitoring)

Article 20. A license notified user, a license radioisotope waste management operator shall, as provided by the Ordinance of MEXT, measure the dose of radiation and the level of contamination with radioisotopes in places where there is a risk of radiation hazards.

2. A license notified user, a license radioisotope waste management operator shall, as provided by the Ordinance of MEXT, measure the dose of radiation and the level of contamination with radioisotopes that may affect any person who may enter the premises of a use facility, a waste refilling facility, a storage facility, a waste storage facility or a waste management facility.

3. A license notified user, a license radioisotope waste management operator shall keep a record and file of the results of such monitoring as described in the preceding two paragraphs and take other measures provided by the Ordinance of MEXT.

(Internal Rules for Prevention of Radiation Hazards)

Article 21. A license notified user, a notified seller(), a notified lesser(), a license radioisotope waste management operator, with the aim of preventing radiation hazards, shall, as provided by the Ordinance of MEXT, draw up Internal Rules for Prevention of Radiation Hazards and submit them to the Minister of MEXT before the person begins using of radioisotopes or radiation generating devices, doing service in the sale or lease of radioisotopes, or doing service of the waste management of radioisotopes and materials contaminated with radioisotopes.

2. The Minister of MEXT may order the license notified user, the notified seller, the notified lesser or the license radioisotope waste management operator to make modification of the Internal Rules for Prevention of Radiation Hazards, when it is considered to be necessary for the prevention of radiation hazards.

3. When a license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator has altered the Internal Rules for Prevention of Radiation Protection, the person shall notify the alteration to the Minister of MEXT within thirty days from the day of alteration.

(Education and Training)

Article 22. A license notified user, a license radioisotope waste management operator shall, as provided by the Ordinance of MEXT, ensure that Internal Rules for Prevention of Radiation Hazards and other related items are well understood by and the education and training required for the prevention of radiation hazards will be provided to persons entering the premises of use facilities, refilling facilities, waste refilling facilities, storage facilities, waste storage facilities, and waste management facilities.

(Health examination)

Article 23. A license notified user, a license radioisotope waste management operator shall, in accordance with the Ordinance of MEXT, provide health examinations to persons entering the premises of use facilities, waste refilling facilities, storage facilities, waste storage facilities and waste management facilities.

2. A license notified user, a license radioisotope waste management operator shall keep the record and file of the results of such health examinations as described in the preceding paragraph and shall take other measures provided by the Ordinance of MEXT.

(Measures for Persons Exposed or possibly Exposed to Radiation Hazards)

Article 24. A license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator shall, as provided by the Ordinance of MEXT, restrict entry into the use facilities, waste refilling facilities, storage facilities, waste storage facilities and waste management facilities, and shall take other measures essential to good health for persons who are exposed and are possible to be exposed to radiation hazards.

(Obligation to Record)

Article 25. A license notified user shall, in accordance with the Ordinance of MEXT, keep books and record the following items:

- (i) Matters concerning the use, storage or waste management of radioisotopes;
- (ii) Matters concerning the use of radiation generating devices;
- (iii) Matters concerning the waste management of materials contaminated with radioisotopes; and
- (iv) Other necessary matters for the prevention from radiation hazards.

2. The notified seller, the notified lesser shall, as provided by the Ordinance of MEXT, keep books and record items concerning selling, storage or waste management of radioisotopes and the items provided in Subparagraph (iii) and Subparagraph (iv) of the preceding paragraph.

3. A license radioisotope waste management operator shall, as provided by the Ordinance of MEXT, keep books and record items concerning storage or waste management of radioisotopes or materials contaminated with radioisotopes and items provided in Subparagraph (iv), of Paragraph 1.

4. The books referred to in the preceding three paragraphs shall be preserved as provided by the Ordinance of MEXT.

(Revocation of the License, etc.)

Article 26. If a licensed user, or a license radioisotope waste management operator comes under any of the following subparagraphs, the Minister of MEXT may revoke such a license as described in Paragraph 1 of Article 3, or Paragraph 1 of Article 4-2, or may order cessation for a period not exceeding one year of the use of radioisotopes or radiation generating devices, or of the waste management of radioisotopes or materials contaminated with radioisotopes:

- (i) When the person has come under any of Paragraphs 2 through 5 of Article 5, or one of subparagraphs of Paragraph 2 of the said article;
- (ii) When the person has violated such conditions as described in Paragraph 1 of Article 8 (including cases where this is applied in accordance with Paragraph 3 of Article 10, Paragraph 3 of Article 11);
- (iii) When the person has modified matters on which the person is required to obtain a license in accordance with the provisions of Paragraph 2 of Article 10 or Paragraph 2 of Article 11;
- (iv) When the person has modified without notification matters of which the person is required to give notification as provided in Paragraph 5 or Paragraph 6 of Article 10;
- (v) When the person has violated such provisions as described in paragraphs 1 or 2 of Article 12-8, or Paragraph 1 or Paragraph 2 of Article 12-9;
- (vi) When the person has violated provisions described in Paragraph 1 or Paragraph 3 of Article 13;
- (vii) When the person has violated orders described in Paragraph 1 or Paragraph 3 of Article 14;
- (viii) When the person has violated such technical standards described in Paragraph 1 of Article 15, Paragraph 1 of Article 16, Paragraph 1 of Article 17, Paragraph 1 of Article 18, or Paragraph 1 or Paragraph 2 of Article 19;
- (ix) When the person has violated such orders provided in Paragraph 2 of Article 15, Paragraph 2 of Article 16, Paragraph 2 of Article 17, Paragraph 4 of Article 18, or Paragraph 3 of Article 19;
- (x) When the person has violated the provisions of Paragraph 2 of Article 18-2 or Paragraph 2 Article 19-2;
- (xi) When the person has violated the provisions of Article 20, Article 23, Article 24 or Paragraph 1 or Paragraph 2 or Paragraph 4 of Article 25;
- (xii) When the person has violated the provisions of Subparagraph (i), or Subparagraph (v) of Article 29 or Subparagraph (i) or Subparagraph (iv) of Article 30;
- (xiii) When the person has violated the provisions of Paragraph 1 of Article 34 or Paragraph 1 or Paragraph 2 of Article 37; or
- (ivx) When the person has violated an order provided in Article 38.

2. The Minister of MEXT may, when a notified user, a notified seller or a notified lessor comes under any of the following items, order the cessation of use, sale or lease of radioisotopes for a period not exceeding one year:

- (i) When the user has changed without notification the items for which the user should have notified in accordance with the provisions of Paragraph 2 of Article 3-2 or Paragraph 2 of Article 4;
- (ii) When the user has violated the provisions of Paragraph 2 of Article 13;
- (iii) When the user has violated an order provided in Paragraph 2 of Article 14;
- (iv) When the user has violated technical standards provided in Paragraph 1 of Article 15, Paragraph 1 of Article 16, Paragraph 1 of Article 17, Paragraph 1 of Article 18, or Paragraph 1 or Paragraph 2 of Article 19;
- (v) When the user has violated such orders provided in Paragraph 2 of Article 15, Paragraph 2 of Article 16, Paragraph 2 of Article 17, Paragraph 4 of Article 18, or Paragraph 3 of Article 19;
- (vi) When the user has violated the provisions of Paragraph 3 of Article 16, or Paragraph 2 of of Article 18 Paragraph 4 of Article 19 or Paragraph of Article 19-2;
- (vii) When the user has violated the provisions of Article 20, Article 23, Article 24 or Paragraph 1 or Paragraph 2 of Article 25;
- (viii) When the user has violated the provisions of Subparagraph (ii) through (iv) of Article 29 or Subparagraph (ii) or Subparagraph (iii) of Article 30;
- (ix) When the user has violated the provisions of Paragraph 1 of Article 34 or Paragraph 1 or Paragraph 2 of Article 37; or
- (x) When the user has violated the provisions of Article 38.

(Transfer of the Waste Disposal Facility)

Article 26-4. Any person who wishes to receive the waste disposal site or the whole waste refilling facilities including the waste disposal site from a licensed radioisotope waste management operator shall obtain the license of the Minister of MEXT, as provided by the Government Ordinance.

2. The provisions of Article 5, Article 7 and Article 8 shall be applied with necessary modifications to the licensing provided in the preceding paragraph.

3. A person who, with the license provided in Paragraph 1, has received the waste disposal site or the whole waste refilling facilities including the waste disposal site from a licensed radioisotope waste management operator shall succeed to the status of the licensed radioisotope waste management operator with respect to the relevant the waste disposal site.

(Notification for Cease of Use, etc.)

Article 27. Except for cases provided in Paragraph 1 of Article 26, when a license notified user has completely ceased the using of radioisotopes or radiation generating devices, or when a notified seller, a notified lesser or a license radioisotope waste management operator has discontinued his service, the said license notified user, notified seller, notified lesser or a license radioisotope waste management operator shall notify this to the Minister of MEXT as provided by the Ordinance of MEXT.

2. When the notification provided in the preceding paragraph has been made, the granted license provided in Paragraph 1 of Article 3 or Paragraph 1 of Article 4-2 shall lose its validity.

3. When a license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator has died or when a license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator of a corporation has dissolved and when there was not succession provided for Paragraph 1, Paragraph 2 or Paragraph 4 through 7 of Article 26-2, Paragraph 1 of Article 26-3, his inheritor or the person who is to take charge of the inheritance on behalf of the inheritor, its liquidator, its trustee in bankruptcy or the representative of the representative of corporation that continues to exist after merger or is established by merger shall, as provided by the Ordinance of MEXT, notify this to the Minister of MEXT.

(Measures in Consequence to the Revocation of License, Cease of Use, etc.)

Article 28. A licensed user, a license radioisotope waste management operator whose license has been revoked in accordance with the provisions of Paragraph 1 of Article 26 or a person who must make a notification in accordance with the provisions of Paragraph 1 or Paragraph 3 of the preceding article shall, in accordance by the Ordinance of MEXT, take measures to transfer the radioisotopes to another license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator, to decontaminate or to manage the waste of radioisotopes or materials contaminated with radioisotopes, etc.

2. Any person provided in the preceding paragraph shall, in accordance with the Ordinance of MEXT, report the measures taken in accordance with the provisions of the said paragraph to the Minister of MEXT within thirty days from the day the person may have a license revoked, from the day the person may have ceased service in the use, sale, lease or waste management of radioisotopes, or from the day the license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator may have died or the license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator of a legal person may have dissolved his company.

3. When the Minister of MEXT recognizes that the measures taken by the persons defined in Paragraph 1 is not adequate, the Minister may order the persons defined in the said paragraph to take necessary measures to prevent from radiation hazards.

(Restrictions on Transfer , Take Over, etc.)

Article 29. Except for cases coming under any of the following subparagraphs, radioisotope() shall not be transferred, taken over, lent, or borrowed:

(i) When a licensed user transfers or lends to other license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator the radioisotopes of the type stated in the user's certificate of license, or takes over or borrows radioisotopes of the type stated in the user's certificate of license within the capacity of the storage facilities stated in the user's certificate of license;

(ii) When a notified user transfers or lends to another license notified user, notified seller, notified lesser or license radioisotope waste management operator radioisotopes of the type of which the user has given notification, or takes them over or borrows them in quantities up to the storage capacity of the storage facility of which the user has given in notification;

(iii) When a notified seller exports radioisotopes of the type notified in the seller's notification or transfers or lends them to license notified users, other notified sellers, notified lessors or license radioisotope waste management operators;

(iv) When a notified lesser exports radioisotopes of the type notified in the notified lessors notification or transfers or lends them to license notified users, notified sellers, other notified lessors or license radioisotope waste management operators;

(v) When a license radioisotope waste management operator transfers or lends to license notified users, notified sellers, notified lessors, or other license radioisotope waste management operators radioisotopes of the type stated in his certificate of license, or he and she takes them over or borrows them within the capacity of the storage facilities stated in the user's certificate of license;

(vi) When a licensed user, a license radioisotope waste management operator whose license has been cancelled in accordance with the provisions of Article 26 Paragraph 1, transfers, in accordance with by the Ordinance of MEXT, radioisotopes to other license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator on the day of being revoked;

(vii) When a person who has to make a notification in accordance with the provisions of Paragraph 1 of Article 27, transfers, as provided by the Ordinance of MEXT, to license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator radioisotope which the person owned on the day when the person ceases the using, selling, leasing or radioisotope waste management service; or

(viii) When a person who has to make a notification in accordance with the provisions of Paragraph 3 of Article 27, transfers, in accordance with the Ordinance of MEXT, to license notified user, a notified seller, a

notified lesser or a license radioisotope waste management operator the radioisotopes which a license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator owned on the day he died, or which a license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator who owned a legal person when it dissolved.

(Restrictions on Possession)

Article 30. Radioisotopes shall not be possessed except for cases which are based on legislations and regulations or which come under any of the following subparagraphs:

- (i) When a licensed user, possesses radioisotopes of the type stated in the user's certificate of license within the capacity of storage facilities stated in the user's certificate of license;
- (ii) When a notified user possesses radioisotopes of the type of which the user has notified in quantities up to the storage capacity of the storage facility of which the user has notified;
- (iii) When a licensed seller and a licensed lessor possesses radioisotopes, of the type of which the seller and a lessor notified, for transportation and possesses for taking a measure as provided by the article 24 or the paragraph 1 or 4 of article 33.
- (iv) When a license radioisotope waste management operator possesses radioisotopes of the type stated in the operator's certificate within the capacity of the storage facilities stated in the operator's certificate of license;
- (v) When notified devices with sign are used, preserved, and transported according to the certificate condition.
- (vi) In case where, a licensed user, a license radioisotope waste management operator whose license has been cancelled in accordance with the provisions of Paragraph 1 of Article 26, possesses, as provided by the Ordinance of MEXT, the radioisotopes which the person owned on the day of being revoked
- (vii) When a person who has to make a notification in accordance with the provisions of Paragraph 1 of Article 27, possesses as provided by the Ordinance of MEXT, the radioisotopes which the person possessed on the day when the person's using radioisotopes or radioisotope waste management service was ceased;
- (viii) When a person, who has to make a notification in accordance with the provisions of Paragraph 3 of Article 27, possesses, as provided by the Ordinance of MEXT, the radioisotopes which a license notified user, a license radioisotope waste management operator possessed when the license notified user, the license radioisotope waste management operator died, or the license notified user, the license radioisotope waste management operator who owned a legal person dissolved;
- (ix) When a person, who has been entrusted with the transportation of radioisotopes by persons provided in each of the preceding subparagraphs, possesses the radioisotopes the person has been entrusted with; or
- (x) When an employee of persons, described in each of the preceding subparagraphs, possesses radioisotopes for the person's service.

(Restrictions on Sea Disposal)

Article 30-2 Radioisotopes or materials contaminated with radioisotopes shall not be dumped for sea disposal except for cases falling under any of the following subparagraphs:

- (i) When a license notified user, a license radioisotope waste management operator has obtained the verification provided in Paragraph 1 of Article 19-2; or
- (ii) In cases unavoidable for the purpose of assuring safety of human lives, ships, aircraft or artificial marine structures.

2. What is referred to as "sea disposal" in the preceding paragraph means dumping material into the sea from ships, aircraft or artificial marine structures, or burning material for the purpose of destruction on ships or artificial marine structures. But this shall not be applied to the dumping into the sea from ships, aircraft or artificial marine structures of material arising from the service of the ships, aircraft or artificial marine structures, and the equipment thereof, nor to the burning on ships or artificial marine structures for the purpose of destruction of material arising from the service of the ships or artificial marine structures, and the equipment thereof.

(Reporting of Accidents)

Article 32. If theft, loss and other accidents happen with regard to the radioisotopes they possess, license notified user(including the user of notified devices with sign person, and who has been entrusted with the transportation of radioisotopes by the user of notified devices with sign , the same shall be applied to the following paragraph), etc. shall notify it without delay to a police officer, or a maritime safety officer.

(Measures in an Emergency)

Article 33. If an earthquake, a fire and other disasters are likely to cause, or have caused radiation hazards due to radioisotopes or materials contaminated with radioisotope, or radiation generating devices, which license notified users, etc. possess, license notified users, etc. shall, in accordance with the Ordinance of MEXT (by the Ordinance of MEXT or by the Ordinance of the Minister of Land, Infrastructure and Transport in cases involving the transportation outside the factory or place of service (including transportation by ship and aircraft) of radioisotopes or materials contaminated with radioisotopes, the same shall be applied to Paragraph 3), immediately take emergency measures.

2. Persons who have chanced upon the situation of the preceding paragraph shall immediately inform it to a police official or a maritime safety official.

3. In the event of such a case as described in the preceding paragraph, license notified users, etc. shall, as provided by the Ordinance of MEXT, notify without delay to the Minister of MEXT (to the Minister of MEXT or the Minister of Land, Infrastructure, and Transport in cases involving the transportation outside the factory or place of service (including transportation by ship and aircraft) of radioisotopes or materials contaminated with radioisotopes, the same shall be applied to the following paragraph).

4. In such a case as described in Paragraph 1, the Minister of MEXT may order any persons defined in the said paragraph, if considered to be urgently necessary for the prevention of radiation hazards, to change the location of radioisotopes or materials contaminated with radioisotopes, to decontaminate, or to take other measures necessary for the prevention of radiation hazards.

Chapter IV. Radiation Protection Supervisor

(Supervisor of Radiation Protection)

Article 34. A license notified user, a notified seller, a notified lesser or a license radioisotope waste management operator shall assign a Radiation Protection Supervisor. In this case, they may assign a Chief Engineer of Radiation Protection out of physicians and dentists when they use radioisotopes or radiation generating devices for purposes of health examination and treatment, and out of pharmacists when they use radioisotopes, or radiation generating devices in manufacturing of such medicines, medical accessories, cosmetics, and medical instruments provided in Article 2 of the Pharmaceutical Affairs Law (Law No. 145, 1960).

(i) Specific license user, license user or license radioisotope waste management operator using unsealed radioisotopes: Persons who have the license of senior radiation protection supervisor of the paragraph 1 of next article (referred to “the license of senior radiation protection supervisor” in the next paragraph and the paragraph 3).

(ii) License user except for licensed user provided in former paragraph: Persons who have the license of senior radiation protection supervisor or junior radiation protection supervisor of the paragraph 1 of next article (referred to “junior radiation protection supervisor” in the next paragraph).

(iii) Notified user, notified seller or notified lessor: Persons who have the license of senior radiation protection supervisor or junior radiation protection supervisor or third class radiation protection supervisor of the paragraph 1 of next article.

2. When license notified users, notified sellers, notified lessors or a license radioisotope waste management operators have assigned Radiation Protection Supervisor, they shall, as provided by the Ordinance of MEXT, notify the fact to the Minister of MEXT within thirty days from the date of selection, the same shall be applied when such persons have been relieved of their assignments.

(Licence for the Supervisor of Radiation Protection)

Article 35. Licences for the Radiation Protection Supervisor shall be Class I, Class II and Class III licences for person in charge of handling radiation.

2. The license for Class I Supervisor of Radiation Protection shall be granted by the Minister of MEXT to persons who have passed Class I examinations conducted by the Minister of MEXT or person who registered by the Minister of MEXT (hereinafter referred to as “registered examination agency”) for the Radiation Protection Supervisor and who have finished Class I training courses provided with by the Minister of MEXT or person who registered by the Minister of MEXT (hereinafter referred to as “registered qualification training program agency”).

3. The license for Class II Supervisor of Radiation Protection shall be granted by the Minister of MEXT to persons who have passed Class II examinations conducted by the Minister of MEXT or registered examination agency for the Radiation Protection Supervisor and who have finished Class II training course provided with by the Minister of MEXT or registered qualification training program agency.

4. The license for Class II Supervisor of Radiation Protection shall be granted by the Minister of MEXT to persons who have finished Class III training course provided with by the Minister of MEXT or registered qualification training program agency

5. The Minister of MEXT may not grant a license for the Radiation Protection Supervisor to persons who come under any of the following subparagraphs:

(i) Persons who have been ordered to return their licence for the Radiation Protection Supervisor described in the following paragraph and for whom one year has not passed from the day of order; or

(ii) Persons who have been sentenced to a fine or heavier penalty for violating the provisions of this Law or of orders based on this Law, and for whom two years have not passed from the day the execution of such sentence was completed or from the day such execution ceased to be levied.

6. When a person granted a licence for Radiation Protection Supervisor has violated this Law or orders based on this Law, the Minister of MEXT may order to return the certificates of the Supervisor of Radiation Protection.

7. Observation of the test for senior radiation protection supervisor and junior radiation protection supervisor (hereinafter referred to “test”) is to judge having special knowledge and ability which is needed for using radioisotopes and radiation generator and the test contains the subjects as provided lower column of attached table 1 accordance to the kinds as provided upper column of the same table.

8. Course for senior radiation protection supervisor, junior radiation protection supervisor and the third

class radiation protection supervisor (hereinafter referred to “entitle course”) contains the subjects as provided lower column of attached table 2 accordance to the kinds as provided upper column of the same table.

9. Subjects of such examinations for supervisor of radiation protection as described in Paragraph 2, procedures for receiving such examinations, and other details of the conduct of examinations, subjects, procedures for taking such courses, and other details of the conduct of courses, and procedures for granting, re-granting and restoring the licence for Supervisor of Radiation Protection, shall be provided by the Ordinance of MEXT.

(Duties, etc. of the Radiation Protection Supervisor)

Article 36. The Radiation Protection Supervisor shall be faithful in charge of the duties.

2. Persons entering use facilities, waste refilling facilities, storage facilities, waste storage facilities and waste management facilities must follow instructions given by the Radiation Protection Supervisor to ensure enforcement of this Law or orders based on this Law and of the Internal Rules for Prevention of Radiation Hazards.

3. License notified users, notified sellers, notified lessors or a license radioisotope waste management operators shall respect the opinion of the Radiation Protection Supervisor with respect to the prevention of the radiation hazards, as well as matters described in the preceding Paragraph.

(Order of Dismissal)

Article 38. When the Radiation Protection Supervisor or Supervisor’s proxy violates the provisions of this Law or orders based on this Law, the Minister of MEXT may order a user, a seller, a lessor or a radioisotope waste management service operator to dismiss the Radiation Protection Supervisor or the Supervisor’s proxy.

Chapter V. Registered Certification Agency, etc.

(Registration of Registered Certification Agencies)

Article 39. The registration as provided by paragraph 1 of Article 12-2 shall be registered upon application by a person who intends to obtain service for design certification, etc(hereinafter referred to as “design certification service”).

(Disqualifying Provision)

Article 40. The Minister of MEXT shall not give a registration unless applicant of registration (hereinafter referred to as “registration applicant”) corresponds to each following subparagraph:

(i) Persons who have been sentenced to a fine or heavier penalty for violating this Law or orders based on this Law, and for whom 2 years have not elapsed from the day they have served out their term or ceased to serve;

(ii) Persons whose designations have been revoked, and for whom 2 years have not elapsed from the day of revocation; or

(iii) Legal persons, any of whose officers falls under Subparagraph (ii).

(Registration Requirement, etc.)

Article 41. The Minister of MEXT shall be registrate unless registration applicant has adapted himself to all the requirements hung up over the next. In such a case, required procedure for registration is defined with the Ordinance of MEXT.

(i) Design certification operator, who has knowledge and experiences as provided follows, shall examine the design certification and the number of operator shall be more than three;

A. Person who has a license of senior radiation protection supervisor.

B. Person who has graduated, after completing the academic courses relevant to science, from universities or technical colleges stipulated in the School Education Law (Law No.26, 1947) and has subsequent experience of two years or more in total in the handling of radioisotopes or substances contaminated by radioisotopes, or radiation generator.

C. Person who has graduated, after completing the academic courses relevant to science, from high schools or junior high schools stipulated in the School Education Law (Law No.26, 1947) and has subsequent experience of five years or more in total in the handling of radioisotopes or substances contaminated by radioisotopes, or radiation generator.

D. Person has the knowledge and experience more than equivalent to above persons.

(ii) Exclusive chief design certification officers (they should be applicants for registry (the board members in the case where the applicants are corporations) or staff of applicants) are engaged in administration of examination of design certification and so forth, meeting the following requirements in knowledge and experience:

A. to have experience of more than five years in design certification service.

B. to be certified as a senior radiation protection supervisor and to have experience more than five years in total in the handling of radioisotopes or substances contaminated by radioisotopes, or radiation generator.

C. to have the knowledge and experience more than equivalent to above persons.

(iii) applicants should not fall under the following requirements which indicate that they are under the influence of those provided in separate table 4 (hereinafter referred to as “stakeholders”):

- A. Stakeholders are parent companies as provided in the provisions paragraph 1 of Article 211-2 in the Commerce Law (No. 48, 1900) in the case where applicants are corporations or companies with limited liability,
- B. The portion of the number of executives or staffs for stakeholders in applicant company (including who used to serve as executive or staffs for stakeholders within two years) to the number of all executives in the company (including those who have control over decision-making process in the case of joint enterprises or companies in limited partnership) exceeds a half.
- C. Registered applicants (the persons who represent the corporation in case of corporations) are executives or staffs for stakeholders (including who used to serve as executives or staffs for stakeholders within two years).

(iv) Applicants are not be in debt.

2. The registry as provided in paragraph 1 of Article 12-2 shall be conducted by filling out the following items in the registry books.

(i) Registration Date and Registration number.

(ii) Name and address of the registered party, as well as the name of representative in case of corporations.

(iii) The content of works for design certification.

(iv) Location of the office to conduct the design certification.

(v) The items to be stipulated in MEXT in addition to the items listed in the aforementioned sub-paragraphs (i) through (iv).

(Registration Renewal)

Article 41-2. The registration of the paragraph 1 of Article 12-2 loses the effect accordance to the time progress unless the registration has to be renewed in each periods provided by the Government Ordinance in terms of more than 5 years less than ten years.

2. before 2 articles are used to the renewal of registration of the paragraph 1

(Obligation of Investigation for Design Certification)

Article 41-3. The registered certification agency, when requested to give investigation for the design certification, shall, except when there is reasonable ground, give such investigation without delay.

2. The designated mechanism verification agency, when giving the mechanism verification, shall make the person perform the verification who is qualified by the Ordinance of MEXT.

(Notification of Change of registration matters)

Article 41-4. When a registered certification agency intends to change any items provided in Subparagraphs (ii) through Subparagraphs (v) of Paragraph 2 of Article 41, the agency shall, by two weeks before, notify to the Minister of MEXT.

(Design Certification Service Rules)

Article 41-5. The registered certification agency shall develop rules for the service of design certification (hereinafter referred to as "internal rules of design certification service"), before the start of service, and subject them to the approval of the Minister of MEXT, the same shall be applied when the agency intends to alter them.

2. Details to be defined in such internal rules shall provide particular provided by the Ordinance of MEXT.

3. The Minister of MEXT, when deeming internal rules of design certification service approved as described in Paragraph 1 to have become improper for the fair conduct of the design certification, may order the registered certification agency to alter them

(Design Certifier, etc.)

Article 41-8. When design certification agency have assigned registered certifier or chief registered certifier, they shall, as provided by the Ordinance of MEXT, notify the fact to the Minister of MEXT within 15 days from the date of selection, the same shall be applied when such persons have been changed of their assignments.

2. When a registered certifier has violated the provisions of this Law, of orders based on this Law, or of internal rules of design certification service, and when the Minister of MEXT deems the certifier to be not appropriate to perform the functions, the Minister of MEXT may order the registered certification agency to remove the mechanism verifier.

3. Person who was discharged from design certification operator by the order of paragraph 2 should not be design certification operator for 2 years after the day of discharge.

(Revocation of Registration, etc.)

Article 41-12. When a registered certification agency has come to fall under Subparagraph either of the followings, the Minister of MEXT must revoke the registration thereof, order to stop of service.

(i) When the agency is come to fall under Subparagraph provided in Subparagraph (i) or(iii) of Article 40;

(ii) When the agency has violated the provisions of Article 41-4, Article 41-6, Paragraph 1 of Article 41-7 or next article;

- (iii) When the agency has investigation for design certification without recourse to internal rules of design certification service approved as described Paragraph 1 of Article 41-5;
- (iv) When the agency has violated orders based on the provisions of Paragraph 3 of Article 41-5, and of Paragraph 2 of Article 41-8 Article 41-10 or said article;
- (v) When the agency has refused to requisition described in Paragraph 2 of Article 41-7; or
- (vi) When the agency has received registration unjustly.

(Recording Books)

Article 41-13. The registered certification agency, as provided by the Ordinance of MEXT, shall prepare and book documents concerning the design certification service provided by the Ordinance of MEXT.

(Implementation of Design Certification Service by the Minister of MEXT)

Article 41-14. When the Minister of MEXT has registered the registered certification agency provided in Paragraph 1 of Article 12-2, the Minister shall not give the design certification.

(Registration of Registered Inspection Agencies)

Article 41-15.

The registration of Paragraph 1 of Article 12-8 shall, as provided by the Ordinance of MEXT, be registered upon application by a person who intends to obtain facility inspections or periodical inspections.(Apply Correspondingly)

Article 41-16. The provisions of Paragraph 3 and Paragraph 4 of Article 39, and of Article 40 through the preceding article shall be applied correspondingly to the designated inspection agencies. In this case, what is referred to as "designated mechanism verification agencies", in these provisions shall be construed to mean "designated inspection agencies", "mechanism verification" to mean "facility inspection and periodical inspection", and "mechanism verifiers" in Article 41-4 to mean "inspectors".

(Registration of Registered Periodic Confirmation Agency)

Article 41-17. The registration of the article 12-10 should be applied by the person who does the service accordance with the periodical certification (hereinafter referred to "periodical certification service).

Chapter VI. Miscellaneous Provisions

(Collection of Reports)

Article 42. The Minister of MEXT, the Minister of Land, Infrastructure, and Transport or the Prefectural Public Safety Commissions may, as provided by the Ordinance of MEXT, by the Ordinance of the Minister of Land, Infrastructure and Transport, or by the Cabinet Order, cause license notified users(include notified user of notified devices with sign), notified sellers, notified lessers or a license radioisotope waste management operators, or persons entrusted by them with transportation, to present report as far as necessary for the enforcement of this Law (in the case of the Ordinance of the Minister of Land, Infrastructure, and Transport, the provisions of Paragraph 1, Paragraph 2 and Paragraph 4 of Article 18 and Paragraph 1 and Paragraph 4 of Article 33 , in the case or the Prefectural Public Safety Commissions, the provisions of Paragraph 6 of Article 18).

2. The Minister of MEXT or the Minister of Land, Infrastructure, and Transport may, as provided by the Ordinance of MEXT or by the Ordinance of the Minister of Land, Infrastructure and Transport, cause registered certification agency, registered inspection agency, registered periodic confirmation agency, registered consignment confirmation agency, registered disposal confirmation agency, registered examination agency, registered qualification training program agency or registered periodic training program agency , in the case of the Minister of MEXT, registered shipment method confirmation agency , in the case of the Minister of Land, Infrastructure, and Transport, to present reports as far as necessary for the enforcement of this Law.

3. The Minister of MEXT may, as far as necessary for the enforcement of the provisions of Paragraph 1 of Article 30-2, cause the commander of a ship or any other person concerned to produce necessary reports in addition to collecting such reports provided in the preceding two paragraphs.

(Radiation Inspectors)

Article 43. MEXT shall have radiation inspectors.

2. The necessary matters concerning the number and the qualification of the radiation inspectors shall be provided by the Government Ordinance.

(On-the-site Inspection)

Article 43-2. The Minister of MEXT, the Minister of Land, Infrastructure, and Transport or the Prefectural Public Safety Commissions may, as far as necessary for the enforcement of this Law (the Ordinance of the Minister of Land, Infrastructure, and Transport for the enforcement of the provisions of Paragraph 1, Paragraph 2 and Paragraph 4 of Article 18 and Paragraph 1 and Paragraph 4 of Article 33, the Prefectural Public Safety Commissions for the enforcement of the provisions of Paragraph 6 of Article 18), cause their the executive persons (radiation inspectors under the direction of the Minister of MEXT or police the executive persons under the direction of the Prefectural Public Safety Commissions) to enter the offices, factories, or the places of office, of license notified users(include notified user of notified devices with sign), notified sellers, notified lessers or a license radioisotope waste management operators or persons entrusted by them with transportation, to check up on their books, papers and other necessary materials, to question

the persons concerned, and to cause them, in the minimum of amount for test, to take away radioisotopes or materials contaminated with radioisotopes.

2. The Minister of MEXT may, as far as necessary for the enforcement of the provisions of Paragraph 1 of Article 30-2, cause the officials to enter the ships so as to check up on their books, documents and other necessary materials, to question the persons concerned, and to take away samples of radioisotopes and other necessary materials, in the minimum of amount required for test, in addition to on-the-site inspection, questioning and taking away of materials provided in the preceding paragraph.

3. Officials making on-the-site-inspections provided in the preceding two paragraphs shall carry their identification cards with them and must show the cards when requested by persons concerned.

4. The authority prescribed in Paragraph 1 and Paragraph 2 shall not be constructed as having been granted for the purpose of criminal investigation.

Article 43-3. The Minister of MEXT or the Minister of Land, Infrastructure and Transportation may, as far as necessary for the enforcement of this Law, cause their the executive persons to enter the offices of registered certification agency, registered inspection agency, registered periodic confirmation agency, registered consignment confirmation agency, registered disposal confirmation agency, registered examination agency, registered qualification training program agency or registered periodic training program agency, in the case of the Minister of MEXT, registered shipment method confirmation agency, in the case of the Minister of Transport, to check up on their books, papers and other necessary materials and to question the persons concerned.

2. The provisions of Paragraphs 3 and Paragraphs 4 of the preceding article shall be applied correspondingly to such on-the-spot inspections as provided in the preceding paragraph.

Chapter VII. Penal Provisions

Article 52. Persons coming under any of the following subparagraphs shall be condemned to either penal servitude of not more than three years and/or a fine of not more than 1,000,000 yen :

(i) A person who has used radioisotopes or radiation generating devices provided in Paragraph 1 of Article 3 without the license provided in the said paragraph;

(ii) A person who has disposed the waste of radioisotopes or radioisotope contaminated materials as a service without the license provided in Paragraph 1 of Article 4-2; or

(iii) A person who has violated the order of suspension of use or radioisotope waste management, provided in Paragraph 1 of Article 26;

(iv) A person who has taken over waste disposal site or waste refilling facilities, etc. include waste disposal site without the license provided in Paragraph 1 of Article 26-4.

Article 53. Persons coming under any of the following subparagraphs shall be condemned to either penal servitude of not more than one year and/or a fine of not more than one 500,000 yen:

(i) A person who has violated the provision of Paragraph 4 of Article 9;

(ii) A person who has changed the items provided in Subparagraph (ii) through Subparagraph (vii) of Paragraph 2 of Article 3 without the license provided in Paragraph 2 of Article 10;

(iii) A person who has changed the items provided in subparagraphs from (ii) to (vi) of Article 4-2 of Paragraph 2 without the license provided in Paragraph 2 of Article 11;

(iv) A person who has broke the command provided in Paragraph 2 of Article 12-7;

(v) A person who has violated the provisions of Paragraph 1, Paragraphs 2 of Article 12-8, Article 29, Article 30, Article 31, Paragraph 1 of Article 34, or Paragraph 1 or Paragraphs 2 of Article 37;

(v-ii) A person who has violated the provisions of Paragraph 1 of Article 30-2 (excluding any such person provided in Article 53-4); or

(vi) A person who has violated the provisions of Paragraph 1 of Article 33 or who has violated the orders based on the provisions of Paragraph 4 of the same article.

Article 53-2. A person who has correspond to any of the following shall be condemned to penal servitude for a term not exceeding one year or a fine not exceeding 500,000 yen.

(i) Person who transgress the regulation of paragraph 1 of Article 41-9(include the case of the regulation is used in Article 41-16, 41-18, 41-20, 41-22, 41-24, 41-28 and 41-32).(ii) A person who has violated such orders for a suspension of service as provided in Article 41-12 (including cases where the prescription is applied correspondingly to Article 41-16, Article 41-18, Article 41-20, Article 41-22, Article 41-24, Article 41-28, Article 41-32 and Article 41-38).

Article 53-3. Any person who has violated the provisions of Paragraph 1 of Article 30-2 in a foreign ship (referring to any ship other than Japanese ship as defined in Article 1 of the Marine Act (Law No. 46 of 1899, hereinafter the same) situated in a sea area outside of Japanese territorial waters, shall be condemned to a fine not exceeding ten million yen.

Article 54. Persons coming under any of the following subparagraphs shall be condemned to a fine of not exceeding 500,000 yen:

(i) A person who has used radioisotopes provided in Paragraph 1 of Article 3-2 without making a notification provided in the said paragraph or who has made a false notification;

(ii) A person who has used notified devices with sign without making a notification provided in Paragraph 1 of Article 3-3 or who has made a false notification;

- (iii) A person who has sold, or leased radioisotopes as business without making a notification provided in Paragraph 1 of Article 3-3 or who has made a false notification;
- (iv) A person who has violated the conditions of Paragraph 1 of Article 8 (including cases where the provision is applied correspondingly to Paragraph 3 of Article 10, Paragraph 3 of Article 11);
- (v) A person who has violated the provisions of Paragraph 2 or 3 of Article 12-5, Article 13, Paragraph 1 of Article 15, Paragraph 1 or 3 of Article 16, Paragraph 1 of Article 17, Paragraph 1 or 7 of Article 18 (including cases changing this paragraph according to the paragraph 2 of Article 25-2), Paragraph 1, 2, 4 or 5 or Paragraph 1 of Article 18 applying for the change for paragraph 2 of Article 25-2 according to the paragraph 3 of Article 25-2;
- (vi) A person who has violated the provisions of Article 14, Paragraph 2 of Article 15, Paragraph 2 of Article 16, Paragraph 2 of Article 17, Paragraph 4 of Article 18 (including cases changing this paragraph according to the paragraph 2 of Article 25-2), Paragraph 3 of Article 19 or Paragraph 4 of Article 18 applying for the change for paragraph 2 of Article 25-2 according to the paragraph 3 of Article 19 or paragraph 3 of Article 25-2;
- (vii) A person who has transported radioisotopes or materials contaminated with radioisotopes without obtaining such verification provided in Paragraph 2 of Article 18-2 (including cases changing this paragraph according to the paragraph 2 of Article 25-2) or Paragraph 2 of Article 18 applying for the change for paragraph 2 of Article 25-2 according to the paragraph 3 of Article 25-2, or making a notification provided in Paragraph 5 of the said article, or submitting a false notification;
- (viii) A person who has managed the waste of radioisotopes or materials contaminated with radioisotopes without obtaining such verification as provided in Paragraph 1 of Article 19-2;
- (ix) A person who has operated waste disposal without the disposal confirmation provided in Paragraph 2 of Article 19-2.
- (x) A person who has violated the order of the suspension of use, sale or lease provided in the provisions of Paragraph 2 of Article 26; or
- (xi) A person who has violated the provisions of Paragraph 1 of Article 28 or who has violated the order based on the provisions of Paragraph 3 of the said article.

Article 55. Persons coming under any of the following subparagraph shall be condemned to a fine of not more than 300,000 yen:

- (i) A person who has changed the items provided in Paragraph 2 of Article 3-2 without making a notification provided in the said paragraph;
- (ii) A person who has changed the items provided in Paragraph 2 of Article 4 without making a notification provided in the said paragraph;
- (iii) A person who has made such an alteration as provided in the provision of Paragraph 5 of Article 10 without making such a notification as provided in Paragraph 5 of the said article or submitting a false notification;
- (iv) A person who has changed items described in Subparagraph (iv) of Paragraph 2 of Article 3, without making such a notification as provided in Paragraph 6 of Article 10;
- (v) A person who does not make the inspection records or makes false records and does not preserve the inspection records to transgress the regulation of paragraph 2 of article 12-4.
- (vi) A person who has refused, obstructed or evaded such an periodic inspection as provided in Paragraph 1, Paragraph 2 of Article 12-9;
- (vii) A person who has refused, obstructed or evaded such an periodic confirmation as provided in Article 12-10;
- (viii) A person who has failed to obey a police officer's order for suspension, refused or obstructed an inspection provided in Paragraph 8 of Article 18, or has failed to obey such an order provided in the said paragraph;
- (ix) A person who has violated the provisions of Article 20, Article 22, Article 23, Article 24, and Paragraph 2 of Article 36-3;
- (x) A person who has failed to keep books, and failed to make entries or has made false entries in violation of the provision of Paragraph 1, Paragraph 2 or Paragraph 3 of Article 25 or who has failed to preserve books in violation of the provisions of Paragraph 4 of the same article;
- (xi) A person who has failed to make a notification provided in Paragraph 1 or Paragraph 3 of Article 27, Article 32 or Paragraph 3 of Article 33, or who has made a false notification;
- (xii) A person who has failed to make such a report as described in Paragraph 1 or Paragraph 3 of Article 42, or who has reported falsely; or
- (xiii) A person who has refused, obstructed, or evaded such an entry, inspection, or removal as described in Paragraph 1 or Paragraph 2 of Article 43-2, or who has failed to answer questions, or made a false statement.

Article 56. A person who has come under any of the following subparagraphs, they shall be punished with a fine not exceeding 300,000 yen:

- (i) A person who has discontinued all of the service of design certification, inspection, periodic confirmation, shipment method confirmation, consignment confirmation, disposal confirmation,

examination or qualification training program, without obtaining such a license as described in Article 41-6 (including cases where the provision applied correspondingly to Article 41-16, Article 41-18, Article 41-20, Article 41-22, Article 41-24, Article 41-28 and Article 41-31);

(ii) A person who has made false entries in the books, or failed to preserve the books in violation of the provisions of Article 41-13 (including cases where the provisions be applied correspondingly to Article 41-16, Article 41-18, Article 41-20, Article 41-22, Article 41-24, Article 41-28, Article 41-32 and Article 41-38);

(iii) A person who has discontinued all of the service of periodic training program service provided in Article 41-37 without making a notification provided in the said paragraph;

(iv) A person who has failed to make such a report as described in Paragraph 2 of Article 42, or have made a false report; or

(v) A person who has refused, obstructed or evaded such an entry or inspection provided in Paragraph 1 of Article 43-3, or have failed to answer questions or made a false statement.

Article 57. When a representative of a legal person or an agent of a legal person or of a person, or some other employees have committed such violating act as described in Article 52, Article 53, Paragraph 2 of Article 53-2, Paragraph 3 of Article 53-3 with respect to the service of the legal person or the person, the legal person or the person shall be punished with such fine provided in the respective article, in addition to the punishment of the actual offender.

Article 58. A person who does not set the financial statement and does not write the items which should be written in the financial statement or write false to transgress of paragraph 1 of 41-7(include the case of regulation is used in article 41-16, 41-18, 41-20, 41-22, 41-24, 41-28, 41-32 and 41-38) or refuse the account which is provided each subparagraph of paragraph 2 of article 41-7 (include the case of regulation is used in article 41-16, 41-18, 41-20, 41-22, 41-24, 41-28, 41-32 and 41-38) without reasonable reason shall be punished with an administrative fine of not more than 200,000 yen.

Article 59. Persons coming under any of the following subparagraph shall be punished with an administrative fine of not more than 100,000 yen:

(i) A person who has violated the provisions of Paragraph 1 of Article 21 or the order based on the provisions of Paragraph 2 of the same article;

(ii) A person who has failed to make a notification provided in Paragraph 8 of Article 26-2;

(iii) A person who has failed to make a notification provided in Paragraph 2 of Article 34 or Paragraph 3 of Article 37; or

(iv) A person who has failed without justifiable reasons to return his license of a Supervisor of Radiation Protection in violation of such orders as provided in Paragraph 6 of Article 35.

Article 60. Persons coming under any of the following subparagraphs shall be punished with an administrative fine of not more than 50,000 yen:

(i) A person who has neglected to make a notification provided in Paragraph 3 of Article 3-2, Paragraph 2 of Article 3-3, Paragraph 3 of Article 4, Paragraph 1 of Article 10, Paragraph 1 of Article 11;

(ii) A person who has failed to present a certificate of license in violation of the provisions of Paragraph 4 of Article 10, Paragraph 4 of Article 11; or

(iii) A person who has failed to make a notification provided in Paragraph 3 of Article 21.

(iv) A person who has failed to make a notification provided in Paragraph 2 of Article 26-3.

(2) Ordinance for the Enforcement of the Law Concerning Prevention from Radiation Hazards Due to Radioisotopes, etc. (Excerpt)

(The Government Ordinance No. 259, May 20, 2005)

Chapter II. License Application and Notification

(License Application for Use)

Article 3. Quantity of radioisotope provided by the Ordinance of the Ministry of Education, Culture, Sports, Science, and Technology (hereinafter referred to as “the Ordinance of MEXT”) of Paragraph 1 of Article 3 of the Law, each type, is minimum value multiplies by 1000 for sealed radioisotopes, is minimum value for unsealed radioisotopes.

2. Such a license as described in Paragraph 1 of Article 3 of the Law shall be obtained for each a factory or place of service.

3. Persons making application for such a license as described in the preceding paragraph shall make the application, stating the expected period of use, together with other papers provided by the Ordinance of the MEXT.

(Notification of Use)

Article 4. Such a notification as described in Paragraph 1 of Article 3-2 of the Law shall be made for each a factory or place of service.

2. Persons intend to make such a notification as described in the preceding paragraph shall make a

notification document stating the expected period of use, together with other papers provided by the Ordinance of MEXT.

(Notification of Notified Devices with Sign)

Article 5. Notification as described in Paragraph 1 of Article 3-3 of the Law shall be made for each a factory or place of service, and each a notified device with sign.

(Notification of Selling and Leasing Service)

Article 6. Persons intend to make such a notification as described in Paragraph 1 of Article 4 of the Law shall make a notification document stating the expected period of use, together with other papers provided by the Ordinance of MEXT.

(License Application for Radioisotope Waste Management Service)

Article 7. The provisions of Paragraph 2 and Paragraph 3 of Article 3 shall be applied correspondingly to license application described in Article 4-2 of Paragraph 1 of the Law. In this case, the term "factory or place of service" as referred to in Paragraph 3 of Article 3 shall be construed to mean "working place for waste management" and the term "expected period of use" as referred to in Paragraph 3 of the said article shall be construed to mean "expected period of service."

(License Application for Alterations Affecting the License for Use)

Article 8. A licensed user, who plan to obtain a license for any alteration as provided in Paragraph 2 of Article 10 of the Law, , shall submit to the Minister of MEXT an application in which the following particulars are described, as provided by the Minister of Education, Culture, Sports, Science and Technology (hereinafter referred to as "the Minister of MEXT):

- (i) The name or title and address, and in the case of a legal person, the name of its representative;
- (ii) The name and the location of factory or service;
- (iii) Details of the alteration; and
- (iv) Reasons for the alteration.

(Notification of a Temporary Alteration in the Place of Use Affecting the License for Use)

Article 9. Quantity of radioisotopes provided by the Government Ordinance as specified in Paragraph 6 of Article 10 of the Law shall be not over 3TBq for sealed radioisotopes, purpose is following:

- (i) Well logging;
- (ii) Examination of riverbed scouring;
- (iii) Demonstration as part of exhibition, display or lecture;
- (iv) Calibration of machines, devices, etc.; and
- (v) Such examination of densities or masses of materials as designated by the Minister of MEXT.

2. Purpose of use for radiation generator provided by the Government Ordinance as specified in Paragraph 6 of Article 10 of the Law shall be as provided in the following:(i) Linear accelerator: nondestructive test of bridge support

(ii) Betatron: nondestructive test

(iii) Cockcroft / Walton type accelerator: underground logging

(License Application for Alterations Affecting Radioisotope Waste Management Service)

Article 10. The provisions of Article 8 shall be applied correspondingly to license application for alterations as provided in of Article 11-2 of the Law. In this case, the term "the name and the location of factory or service" shall be construed to mean "the location of working place for radioisotope waste management service."

Chapter III. Certification of Designs for Radioisotope-equipped Device

(Radioisotope, etc. without Facility Inspection)

Article 13. The storage capacity provided by the Government Ordinance as specified in Paragraphs 1 and Paragraphs 2 of Article 12-8 of the Law shall be 37 TBq for sealed radioisotopes, and 740 MBq for unsealed radioisotopes.

(Periods of Periodical Inspection)

Article 14. Such periods provided by the Government Ordinance, as specified in Paragraph 1 and Paragraph 2 of Article 12-9 of the Law shall be the periods set forth in the following subparagraphs according to the division of persons provided in the following respective subparagraphs:(Periods of Periodical Confirmation)

Article 15. Such periods provided by the Government Ordinance, as specified in Article 12-10 shall be the periods set forth in the following subparagraphs according to the division of persons provided in the following respective subparagraphs:

- (i) A licensed user, seller or lesser, or radioisotope waste management service operator who uses a storage facility of a storage capacity for unsealed radioisotopes not smaller than as provided in Article 14; within one year from the day on which two years shall have elapsed from the day of successful completion of a facility inspection, or a periodical confirmation; and
- (ii) Other persons; within one year from the day on which four years shall have elapsed from the day of successful completion of the facility inspection, or the periodical confirmation.

(Necessity of Verification Concerning Transportation)

Article 16. The cases provided by the Government Ordinance as specified in Paragraph 2 of Article 18 of

the Law shall be the cases where any of the radioisotopes or the materials contaminated with radioisotopes, which particularly require measures for the prevention of radiation hazards and provided by the Ordinance of MEXT (by the Ordinance of the Minister of Land, Infrastructure and Transport in the case of the verification concerning transportation by rail, by track, by cable, by trackless car, by motor and by light vehicle excluding the verification concerning goods for transportation), is to be transported.

(Necessity for Notification to the Prefectural Public Safety Commission)

Article 17. The provisions described in the preceding article shall be applied correspondingly to such cases provided by the Government Ordinance, as defined in Paragraph 5 of Article 18 of the Law.

(Communication among the Prefectural Public Safety Commissions)

Article 18. In the case of transportation travelling over two or more prefectures, the relating Prefectural Public Safety Commissions (hereinafter referred to as "the relating Safety Commissions" in this article) shall take measures provided in the following:

(i) The relating Safety Commissions other than the Prefectural Safety Commission controlling the place of departure (hereinafter referred to as "the Safety Commission of the departure") shall accept notification provided in Paragraph 5 of Article 2 and instruction of Paragraph 6 of the said article;

(ii) When implementing instruction provided in Paragraph 6 of Article 18 of the Law, the content of the direction shall be notified in advance to the relating Safety Commissions; and

(iii) Other than those provided in the preceding Paragraph 2, close communication shall be taken with the relating Safety Commissions concerning the said transportation in order to secure the safety of the public by preventing radiation hazards.

(Necessity for Verification Concerning Waste Management)

Article 19. The cases provided by the Government Ordinance as specified in Paragraph 1 of Article 19-2 of the Law, shall be the cases other than the cases where the waste of radioisotopes or materials contaminated with radioisotopes are managed at those waste management facilities and the cases other than the ocean dumping that falls as specified in Subparagraph (ii) of Paragraph 1 of Article 30-2 of the Law.**Chapter V.**

Miscellaneous Provisions

(The Number and Qualification of Radiation Inspectors)

Article 30. The number of radiation inspectors shall be twenty-two.

2. Radiation inspectors shall have adequate knowledge of and experience in the prevention of radiation hazards

(3) The Rules for the Enforcement of the Law Concerning Prevention from Radiation Hazards Due to Radioisotopes, etc. (Excerpt)

(The Ordinance No. 56 of the Prime Minister's Office, September 30, 1960)

(Latest Revision: the Ordinance No. 35 of the Ministry of Education, Culture, Sports, Science, and Technology, June 1, 2005)

Chapter II. License Application, etc.

(License Application for Use)

Article 2. The license application for use described in Paragraph 2 of Article 3 of the Law for Prevention of Radiation Hazards due to Radioisotopes, etc. (Law No. 167, 1957, hereinafter referred to as "the Law") shall be in accordance with Form No. 1 provided separately.

2. The application described in the preceding paragraph shall be attached with the following documents, as provided in Paragraph 3 of Article 3 of the Ordinance for the Enforcement of the Law Concerning Prevention from Radiation Hazards Due to Radioisotopes, etc. (The Government Ordinance No. 259, 1960, hereinafter referred to as "the Ordinance"):

(i) In the case of a legal person, an excerpt copy of the register;

(ii) A document containing the expected starting time of use and the expected time period of use;

(iii) Plane views of the inside and outside of the factory or place of service, which are provided with scales and directions, and centered on the use facilities, storage facilities and radioisotope waste management facilities;

(iv) Plane views of rooms of the use facilities, storage facilities, and radioisotope waste management facilities, which illustrate room plans and purposes of use, doorways, the controlled area, and locations to post marks, which are provided with scales and directions;

(v) Detailed sectional views of the main portions of the use facilities, storage facilities, and radioisotope waste management facilities, which are provided with scales;

(vi) Documents, drawings and documents in which the situation of the area adjacent to the factory or place of service is described to verify the conformity to the standards described in Subparagraph (iii) of Paragraph 1 of Article 14-7, Subparagraph (iii) of Article 14-9, or Subparagraph (iii) of Article 14-11, (limited to the case that such measures described in the parenthesis of Item B of Subparagraph (iii) of Paragraph 1 of Article 14-7 are taken);

(vi-2) When such automatic displays provided in Subparagraph (vi) of Paragraph 1 of Article 14-7 or such interlocks provided in Subparagraph (vii) of the said paragraph are installed, plane views of rooms where radioisotopes or radiation generating devices are used or installed, that illustrates the doorway and the location where the automatic displays or the interlocks are installed, and documents containing the type and detailed function of the interlocks;

(vii) Documents and drawings which verify that the ventilation equipment are what have capacity as specified in Item A and Item B of Subparagraph (iv) of Paragraph 1 of Article 14-11, drawings in which the location of the ventilation facility and the ventilation system are illustrated, and when the ventilation monitoring equipment is installed, documents in which the situation of the area adjacent to the factory or place of service (limited to the case that such measures as described in the parenthesis in Item B(2) of the said subparagraph are taken) is described, and the details of the ventilation monitoring equipment, and drawings showing the location of the ventilation monitoring equipment, and when such a ventilation facility as described in Item B(3) of the said subparagraph is applied for, the document in which the reason is described;

(viii) Documents and drawings which verify that the discharge facility has the capability as specified in Item A of Subparagraph (v) of Paragraph 1 of Article 14-11, drawings in which the location of the discharge facility and the discharge system are illustrated, and when a discharge monitoring equipment is installed, documents in which the situation of the area adjacent to the factory or place of service (only when such measures as described in the parenthesis in Item B(2) of the said subparagraph are taken) is described, and the details of the discharge monitoring equipment, and drawings showing the location of the discharge monitoring equipment, and when such a discharge facility as described in Item A(3) of Subparagraph (v) of the said paragraph is applied, the document in which the reason is described;

(ix) In such cases as specified in Paragraph 2 and Paragraph 3 of Article 14-7, documents containing details of the method for the use of radioisotopes or radiation generating devices and the measures to be taken for prevention of radiation hazards; and

(x)

(xi) The diagnosis of doctor on mental functional disorder concerning persons wishing to obtain the license provided in Paragraph 1 of Article 3 of the Law (in the case of a legal person, its executives executing the service, hereinafter referred to as "applicant").

3. When the applicant is a legal person, and the Minister of MEXT recognizes that there is no problem in performing the service judging from the job specification of the officer, the applicant may submit the document which prove that the concerned officer is not subject to Subparagraph (i) of Paragraph 2 of Article 5 of the Law, instead of such a diagnosis as described in Subparagraph (xi) of the preceding paragraph.

(Notification of Use)

Article 3. The notification for alternation concerning the license for use described in Paragraph 1 of Article 3-2 of the Law shall be in accordance with Form No. 2 provided separately.

2. The following documents shall be attached to the notification described in the preceding paragraph in accordance with the provisions of Paragraph 2 of Article 4 of the Ordinance:

(i) Documents in which the expected starting time of use and the expected period of use are described;

(ii) Plane views showing the situation of the place of use and the place of waste management, the controlled area and the location where marks are posted, and the storage facilities in the case of intending to use sealed radioisotopes, and the device installed facility in the case of intending to use certified radioisotope-equipped devices, which are provided with scales and directions; and

(iii) Documents and drawings which verify that the shield walls and other shields of the storage facilities are those with the capacity as specified in Subparagraph (iii) of Article 14-9.

(Notification of Alteration Concerning Notification of Use)

Article 4. The notification for alterations described in Paragraph 2 of Article 3-2 of the Law shall be in accordance with Form No. 3 provided separately.

2. The following documents shall be attached to the notification described in the preceding paragraph:

(i) The document in which the expected time of alteration is described; and

(ii) Documents and drawings concerning the alteration as specified in Subparagraph (ii) and (iii) of Paragraphs 2 of the preceding article.

(Notification of Use of Notified Devices with Sign)

Article 5. The notification of use for notified devices with sign in Paragraph 1 of Article 3-3 of the Law shall be in accordance with Form No. 4 provided separately.

(Notification of Selling and Leasing Service)

Article 6. The notification for selling or leasing service described in Paragraph 1 of Article 4 of the Law shall be in accordance with Form No. 6 provided separately.

2. The provisions of Paragraph 2 (excluding Subparagraph (ix) of the said paragraph) and Paragraph 3 of the preceding article shall be applied correspondingly to the documents to be attached to the application as described in the preceding paragraph, as provided in the provisions of Paragraph 2 of Article 3 of the Ordinance applied correspondingly to Article 5 of the Ordinance.

- (i) In the case of a legal person, an excerpt copy of the register;
- (ii) A document containing the expected starting time of use and the expected time period of use and expected quantity of annual sales each kind of radioisotopes or expected quantity of max leasing.

(Notification of Change for Notification of selling and Leasing Service)

Article 6-2. The notification of change in Paragraph 2 of Article 4 of the Law shall be in accordance with Form No. 7 provided separately.

2. The following documents shall be attached to the notification described in the preceding paragraph:

(i) The document in which the expected time of alteration is described; and

(ii) Documents concerning the alteration as specified in Subparagraph (ii) of Paragraphs 2 of the preceding article. (License Application for Radioisotope Waste Management Service)

Article 7. The license application for radioisotope waste management service described in Paragraph 2 of Article 4-2 of the Law shall be in accordance with Form No. 8 provided separately.

2. The provisions of Paragraph 2 (excluding Subparagraph (iv), (vi-2), (ix) and (x) of the said paragraph) and Paragraph 3 of Article 2 shall be applied correspondingly to the documents to be attached to the application as described in the preceding paragraph, as provided in the provisions of Paragraph 2 of Article 3 of the Ordinance except for Article 6 of the Ordinance. In this case, the wordings, "the expected starting time of use and the expected time period of use" in Subparagraph (ii) of Paragraph 2 of Article 2 shall be construed to mean "the expected starting time of service and the expected time period of service, and the expected annual collecting quantity of radioisotopes, etc. and the expected annual waste management quantity for every method of waste management", "use facilities, storage facilities" in Subparagraph (iii) of the said paragraph to mean "waste refilling facility, waste storage facility" and "factory or place of service" to mean "radioisotope waste management service place", "use facilities, storage facilities" in Subparagraph (iv) and (v) of the said paragraph to mean "waste refilling facilities, waste storage facilities", "Subparagraph (iii) of Paragraph 1 of Article 14-7, Subparagraph (iii) of Article 14-9" in Subparagraph (vi) of the said paragraph to mean "Subparagraph (iii) of Paragraph 1 of Article 14-7 applied correspondingly to Article 14-8, Subparagraph (iii) of Article 14-9 applied correspondingly to Article 14-10", "factory or place of service" to mean "radioisotope waste management service place" and "the parenthesis of Item B of Subparagraph (iii) of Paragraph 1 of Article 14-7" to mean "the parenthesis of Item B of Subparagraph (iii) of Paragraph 1 of Article 14-7 applied correspondingly to Article 14-8", "factory or place of service" in Subparagraph (vii) and (viii) of the said paragraph to mean "radioisotopes waste management place", "Paragraph 1 of Article 3 of the Law" in Subparagraph (xi) of the said paragraph to mean "Paragraph 1 of Article 4-2 of the Law". (License Application for Alterations Concerning the License for Use)

Article 9. The license application for alterations concerning the license for use described in Article 8 of the Ordinance shall be in accordance with Form No. 9 provided separately.

2. The following documents shall be attached to the application described in the preceding paragraph:

(i) The document showing the expected time of alteration;

(ii) In connection with the alterations, such documents and drawings as specified in Subparagraph (iii) through (x) of Paragraph 2 of Article 2; and

(iii) In the case of accompanying constructions, the documents which include the expected construction period and the measures taken for prevention of radiation hazards during the construction period.

(Minor Alternations not Requiring a License of Alternation)

Article 9-2. Minor alterations provided by the Ministerial Ordinance of MEXT in the provisory provision of Paragraph 2 of Article 10 of the Law, shall be those coming under the following subparagraphs:

(i) Reduction in storage capacity of storage facilities;

(ii) Reduction in quantity of radioisotopes;

(iii) Reduction in number of radiation generating devices;

(iv) Discontinuation of use facilities, storage facilities or waste management facilities;

(v) Alteration of method of use, or the location, structure or equipment of use facilities, storage facilities or waste management facilities, that are those provided by the Minister of MEXT; or

(vi) Alteration of performances of radiation generating devices that are those provided by the Minister of MEXT.

(License Application for Alterations Concerning Radioisotope Waste Management Service)

Article 9-3. The provisions of Article 9 shall be applied correspondingly to license application for alterations concerning radioisotope waste management service described in Article 10 of the Ordinance. In this case, the wordings, "the expected time of alteration" in Subparagraph (i) of Paragraph 2 of Article 9 shall be construed to mean "the expected time of alteration, and the expected annual collecting quantity of radioisotopes, etc. concerning the alteration and the expected annual waste management quantity for every method of waste management", and "through Subparagraph (x)" in Subparagraph (ii) of the said paragraph to mean "through Subparagraph (vi), and Subparagraph (vii) and Subparagraph (viii)".

2.

Article 11. The notification for alterations of place of use described in Paragraph 6 of Article 10 of the Law

shall be in accordance with Form No. 12 provided separately.

2. The following documents shall be attached to the notification described in the preceding paragraph:

- (i) The documents in which the place of use is illustrated and the situation of its neighborhood is described;
- (ii) Plane views of the place of use and its neighborhood showing the controlled area and places where marks are posted, which are centered on the place of use and provided with scales and directions; and
- (iii) Documents in which the measures taken to prevent radiation hazards are described.

Chapter II-3. Standards of Use Facilities, etc.

(Standards of Use Facilities)

Article 14-7. The technical standards of the location, structure and equipment of use facilities provided in Subparagraph (i) of Article 6 of the Law shall be as follows:

- (i) The use facility shall be installed in the place with little possibility of ground collapse and flood;
- (ii) When the concerned use facility is a building defined in Subparagraph (i) of Article 2 of the Construction Standard Law (Law No. 201, 1950) or a living space defined in Subparagraph (iv) of the said article, the main structures, etc. (referring to the main structures, and walls and pillars partitioning the concerned facility defined in Subparagraph (v) of the said article, hereinafter the same) shall be fire-resistant (referring to fire-resistant structure defined in Subparagraph (vii) of the said article, hereinafter the same), or are constructed of inflammable materials (which refer to inflammable material as defined in Subparagraph (ix) of the said article, hereinafter the same);

(iii) The use facility shall be furnished with shield walls and other shields in order to keep each of the following doses not exceeding the dose limits provided by the Minister of MEXT respectively:

- A. Radiation doses possible to be exposed to persons in places inside the use facilities where persons always enter; and
- B. Radiation doses in the boundary (when the measures are taken so that persons do not enter the area adjacent to the boundary of the factory or place of service without permission, the boundary of the areas which are composed of the factory or place of service and the concerned area) of the factory or place of service and in areas inside the factory or place of service where persons reside.

(iv) In the case of using unsealed radioisotopes, the workroom shall be provided with as provided in the following:

- A. The inside wall, floor and other parts of the workroom, which are possible to be contaminated with radioisotopes, shall have few projection, hollow or crevices of joint finishing materials, etc.;
- B. The inside wall, floor and other parts of the workroom which are possible to be contaminated with radioisotopes, shall be flat and smooth, manufactured of materials that gas or liquid does not permeate, and finished with corrosion-resistant materials; and
- C. Devices such as hoods and glove boxes, etc. to prevent spread of gaseous radioisotopes shall be installed with connection to the ventilation equipment of the workroom.

(v) In the case of using unsealed radioisotopes, the contamination inspection room shall be provided with as provided in the following:

- A. The contamination inspection room shall be provided with in the places where persons usually enter and leave through, and are most suitable for inspection of contamination with radioisotopes, such as neighbourhood, etc. of doorway of the use facilities;
- B. The inside wall, floor and other parts of the contamination inspection room which are possible to be, contaminated with radioisotopes, shall have few projection, hollow, or crevices of joint finishing materials, etc., and shall be those which conform to the standards described in Item A and Item B of the preceding subparagraph;
- C. The contamination inspection room shall be provided with cleaning equipment and dressing equipment, and shall be equipped with radiation measuring instruments for inspection of contamination, and with instruments and materials required for removal of contamination; and
- D. The drain piping of the cleaning equipment provided in Item C shall be connected with the discharge facility.

(vi) The doorway of the room, where sealed radioisotopes or radiation generating devices of the quantity provided by the Minister of MEXT are used, and where persons usually enter and leave through, and when radioisotopes or radiation generating devices are used, shall be equipped with an automatic display device to indicate the use;

(vii) The doorway of the room, where sealed radioisotopes or radiation generating devices of quantity provided by the Minister of MEXT are used, where persons usually enter and leave through, and when radioisotopes or radiation generating devices are used, shall be equipped with the interlock which prevents persons from entering the room without permission;

(viii) The boundary of the controlled area shall be provided with the fences and other facilities to prevent persons from entering without permission; and

(ix) The marks shall be posted at the room where radioisotopes or radiation generating devices are used, contamination inspection room, the fences provided with as the boundary of the controlled area, and other facilities to prevent persons from entering the room without permission as provided in the annexed table.

2. The provisions of the preceding paragraph are not applied to the case where radioisotopes are used

dispersing broadly and temporarily, such as investigation of leakage of the water, epidemiological investigation of insects, investigation of moving situations of source materials in the production process, etc.

3. The provisions of Subparagraph (i), Subparagraph (ii), Subparagraph (vi) and Subparagraph (vii) of Paragraph 1 are not applied to the case where sealed radioisotopes or radiation generating devices are used in moving as necessary.

4. The provisions of Subparagraph (ii) of Paragraph 1 are not applied to the case where sealed radioisotopes not more than quantity provided by the Minister of MEXT, .

5. The provisions of Subparagraph (v) of Paragraph 1 are not applied to the case where unsealed radioisotopes are used within the sealed device, so that surfaces of human bodies and materials worn on human bodies, such as working clothes, footwear, etc., may not be contaminated with radioisotopes.

6. The provisions of Subparagraph (vii) of Paragraph 1 are not applied to the case where walls and other shields are furnished, so that radiation doses which persons are possible to be exposed, in the room where radioisotopes or radiation generating devices are used, are kept not exceeding the dose limits provided in Item A of Subparagraph (iii) of the said paragraph.

(Standards of Waste Refilling Facilities)

Article 14-8. The provisions of Paragraph 1 (excluding Subparagraph (vi) and Subparagraph (vii)) of said article shall be applied correspondingly to technical standards of the location, structure and equipment of waste refilling facilities as provided in Subparagraph (i) of Article 7 of the Law. In this case, wordings, "factory or place of service" in Item B of Subparagraph (iii) of Paragraph 1 of said article shall be construed to mean "radioisotope waste management service place", "using unsealed radioisotopes" in Subparagraph (iv) and (v) of the said paragraph to mean "refilling or repacking unsealed radioisotopes, etc.", and "rooms where radioisotopes or radiation generating devices are used" in Subparagraph (ix) of the said paragraph to mean "rooms where radioisotopes, etc. are refilled or repacked."

(Standards of Storage Facilities)

Article 14-9. The technical standards of the location, structure and equipment of storage facilities, provided in Subparagraph (ii) of Article 6 of the Law and Subparagraph (ii) of Article 13 of the Law, shall be provided as follows:

(i) The storage facility shall be installed in the place with little possibility of ground collapse and flood;

(ii) The storage facility shall be provided with storage rooms or storage box as provided in the following. But the same shall not be applied to the case where sealed radioisotopes are kept in containers with fire-resistant structure:

A. The main structures, etc. of a storage room shall be fire-resistant structure and the opening shall be furnished with a fire door applicable to the specific fire protection facilities provided in Paragraph (i) of Article 112 of the Ordinance for the Enforcement of the Law Concerning the Construction Standard Law (Government Ordinance No. 338, 1950); and

B. The storage box shall be a fire-resistant structure.

(iii) The storage facility shall be furnished with shield walls and other shields that conform to the standard as specified in Subparagraph (iii) of Paragraph 1 of Article 14-7;

(iv) The storage facility shall be provided with containers in which radioisotopes are contained as provided in the following:

A. The container, in which radioisotopes possible to contaminate the outside atmosphere are contained, shall have the leak-tight structure;

B. The container, in which liquid radioisotopes are contained, shall have a structure hard to spill the liquid, and shall be manufactured of materials hard to permeate the liquid; and

C. The container, in which liquid or solid radioisotopes are contained and which is possible to cause incidents such as cracks, failures, etc., shall be equipped with receiving trays and absorbers, etc., and other facilities or appliances to prevent contamination with radioisotopes by spreading.

(v) The places, where lead to outside, such as doors, lids of the storage facilities, shall be provided with keys and other facilities or appliances for closing;

(vi) The boundary of the controlled area shall be provided with fences and other facilities to prevent persons from entering without permission; and

(vii) The marks shall be posted at the storage room or storage box, on the container provided in Subparagraph (iv), on the fences provided with as the boundary of the controlled area, and on other facilities to prevent persons from entering without permission, as provided in the annexed table.

(Standards of Waste Storage Facilities)

Article 14-10. The provisions of the preceding article shall be applied correspondingly to technical standards of the location, structure and equipment of waste storage facilities provided in Subparagraph (ii) of Article 7 of the Law. In this case, the wordings, "radioisotopes" to mean "radioisotopes, etc."

(Standards of Waste Management Facilities)

Article 14-11. The technical standards of the structure and equipment of waste management facilities, provided in Subparagraph (iii) of Article 6 of the Law, Subparagraph (iii) of Article 7 of the Law shall be provided as follows:

- (i) The waste management facility shall be installed in the place with little possibility of ground collapse and flood;
- (ii) The main structures, etc. of waste management facilities shall be fire-resistant structure, or be constructed of inflammable materials;
- (iii) The waste management facility shall be furnished with shield walls and other shields that conform to the standards described in Subparagraph (iii) of Paragraph 1 of Article 14-7;
- (iv) In the case of using or refilling or repacking unsealed radioisotopes, etc., ventilation equipment shall be installed as provided in the following. But this shall not be applied and of little possibility of generating gaseous radioisotopes or of contaminating atmosphere with radioisotopes:
 - A. The ventilation equipment shall have capacity for keeping the concentration of radioisotopes in the atmosphere of the places, such as workrooms or waste management workrooms where persons always enters, not exceeding the concentration limits specified by the Minister of MEXT; and
 - B. The ventilation equipment shall be those provided in either in the following:
 - (1) The ventilation equipment shall have a capacity keeping the concentration of radioisotopes in ventilation at the ventilation port not exceeding the concentration limits specified by the Minister of MEXT;
 - (2) By equipping the ventilation monitoring equipment to monitor the concentration of radioisotopes in ventilation, the ventilation equipment shall have capacity for keeping the concentration of radioisotopes in the atmosphere of the outside of boundaries (when the measures are taken so that persons do not enter the area adjacent to the boundary of the place of service, etc. without permission, the boundary of areas which are composed of the place of service, etc. and the concerned area, the same in this subparagraph and the next subparagraph, Subparagraph (ii) and Subparagraph (v) of Paragraph 1 of Article 19) of the place of service, etc., not exceeding the concentration limits specified by the Minister of MEXT; or
 - (3) When it is very difficult to provide with ventilation equipment which have the capacity as described in Item (1) or Item (2), the approval shall be obtained from the Minister of MEXT concerning that the ventilation equipment have capacity for keeping the radiation dose in the outside of boundaries of the place of service, etc. not exceeding the dose limits specified by the Minister of MEXT.
 - C. The ventilation equipment shall have structure hard for discharge gas to leak except for the vent port, and shall be made of corrosion-resistant materials; and
 - D. The ventilation equipment shall be installed with the equipment to prevent spreading of air contaminated with radioisotopes in case of failure.
- (v) In the case of cleaning or discharging liquid radioisotopes, etc., discharge equipment shall be as provided in the following:
 - A. The discharge equipment shall be those provided in either of the following:
 - (1) The discharge equipment shall have a capacity for keeping the concentration of radioisotopes in the discharge liquid at the discharge port not exceeding the concentration limits specified by the Minister of MEXT;
 - (2) By equipping the discharge liquid monitoring equipment to monitor the concentration of radioisotopes in discharge liquid, the discharge equipment shall have capacity for keeping the concentration of radioisotopes in discharge liquid at boundaries of the place of service, etc. not exceeding the concentration limits specified by the Minister of MEXT; or
 - (3) When it is very difficult to provide with discharge equipment which have the capacity as described in Item (1) or Item (2), the approval shall be obtained from the Minister of MEXT, concerning that the discharge equipment have capacity for keeping the radiation dose in the outside of boundaries of the place of service, etc. not exceeding the dose limits specified by the Minister of MEXT.
 - B. The discharge equipment shall have structure hard for the discharge liquid to leak and penetrate, and shall be made of corrosion-resistant materials; and
 - C. The discharge liquid cleanup tank shall has structure which allows to take samples from the discharge liquid or to determine the concentration of radioisotopes in the discharge liquid, and the outlet equipped with devices to adjust outflow of the discharge liquid, and shall has structure to cover the upper opening with the lid, or its surroundings shall be provided with the fences and other facilities to prevent persons from entering without permission.
- (vi) In the case of incinerating radioisotopes, etc., in addition to the incinerator as provided in the following, the ventilation equipment shall be provided to conform to the standard specified in Subparagraph (iv), the waste management workroom to conform to the standard specified in Subparagraph (iv) of Paragraph 1 of Article 14-7 and the contamination inspection room to conform to the standard specified in Subparagraph (v) of the said paragraph:
 - A. The incinerator shall has structure for the discharge gas hard to leak and for the ash hard to disperse;
 - B. The incinerator shall has structure connected with the ventilation equipment; and

- C. The carrying out part of the incineration residue of the incinerator shall be connected with the waste management workroom.
- (vii) In the case of solidifying radioisotopes, etc. by using solidification materials of concrete and others, the solidification process facility shall be as provided in the following, and shall be provide with the ventilation facility which conforms to the standard specified in Subparagraph (iv), the radioisotope waste management workroom which conforms to the standard specified in Subparagraph (iv) of Paragraph 1 of Article 14-7 and the contamination inspection room which conforms to the standard specified in Subparagraph (v) of the said paragraph:
- A. The solidification process facility shall has structure for radioisotopes, etc. hard to leak and spill out, and for coarse particulates hard to disperse; and
 - B. The solidification process facility shall be made of materials hard for the discharge liquid to penetrate, and shall be made of corrosion-resistant materials.
- (viii) In the case of storage, the storage facility shall be provided with as provided in the following:
- A. The storage facility shall has structure partitioned from the outside;
 - B. The places which lead to outside, such as doors, lids of the storage facility shall be installed with keys and other facilities or appliances for closing; and
 - C. The storage facility shall be equipped with a container that has fire-resistant structure and conforms to the standard specified in Subparagraph (iv) of Article 14-9. This shall not be applied where such specified measures to prevent spreading of contamination are taken for the contaminated materials such as large-sized machines, etc. that have some significant difficulties to be sealed in containers.
- (ix) The boundary of the controlled area shall be provided with the fences and other facilities to prevent persons from entering without permission; and
- (x) The marks shall be posted at the discharge equipment, ventilation equipment, waste management workrooms, contamination inspection rooms, storage equipment, containers provided in Item C of Subparagraph (viii), and fences provided with as the boundary of the controlled area and other facilities to prevent persons from entering without permission, as provided in the annexed table.

2. When a ventilation equipment or a discharge equipment for which an approval has been granted as provided in Item B(3) of Subparagraph (iv) or in Item A(3) of Subparagraph (v) of the preceding paragraph is recognized that the facility have not the capability corresponding to the concerned approval, the Minister of MEXT may revoke the concerned approval.(Standards of Device Installed Facilities)

Article 14-12. For the technical standards of the location, structure and equipment of the device installed facility as provided in Paragraph 2 of Article 13 of the Law, the provisions of Subparagraph (i), Subparagraph (iii), Subparagraph (viii) and Subparagraph (ix) of Paragraph 1 of Article 14-6, and Subparagraph (v) of Article 14-9 shall be applied correspondingly other than those as provided in the following. In this case, the wording "rooms where radioisotopes or radiation generating devices are used, contamination inspection rooms" in Subparagraph (ix) of Paragraph 1 of Article 14-6 shall be construed to mean "rooms where certified radioisotope-equipped devices are used":

- (i) The device installed facility (limited to those installed with electron capture detectors for gas chromatography (limited to those equipped with nickel-63, hereinafter the same)) shall be provided with a storage container; and
- (ii) The marks shall be posted on the container provided in the preceding subparagraph, as provided in the annexed table.

Chapter II-4. Facility Inspection, etc.

(Minor Alterations without Requirement of Facility Inspection)

Article 14-13. Minor alterations provided by the Ordinance of MEXT in Paragraph 1 of Article 12-8 of the Law shall be the alterations other than those as described in the followings:

- (i) The following alterations made by a licensed user:
 - A. Extension of a use facility where sealed radioisotopes in quantity of 10 TBq or more are used;
 - B. Extension of a storage facility where sealed radioisotopes in quantity of 10 TBq or more are straged;
 - C. Such an alteration of the storage capacity of the storage facility (only sealed radioisotopes 10 TBq or more) is used shall be changed from less than 10 TBq to 10 TBq or more; or
 - D. Extension of a waste management facility where the waste of sealed radioisotopes are managed.
- (ii) The following alterations made by a licensed user:
 - A. Extension of a use facility where quantity for annual use of unsealed radioisotopes exceeds the quantity provided by the Minister of MEXT;
 - B. Extension of a storage facility of which storage capacity for unsealed radioisotopes exceeds the quantity provided by the Minister of MEXT;
 - C. Such an alteration of storage capacity of the storage facility that storage capacity for unsealed radioisotopes of the factory or place of service where the said storage facility is used shall be changed ; or
 - D. Extension of a waste management facility where the waste of unsealed radioisotopes are managed.

(iii) ExtensionIncrease of a use facility where the radiation generating device is used by a licensed user of the radiation generating device, where the radiation generating device is used, or an alteration to use the radiation generating device at the facility, where radiation generating device has not been used.

2. Minor alterations provided by the Ordinance of MEXT in Paragraph 2 of Article 12-8 of the Law are the alterations other than the increase of the waste refilling facility, the waste storage facility, or the waste management facility.

(Application for Facility Inspection)

Article 14-14. Any persons who intends to receive the facility inspections (except the inspections performed by the registered inspection agencies) as provided in Paragraph 1 of Article 12-8 of the Law shall submit to the Minister of MEXT an application as provided in annexed Form 15 with the following documents attached:

(i) The clear plane views showing the location of use facilities, etc of the factory or service;

(ii) Measured plane views of use facilities, etc.; and

(iii) Detailed measured sectional views of use facilities, etc.

2. Concerning the said application, in the case of the factory or place of service located in Ibaraki Prefecture, the application described in the preceding paragraph shall be submitted through the Director of Mito Nuclear energy Office,

3. Any person, who intends to receive the facility inspection performed by registered inspection agencies described in Paragraph 1 of Article 12-8 of the Law, shall submit to the said registered inspection agencies an application as provided in annexed Form 15 with documents of each subparagraph of Paragraph 1 attached.

Article 14-15. The provisions of said article shall be applied correspondingly to the application of the facility inspection described in Paragraph 2 of Article 12-8 of the Law. In such a case, the wording “use facilities, etc.”, and “the factory or place of service” in Paragraph 1 of said article shall be construed to mean “waste refilling facility, etc.”, and “radioisotope waste management service place”, respectively, and “the factory or place of service” in the said article Paragraph 2 shall be construed to mean “radioisotope waste management service place”.

(Issue of a Facility Inspection Certificate)

Article 14-16. The Minister of MEXT or the registered inspection agencies shall perform facility inspections as provided in Paragraph 1 or Paragraph 2 of Article 12-8 of the Law, and when the successful completion is recognized, a facility inspection certificate shall be issued.

(Application for Periodical Inspection)

Article 14-17. Any person who intends to receive periodical inspection (except the inspections performed by the registered inspection agencies) as provided or in Paragraph 1 of Article 12-9 of the Law shall submit to the Minister of MEXT an application described in annexed Form 16 with the following documents attached:

(i) The clear plane views showing the location of use facilities, etc. of the factory or service;

(ii) Measured plane views of use facilities, etc.; and

(iii) Detailed measured sectional views of use facilities, etc.

2. Concerning the said application, in the case of the factory or place of service located in Ibaraki Prefecture, the application described in the preceding paragraph shall be submitted through the Director of Mito Nuclear energy Office.,

3. Any persons, who intends to receive the facility inspection performed by registered inspection agencies described in Paragraph 1 of Article 12-98 of the Law, shall submit to the said registered inspection agencies an application as provided in annexed Form 16 with documents of each subparagraph of Paragraph 1 attached.

Article 14-18. The provisions of said article shall be applied correspondingly to the application of the periodical inspection described in Paragraph 3 of Article 12-9 of the Law. In such a case, the wording “use facilities, etc.”, and “factory or place of service” in Paragraph 1 of said article shall be construed to mean “waste refilling facility, etc.”, and “radioisotope waste management service place”, respectively, and “the factory or place of service” in Paragraph 2 of the said article to mean “radioisotope waste management service place”.

(Issue of a Periodical Inspection Certificate)

Article 14-19. The Minister of MEXT or the registered inspection agencies shall perform periodical inspections as provided in Paragraph 1 or Paragraph 2 of Article 12-9 of the Law, and when the satisfaction is recognizes, a periodical inspection certificate shall be issued.

Chapter III. Standards of Use, etc.

(Standards of Use)

Article 15. Technical standards as provided by the Ordinance of MEXT in provisions of Paragraph 1 of Article 15 of the Law shall be as follows:

(i) Radioisotopes or radiation generating devices shall be used in use facilities. But this shall not be applied for the cases when notified user uses sealed radioisotopes or the cases as defined in Paragraph 6 of Article 10 of the Law or Paragraph 2 of Article 14-7 of the Ordinance;

- (i-2) Unsealed radioisotopes shall be used in workrooms;
- (ii) Sealed radioisotopes shall be used under such conditions that the radioisotopes conform to the followings at all times:
 - A. Under the normal conditions of the use, there shall not be a possibility of unsealing or destruction; and
 - B. There shall not be a possibility of contamination with sealed radioisotopes being dispersed by leakage, permeation, etc.
- (iii) Radiation doses of personnel engaged in radiation work shall not exceed effective dose limits and dose equivalent limits by taking any of the following measures:
 - A. Radiation shall be shielded by using shielding walls or other shields;
 - B. Appropriate distance shall be kept between radioisotopes or radiation generating devices and human bodies by using remote handling apparatus, forceps, etc.; and
 - C. Time of radiation exposure to human body shall be shortened.
- (iii-2) When radioisotopes or radiation generating devices are used in the room where interlocks, defined in Subparagraph (vii) of Paragraph 1 of Article 14-7, are installed, the measures to prevent the doors from being opened or closed from outside, which doors people usually do not use such as carry-in entrance, emergency exit, etc., and measures shall be taken to enable a person locked inside of the room to escape swiftly;
- (iv) The concentration of radioisotopes in the atmosphere, which people respire in the place of the workroom where persons normally enter, shall not exceed concentration limits in the atmosphere, by purification and ventilation of the atmosphere contaminated with radioisotopes;
- (v) Food, drink, or smoking shall be prohibited in the workroom;
- (vi) The surface concentration of radioisotopes of materials, which come in contact with persons in the workroom or the contamination inspection office, shall not exceed the surface concentration limits by removal of the contamination with radioisotopes on the surface or by disposal of the material contacted;
- (vii) Working cloths, protection tools, etc. shall be worn in the workroom while at work, and person shall not leave the workroom with these materials wearing without reason;
- (viii) Contamination with radioisotopes on human body and the surface of materials worn on human bodies such as working cloths, foot wears, and protection tools shall be inspected and removed when the person leaves the workroom;
- (ix) Such materials contaminated with radioisotopes that surface concentration of radioisotopes exceeds the surface concentration limits shall not be taken out of the workroom without reason;
- (x) Such materials contaminated with radioisotopes that surface concentration of radioisotopes exceeds the concentration provided by the Minister of MEXT shall not be taken out of the controlled area without reason;
- (xi) Cautions necessary for prevention of radiation hazards shall be displayed in the easily visible area in use facilities, device installed facilities, or the controlled area;
- (xii) Measures shall be taken to prevent the people from entering the controlled area for no reason, and when any person other than the occupational personnel enters the area, the person shall be made to obey the instructions given by the occupational personnel;
- (xiii) When the notified user uses radioisotopes at the controlled area, the area shall be marked as provided in the annexed table;
- (xiv) When sealed radioisotopes are transferred to use, the radioisotopes shall be inspected immediately after the use by radiation measuring instruments, whether there is abnormality such as loss or leakage, etc., and when abnormality exists, necessary measures, such as exploration, etc., to prevent radiation hazards shall be taken; and

2.

Article 16. Delete

(Criteria for Storage)

Article 17. Technical standards for storage as specified by the Ordinance of MEXT in Paragraph 1 of Article 16 of the Law for a license notified user shall be as follows:

- (i) Radioisotopes shall be stored in a container provided for in a storage room or a storage box (a storage facility, when sealed radioisotopes are stored in a fire-resistant structured container, or a storage facility or a device installed facility, when certified radioisotope-equipped devices are stored);
- (ii) Radioisotopes exceeding the storage capacity of a storage facility shall not be stored;
- (iii) The dose of a occupational personnel engaged in radiation work shall not exceed effective dose limits and dose equivalent limits by taking any of measures as defined in Item A through Item C of Subparagraph (iii) of Paragraph 1 of Article 15;
- (iii-2) The measures shall be taken to prevent possibilities of a storage box (or a container, when sealed radioisotopes are stored in the fire-resistant structured container) being carried about without reason while radioisotopes are stored;
- (iv) When radioisotopes possibly contaminate the atmosphere are stored, the concentration of the radioisotopes in the atmosphere of the storage facility that persons respire shall not exceed the concentration limits in the atmosphere;

(v) Eating, drinking and smoking shall be prohibited at the places of the storage facilities, where there is a possibility of oral ingestion of radioisotopes;

(vi) The surface concentration of radioisotopes on materials that come in contact with persons in the storage facility shall not exceed the surface concentration limits by taking the following measures:

A. Liquid radioisotopes shall be put in a container whose structure is spill-proof and which uses materials impermeable to liquid; and

B. Spreading of contamination with radioisotopes shall be prevented by using receiving saucer, absorbents, or other facilities, or instruments for such a container, which encloses liquid or solid radioisotopes, when occurrence of accidents is possible, such as cracking, breaking, etc.

(vii) Such materials contaminated with radioisotopes that surface concentration of radioisotopes exceeds the concentration limits as specified by the Minister of MEXT shall not be taken out of the controlled area without reason;

(viii) Necessary cautions for prevention of radiation hazards shall be displayed at the easily visible places of the storage facilities;

(ix) The measures shall be taken to prevent the people from entering the controlled area without reason, and when a person enters the area other than the personnel engaged in radiation works, the person shall be made to obey the instructions given by the personnel engaged in the radiation work; and

2. Technical standards for storage provided in Paragraph 1 of Article 16 of the Law, for the license radioisotope waste management operator shall be as provided in the followings, and the provisions of Subparagraph (ii), Subparagraph (iii), and Subparagraph (iv) through Subparagraph (ix) of the preceding paragraph shall be applied correspondingly. In such a case, the wording "storage facility" and "radioisotopes" in Subparagraph (ii) of the said paragraph shall be construed to mean "waste storage facility" and "radioisotopes, etc.", respectively, "radioisotopes, which may possibly contaminate the atmosphere" and "storage facility" in Subparagraph (iv) of the said Paragraph to mean "radioisotopes, etc., which may possibly contaminate the atmosphere" and "waste storage facility", respectively, "storage facility" and "radioisotope" in Subparagraph (v) of the said paragraph to mean "waste storage facility" and "radioisotopes, etc.", respectively, "storage facility", "liquid radioisotopes", and "solid radioisotopes" in Subparagraph (vi) of the said paragraph to mean "waste storage facility", "liquid radioisotopes, etc.", and "solid radioisotopes, etc.", respectively, "storage facility" in Subparagraph (viii) of the said paragraph to mean "waste storage facility":

(i) Radioisotopes, etc. shall be stored in a container of a storage room or a storage box (a waste storage facility, when sealed radioisotopes, etc. are stored in a fire-resistant structured container); and

(ii) Measures shall be taken to prevent a storage box (a container, when sealed radioisotopes, etc. are stored in the fire-resistant structured) being carried about without reason while the radioisotopes, etc. are stored.

(Standards of Waste Management)

Article 19. The technical standards of waste management as provided in Paragraph 1 of Article 19 of the Law for a license user, a license radioisotope waste management operator shall be as provide in the followings, and the provisions of Subparagraph (iii) Paragraph 1 of Article 15 and Subparagraph (iv) through Subparagraph (x) and Subparagraph (xi) and (xii) of Article 15 shall be applied correspondingly. In this case, the wordings, "radioisotopes or radiation generating devices" in provisions of Item B of Subparagraph (iii) of the said paragraph shall be construed to mean "radioisotopes, etc." and "workrooms" in Subparagraph (iv) through Subparagraph (ix) of Article 15 to mean "waste management workroom" and "use facility, or the controlled area" to mean "waste management facility" in Subparagraph (xi) of the said paragraph:

(i) Gaseous radioisotopes, etc. shall be managed as waste after purification or exhaustion through the ventilation equipment;

(ii) In the case of waste management by the method described in the preceding subparagraph, the waste management shall be as provided in the following:

A. In the case of waste management using the ventilation equipment described in Item B(1) of Subparagraph (iv) of Paragraph 1 of Article 14-11, the concentration of radioisotopes in the ventilation at the ventilation port of the equipment shall be below the limits of concentrations specified by the Minister of MEXT;

B. In the case of waste management using the ventilation facility described in Item B(2) of Subparagraph (iv) of Paragraph 1 of Article 14-11, the concentration of radioisotopes in the atmosphere outside the boundary of the place of service, etc. shall be kept below the concentration limits specified by the Minister of MEXT by monitoring the concentrations of radioisotopes in the ventilation air; and

C. In the case of waste management using the ventilation equipment described in Item B(3) of Subparagraph (iv) of Paragraph 1 of Article 14-11, the concentration of radioisotopes in the atmosphere outside the boundary of the place of service, etc. shall be kept below the limits of concentrations specified by the Minister of MEXT by monitoring the quantities and concentrations of radioisotopes in the ventilation air.

(iii) In the case of removal of radioisotopes, etc. stuck to the ventilation equipment described in

Subparagraph (i) of this article, facilities or equipments and protection tools such as floor coverings, receiving trays, absorbents and others shall be used to prevent the spread of contamination with radioisotopes;

(iv) Liquid radioisotopes, etc. shall be managed as waste by methods provided in the following:

- A. Purification or discharge through the discharge equipment;
- B. Storage in the storage equipment after packaging in a container or after solidifying in a container with concrete or other solidification materials at the solidification treatment equipment;
- C. Incineration by the incinerator; and
- D. Solidification with concrete or other solidification materials at the solidification treatment equipment.

(v) In the case of waste management by methods described in Item A of the preceding subparagraph, it shall be performed as provided in the followings:

- A. In the case of waste management through the discharge equipment described in Item A(1) of Subparagraph (v) of Paragraph 1 of Article 14-11, the concentrations of radioisotopes in the discharged liquid at the draining point of the equipment concerned shall be below the limits of concentrations of radioisotopes provided by the Minister of MEXT;
- B. In the case of waste management through the discharge equipment described in Item A(2) of Subparagraph (v) of Paragraph 1 of Article 14-11, the concentrations of radioisotopes in the discharged liquid at the boundary of the place of service, etc. shall be made below the limits of concentrations provided by the Minister of MEXT by monitoring the concentration of radioisotopes in the discharged liquid; or
- C. In the case of waste management through the discharge equipment as described in Item A(3) of Subparagraph (v) of Paragraph 1 of Article 14-11, radiation doses outside the boundary of the place of service, etc. shall be made below the dose limits provided by the Minister of MEXT by monitoring the quantities and concentrations of radioisotopes in the discharged liquid.

(vi) In the case of waste management by the method described in Item A of Subparagraph (iv), when treating the discharge liquid or removing the radioisotopes, etc. stuck or deposited to the discharge equipment described in Item A of the said subparagraph, facilities or equipments and protection tools such as floor coverings, receiving trays or absorbents and others shall be used to prevent spreading of contamination with radioisotopes;

(vii) In the case of waste management by the method described in Item AB of Subparagraph (iv), when the packaging of liquid radioisotopes in a container is carried out, the container shall conform to the standards as specified in the following:

- A. The structure of the container shall be made to be hard to spill the liquid; and
- B. The material hard to be permeated by the liquid shall be used for the container.

(viii) In the case of waste management by the method described in Item AB of Subparagraph (iv), when the liquid radioisotopes packaged in the container is storage in the storage equipment, if the possible accident such as a crack or a rupture of the container may be anticipated, the facilities or equipments to prevent the spreading of the contamination with radioisotopes such as receiving trays or absorbents or others shall be used to prevent the spreading of contamination with radioisotopes;

(ix) In the case of waste management by the method described in Item B of Subparagraph (iv), when the liquid radioisotopes, etc. is solidified in a container, the container which become one unit with the solidified liquid radioisotopes, etc. shall be able to prevent scattering or leakage of liquid radioisotopes, etc.;

(x) In the case of waste management by the method described in Item B of Subparagraph (iv), the works to solidify the liquid radioisotopes into the container shall be performed in the waste management workroom;

(xi) In the case of waste management by the method described in Item C of Subparagraph (iv), the works to take out the ash from the incinerator after incineration of liquid radioisotopes, etc. shall be performed in the waste management workroom;

(xii) In the case of waste management by the method described in Item D of Subparagraph (iv), the works to solidify the liquid radioisotopes with concrete or other solidification materials shall be performed in the waste management workrooms;

(xiii) Solid radioisotopes, etc. shall be managed as waste by any of methods provided in the followings:

- A. Incineration with the incinerator;
- B. Storage in the storage equipment after packaging in a container or after solidification in a container with concrete or other solidification materials in the solidification processing equipment; or
- C. In the case of the exceptions as described in Item C of Subparagraph (viii) of Paragraph 1 of Article 14-11, it shall be storage in the storage equipment.

(xiv) The provision of Subparagraph (xi) shall be applied correspondingly to the waste management described in A of the preceding subparagraph; and

(xv) The provision of Subparagraph (ix) and (x) shall be applied correspondingly to the waste management described in Item AB of Subparagraph (xiii).4. The provisions of Subparagraph (iii), Subparagraph (x), Subparagraph (xi) and Subparagraph (xii) of Paragraph 1 of Article 15 shall be applied with necessary modification correspondingly to the technical standards of waste management provided in the provisions of

Paragraph 1 of Article 19 of the Law for a notified user, other than those as provided in the followings. In this case, wordings, “radioisotopes or radiation generating devices” in Item B of Subparagraph (iii) of the said paragraph shall be construed to mean “radioisotopes, etc.” and “use facilities, or the controlled area” in Subparagraph(xi) of the said paragraph to mean “the controlled area”:

- (i) Waste management of radioisotopes, etc. shall be performed by taking measures to prevent radiation hazards, such as enclosing those in a container placed in a designated separated area; and
- (ii) The container and the controlled area provided in the preceding subparagraph shall be marked as provided in the annexed table.

5. The technical standards of waste management provided in the provisions of Paragraph 2 of Article 19 of the Law shall be as provided in the following provisions, and the provisions of Subparagraph (iii) of Paragraph 1 of Article 15 shall also be applied correspondingly. In this case, the wording, “radioisotopes or radiation generating devices” in the said subparagraph shall be construed to mean “radioisotopes, etc.”:

- (i) Radioisotopes, etc. shall be disposed by methods provided in the following :
 - A. Request licence notified user or license waste management operator to storage;
 - B. Request license waste management operator relate to waste disposal to waste disposal.
- (ii) For the personnel who performs waste management (except the personnel engaged in radiation work), the exposure dose shall be controlled not to exceed the dose limits specified by the Minister of MEXT.

Chapter IV. Duties of Measurement, etc.

(Measurement)

Article 20. The measurement provided in the provisions in Paragraph 1 of Article 20 of the Law shall be performed as provided in the followings:

- (i) The measurement of quantity of radiation shall be performed for one centimetre dose equivalent rate or one centimetre dose equivalent. Regardless of this provision, at the place where seventy micrometer dose equivalent rate is possible to exceed ten times of one centimetre dose equivalent rate or seventy micrometer dose equivalent is possible to exceed ten times of one centimetre dose equivalent, the measurement shall be performed for seventy micrometer dose equivalent rate or seventy micrometer dose equivalent respectively;
- (ii) The measurement of amount of radiation or situations of contamination with radioisotopes shall be performed using radiation measurement devices. Regardless of this provision, in such a case that the measurement by radiation measuring devices is considerably difficult, these values may be derived by calculation;
- (iii) The measurement provided in the preceding subparagraph shall be performed for the items provided in the upper section of the following table at the most appropriate points to detect the amount of radiation or the situations of contamination with radioisotopes of the places shown in the lower section of the table; and

Item	The amount of radiation	The measurement of situations of contamination with radioisotopes
Place	A. Use facilities B. Waste refilling facilities C. Storage facilities D. Waste storage facilities E. Waste Management facilities F. Boundaries of the controlled area G. Inhabit area inside of the place of service H. Boundaries of the place of service, etc.	A. Workrooms B. Waste management workrooms C. Contamination inspection rooms D. Ventilation ports of ventilation equipments E. Draining points of discharge equipments F. Places where the ventilation monitoring equipment is installed G. Places where the discharge monitoring equipment is installed H. Boundaries of the controlled area

- (iv) The measurement described in Subparagraph (ii) shall be performed once prior to the start of works and shall be performed as provided in the followings after the start of works:
 - A. The measurement of the amount of radiation (except the measurement described in Item B and Item C) and the measurement of the situations of contamination at the workrooms, waste management workrooms, contamination inspection rooms and boundaries of the controlled area shall be performed once every period not exceeding one month. But ;
 - B. For the place where fixed sealed radioisotopes or fixed radiation generating devices are handled, the measurement of the amount of radiation (except the measurement described in Item C), in case where the method of handling and the location of shielding walls or other shields are not changed, shall be performed once every period not exceeding six months;
 - C. When only sealed radioisotopes less than 3.7 GBq or less is handled, the measurement of amount of radiation shall be performed once every period not exceeding six months; and
 - D. The measurement of the situations of contamination with radioisotopes at the ventilation port of ventilation equipment, the draining port of discharge equipment, the place where the ventilation monitoring equipment is installed, and the place where the discharge monitoring equipment is installed, shall be performed every time the ventilation or discharge is carried out (in the case of

the continuous ventilation or discharge, the measurement shall be performed continuously).

2. The measurement of the amount of radiation as described in Paragraph 2 of Article 20 of the Law shall be performed as provided in the followings for the dose by external exposure and the dose by internal exposure:

(i) The measurement of the dose by external exposure shall be performed as provided in the followings: and

- A. The measurement of one centimetre dose equivalent and seventy micrometer dose equivalent (one centimetre dose equivalent for neutron beam) about chest region (abdomen region for female (except a person who are given a diagnosis of infertility or a person who submit to a license notified user, or a license radioisotope waste management operator the report in written form that she has no intention to get pregnant, but this shall not be applied where there is a rational reason));
- B. When the region possible to received the maximum dose by external exposure among the regions of the head and the cervical parts, of the chest and upper arm parts, and of abdomen and femoral parts is other than the region of chest and upper arm parts (for female who is measured at the abdomen region in Item A, the region of abdomen and femoral region), one centimetre dose equivalent and seventy micrometer dose equivalent (for neutron beam, one centimetre dose equivalent) shall be measured at the region where the dose equivalent by external exposure may be the maximum in addition to the measurement described in Item A;
- C. When the region possible to receive the maximum dose by external exposure among the regions of the body is other than the head part, the cervical part, the chest part, the upper arm part, the abdomen part and the femoral part, seventy micrometer dose equivalent shall be measured at the region concerned in addition to the measurement described in Item A and Item B. For the neutron beam, the measurement is not limited to this method;
- D. The measurement shall be performed using the radiation measuring devices. Regardless of this provision, when the measurement by radiation measuring devices is considerably difficult, these values can be derived by calculation; and
- E. For the person who enters into the controlled area, the measurement shall be continuously carried out during the period of the access. Regardless of this provision, for the person who enters temporarily into the controlled area and is not the occupational personnel engaged in radiation work, this provision is not applicable if the dose by external exposure in the controlled area concerned is not possible to exceed the dose as provided by the Minister of MEXT.

(ii) The measurement of the dose of internal exposure shall be performed as provided by the Minister of MEXT, when the radioisotopes are taken by inhalation or by oral ingestion by mistake, once every period not exceeding three months for the person who enters into the workrooms or other areas where the radioisotopes are possible to be taken by inhalation or by oral ingestion (once every period not exceeding one month until the childbirth for the female who is recognized to be pregnant by submitting the report, etc. to the license notified user, or the license radioisotope waste management operator). Regardless of this provision, for the person who enters temporarily into the workroom or other areas where the radioisotopes are possible to be taken by inhalation or by oral ingestion and is not the personnel engaged in radiation work, this provision is not applicable if the dose by internal exposure is not possible to exceed the dose provided by the Minister of MEXT.

3. The measurement of the situation of contamination with radioisotopes described in Paragraph 2 of Article 20 of the Law shall be performed as provided in the followings using the radiation measurement device:

(i) The measurement shall be performed for the surface of the human body parts, such as hands, feet or other regions that are possible to be contaminated with radioisotopes, and for the surface of working wears, footwear, protection tools or other wears for the human body that are possible to be contaminated with radioisotopes; and

(ii) For the persons who enter into the facilities where the unsealed radioisotopes are handled, the measurement shall be performed when the persons concerned leave the facilities.

4. The measurement provided by the Ministerial Order of MEXT described in Paragraph 3 of Article 20 of the Law shall be as follows:

(i) Results of the measurement described in Paragraph 1 shall be recorded for the following items every time the measurement is carried out, and shall be stored for five years:

- A. Date and time of the measurement;
- B. Regions measured;
- C. Full name of the person made the measurement;
- D. Classification and type of the radiation measurement device;
- E. Methods of the measurement; and
- F. Results of the measurement.

(ii) The results of measurement of dose by external exposure shall be summed up for every three month period starting from the first of April, the first of July, the first of October and the first of January, and also for every one year period starting from the first of April and, and for the female who is recognized to be pregnant by submitting the report, etc. by her to the license notified user or the license radioisotope waste

management operator, for one month starting from the first day of the month during the period until the childbirth and shall be recorded for the following items every time the measurement is summed:

- A. Full name of the person being measured;
- B. Full name of the person made the measurement;
- C. Classification and type of the radiation measuring devices;
- D. Methods of the measurement; and
- E. Regions measured and results of the measurement

(iii) The results of measurement of dose by internal exposure shall be recorded for the following items every time the measurement is carried out:

- A. Date and time of the measurement;
- B. Full name of the person being measured;
- C. Full name of the person made the measurement;
- D. Classification and type of the radiation measuring devices;
- E. Methods of the measurement; and
- F. Results of the measurement.

(iv) When the surface of a region of the human body such as hands, feet, etc. is contaminated with radioisotopes exceeding the limits of surface contamination density and is not easy to remove the contamination, the results of measurement as described in the previous paragraph shall be recorded for the following items:

- A. Date and time of measurement;
- B. Full name of the person being measured;
- C. Full name of the person made the measured;
- D. Classification and type of the radiation measuring devices;
- E. The situation of the contamination;
- F. Methods of the measurement; and
- G. Regions being measured and the results of the measurement.

(v) The effective dose and equivalent dose shall be calculated, as provided by the Minister of MEXT, based on the results described in Subparagraph (ii) through the preceding subparagraph for every concerned period which is three months starting from the first of April, the first of July, the first of October and the first of January and also one year starting from the first of April and, for the recognized who is known to be pregnant by submitting the report, etc. from her to the license notified user or the license radioisotope waste management operator, one month starting from the first day of every month during the period until the childbirth, and shall record the following items every time the calculation is carried out:

- A. Year, month and date of calculation;
- B. Full name of the person being calculated;
- C. Full name of the person made the calculation;
- D. The calculated periods;
- E. The effective dosages; and
- F. The equivalent dosages and the name of the organization.

(v-2) As a result of the calculation as described in the preceding subparagraph, if the effective dosage for one year starting from the first of April exceed twenty mSv, the accumulated effective dosage (the sum of effective dosage as calculated in the preceding subparagraph for every one year starting from the first of April) of the period provided by the Minister of MEXT including concerned one year period shall be summed up every year for the concerned period, and following items shall be recorded every time summed

- A. Year, month and date of the summation;
- B. Full name of the person calculated for;
- C. Full name of the person made the calculation;
- D. Period of the summation; and
- E. Accumulated effective dosages.

(vi) A copy of records described in Subparagraph (ii) though the proceeding Subparagraph shall be delivered to the person being measured every time the record is made; and

(vii) The record described in Subparagraph (ii) through Subparagraph (v-2) shall be stored. This provision is not applicable when the person for whom the record concerned are made become not the employee of the license notified user or the license radioisotope waste management operator, or when the records concerned are transferred after five years of storage to the organization designated by the Minister of MEXT.

(Storage by Electro-magnetic Medias)

Article 20-2. The record as the result of measurements defined in Paragraph 3 of Article 20 of the Law may be made by electro-magnetic medias (electronic medias, magnetic medias, or other medias which records cannot be recognized by direct human perception, hereinafter the same definition is applied) and stored as provided in Paragraph 4 of the preceding article.

2. In the case of the storage defined in the preceding paragraph is carried out, the record provided in the said paragraph shall be made to be able to be immediately displayed as necessary using the electronic computers or other equipments.

3. In the case of the storage defined in Article 1, efforts shall be made to secure the standards specified by the Minister of MEXT.

(Internal Rules for Prevention of Radiation Hazards)

Article 21. The Internal Rules for Prevention of Radiation Hazards as provided in Paragraph 1 of Article 21 of the Law shall provide the following items:

- (i) Matters concerning duty and organization of persons engaged in the use of radioisotopes or radiation generating devices;
- (i-2) Matters concerning duty and organization of the Supervisor of Radiation Protection and other persons engaged in safety management for the use of radioisotopes or radiation generating devices;
- (i-3) Matters concerning assignment of the proxy of the Supervisor of Radiation Protection;
- (i-4) Matters concerning maintenance and management of the radiation facility (include the management of entry to the area which is not controlled area);
- (i-5) Matters concerning inspection of the radiation facility (in the case of using or refilling or repacking of sealed radioisotopes or managing the waste of sealed radioisotopes, etc. by the notified user, the controlled area);
- (ii) Matters concerning use of radioisotopes or radiation generating devices (include the matters concerning about the way of confirmation of number of not sealed radioisotopes in the case established in Paragraph 2 of Article 15);
- (iii) Matters concerning receiving or putting out, storage, transportation or waste management of radioisotopes, etc. (include management of lessor when user does not store radioisotopes adequately);
- (iv) Matters concerning measurements of the radiation dose and the level of contamination with radioisotopes, and measures concerning results of the measurement, as provided in subparagraphs of Paragraph 4 of Article 20;
- (v) Matters concerning education and training required for prevention of radiation hazards;
- (vi) Matters concerning health examination;
- (vii) Matters concerning measures essential to the health for persons suffering or who may possibly suffer from radiation hazards;
- (viii) Matters concerning record and preservation as defined for in Article 25 of the Law;
- (ix) Matters concerning measures when an earthquake, fire or other disasters occur (except measures provided in the following subparagraph);
- (x) Matters concerning measures in an emergency;
- (xi) Matters concerning reports of the situation of radiation management; and
- (xiii) Other necessary matters concerning the prevention of radiation hazards.

2. The notification as provided in Paragraph 1 of Article 21 of the Law shall be made in Form No.22 provided separately.

3. The notification as provided in Paragraph 3 of Article 21 of the Law shall be made in Form No.23 provided separately, with the altered Internal Rules for Prevention of Radiation Hazards attached.

4. Concerning the said report, in the case of the place of service, etc. concerning the said report is located in Ibaraki Prefecture, the notification described in the preceding two paragraphs shall be made through the Director of Mito Nuclear energy Office.

(Education and Training)

Article 21-2. The education and training as provided in Article 22 of the Law shall be as provided in the following subparagraphs:

- (i) The education and training shall be provided to persons entering the controlled area (include persons entry the area which is not controlled area according to the Paragraph 1 of Article 22-3) and the occupational personnel in handling work, etc. as provided in the following subparagraph through Subparagraph (v);
- (ii) The education and training to the occupational personnel engaged in radiation work shall be made before entering the controlled area for the first time, and for each period not exceeding one year after entering it;
- (iii) The education and training to the occupational personnel in handling work, etc. who will not enter the controlled area shall be made before the person begins the handling work, etc., for each period not exceeding one year after beginning the work;
- (iv) The education and training to persons defined in the preceding two subparagraphs shall be performed with regard to items provided in the followings:
 - A. Influence of radiation to the human body;
 - B. Safe use of radioisotopes or radiation generating devices;
 - C. Legislations concerning prevention from radiation hazards due to radioisotopes or radiation generating devices; and
 - D. Internal Rules for Prevention of Radiation Hazards.
- (v) The education and training to persons (include persons entry the area which is not controlled area according to the Paragraph 1 of Article 22-3) other than persons defined in the preceding subparagraph shall be performed with regard to matters necessary to prevent radiation hazards occurring in the radiation

facility where they enter.

2. Despite of the provisions in the preceding paragraph, for persons considered to have sufficient knowledge and skill concerning all or any of items or matters provided in Subparagraph (iv) or Subparagraph (v) of the said paragraph, the education and training with regard to the said items or matters may be omitted.

3. Necessary matters concerning practice of the education and training such as amount of time for the education and training, etc., as well as matters provided in the preceding two paragraphs, shall be provided by the Minister of MEXT.

(Health examination)

Article 22. Health examination as provided in Paragraph 1 of Article 23 of the Law shall be as provided in the following subparagraphs:

(i) It shall be provided to the occupational personnel engaged in radiation work (except persons entering the controlled area temporarily) before entering the controlled area for the first time;

(ii) After the occupational personnel engaged in radiation work described in the preceding subparagraph enters the controlled area, it shall be given to the personnel for each period not exceeding one year;

(iii) Despite of the provision in the preceding subparagraph, when the occupational personnel engaged in radiation work comes under any of the followings, the health examination shall be given to the personnel without delay:

A. When a person has taken radioisotopes by oral ingestion or inhalation accidentally;

B. When a person has been contaminated on the skin with radioisotopes in excess of the surface concentration limits, and the said contamination cannot be easily removed;

C. When a person has been, or could have been contaminated on a wound portion of the skin with radioisotopes, or

D. When a person was exposed, or possibly be exposed radiation in excess of the equivalent dose limits or the effective dose limits.

(iv) Methods of the health examination shall be physician's interview, and tests or medical checkup;

(v) The physician's interview shall be made with regard to the following items:

A. Existence of radiation exposure record (including electron beam or X-ray having energy of less than 1 MeV, the same shall be applied to the following Item B and Subparagraph (i) of the Article 23); and

B. For persons having radiation exposure records, the situation of radiation exposure such as place, details and period of time for the work, radiation dose, existence of radiation hazards, situation of radiation exposure, etc.

(vi) The tests or medical check shall be made with regard to the following regions and items. But, the regions or Item A through Item C (except the regions or Item A and Item B for the health examination concerning Subparagraph (i)) are made when the physician considers necessary:

A. Amount of hemoglobin of hematocrit in peripheral blood, red blood cell counts, white blood cell counts and percent white blood cell counts;

B. Skin,

C. Eyes; and

D. Other regions and items provided by the Minister of MEXT.

2. Measures provided by the Ordinance of MEXT described in Paragraph 2 of Article 23 of the Law shall be as provided in the following subparagraphs:

(i) Results of the health examination shall be recorded on the following items for each health examination:

A. Date of the examination;

B. Full name of person being examined;

C. Name of physician who made the health examination;

D. Results of the health examination; and

E. Measures taken in accordance with the results of the examination.

(ii) A copy of the record as described in the preceding subparagraph shall be delivered to the person received the health examination after each health examination; and

(iii) The record described in the Subparagraph (i) shall be kept. But this provision is not applicable when the person received the health examination became not be an employee of the license notified user, or the license radioisotope waste management operator, or that such record is transferred to the agency provided by the Minister of MEXT after being kept for five (5) years.

(Keeping in Electromagnetic Medias)

Article 22-2. Records of health examinations defined in Paragraph 2 of Article 23 of the Law may be made by and stored in electromagnetic media as provided in the paragraph 2 of the preceding article.

2. In the case of keeping as provided in the preceding paragraph, the records given in the said paragraph shall be shown immediately as needed by an electronic computer or other equipments.

3. In the case of keeping as provided in Paragraph 1, every effort shall be made to ensure to meet the standards as provided by the Minister of MEXT.

(Measures for Persons Suffering or Who May Possibly Suffer from Radiation Hazards)

Article 23. Measures as provided in Article 24 of the Law, which the license notified user, notified devices with sign user, the notified seller, the notified lessor and the license radioisotope waste management operator shall take, shall be as provided in the following subparagraphs:

(i) When a personnel engaged in radiation work has suffered or possible to suffer from radiation hazards, such measures shall be taken as shortening of entering hours or prohibiting entering into the controlled area, or relocating the personnel to works where potential radiation exposure is small, and essential guidance, etc. shall be provided for the health; and

(ii) When a person other than personnel engaged in radiation work has suffered or possible to suffer from radiation hazards, appropriate measures shall be taken, such as health examination by a physician and essential guidance for the health without delay.

(Record)

Article 24. Details of items which shall be recorded in books, which the license notified user, the notified seller, the notified lessor and the license radioisotope waste management service operator must keep as provided in Paragraph 1, Paragraph 2 or Paragraph 3 of Article 25 of the Law, shall be as provided in the following subparagraphs:

(i) For the license notified user as provided in the followings:

- A. Type and quantity of radioisotopes for acceptance or putting out
- B. Date for receiving or putting out of radioisotope
- C. Type and quantity of radioisotopes for use (except for the refilling or repacking, as same in this Subparagraph);
- D. Type of radiation generating devices for use;
- E. Date, purpose, method and place of use of radioisotopes or radiation generating devices;
- F. Full name of an occupational personnel (include person who confirmed the number of not sealed radioisotopes in the case established in Paragraph 2 of Article 15) in the use of radioisotopes or radiation generating devices;
- G. Type and quantity of radioisotopes for storage;
- H. Period of time, method and the place of custody of radioisotopes;
- I. Full name of an occupational personnel in custody of radioisotopes;
- J. Date and method of transportation of radioisotopes outside a factory or a place of service, and full names of a consignee or consignor, a person who has been entrusted with transportation and an occupational personnel in the transportation;
- K. Type and quantity of radioisotopes for waste management;
- L. Date, method and the place of waste management of radioisotopes, etc.;
- M. Full name of a person engaged in waste management of radioisotopes, etc.;
- N. When radioisotopes, etc. are sealed or solidified in a package for sea disposal, quantity and specific weight of the said package and method of sealing or solidification;
- O. Date of inspection of the radiation facility (when a notified user uses or refills or repacks sealed radioisotopes or waste management of sealed radioisotopes, etc., the controlled area), results of inspection and details of measures taken in accordance with the results, and full name of the inspector;
- P. Date when the education and training to persons who enter the radiation facility was performed, items of the said education and training, and full names of persons received the said education and training; and
- Q. Full name of a person entered the area which is not controlled area accordance with the Paragraph 1 of Article 22-3

(ii) For the notified seller and notified lessor as provided in the followings

- A. Type and quantity of radioisotopes concerning purchase or sale, or receipt or lease;
- B. Date concerning purchase or sale, or receipt or lease, and name of supplier or seller, or transferor or lessee of radioisotopes;
- C. Date and method of transportation of radioisotopes, etc. and full names of a consignee or consignor, a person who has been entrusted with transportation and an occupational personnel in the transportation; and
- D. Type and number of radioisotopes whose storage was entrusted, full names of a person who entrusted the storage and term of place of storage

(iii) For the license radioisotope waste management operator as provided in the followings:

- A. Type and quantity of radioisotopes, etc. received;
- B. Date of receiving or putting out and the name of sender or receiver of radioisotopes, etc.;
- C. Type and quantity of radioisotopes, etc. for storage;
- D. Period of time, method and place for custody of radioisotopes, etc.;
- E. Full name of a person engaged in custody of radioisotopes, etc.;
- F. Date and method of transportation of radioisotopes, etc. outside a radioisotope waste management service place, and full names of a consignee or consignor, a person who has been entrusted with transportation and a person engaged in the transportation; and

G. Matters as described in Item K through Item P of Subparagraph (i).(iv) For the license radioisotope waste management operator who operate waste disposal as provided in the followings:

- A. Type and number of disposal waste disposed waste disposal site;
- B. Date of waste disposal in waste disposal site, and place;
- C. Full name of a person engaged in waste disposal;
- E. Date of inspection of the radiation facility, results of inspection and details of measures taken in accordance with the results, and full name of the inspector;
- F. Matters as described in Item K through Item N of Subparagraph (i);
- G. Matters as described in Item A through Item F of Subparagraph (iii).

2. The license notified user, the notified seller, the notified lessor or the license radioisotope waste management operator shall close the registration defined in the preceding paragraph every year as provided in Paragraph 1, Paragraph 2 or Paragraph 3 of Article 25 of the Law.

3. The period of time to keep the registration as provided in Paragraph 4 of Article 25 of the Law shall be five (5) years after the said registration defined in the preceding paragraph is closed. But

(Keeping in Electromagnetic Medias)

Article 24-2. When the matters as provided in the subparagraphs of Paragraph 1 of the preceding article will be recorded by an electromagnetic media, and the said record will be kept so that it may be shown immediately as needed by an electronic computer or other equipments, the said record may be kept in place of the book in which the said matters defined in Paragraph 4 of Article 25 of the Law are recorded.

2. In the case of keeping as provided in the preceding paragraph, every effort shall be made to ensure to meet the standards provided by the Minister of MEXT.

(Notification of Discontinuation of Use, etc.)

Article 25. The notification (except notified user of notified devices with sign.) as provided in Paragraph 1 of Article 27 of the Law shall be made in Form No.29 provided separately within thirty (30) days from the day when service for the use or sale, lease or radioisotope waste management was discontinued.

2. The notification as provided in Paragraph 3 of Article 27 of the Law shall be made in Form No.30 provided separately within thirty (30) days from the death or dissolution.4. The notification described in the preceding two paragraph 1 or 2 shall be accompanied with the certificate of the license.

5. The number of submission for the notification described in Paragraph 1 or Paragraph 2 shall be one original and two duplicates.

6. The number of submission for the notification described in Paragraph 3 shall be one

7. Concerning the said notification, in the case of the place of service, etc. located in Ibaraki Prefecture, the notification described in Paragraph 1 or Paragraph 2 shall be made through the Director of Mito Nuclear energy Office.

(Measures Taken in Consequence to the Revocation of a License, Discontinuation of Use, etc.)

Article 26. Measures which have to be taken in accordance with the provisions of Paragraph 1 of Article 28 of the Law by the person defined in the said paragraph shall be as provided in the following subparagraphs:

(i) The possessed radioisotopes shall be transferred to the license notified user, the seller, the lessor or the license radioisotope waste management operator, or shall be disposed;

(ii) The leased radioisotopes shall be returned to the license notified user, the seller, the lessor or the license radioisotope waste management operator;

(iii) The contamination with radioisotopes shall be removed ;

(iv) Materials contaminated with radioisotopes shall be transferred to the license radioisotope waste management operator, or shall be disposed; and

(v) Records described in Subparagraph (ii) through Subparagraph (v-ii) of Paragraph 4 of Article 20, and Subparagraph (i) of Paragraph 2 of Article 22 shall be transferred to the agency designated by the Minister of MEXT.

2. The measures specified in the preceding paragraph shall be taken within thirty days from the day when the license was revoked, or day of discontinuing of using, selling, leasing or discontinuing of the radioisotope waste management service, or from the day of death or dissolution.

3. Documents for reporting concerning Paragraph 2 of Article 28 of the Law shall be in Form No.32 given in the separate paragraph.

4. Concerning the said notification, in the case of the place of service, etc. located in Ibaraki Prefecture, the notification as described in the preceding paragraph shall be made through the director of Mito Nuclear energy Office.

(Restriction on Transfer)

Article 27. The transfer on radioisotopes in accordance with the provisions of Paragraph 6, Paragraph 7 or Paragraph 8 of Article 29 of the Law shall be made within thirty (30) days from the day when the license was revoked, or using, selling or discontinuing of the radioisotope waste management service, or from the day of death or dissolution.

(Restriction on Possession)

Article 28. The period of time in which radioisotopes can be possessed as provided in the provisions in parentheses of Subparagraph (vi), (vii) and (viii) of Article 30 of the Law shall be 30 days from the day of

validity of certification , the day of disuse and death date or liquidation date.

Article 29. Measures in an emergency that the license notified user, notified user of notified devices with sign, the seller, the lessor, the license radioisotope waste management operator, or a person who has been entrusted with transportation by any of them has to take in accordance with the provisions Subparagraph (i) of Article 33 of the Law shall be as provided in the following subparagraphs:

(i) When fire breaks out in the radiation facility or packages of radioactive materials, or when there is a possibility of fire reaching them, every effort shall be made to extinguish the said fire or to prevent its expansion, and at the same time, the situation shall be informed to the firehouse or the house designated by the mayor of the municipality as provided in Article 24 of the Fire Protection Law (Law No.186, 1948);

(ii) Warning for evacuation shall be provided for persons present within the radiation facility, engaged in transportation of packages of radioactive materials, and present in those vicinities, when it is necessary to prevent the occurrence of radiation hazards;

(iii) Where there are persons suffering or who may possibly suffer from radiation hazards, emergency measures shall be taken, such as rescue and evacuation for them;

(iv) Where contamination with radioisotopes has occurred, its expansion shall be prevented and it shall be removed speedily;

(v) Where there is a time allowance to transfer radioisotopes, etc. to other places, it shall be transferred to a safe place as necessary, and the entry of persons other than those related shall be prohibited by demarcating the periphery of the place with a rope, posting signs, etc., and stationing guards; and

(vi) Other necessary measures shall be taken for prevention of radiation hazards.

2. When the emergency activities described in the subparagraphs of the preceding paragraph are performed, dosages received by the person engaged in the said emergency activities shall be kept as low as possible by means of using radiation shields, forceps or protectors, shortening time of radiation exposure, etc. In this case, radiation exposure of any personnel engaged in radiation works (for female, it is limited to the personnel who is diagnosed as sterility or who has notified the intension for no pregnancy to the license notified user, the license radioisotope waste management operator in writing) is allowable up to the dose limits as specified by the Minister of MEXT, despite of the provisions in Subparagraph (iii) of Paragraph 1 of Article 15 (including the case applied correspondingly to Paragraph 1, Paragraph 3 and Paragraph 5 of Article 19), Subparagraph (iii) of Paragraph 1 of Article 17 (including the case applied correspondingly to Subparagraph (ii) of the said paragraph), and Subparagraph (viii) of Article 18-13.

3. The person defined in Paragraph 1 of Article 33 of the Law shall notify the following items provided in Paragraph 3 of the said article:

(i) Date, place and cause of the event described in Paragraph 1 of Article 33 of the Law;

(ii) Situation of radiation hazards which occurred or possible to occur;

(iii) Description of emergency measures taken or intended to take; and

4. Concerning the said notification (except notified devices with sign user and a person who has been entrusted with transportation by notified devices with sign user.), in the case of the place of service, etc. concerning the said notification is located in Ibaraki Prefecture, the notification described in the preceding paragraph shall be made through the Director of Mito Nuclear energy Office.

Chapter V. Supervisor of Radiation Protection

(Assignment of Supervisor of Radiation Protection)

Article 30. Number of Supervisor of Radiation Protection, who have to be assigned by the license notified user, the seller, the lessor or the license radioisotope waste management operator provided in Paragraph 1 of Article 34 of the Law, shall be at least one (1) person for each of factory, place of service, or radioisotope waste management service place for the license notified user or the license radioisotope waste management operator and at least (1) person for the notified seller or the notified lessor.

2. The assignment provided in Paragraph 1 of Article 34 of the Law shall be made before putting radioisotope to user facilities or storerooms and establishing radioactive generator of selling or leasing service of radioisotopes, or radioisotope waste management service.

(Notification of Assignment of Supervisor of Radiation Protection, etc.)

Article 31. The notification on assignment or dismissal of the Supervisor of Radiation Protection, defined in Paragraph 2 of Article 34 of the Law, shall be made in Form No.33 provided separately.

2. Concerning the said notification, in the case of the place of service, etc. located in Ibaraki Prefecture, the notification described in the preceding paragraph shall be made through the Director of Mito Nuclear energy Office.

Chapter VI. Miscellaneous Provisions

(Collection of Reports)

Article 39. When the license notified user, the notified use of notified devices with sign, the notified seller, the notified lessor, the license radioisotope waste management operator, or a person who has been entrusted with transportation by any of them comes under any of the followings, the person shall report that interest immediately and that situation and measures taken within 10 days to the Minister of MEXT:

(i) When radioisotopes are stolen or missing;

(viii) When a person engaged in radiation work is exposed or may possibly be exposed to radiation in

excess of the effective dose limits or the equivalent dose limits; or

2. When the license notified user, the licensed radioisotope waste management operator discontinued radiation facilities, the said person shall report measures taken such as removing of contamination with radioisotopes or other in Form No.46 provided separately within thirty (30) days to the Minister of MEXT.

3. The user, the seller, the lessor or the radioisotope waste management service operator shall prepare a report for each place of service for each year starting from April 1 to March 31 of the following year in Form No.47 provided separately, and shall submit it within three (3) months after the said period of time.

4. Other than the case as provided in the preceding paragraphs, when the license notified user, the notified use of notified devices with sign, the notified seller, the notified lessor, the license radioisotope waste management operator, or a person who has been entrusted with transportation by any of them is required by the Ministry of MEXT to report on the following items within a given period of time, the said person shall report the said items within the said period of time to the Ministry of MEXT:

(i) Situation of the radiation management;

(ii) Situation of the inventory and the alteration in quantity of radioisotopes; and

(iii) Situation of the waste management or transportation of radioisotopes, etc. performed outside a factory or service.

(Receipt of Samples)

Article 40. When the radiation inspector take samples of radioisotopes, etc. as provided in Paragraph 1 of Article 43-2 of the Law, the inspector shall issue a receipt of the samples to the person from whom the samples are withdrawn.

(Identification Cards)

Article 41. The identification card defined in Paragraph 3 of Article 43-2 of the Law to identify the status of radiation inspectors for onsite inspection as provided in the provisions of Paragraph 1 of the said article or to identify the status of officials for onsite inspection as provided in the provisions of Paragraph 2 of the said article shall be made with Form No. 48 and Form No. 49, respectively, which are provided separately.

10 Electricity Utilities Industry Law

Text is the same as Annex 3.9(A3.39 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention.

(1) Ministry Ordinance concerning Reserve Fund for Dismantling Nuclear Power Facilities

(Ordinance No. 30 of the Ministry of Economy, Trade and Industry, dated May 25, 1989)

Last revision: Ordinance No. 45 of the Ministry of Economy, Trade and Industry, dated March 31, 2003

In order to implement the provision of Article 36 of the Electricity Utilities Industry Law (Law No. 170 of 1964), the Ministry Ordinance concerning Reserve Fund for Dismantling Nuclear Power Facilities shall be enacted as follows:

(Definition)

Article 1: The terms used in this ministry ordinance shall be in accordance with the technical terms used in the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Law No. 166 of 1957) and in the Rules for the Installation, Operation, etc. of Commercial Power Reactors (Ordinance No. 77 of the Ministry of Economy, Trade and Industry of 1978), and, in addition, the meaning of the terms referred to in the following items shall be in accordance with the definition made in each item concerned.

I. "Specific Nuclear Power Generation Facilities" shall mean those mentioned below.

a. The reactors, nuclear fuel material handling and storage facilities, reactor cooling system facilities, instrumentation and control system facilities, disposal facilities for the wastes material contaminated with nuclear fuel (excluding the storage facilities for the radioactive wastes conditioned for storage) and reactor containment facilities of the Commercial Nuclear Power Reactors

b. The buildings in which the facilities mentioned in paragraph a. above are installed and their associated accommodation (excluding the

c. Other than the facilities mentioned in paragraph a. above, foundation of the building on which the nuclear reactor is installed.) generator and other equipment, which are installed within the buildings mentioned in paragraph b above.

II. "Dismantling" shall mean the operations mentioned below, that are conducted for the Specific Nuclear Power Generation Facilities related to the commercial nuclear reactor, after the cease of reactor operation.

a. Elimination of contamination with nuclear fuel material

b. Dismantling

c. Conditioning of the wastes contaminated with the nuclear fuel material for storing temporarily in the plant or premises in which the Specific Nuclear Power Generation Facilities are installed.

d. Conditioning of the wastes contaminated with the nuclear fuel material suitable to burial of such wastes for final disposal

e. Transportation and disposal of the wastes

III. An “Electric Utility Involved” shall mean an electric utility who is a reactor establisher.

IV. “Cumulative Electric Power Generated” shall mean the sum of the electric power generated from the day on which the reactor was licenced as Specific Nuclear Power Generating Facility (hereinafter referred to as “Electric Power Generation Commencing Day”) to the end of the business year concerned.

V. “Assumed Life Time Electric Power Generated” shall mean the sum of the electric power generated assuming each Specific Nuclear Power Generating Facility that operates for 266,304 hours with the electrical power output licenced under the Article 47, Section 1 or 2 of the Electricity Utilities Industry Law.

VI. “Total Estimated Amount” shall mean the amount estimated for the total cost required for dismantling each Specific Nuclear Power Generation Facility.

VII. “Limit Amount for the Reserve” shall mean the amount equivalent to 90 hundredth of the total estimated amount multiplied by the fraction of the cumulative electric power generated to the assumed life time electric power generated or the amount equivalent to 90 hundredth of the total estimated amount for each Specific Nuclear Power Generation Facility, whichever lower.

(Approval of the total estimated amount)

Article 2: The Electric Utility Involved shall, for each business year, shall finalize the total estimated amount on the day on which the business year concerned ends, and obtain the approval of the Minister of Economy, Trade and Industry by the end of the business year concerned.

(Reserve)

Article 3:

1. When the Limit Amount for the Reserve for each Specific Nuclear Power Generation Facility for the business year concerned exceeds the amount calculated as the Limit Amount for such Reserve at the end of the preceding business year, the Electric Utility Involved shall reserve such excess amount (In the business year to which the date of commencing electric power generation: the Limit Amount for the Reserve for the business year concerned).

2. The amount referred to in the preceding section shall be reserved till the business year to which belongs the day on which the operation of the nuclear reactor in relation to the Specific Nuclear Power Generation Facility concerned is ceased.

(Drawdown)

Article 4:

1. The Electric Utility Involved shall draw down the amount equivalent to the amount disbursed for dismantling of nuclear power facilities during the business year concerned (in the case where this amount exceeds the balance at the end of the immediately preceding business year : the balance concerned) from the balance of the reserve fund that has been reserved at each business year end in accordance with the stipulation of Section 1 of the preceding article (in the case where the reserve fund for dismantling nuclear power facilities referred to in Section 1 of the same article was reserved in the business year concerned: the balance at the end of the immediately preceding business year plus the amount reserved during the business year concerned. The same shall apply in this section.)

2. In the event that there still remains the balance of the reserve fund that has been reserved in accordance with the provision of the Section 1 of the preceding article, after the dismantling of the Specific Nuclear Power Generation Facilities completed, the Electric Utility Involved shall draw down the entire remaining amount of the said balance of the reserve fund.

3. In the case that the balance of the reserve fund for dismantling nuclear power facilities, reserved in accordance with the stipulation of Section 1 of the preceding article at the end of each business year for each Specific Nuclear Power Generation Facility, exceeds the limit amount for reserving in the business year concerned, the Electric Utility Involved shall draw down the excess amount concerned from the said balance.

4. With regard to the reserve fund for dismantling nuclear power facilities, reserved in accordance with the provision of Section 1 of the preceding article, the Electric Utility Involved shall not draw down the reserve fund concerned, except when the drawdown is carried out pursuant to the stipulation of the preceding Section 3.

Additional Clauses

11 Basic Law on General Emergency Preparedness

Text is the same as Annex 3.10(A3.69 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention. (Objectives)

12 Special Law of Nuclear Emergency Preparedness

Text is the same as Annex 3.11(A3.73 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention.

13 Specified Radioactive Waste Final Waste management Act (Excerpt) (Law No. 117, June 7, 2000)

Chapter I General Provisions

(Purpose)

Article 1. The purpose of this Law is to work out measures necessary for systematically and reliably implementing the final waste management of specific radioactive waste generated after the reprocessing of spent fuel arising from the operation of power reactors in order to contribute to the proper use of nuclear energy for power generation and improve the environment of nuclear energy for power generation, and thereby to contribute to the sound development of the national economy and the stabilization of national life.

(Definitions)

Article 2. For the purpose of this Law, “specific radioactive waste” means a vitrified substance remaining after the reprocessing of spent fuel.

2. For the purpose of this Law, “final waste management” means the final disposal of specific radioactive waste in such a way that the specific radioactive waste and articles contaminated thereby are safely and securely emplaced in geological formations at such depths as are prescribed by the Government Ordinance to be over 300 meters under the ground after necessary measures have been carried out to ensure that they are effectively prevented from becoming dispersed, running off, or permeating into the ground.

3. For the purpose of this Law, “power reactor” means any of the nuclear reactors which are specified in Article 3, item (iv) of the Atomic Energy Basic Law and which fall under the following items:

(i) commercial power reactors specified in Article 23, paragraph 1, item (i) of the Reactor regulation law; and

(ii) nuclear reactors specified in Article 23, paragraph 1, item (iv) of the Reactor regulation law and prescribed by the Government Ordinance.

4. For the purpose of this Law, “after the reprocessing of spent fuel” means after the processing by a chemical process of spent fuel [which refers to nuclear fuel material used as fuel in a power reactor] in order to separate nuclear fuel material and other useful materials from the spent fuel.

5. For the purpose of this Law, “preliminary investigation areas” means any of the areas where according to literature, evidence, other data and materials, violent geological movements caused by an earthquake, a volcanic eruption, an upheaval, geological erosion and other natural phenomena (hereinafter referred to as “seismic activity and similar natural phenomena”) are less likely to occur now and in the future and where a geological formation, where the final disposal will be carried out, and its surrounding geological formations, the situation of groundwater, and other matters in these formations are surveyed by boring and other methods prescribed by the Government Ordinance in order to select a detailed investigation area.

6. For the purpose of this Law, “detailed investigation area” means any of the preliminary investigation areas where a survey specified under the preceding paragraph (hereinafter referred to as the “preliminary investigation”) finds that the geological formation where the final disposal will be carried out is believed to be stable now and in the future, and tunnels and pits can be excavated in the said geological formation without encountering hindrance and trouble, and where the physical and chemical properties of the said geological formation and its surrounding geological formations are investigated by installing necessary measuring and testing instruments and facilities prescribed by the Government Ordinance.

7. For the purpose of this Law, “site for construction of final disposal facility” means a site where final disposal facilities is constructed in the detailed investigation area where an investigation specified in the preceding paragraph (hereinafter referred to as the “detailed investigation”) finds that the physical and chemical properties of the said geological formation are suitable for the construction of final disposal facilities.
8. For the purpose of this Law, “final disposal facility” means a cluster of facilities which will be constructed in order to carry out the final disposal of specific radioactive waste and which consist of facilities for the transport of specific radioactive waste, pits and tunnels for the emplacement of specific radioactive waste, and other facilities prescribed by the Government Ordinance.
- 9 For the purpose of this Law, “licensed operator of reactors” means an operator who will install or has installed a power reactor.

Chapter II Basic Policy, etc.

(Basic Policy)

Article 3. The Minister of Economy, Trade and Industry shall lay down and officially announce a basic policy for the final disposal of specific radioactive waste (hereinafter referred to as the “basic policy”) in order to systematically and reliably carry out the final disposal of specific radioactive waste.

2. The basic policy shall provide for the matters mentioned in the following items:
 - (i) a basic orientation toward the final disposal of specific radioactive waste;
 - (ii) matters concerning the selection of preliminary investigation areas, detailed investigation areas, and sites for final disposal facility construction (hereinafter referred to as the “preliminary investigation areas and others”);
 - (iii) matters concerning policy measures designed to promote the understanding of interested local citizens as to the selection specified under the preceding item;
 - (iv) matters concerning the implementation of the final disposal of specific radioactive waste;
 - (v) matters concerning the development of technologies for the final disposal of specific radioactive waste;
 - (vi) matters concerning policy measures designed to promote the understanding of the general public as to the final disposal of specific radioactive waste; and
 - (vii) other important matters concerning the final disposal of specific radioactive waste.
3. The Minister of Economy, Trade and Industry shall, when he intends to lay down the basic policy, consult in advance the AEC (or the NSC with respect to regulations of safety in the matters specified in items (iv) and (v) of the preceding paragraph).
4. The Minister of Economy, Trade and Industry shall be subject to the decision of a Cabinet meeting before establishing the basic policy.

(Final Disposal Plan)

Article 4. The Minister of Economy, Trade and Industry shall every five years formulate and officially announce a plan for the final disposal of specific radioactive waste (hereinafter referred to as the “final disposal plan”) covering a time frame of ten years as a single period in accordance with the basic policy.

2. The final disposal plan shall provide for the matters mentioned in the following items:
 - (v) quantity, and an estimate, of specific radioactive waste generated after the reprocessing of spent fuel arising from the operation of power reactors;
 - (ii) matters concerning a timetable for the final disposal of specific radioactive waste under the preceding item, the quantity of specific radioactive waste to be disposed of in the final disposal, and the scale and capacity of the final disposal facilities necessary therefor;
 - (iii) matters concerning the selection of preliminary investigation areas and others and the construction of the final disposal facilities;
 - (iv) matters concerning a method of implementing the final disposal of specific radioactive waste; and
 - (v) other matters necessary for implementing the final disposal of specific radioactive waste.
3. The Minister of Economy, Trade and Industry shall, when he intends to formulate the final disposal plan, consult in advance the AEC (or the NSC with respect to regulations of safety in the matters specified in item (iv) of the preceding paragraph).
4. The Minister of Economy, Trade and Industry shall be subject to the decision of a Cabinet meeting before establishing the final disposal plan.
5. The Minister of Economy, Trade and Industry shall, when he intends to establish the location of preliminary investigation areas and others specified in paragraph 2, item (iii), hear and fully respect the comments of prefectural governors and municipality heads having jurisdiction over the said location of

preliminary investigation areas and others.

(Implementation Plan)

Article 5. Subject to the provisions of the Ordinance of the Ministry of Economy, Trade and Industry, the Nuclear Waste Management Organizations (hereinafter referred to as the “Organizations”) shall formulate a plan for implementing the final disposal of specific radioactive waste (hereinafter referred to as the “implementation plan”) in accordance with the final disposal plan and obtain approval for the implementation plan from the Minister of Economy, Trade and Industry. The same shall apply when the Organizations intends to revise the implementation plan.

2. The implementation plan specified in the preceding paragraph shall provide for the matters mentioned in the following items:

- (i) the quantity, and an estimate, of specific radioactive waste that must be disposed of in the final disposal;
- (ii) matters concerning a timetable for the final disposal of specific radioactive waste under the preceding item, the quantity of specific radioactive waste to be disposed of in the final disposal, and the scale and capacity of the final disposal facilities necessary therefor;
- (iii) matters concerning the selection of preliminary investigation areas and others and the construction of the final disposal facilities;
- (iv) matters concerning a method of implementing the final disposal of specific radioactive waste; and
- (v) other matters specified in the Ordinance of the Ministry of Economy, Trade and Industry.

3. The Minister of Economy, Trade and Industry may, if he deems it necessary to do so, order the Organizations to alter the implementation plan.

Chapter III

Selection of Preliminary Investigation Areas

(Selection of Preliminary Investigation Areas)

Article 6. The Organizations shall, when it intends to select preliminary investigation areas, carry out in advance a survey based on literature and other data (to be referred to in the ensuing paragraph as the “literature survey”) in accordance with the final disposal plan and the approved implementation plan of the Organizations (which refers to the implementation plan for which the Organizations has obtained approval in accordance with the provisions of the former part of paragraph 1 of the preceding article, or the revised implementation plan if approval for a revision is granted in accordance with the provisions of the latter part of the same paragraph; hereinafter to be so understood) with respect to the matters mentioned in the following items:

- (i) matters concerning seismic activity and similar natural phenomena that have occurred in the past in an area to be chosen as the preliminary investigation areas and its surrounding areas;
- (ii) matters concerning an outline of active faults, if any, in the area and its surrounding areas specified in the preceding item; and
- (iii) other matters specified in the Ordinance of the Ministry of Economy, Trade and Industry.

2. Subject to the provisions of the Ordinance of the Ministry of Economy, Trade and Industry, when the Organizations has carried out the literature survey in accordance with the provisions of the preceding paragraph, it shall, based on the results of the literature survey, select preliminary investigation areas from among those areas with respect to which the said literature survey has been carried out (to be referred to in this paragraph as the “literature survey areas”) and which are deemed to meet all of the following criteria:

- (i) there is no record of violent geological movements caused by seismic activity and similar natural phenomena in the said literature survey areas;
- (ii) violent geological movements caused by seismic activity and similar natural phenomena are less likely to occur now and in the future in the said literature survey areas; and
- (iii) other matters specified in the Ordinance of the Ministry of Economy, Trade and Industry.

3. The Organizations shall, when it has selected the preliminary investigation areas in accordance with the provisions of the preceding paragraph, obtain approval from the Minister of Economy, Trade and Industry with respect to change to the matters mentioned in paragraph 2, item (iii) of the preceding article pertaining to the approved implementation plan in accordance with the provisions of the latter part of paragraph 1 of the same article.

(Selection of Detailed Investigation Areas)

Article 7. The Organizations shall, when it intends to select detailed investigation areas, carry out in advance the preliminary investigation in accordance with the final disposal plan and the approved implementation plan of the Organizations with respect to the matters mentioned in the following items in the preliminary investigation areas under Article 5, paragraph 2, item (iii), as stated in the said approved implementation plan:

- (i) matters concerning geological movements caused by seismic activity and similar natural phenomena in a geological formation where the final disposal will be carried out and its surrounding geological formations (to be referred to in this article as the “subject geological formation and others”) in the said preliminary investigation areas;
 - (ii) matters concerning the types and properties of rocks that make up the said subject geological formation and others;
 - (iii) matters concerning the details of active faults, if any, in the said subject geological formation and others;
 - (iv) matters concerning an outline of crush zones or groundwater flows in the said subject geological formation and others; and
 - (v) other matters specified in the Ordinance of the Ministry of Economy, Trade and Industry.
2. Subject to the provisions of the Ordinance of the Ministry of Economy, Trade and Industry, when the Organizations has carried out the preliminary investigation in accordance with the provisions of the preceding paragraph, it shall, based on the results of the preliminary investigation, select detailed investigation areas from among those areas with respect to which the said preliminary investigation has been carried out and which are deemed to meet all of the following criteria:
- (i) violent geological movements caused by seismic activity and similar natural phenomena have not occurred for a long period of time in the said subject geological formation and others;
 - (ii) tunnels and pits can be excavated in the said subject geological formation and others without encountering hindrance and trouble;
 - (iii) active faults, crush zones, or groundwater flows, if any, in the said geological formation and others are less likely to have adverse effects on tunnels, pits and other underground facilities (to be referred to in the items of paragraph 2 of the ensuing article); and
 - (iv) other matters specified in the Ordinance of the Ministry of Economy, Trade and Industry.
3. The provisions of paragraph 3 of the preceding article shall apply with necessary modifications to the selection of detailed investigation areas.

(Selection of a Site for Construction of Final Disposal Facility)

Article 8. The Organizations shall, when it intends to select a site for construction of final disposal facility, carry out in advance the detailed investigation in accordance with the final disposal plan and the approved implementation plan of the Organizations with respect to the matters mentioned in the following items in the detailed investigation areas under Article 5, paragraph 2, item (iii), as stated in the said approved implementation plan:

- (i) matters concerning the strength of rocks that make up a geological formation where the final disposal will be carried out (to be referred to in this article as the “subject geological formation”) and the physical properties of the said subject geological formation in the said detailed investigation areas;
 - (ii) matters concerning hydrogen ion concentration in the said subject geological formation and other chemical properties of the said subject geological formation;
 - (iii) matters concerning the details of groundwater flows, if any, in the said subject geological formation; and
 - (iv) other matters specified in the Ordinance of the Ministry of Economy, Trade and Industry.
2. Subject to the provisions of the Ordinance of the Ministry of Economy, Trade and Industry, when the Organizations has carried out the detailed investigation in accordance with the provisions of the preceding paragraph, it shall, based on the results of the detailed investigation, select a site for construction of final disposal facilities from among those detailed investigation areas with respect to which the said detailed investigation has been carried out and which are deemed to meet all of the following criteria:
- (i) it is expected that underground engineered facilities in the said subject geological formation are unlikely to be exposed to unusual pressure, and in other respects, the physical properties of the said subject geological formation are expected to be suitable for the construction of final disposal facilities;
 - (ii) it is expected that underground engineered facilities in the said subject geological formation are unlikely to be exposed to unusual corrosive action, and in other respects, the chemical properties of the said subject geological formation are expected to be suitable for the construction of final disposal facilities;
 - (iii) it is expected that groundwater or groundwater flow in the said subject geological formation is unlikely to disturb the functions of underground engineered facilities; and
 - (iv) other matters specified in the Ordinance of the Ministry of Economy, Trade and Industry.
3. The provisions of Article 6, paragraph 3 shall apply with necessary modifications to the selection of a site for construction of final disposal facilities.

(Construction of final disposal facility)

Article 9. The Organizations shall construct final disposal facilities in the site for construction of final disposal facility selected in accordance with the provisions of paragraphs 2 and 3 of the preceding article.

Chapter IV
Implementation of Final Disposal Operation, etc.

Section 1
Contribution to the Fund

(Contribution to the Fund)

Article 11. Licensed operators of reactors shall contribute to the fund to an Organization every year in order to meet expenses incurred in operations for the final disposal of specific radioactive waste generated after the reprocessing of spent fuel arising from the operation of their power reactors (these operations refer to those operations of the Organizations specified in Article 56, paragraph 1; hereinafter to be so understood).

Section 2
Implementation of Final Disposal

(Implementation of Final Disposal)

Article 16. When licensed operators of reactors have paid contribution to the fund under Article 11, paragraph 1 (if pressing for payment has been made in accordance with the provisions of paragraph 1 of the preceding article, contribution to the fund under Article 11, paragraph 1 and an arrears charge under paragraph 5 of the preceding article; to be so understood in this article and Article 58, paragraph 1), the Organizations shall carry out the final disposal of specific radioactive waste pertaining to contribution to the fund under Article 11, paragraph 1 in the final disposal facilities under Article 5, paragraph 2, item (iii), in accordance with the final disposal plan and the approved implementation plan of the Organizations.

(Closure of the Final Disposal Facility)

Article 17. When subject to the provisions of the preceding article the final disposal of specific radioactive waste (including disposal identical to the final disposal of committed specific radioactive waste under Article 56, paragraph 2, item (i); to be so understood in Article 19) has been completed in the final disposal facility, the Organizations may close the said final disposal facility only if it has in advance gained the validation of the Minister of Economy, Trade and Industry that the conditions of the said final disposal facility conform to the standards specified in the Ordinance of the Ministry of Economy, Trade and Industry.

Article 18. In the case described in the preceding article, the Organizations shall keep a record of the matters specified in the Ordinance of the Ministry of Economy, Trade and Industry respecting the said final disposal facility, submit it to the Minister of Economy, Trade and Industry, furnish a duplicate copy of the said record at its office, and make it available for public inspection.

2. The Minister of Economy, Trade and Industry shall permanently keep the record submitted in accordance with the provisions of the preceding paragraph.

(Regulations of Safety)

Article 20. When the Organizations performs operations for the final disposal of specific radioactive waste (including the operation specified in Article 56, paragraph 2, item (i)) in accordance with the provisions of this Law, applicable regulations of safety shall be as separately prescribed by laws.

Section 3
Protection of the Final Disposal Facility

(Protection of the Final Disposal Facility)

Article 21. When the Organizations has filed an application and if it is deemed necessary to do so in order to protect the final disposal facility, the Minister of Economy, Trade and Industry may designate a three-dimensional zone covering a certain scope of the final disposal facility site, its surrounding area and underground district as a protected area.

2. The Minister of Economy, Trade and Industry shall, when he intends to designate a protected area under the preceding paragraph (hereinafter referred to briefly as the "protected area"), hear the comments of prefectural governors and municipality heads having jurisdiction over the said area.

3. The Minister of Economy, Trade and Industry shall, when he designates the protected area, make a public announcement of the designation and the designated area in the government gazette.

4. The designation of the protected area shall become effective upon public announcement made in accordance with the provisions of the preceding paragraph.

5. The provisions of the preceding three paragraphs shall apply with necessary modifications to the cancellation of the designation of the protected area and change in the protected area.

6. A site in the protected area shall not be excavated without the permission of the Minister of Economy, Trade and Industry. However, this does not apply where the Organizations excavates a site as its business.

7. Conditions may be attached to the permission under the preceding paragraph to the extent necessary to

protect the final disposal facilities.

8. The Minister of Economy, Trade and Industry shall not grant the permission under paragraph 6 if the excavation of a site under the same paragraph does not conform to the standards specified in the Ordinance of the Ministry of Economy, Trade and Industry.
9. When the Organizations has filed an application, and if it is deemed necessary to do so to protect the final disposal facilities, the Director-General of the Regional Bureau of Economy, Trade and Industry may reduce a mining area or an area of mining lease, or revoke a mining concession, mining right or mining lease established within the protected area.

Chapter V The Nuclear Waste Management Organizations

Section 1 General Provisions

(Purpose)

Article 34. The Organizations has for its purpose to perform operations for the final disposal of specific radioactive waste generated after the reprocessing of spent fuel arising from the operation of power reactors in order to contribute to the proper use of nuclear energy for power generation and thereby to improve the environment of nuclear energy for power generation.

Section 4 Operations

(Operations)

Article 56. The Organizations shall perform the following operations in order to accomplish the purpose specified in Article 34:

- (i) the selection of preliminary investigation areas and others;
 - (ii) the construction, improvement, maintenance and management of the final disposal facilities;
 - (iii) the final disposal of specific radioactive waste;
 - (iv) the closure of the said final disposal facility after the completion of final disposal, and the management of an area containing the closed said final disposal facility;
 - (v) the collection of contribution to the fund;
 - (vi) the performance of operations incidental to the operations enumerated in the preceding items.
2. In addition to the operations mentioned in the preceding paragraph, the Organizations may perform the following operations under commission to the extent of not affecting the performance of the operations under the same paragraph:
- (i) carrying out disposal identical to the final disposal as to committed specific radioactive waste [which refers to a vitrified substance remaining after the processing by a chemical process of spent fuel (which refers to nuclear fuel material used as fuel in nuclear reactors, excepting power reactors, specified in Article 3, item (iv) of the Atomic Energy Basic Law; hereinafter to be so understood in this item) in order to separate nuclear fuel material and other useful materials from spent fuel arising from the operation of such reactors]; and
 - (ii) carrying out surveys necessary for the operations mentioned in items (i) to (iv) of the preceding paragraph and in the preceding item.
3. The Organizations shall, when it intends to perform the operation specified in item (i) of the preceding paragraph, obtain the authorization of the Minister of Economy, Trade and Industry.

(Reserve Fund for Final Disposal)

Article 58. The Organizations shall set aside contribution to the fund under Article 11, paragraph 1, as a reserve fund for final disposal in order to meet expenses necessary for performing final disposal operations.

2. A reserve fund for final disposal shall be deposited in such a corporation as is designated by the Minister of Economy, Trade and Industry in accordance with the provisions of the Ordinance of the Ministry of Economy, Trade and Industry (such corporation to be referred to hereinafter as the “designated corporation”).
3. A reserve fund for final disposal shall be managed by the designated corporation.
4. The designated corporation shall allow interest on a reserve fund for final disposal in accordance with the provisions of the Ordinance of the Ministry of Economy, Trade and Industry.

Article 59. The Organizations may recover a reserve fund for final disposal in order to meet expenses necessary for performing final disposal operations subject to the approval of the Minister of Economy, Trade and Industry in accordance with the provisions of the Ordinance of the Ministry of Economy, Trade and Industry.

(Management of Operations)

Article 60. The Organizations shall make it a principle to secure safety in performing the operations

specified in Article 56, paragraphs 1 and 2, secure transparency in the management of its operations through appropriate information disclosure, and strive to gain the understanding and cooperation of local citizens and others in and around preliminary investigation areas and others, and in areas around the final disposal facility

14. The Law for Deposit and Management of the Reserve Fund for Spent Fuel Reprocessing and so forth in the Nuclear Power Generation. (Law No.48, May 20, 2005)

(Purpose)

Article 1: The purpose of this law is to prepare infrastructure regarding the nuclear power generation and thereby contribute to the sound development of national economy and stabilization of national life by taking necessary measures to reserve and manage the Reserve Fund for Spent Fuel Reprocessing and so forth, in order to properly implement Spent Fuel Reprocessing and so forth in the nuclear power generation.

(Definition)

Article 2:

1. Under this law, "the Spent Fuel" shall mean the nuclear fuel material used as fuel in the commercial nuclear power reactor stipulated in Article 23, Section 1, Item 1 of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (the Law No. 166 of 1975, hereinafter referred to as "Nuclear Reactor Regulation Law"),(that is to say, the nuclear fuel material stipulated in Article 3, Item 2 of the Atomic Energy Basic Law (the Law No. 186 of 1955). The same applies hereafter).

2. Under this law, "Reprocessing" shall mean to process the Spent Fuel in order to separate useful material as nuclear fuel material and other from the Spent Fuel by chemical processing.

3. Under this Law, "Separated Useful Material" shall mean the nuclear fuel material and other useful material separated from the Spent Fuel along with the Reprocessing.

4. Under this Law, "Reprocessing and so forth" shall mean the following. I. Reprocessing II. Processing, control and disposal of the following. (The final disposal stipulated in Article 2, Section 2 of the Law on Final Disposal of Special Radioactive Wastes, the Law No. 117 of 2000 is excluded.) a. the residual material after separation of the Separated Useful Material from the Spent Fuel in Reprocessing (hereinafter referred to as "Residue"). b. the material contaminated with Spent Fuel, Separated Useful Material or Residue along with the Reprocessing. III. Dismantling of the Reprocessing plant (That is to say, the Reprocessing plant stipulated in Article 44, Section 2, Item 2 of the Nuclear Reactor Regulation Law. The same applies hereafter). IV. In addition to those listed in the preceding 3 Items, storage of the Separated Useful Material (limited to the storage conducted in the Reprocessing plant) and other actions stipulated in the Government Ordinances.

5. Under this Law, the "Specific Commercial Power Reactor" shall mean the commercial nuclear power reactor that has licensed under Article 23, Section 1 of the Nuclear Reactor Regulation Law by stating that Reprocessing shall be conducted as a means of disposal listed in Article 23, Section 2, Item 8 of the Nuclear Reactor Regulation Law.

6. Under this Law, the "Specific Commercial Power Reactor Establisher" shall mean the one who has established a Specific Commercial Power Reactor.

(Reserve Fund for Spent Fuel Reprocessing and so forth)

Article 3:

In order to carry out properly the Reprocessing and so forth of the Spent Fuel generated along with the operation of the Specific Commercial Power Reactor, the Specific Commercial Power Reactor Establisher shall reserve annually, as the Spent Fuel Reprocessing Reserve Fund, of which the amount is notified by the Minister of Economy, Trade and Industry in accordance with the provision of Section 4 herein (or the amount adjusted in a case where the notice of adjustment stipulated in Clause 5 herein should have been given).

Reserving of the Spent Fuel Reprocessing Reserve Fund and so forth shall be made to the fund managing corporation as provided in Article 10 (in the next following section and Article 6, referred to simply as the "Fund Managing Corporation"), Section 1 of the Ordinance of the Ministry of Economy, Trade and Industry.

3. The Reserve Fund for Spent Fuel Reprocessing and so forth shall be managed by the Fund Managing Corporation.

4. The amount of the Reserve Fund for Spent Fuel Reprocessing and so forth shall be calculated in accordance with the standard stipulated in the Ordinance of the Ministry of Economy, Trade and Industry and based on the amount of generation of the Spent Fuel along with the operation of a Specific Commercial Power Reactor, Reprocessing capacity and its operational performance of the Reprocessing plant (including the amount of Separated Useful Material generated) and the cost needed for Reprocessing etc. and other matters, and this amount is notified to each Specific Commercial Power Reactor Establisher by the Minister of Economy, Trade and Industry.

5. The Minister of Economy, Trade and Industry may notify adjustment of the amount calculated in the preceding section when any substantial change in the state of generation of the Spent Fuel and any other substantial change in the circumstances should be found.

6. When recognized to be necessary in giving a notice in accordance with the Section 4, the Minister of Economy, Trade and Industry may also notify to the former Specific Commercial Power Reactor Establisher an additional amount to be reserved as the Reserve Fund for Spent Fuel Reprocessing and so forth, after taking into consideration the amount of the Reserved Fund for the Spent Fuel Reprocessing and so forth already reserved by the Establisher, the cost needed for Reprocessing and so forth as well as other matters.

7. The Establisher who received a notice in accordance with the provision of the preceding section shall reserve the amount notified as the Reserve Fund for Spent Fuel Reprocessing and so forth as stipulated in the Ordinance of the Ministry of Economy, Trade and Industry.

(Report from the Reprocessing Operator etc.)

Article 4: Reprocessing operators stipulated in Article 44-IV, Section 1 of the Nuclear Reactor Regulation Law and those who are engaged for business in the actions listed in Article 2, Section 4, Item 2 (except those stipulated by the Ordinance of the Ministry of Economy, Trade and Industry, hereinafter referred to as "Reprocessing Operators etc.") shall report annually to the Minister of Economy, Trade and Industry the operational status of the Reprocessing plant, the operating plan of Reprocessing etc., the cost involved in Reprocessing etc. and other items prescribed in the Ordinance of the Ministry of Economy, Trade and Industry in accordance with the provisions in the same Ordinance. This will also apply in the case where any change in the items reported should occur. (Except slight changes defined in the Ordinance of the Ministry of Economy, Trade and Industry.)

(Report from the Specific Commercial Power Reactor Establisher)

Article 5: Specific Commercial Power Reactor Establisher shall report annually to the Minister of Economy, Trade and Industry, in accordance with the stipulations in the Ordinance of the Ministry of Economy, Trade and Industry the status of generation of the Spent Fuel along with the operation of its Specific Commercial Power Reactor, the plan for Reprocessing etc., the cost involved in Reprocessing etc. and other items stipulated in the Ordinance of the Ministry of Economy, Trade and Industry. This will also apply in the case where any change in the items reported should occur. (Except slight changes defined in the Ordinance of the Ministry of Economy, Trade and Industry Decree.)

(Interest)

Article 6: The Fund Managing Corporation shall pay interest on the Reserve Fund for Spent Fuel Reprocessing and so forth as provided for in the Ordinance of the Ministry of Economy, Trade and Industry.

(Redemption)

Article 7:

1. In a case where the Reserve Fund for Spent Fuel Reprocessing and so forth, and the fund is used for the cost needed for the implementation of the Reprocessing and so forth, and in other cases where it is not required to reserve the Reserve Fund for Spent Fuel Reprocessing and so forth as prescribed in the Ordinance of the Ministry of Economy, Trade and Industry Decree, the Specific Commercial Power Reactor Establisher etc. (Specific Commercial Power Reactor Establisher and the former Specific Commercial Power Reactor Establisher) may redeem the Reserve Fund for Spent Fuel Reprocessing and so forth in accordance with the stipulations in the Ordinance of the Ministry of Economy, Trade and Industry and the plan approved under the provisions of the next section.

2. When a Specific Commercial Power Reactor Establisher and so forth wish to redeem the Reserve Fund for Spent Fuel Reprocessing and so forth, the Establisher and so forth shall prepare a plan for the

redemption of the Reserve Fund for Spent Fuel Reprocessing and so forth, and obtain approval from the Minister of Economy, Trade and Industry as provided for in the Ordinance of the Ministry of Economy, Trade and Industry. The same shall apply to the case where any change in this respect is contemplated.

(Succession)

Article 8:

1. In the case where the Specific Commercial Power Reactor Establisher and so forth are to be succeeded or merged, the Reserve Fund for Spent Fuel Reprocessing and so forth reserved by the said Specific Commercial Power Reactor Establisher and so forth shall be deemed to have been reserved by the successor or the corporation that survived the merger or by the corporation to be incorporated as a result of the merger.
2. In the case where the Spent Fuel is transferred from a Specific Commercial Power Reactor Establisher to another Specific Commercial Power Reactor Establisher, the Reserve Fund for Spent Fuel Reprocessing and so forth reserved by the said Specific Commercial Power Reactor Establisher shall be deemed to have been reserved by the said another Specific Commercial Power Reactor Establisher.
3. The stipulation of the preceding section shall also apply mutatis mutandis to the case where the Spent Fuel has been transferred from former Specific Commercial Power Reactor Establisher to a Specific Commercial Power Reactor Establisher.

(Delegation to the Ordinance of Ministry of Economy, Trade and Industry)

Article 9: In addition to the provisions in Article 3 and Article 6 through the preceding article, any necessary matter regarding reserving and redeeming the Reserve Fund for Spent Fuel Reprocessing and so forth shall be stipulated in the Ordinance of the Ministry of Economy, Trade and Industry.

(Designation etc.)

Article 10: The Minister of Economy, Trade and Industry may designate, by application, a non-profit corporation that can be deemed to be clear the following standard regarding the business stipulated in the following section (hereinafter referred to as “the Fund Managing Business”) as the Fund Managing Corporation, that shall be the only one of its kind throughout the whole country. I. To have the accounting and technical base by which the Fund Managing Business can be properly carried out. II. The composition of the officers and employees is as such that can, without doubt, carry out fairly the Fund Managing Business. III. If engaged in business other than the Fund Managing Business, doing that business shall not hinder fair operation of the Fund Managing Business. IV. More than 2 years have elapsed after its designation has been cancelled in accordance with the provision of Article 18, Section 1. V. Those listed bellow are not among its officers. a. The one that has been sentenced to a penalty of imprisonment or heavier and two years have not elapsed after completion of that term or after being freed from that penalty. b. The one that has been sentenced to pay a fine by violating the stipulations of this Law or any order based on this Law and two years have not elapsed after the payment of the fine or after being freed from that penalty.

2. The Fund Managing Corporation shall be engaged in the following business. I. To manage the Reserve Fund for Spent Fuel Reprocessing and so forth. II. To confirm that the amount equivalent to the redeemed amount of the Reserve Fund for Spent Fuel Reprocessing and so forth in relation to the redemption of the Reserve Fund for Spent Fuel Reprocessing and so forth is surely used as the cost of Reprocessing and so forth.
3. When designation stipulated in Section 1 is made, the Minister of Economy, Trade and Industry shall make the public notification of the name and domicile of the designee as well as the address of its office.
4. The Fund Managing Corporation shall give notice in advance to the Minister of Economy, Trade and Industry when it is going to change its name, domicile and address of its office.
5. In receipt of the notice mentioned in the preceding Section, the Minister of Economy, Trade and Industry shall give a public notification of the items related to the notice concerned.

(Rules on the Fund Managing Business)

Article 11:

1. The Fund Managing Corporation shall, before it starts its operation, establish rules for the Fund Managing Business concerning the method of operation and other matters stipulated in the Ordinance of the Ministry of Economy, Trade and Industry, and shall obtain approval from the Minister of Economy, Trade and Industry.

2. The Minister of Economy, Trade and Industry shall approve the application for approval stipulated in the preceding Section, if the application satisfies all of the items mentioned below. I. The method of operation of Fund Managing Business is properly and clearly defined. II. Any specific person is not treated with unfair discrimination. III. There is no fear that the benefit of the Specific Commercial Power Reactor Establisher and so forth are not unfairly impaired.

3. The Minister of Economy, Trade and Industry may order to change the rules on the Fund Managing Business that have been approved in accordance with the provision of the Section 1, if the approved rules are found to have become inappropriate for proper and secure operation of the Fund Managing Business.

(Business Plan etc.)

Article 12:

1. In accordance with the provision in the Ordinance of the Ministry of Economy, Trade and Industry, the Fund Managing Corporation shall, in each business year, prepare its business plan as well as revenue and expenditure budget regarding the Fund Managing Business, and obtain approval of it from the Minister of Economy, Trade and Industry. The same shall apply in the case where any change in them is contemplated.

2. In accordance with the provision in the Ordinance of the Ministry of Economy, Trade and Industry, the Fund Managing Corporation shall, after the close of each business year, prepare its business report and statement of revenue and expenditure regarding the Fund Managing Business, and submit them to the Minister of Economy, Trade and Industry.

(Suspension and Closure of Business)

Article 13: The Fund Managing Corporation shall not suspend or close all or a part of the Fund Managing Business without approval of the Minister of Economy, Trade and Industry.

(Effective Use of the Reserve Fund for Spent Fuel Reprocessing and so forth)

Article 14:

1. The Fund Managing Corporation shall not use the Reserve Fund for Spent Fuel Reprocessing and so forth in any other manner than those listed below. I. Holding of the government bonds and other securities designated by the Minister of Economy, Trade and Industry. II. Placing of deposit with banks and other financial institutions designated by the Minister of Economy, Trade and Industry or postal deposit. III. Entrusting of cash fund to the financial institutions engaged in trust business (financial institutions approved under the Law Regarding the Dual Capacity to Operate the Trust Business (Law No. 43 of 1943) Article 1, Section 1.)

2. The Fund Managing Corporation shall have an accounting distinctly separated from the general accounting in accordance with the provision in the Ordinance of the Ministry of Economy, Trade and Industry regarding the accounting of the Reserve Fund for Spent Fuel Reprocessing and so forth, and have individually separated accounts established and properly maintained for each Specific Commercial Power Reactor Establisher that reserved the Reserve Fund for Spent Fuel Reprocessing and so forth.

(Book-keeping)

Article 15: The Fund Managing Corporation shall keep books and enter in them those matters as stipulated in the Ordinance of the Ministry of Economy, Trade and Industry regarding the Fund Managing Business and shall keep these books.

(Order to Dismiss)

Article 16: In the event that any officer of the Fund Managing Corporation should have violated any stipulation of this Law or any provision of the order or punishment under this Law or acted in contravention of the rules of the Fund Managing Business as prescribed in Article 11, Section 1 in accordance with which the approval was granted, or committed significantly improper actions for the Fund Managing Business, the Minister of Economy, Trade and Industry may give order to the Fund Managing Corporation to dismiss such an officer.

(Order to Supervise)

Article 17: To the extent needed to enforce this Law, the Minister of Economy, Trade and Industry may give to the Fund Managing Corporation orders necessary to supervise the Fund Managing Business.

(Cancellation of Designation)

Article 18:

1. The Minister of Economy, Trade and Industry may cancel the designation stipulated in Article 10,

Section 1 (hereinafter, within this Article, referred to as “the Designation”), if any of the following items is found applicable to the Fund Managing Corporation. I. When it is recognized that the Fund Managing Corporation cannot properly and securely perform the Fund Managing Business. II. When any unfair action regarding the Designation is found. III. Any stipulation of this Law or any prescription of the order or punishment under this Law has been violated or the Fund Managing Business was performed without observing the rules of the Fund Managing Business as stipulated in Article 11, Section 1 in accordance with which the approval was granted.

2. The Minister of Economy, Trade and Industry shall make a public notification accordingly when the designation has been cancelled under the stipulation of the preceding section.
3. In the event that cancellation of the designation under Section 1 has been effected and if the Specific Commercial Power Reactor Establisher and so forth should have the Reserve Fund for Spent Fuel Reprocessing remaining with the corporation whose designation has been cancelled, the corporation whose designation was cancelled shall promptly transfer the said Reserve Fund to the corporation newly designated by the Minister of Economy, Trade and Industry under Article 10, Section 1.

When a new Fund Managing Corporation, to whom the Reserve Fund for Spent Fuel Reprocessing and so forth should be transferred under the stipulation of the preceding section, has been designated, the Minister of Economy, Trade and Industry shall notify the related Specific Commercial Power Reactor Establisher and so forth accordingly.

(Reporting and On-the-spot Inspection)

Article 19:

1. The Minister of Economy, Trade and Industry may have the Specific Commercial Power Reactor Establisher and so forth as well as Reprocessing operator and so forth report on their business, or may let its officials enter into the offices, plants or business establishments of the Specific Commercial Power Reactor Establisher and so forth as well as Reprocessing operator and so forth and inspect their books, documents and other materials.
2. To the extent needed to enforce this Law, the Minister of Economy, Trade and Industry may have the Fund Managing Corporation report on the state of its Fund Managing Business or its asset, or let its officials enter into the offices of the Fund Managing Corporation and inspect its state of Fund Managing Business or books, documents and other materials.
3. These officials who inspect on the spot under the stipulations of the preceding two sections shall bear the certificate of identification representing their status and show it to the related people.
4. Authority to inspect on the spot under the stipulations of Sections 1 and 2 shall not be interpreted as the one that is given for criminal investigation.

(Interim Measures)

Article 20: When orders are formulated, changed or repealed under the stipulations of this Law, necessary interim measures (including interim measures for penalty) may be decided by the same order within the extent that is assessed reasonably necessary as a result of such formulation, change or repeal.

(Penalty)

Article 21: Those who have violated the stipulations of Article 3, Section 1 or 7 shall be subject to imprisonment with hard labor for 3 years or less or a fine of 3 million yen or less, or both of them.

Article 22: The one to whom any of the following item applies shall be subject to imprisonment with hard labor for 1 year or less or a fine of 1 million yen or less, or both of them.

The one who failed to report or submitted a false report in violation of the stipulations of Article 4 or 5.

The one who has redeemed the Reserve Fund for Spent Fuel Reprocessing and so forth without the approval stipulated in Article 7, Section 2.

The one who failed to report or submitted a false report under Article 19, Section 1.

The one who rejected, obstructed or avoided the inspection stipulated in Article 19, Section 1.

Article 23: In the event that any of the following items is applicable, the officer or employee of the Fund Managing Corporation who committed the violation shall be subject to a fine of half a million yen or less.

I. When all the Fund Managing Business has been closed without obtaining the permission of Article 13.

II. When books have not been entered or falsely entered or the books have not been preserved as stipulated in Article 15. III. When the report stipulated in Article 19, Section 2 has not been submitted or

have been submitted with false statements. IV. When the inspection stipulated in Article 19, Section 2 has been rejected, obstructed or avoided.

Article 24: In the event that any of the representative of a corporation or any agent, employee or other person engaged in the business of a corporation or a natural person should commit actions in violation of the following stipulation in regard to the business of such a corporation or such a natural person, the corporation, in addition to punishing the one who so acted, shall be subject to fines as stated below and the natural person shall be subject to a fine as stipulated in each of the following Article.

I. Article 21: A fine of 300 million yen or less.

Article 22: A fine of 100 million yen or less.

Additional Clauses

(Enforcement Date)

Article 1: This Law shall become effective on the day designated by the government Ordinance within 9 months from the date of official announcement. However, the provisions of the Articles 4 and 5, Article 19, Sections 1, 3 and 4, Article 22, Sections 1, 3 and 4, Article 24, Section 2 and the next Article shall become effective on the day designated by the government Ordinance within 6 months from the date of official announcement.

(Preparatory Actions)

Article 2: Designation in accordance with the stipulation of Article 10, Section 1 and its related necessary procedures and other actions (including the approval of the Rules on the Fund Managing Business) may take place even before this Law takes effect, following the example of the stipulations of the same article and Article 11.

(Interim Measures)

Article 3:

1. In addition to the Reserve Fund for Spent Fuel Reprocessing and so forth required to be reserved in every business year in accordance with the provision of Article 3, Item 1, the Specific Commercial Power Reactor Establisher, that has the Spent Fuel generated through operation of the Specific Commercial Power Reactor during the period between the date of commencement of operation and the date immediately preceding the date of enforcement of this Law, shall reserve the fund to the Fund Managing Corporation, as stipulated in the Ordinance of the Ministry of Economy, Trade and Industry, in the amount to be notified by the Minister of Economy, Trade and Industry under the provision of Section 4 of the same article that is to be applied mutatis mutandis in Section 5, in order to apply the fund to cover the cost of Reprocessing and so forth of the said Spent Fuel.

2. The fund reserved in accordance with the stipulation of the preceding section shall be deemed to have been reserved as the Reserve Fund for Spent Fuel Reprocessing and so forth of Article 3, Section 1.

3. Reserving of the fund under Section 1 (excluding the reserve regarding the amount decided by the Ordinance of the Ministry of Economy, Trade and Industry as an equivalent of the cost used for the Reprocessing and so forth of the Spent Fuel generated from operation during the period between the first day of the business year that includes the date of enforcement of this Law and the date immediately preceding the date of enforcement of this Law) shall be made in a manner equally divided into each business year between the business year that includes the date of enforcement of this Law and the fifteenth business year thereafter. However, in the event that it is recognized that there is no fear of disturbance of proper operation of Reprocessing and so forth, and the approval of the Minister of Economy, Trade and Industry has been obtained in accordance with the Ordinance of the Ministry of Economy, Trade and Industry, the fund may be reserved in divided portions in such a manner as approved.

Reserving of the fund prescribed in Section 1 regarding the amount decided in accordance with the provision of the Ordinance of the Ministry of Economy, Trade and Industry, referred to in the preceding section, shall be made in the business year in which this Law is enforced in accordance with the stipulation in the Ordinance of the Ministry of Economy, Trade and Industry stipulates.

5. The stipulation of Article 3, Section 4 shall be applied mutatis mutandis to the Reserve Fund to be reserved in accordance with Section 1. In this case, the “operation of the Specific Commercial Power Reactor” in Section 4 of the same article shall be reread as the “operation of the Specific Commercial Power Reactor during the period between the date of commencement of operation and the date immediately preceding the date of enforcement of this Law”.

(Penalty)

Article 4:

1. The one who has violated the stipulation of Section 1 of the preceding article shall be subject to imprisonment with hard labor for 3 years or less or to a fine of 3 million yen or less, or both of them.
2. If any of the representatives of a corporation or any agent, employee or other person engaged in the business of a corporation or a natural person should have committed actions in violation of the following stipulation in regard to the business of such a corporation or such a natural person, the corporation shall, in addition to punishing the one who committed the actions, be subject to a fine of 300 million yen or less and the natural person shall be subject to a fine as stipulated in the same section.

(Delegation to the government Ordinance)

Article 5: In addition to the stipulations of these additional clauses, the necessary interim measures along with the enforcement of this Law shall be decided in the government Ordinances.

(Review)

Article 6: When 5 years have passed after the enforcement of this Law, the government shall review the status of enforcement of this Law, and when recognized to be necessary, study the stipulations of this Law, and take necessary actions, based on such a study.

(Reason)

In order to have Spent Fuel Reprocessing and so forth in nuclear power generation properly implemented, it is necessary to decide on the matters regarding the obligation to reserve the Reserve Fund for Spent Fuel Reprocessing and so forth as well as the Fund Managing Corporation that manages the said Reserve Fund and so on. This is the reason why this bill is proposed.

15.Guides

(1) Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities (Excerpt)

(Decision of the NSC August 30, 1990)

Text is the same as Annex 3.13(3) A3.84 page) of National Report of Japan for Third Review Meeting of Convention on Nuclear Safety. August, 2004, which is also applicable to this convention (Search by Internet for IAEA →Nuclear Safety →Safety Convention →National Report →Japan). Please see our National Report on Nuclear Safety Convention.

(2) Basic Guide for Safety Review of Nuclear Fuel Cycle Facilities (Excerpt)

(Decision of the NSC, February 7, 1980)

(Last revision: Decision by the NSC, March 29, 2001)

Preface

As nuclear fuel cycle facilities, there are various types of facilities, such as uranium fuel fabrication facilities, plutonium handling facilities, hot laboratories, and reprocessing facilities of spent fuels. In such nuclear fuel cycle facilities, it is common that nuclear fuel materials move through processes, changing their characteristics and forms, and measures for nuclear fuel materials not to cause criticality, measures to confine radioactive materials, etc. at each process are required.

This basic guide summarizes the fundamental aspect of the safety examination common to the nuclear fuel cycle facilities so that the assessment from a common viewpoint may be achieved at the safety examination of such nuclear fuel cycle facilities.

I. Application

This basic guide shall be applied to the fabrication facility defined in Article 13 of the Law for Regulations of Nuclear Source Material, Nuclear Fuel Material and Nuclear Reactors (referred to hereinafter, as "the Reactor Regulation Law"), the reprocessing facility defined in Article 44 of the said law, and the use facility defined in Article 53 of the said law, etc. (provided that the facility is relating to the nuclear fuel materials specified in Article 16-2 of the Ordinance of the Reactor Regulations Law) of nuclear fuel cycle facilities.

II. Definition of Terms

In this basic guide, the meaning of the term defined in each following paragraph is as provided in each paragraph concerned.

1. Personnel Engaged in Radiation Work

Personnel engaged in radiation work defined in regulations relating to the Reactor Regulation Law.

2. Important Safety Related Facilities

Structures, systems and components of which functional loss could exert excessive radiation exposure on the general public and personnel engaged in radiation work, and structures, systems and components installed in order to mitigate excessive radiation exposure at the accident on the general public and personnel engaged in radiation work.

3. Maximum Postulated Accident

The accident initiated by technically postulated events, which, in consideration of important engineered safety features, causes maximum radiation exposure to the public.

4. Single Unit

One handling unit for nuclear fuel materials in view of the criticality control

III. Site Conditions

1. Basic Conditions

At the site of the nuclear fuel cycle and its vicinity, no event liable to induce large accident shall be considered to occur. And if accident should occur, very few events shall be expected to occur to escalate the emergency situation.

2. Normal Conditions

The dose of the general public by nuclear fuel cycle at normal conditions shall be as low as reasonably achievable.

3. Accident Conditions

The general public shall not be exposed to an excessive radiation even in case of an assumed maximum credible accident in the nuclear fuel cycle.

IV. Radiation Control

4. Confinement Function

Nuclear fuel cycle facilities shall have sufficient function to confine the radioactive materials in the restricted area.

5. Radiation Shielding

In the nuclear fuel cycle facilities, sufficient radiation shielding shall be provided in consideration of working conditions for personnel engaged in radiation work.

6. Radiation Exposure Control

In the nuclear fuel cycle facilities, measures shall be taken to monitor and to control sufficiently the radiation exposure of personnel engaged in radiation work.

V. Environmental Safety

7. Discharge Control of Radioactive Waste

For the nuclear fuel cycle facilities, the concentration, etc. of radioactive materials released into the environment shall be controlled as low as reasonably achievable by processing the radioactive wastes generated appropriately.

8. Consideration in Storage, etc.

In the nuclear fuel cycle facilities, the dose in site vicinity due to the storage of radioactive materials, etc. shall be controlled as low as reasonably achievable.

9. Radiation Monitoring

In the nuclear fuel cycle facilities, measures shall be taken to monitor appropriately the concentration, etc. of radioactive materials at the release routes of the radioactive wastes.

Moreover, according to the possibility of the release of radioactive materials, measures shall be taken to monitor appropriately the radiation dose, the concentration of radioactive materials, etc. in the surrounding environment.

VI. Criticality Safety

10. Criticality Control of Single Unit

The single unit of nuclear fuel cycle facilities shall be provided measures to prevent criticality in any case assumed from technical point of view.

11. Criticality Control of Plural Units

When two or more single units exist in a nuclear fuel cycle, measures shall be taken to prevent criticality in any case assumed from technical point of view considering the mutual interference of neutrons between units.

12. Consideration to Criticality Accident

In the nuclear fuel cycle facilities possible to cause a criticality accident by operation error, etc., appropriate measures shall be taken for the unexpected criticality accident.

VII. Other Measures for Safety

13. Consideration to Earthquake

Important safety related facilities in the nuclear fuel cycle facilities shall be classified corresponding to the importance in seismic design so that each facility shall be designed to endure against the force of design basis earthquake that is defined as most appropriate with reference to the past record, and to-the-data based on the field survey, etc. in the site and its vicinity.

14. Consideration to the Natural Phenomena other than Earthquakes

Important safety related facilities in the nuclear fuel cycle facilities shall be designed taking into account the forces of the nature considered to be the most severe phenomena among anticipated natural phenomena other than earthquakes, with reference to the past record, at-the-spot observation, etc. in the site and its vicinity.

15. Consideration to Fire and Explosion

In the nuclear fuel cycle facilities with possibility of a fire and explosion, suitable measures shall be taken to prevent their occurrence, and at the time of the unexpected fire or explosion, to prevent their expansion and release of excessive radioactive materials into the outside of the facilities.

16. Consideration to Loss of Power Supply

In the nuclear fuel cycle facilities, suitable measures shall be taken for the loss of function of the external power system.

17. Consideration to Transfer of Radioactive Materials

In the nuclear fuel cycle facilities, when radioactive materials are transferred in the nuclear fuel cycle facilities, appropriate measures shall be taken for the confinement function, the radiation shielding, etc.

18. Consideration to Accidents

In the nuclear fuel cycle facilities, appropriate measures shall be taken for alarm, communication, evacuation of workers, etc.

19. Consideration to Share Use

Important safety related facilities of a nuclear fuel cycle shall be designed not to share if there is a possibility of loss of the safety function by share use.

20. Conformity to Standards and Criteria

Design, construction and inspection of the important safety related facilities in the nuclear fuel cycle facilities shall be based on the standards and criteria recognized as appropriate.

21. Consideration to Inspection, Repair, etc.

Important safety related facilities in the nuclear fuel cycle facilities shall be possible to be made inspection, test, maintenance and repair by the suitable method according to the importance.

(3) Radioactive Waste Processing and Disposal Policy

(AEC, Special Committee on Processing and Disposal of Radioactive Waste, October 8, 1985)

Chapter 1. Implementation Organization and Allocation of Responsibilities for Processing and Disposal of Radioactive Wastes

2. Fundamental Concept

(1) Responsibilities of waste generators and the government

Since the radioactive wastes are generated with the business activities of the nuclear business operator, it is considered that the responsibility to process and dispose of the wastes appropriately and surely shall be born by the nuclear business operator as a generator of wastes (referred to hereinafter, as "generator").

On the other hand, the government bears the responsibility to performs the research and development, and safety regulation of processing and disposal of radioactive wastes, and also is required to play appropriate roles in the implementation of the disposal from the viewpoint that the long term assurance of safety for disposal of radioactive wastes and the promotion of nuclear energy development and utilization smoothly as planned. Especially, the government is required to take responsibility to perform appropriately and surely for disposal of high level radioactive wastes.

(2) Relationship between generators and radioactive disposal business operators

When the generator carries out the processing and disposal of the radioactive waste by himself, the generator concerned shall take the legal responsibility for ensuring safety of the processing and disposal.

On the other hand, it may be a possible for the independent business operator having sufficient economical and technical capability (referred to hereinafter, as "radioactive disposal business operator") are entrusted to monopolize the processing and disposal of radioactive waste for efficiency and rationality reasons, and in such case, it is more appropriate for the radioactive disposal business operator to take the legal responsibility for ensuring safety of the processing and disposal, from viewpoints of concentrating the responsibility for ensuring safety and performing the efficient processing and disposal. In that case, it is important for the generators to bear expense required for the processing and disposal, and also to give suitable support to the radioactive disposal business operator so that the processing and disposal may be carried out smoothly.

(4) Basic Concept for Safety Regulations for Land Disposal of Low Level Solid Radioactive Wastes

(The Committee on Safety Regulations of the Radioactive Waste, the NSC, October 11, 1985)

Chapter 2. Concept of Ensuring Safety of Land Disposal

Section 1. Fundamental Concept of Disposal of Radioactive Wastes

(1) Radioactive wastes are classified generally by the place of generation and variety, as well as the concentration of radioactive materials, into the low level radioactive waste generated at nuclear power plants, etc., the high level radioactive wastes generated at reprocessing plants, or the TRU (Trans Uranium) waste generated at reprocessing plants or the plutonium uranium mixed oxide (MOX) fuel fabrication plants, etc., and the following measures for disposal of those wastes are basically taken according to the respective characteristics.

(2) In principle, the radioactive wastes shall be disposed with the policy of preventing the any hazardous impact of radioactivity to the human environment, therefore, it is essential to isolate it safely from the human environment until the radioactivity decays low enough level at which it does not cause any safety problem, by processing it in the form suitable for the disposal type chosen.

(3) The methods and time periods for isolation from the human environment differ depending on characteristics of radioactive wastes, especially the kinds and concentrations of radionuclides in the wastes, the methods and the time periods shall be chosen presuming that safety of disposal at the final stage shall not rely on the integrity of engineered barriers or the human management activities.

(4) As the current disposal methods of radioactive wastes, there are mainly four types; the method by which to prevent hazardous impact of radioactivity by diffusing the radioactive waste (referred to hereinafter, as "diffusion type"); the method by which to prevent hazardous impact of radioactivity by disposing at land of the solid radioactive waste whose radioactivity is expected to be significantly decayed in the course of control period, under step-wise control until it is fully decayed (referred to hereinafter, as "control type"); the method by which to isolate the radioactive waste needed to be isolated for a long period of time safely at the stable place physically apart enough from the human environment (referred to hereinafter, as "isolation type"); and the method by which to reuse or recycle the very low level radioactive waste to the resources, materials, etc. under certain conditions (referred to hereinafter, as "reuse type").

(5) To ensure the safety on the disposal of radioactive wastes, it is required to assess the safety of the disposal method chosen, and to implement safety management based on assessment results. In the safety assessment, it is essential to confirm that the disposal does not cause any hazards, evaluating the dose that the general public might be exposed through the food chain of radionuclides, originated from the disposal of the waste.

(5) Fundamental Guidelines for Licensing Review of Land Disposal Facility of Low-Level Radioactive Waste (Excerpt)

(Decision of the NSC, March 17, 1998)

(Latest Revision: NSC, March 29, 2001)

I. Application

This basic concept shall be applied for the step wise control of final disposal as a waste repository business for the low level radioactive solid waste generated from operation etc. of reactor facilities. In this type of disposal, the control is released step wisely until no institutional control become necessary at the final stage. There are two types of disposal in this category. One type: near surface disposal of the solidified waste in containers carried out in disposal facility which is installed with engineered barriers (referred to hereinafter, as "disposal in engineered barriers type disposal facility") and the other: near surface disposal of the non-solidified radioactive concrete waste in containers (referred to hereinafter, as non-solidified concrete wastes, etc.) carried out in the disposal facility which is not installed with engineered barriers (referred to hereinafter, as "disposal in non-engineered barriers type disposal facility").

II. Definition of Terms

The meaning of the terms used in this fundamental concept is as follows:

(1) Waste disposal facilities

The place that is excavated the land for disposal of wastes or for installation of engineered barriers, and the place that is filled back after wastes are emplaced. When engineered barriers are installed the place includes the engineered barriers.

(2) Waste disposal facilities

Waste disposal facilities and its associated facilities, and the associated facilities includes waste receiving facilities, radiation control facilities etc.

(3) Step-wise control

Step-wise control means controlling the waste disposal facility until the level of the radioactivity of the

near surface disposed wastes decays to the level of which no concerns for the safety is necessary. The control will released step wisely in accordance with the waste type and the level of radioactivity decay etc. in consideration with the prevention of radiation dose of the general public as low as reasonably achievable. Methods of the control depend on the waste form and concentration of radioactivity in the waste, and existence of installed engineered barriers, etc., and those are as shown below fundamentally:

(a) The case of disposal in engineered barriers type disposal facility The first step

It is the step necessary to prevent leakage of radioactive materials by engineered barriers and to monitor radioactive materials not to leak out of the barriers.

The second step

It is the step necessary to prevent the migration of radioactive materials to the human environment by engineered barriers and the natural barrier, and to monitor the leakage of radioactive materials out of engineered barriers and the migration to the human environment.

3) The third step

It is the step necessary to prevent the migration of radioactive materials to the human environment by the natural barrier mainly and to take countermeasures to prohibit or restrict specific activities.

(b) The case of disposal in non-engineered barriers type disposal facility

1) Disposal step

It is a step necessary to prevent the migration of radioactive materials to the human environment, and to monitor the migration of radioactive materials to the human environment from the waste disposal facility.

2) Preservation stage

It is the step necessary to prevent the migration of radioactive materials to the human environment by the natural barrier and to take countermeasures to prohibit or restrict specific activities.

III. Fundamental Site Conditions

It shall be considered that the initiating event to the big accident does not occur in or around the site of the waste disposal facility. Moreover, if the accident occurs, events shall be seldom to escalate the effect.

IV. Dose Evaluation

4-1 Evaluation under Normal Conditions

The radiation dose of the general public in normal times shall be as low as reasonably achievable in the planning of a step-wise control, in the design of the waste disposal facility, and in relation with the situation of the site and its vicinity.

4-2 Safety Evaluation

When it is presupposed that the technically assumed abnormal event occurs, excessive radiation exposure shall not be imposed to the general public.

V. Radiation Control

5-1 The Function of Enclosure

In the case of disposal at the waste disposal facility installed with engineered barriers, the design shall be provided with function to enclose radioactive materials in the restricted area of the waste disposal facility in the first step.

5-2 Inhibition of Radioactive Nuclides Migration

In the case of disposal at the waste disposal facility not installed with engineered barriers, appropriate measures shall be taken with due consideration of migration inhibition of radioactive nuclides from the waste disposal facility to the human environment in the disposal step.

5-3 Radiation Protection

(1) The waste disposal facility shall be installed with radiation shields to reduce the radiation dose of the general public as low as reasonably achievable by direct gamma ray and the sky shine gamma ray.

(2) In the case of disposal in non-engineered barriers type disposal facility, and when there is the possibility of scattering of radioactive materials, measures shall be taken to reduce the radiation dose of the general public by the scattering as low as reasonably achievable.

(3) The waste disposal facility shall be installed with appropriate radiation shields and the ventilation etc. with due consideration of the working conditions of the personnel engaged in radiation work.

5-4 Radiation Exposure Control

Measures for monitoring and controlling of the radiation doses of the personnel engaged in radiation work shall be taken at the waste disposal facility.

VI. Environmental Safety

6-1 Discharge Control of Radioactive Gaseous and Liquid Wastes

Concentrations of radioactive materials discharged to the environment shall be controlled as low as reasonably achievable at the waste disposal facility by appropriate processing of radioactive gaseous waste and the radioactive liquid waste generated at the associated facilities in the waste disposal facility.

6-2 Radiation Monitoring

(1) Measures shall be taken at the waste disposal facility to appropriately monitor the concentration of radioactive materials etc. on the discharge route of radioactive gaseous and liquid wastes that is discharged from the associated facilities of the waste disposal facility.

Measures shall be taken to appropriately monitor the radiation dose, the concentration etc. of radioactive

materials in the environment in accordance with the amount of released radioactive materials.

(2) Measures shall be taken at the waste disposal facility to appropriately monitor the concentration of radioactive materials etc. leaking out from the waste disposal facility to the underground water etc. and migrating to the human environment in the 1st step and the 2nd step, or in the disposal step.

VII. Other Safety Measures

7-1 Design Considerations to Earthquakes

The waste disposal facility shall be designed for the design base earthquake force to preserve safety functions required for the appropriate time period.

This design base earthquake force shall be defined corresponding to the C class facility in the classification of importance for seismic design specified in the "Examination Guide for Seismic Design of Nuclear Power Reactor facilities".

7-2 Design Considerations to Natural Phenomena other than Earthquake

The waste disposal facility shall be designed taking into considerations of the expected natural phenomena other than the earthquake to preserve required safety functions required for the appropriate time period referring to the past record, at-the-spot observation, etc. in the site and its vicinity.

7-3 Considerations to Fire and Explosion

Measures shall be taken at the waste disposal facility to prevent occurrence of the fire and explosion, and to prevent excessive release of radioactive materials to the outside of the facility even at the emergency of fire and explosion.

7-4 Considerations to the Loss of Power Supply

Measures shall be taken at the associated facilities of the waste disposal facility responding to the loss of function of the external power supply system.

7-5 Conformity to Standards and Criteria

The waste disposal facility shall be designed and constructed based on the standards and the criteria accepted as appropriate.

VIII. Termination of Control Time Period

Management and control of the waste disposal facility carried out from a viewpoint of the exposure control may be terminated by the end of the limited time span, and the radiation dose of the general public assumed to be imposed from the waste disposed shall be low enough so as the control is no more necessary after the termination of the control.

COMMENTARY

This basic concept was developed based on the features for the safety assurance of the waste repository business as described below:

(1) The concept of the safety assurance of the methods for the final disposal carried out as a waste repository business is as provided in "the basic Concept of the Safety Regulation for Land Disposal of the Low Level Radioactive Solid Waste" as mentioned above, i.e., the waste generated at nuclear facilities will be disposed safely and necessary control shall be imposed of taking into consideration of the degree of possible radiation exposures etc. to the general public until the reduction of the radioactivity is achieved so that no further control is necessary.

(2) The control provided at the waste disposal facility is different from what has been provided in the ordinary nuclear facilities, and it is possible to consider the change of control methods step wise in accordance with reduction of the radioactivity etc.

Methods of the control in each step depend on the form and concentration of radioactivity of the waste, existence of installed engineered barriers, etc., and those are as shown below:

(a) The case of disposal in engineered barriers type disposal facility

1) The first step

The peripheral monitoring area shall be established to limit entry to the area, and the repository preservation area shall be established to implement patrol and inspection in the area.

In addition, no leakage of radioactive materials from the engineered barriers installed in the waste disposal facility shall be confirmed by monitoring leakage of radioactive materials etc., and necessary measures, such as the repair, shall be taken when leakage is confirmed.

2) The second step

The peripheral monitoring area shall be established to limit entry to the area, and the repository preservation area shall be established to implement patrol and inspection in the area.

In addition, the underground water etc. shall be sampled and measured to monitor the concentration of radioactive materials leaking from the engineered barriers and migrating to the human environment.

3) The third step

The repository preservation area shall be established to implement patrol and inspection in the area, and the specific acts such as farming works etc. in the area shall be restricted or prohibited.

(b) The case of disposal in non-engineered barriers type disposal facility

1) Disposal step

The peripheral monitoring area shall be established to limit entry to the area, and the repository preservation area shall be established to implement patrol and inspection in the area. In addition, the underground water etc. shall be sampled and measured to monitor the concentration of radioactive materials migrating from the waste disposal facility to the human environment.

2) Preservation stage

The repository preservation area shall be established to implement patrol and inspection in the area, and the specific acts such as farming works etc. in the area shall be restricted or prohibited.

Therefore, the safety evaluation of the waste disposal facility during the control time period shall be implemented with due considerations of the above described methods of step-wise control and functional degradation of the equipment installed in the waste disposal facility according to the progress of time.

(3) In addition, as the waste repository business is planned to move to the step which does not need management or control finally after the step wise control described above, it is necessary to examine at the time of business application, and to obtain the prospect on the possibility to move to the situation which does not need management or control after the stepwise control with in the limited time span.

II. Concerning to this basic concept, there will be some subject to be considered for the application and to be clarified as guide value for decision-making. The followings are description for such subjects:

1 On Application

"The low level radioactivity solid waste generated with operation of reactor facilities etc." means the radioactivity solid waste of low level generated in connection with operation and maintenance of nuclear reactors, processing of the waste at the disposal facilities, which are the associated facilities of nuclear reactors, etc. including the waste generated in connection with dismantling of reactor facilities.

"Wastes of the non-solidified concrete, etc." means wastes of the concrete including the reinforcing steel rods and other similar materials.

2 On Definition of Terms

(1) "Engineered barriers" used in this basic concept means engineered structures, such as the concrete vault (including fillers, such as the soil for filling the void at the disposal of wastes), and the so-called MONOLITH which dispose the waste solidified as a unit built, expecting for prevention and reduction of leakage of radioactive materials of the disposed waste to the human environment.

In addition, it includes materials and the containers used for solidification of the waste in a container.

(2) "Natural barriers" used in this basic concept means the soil etc. around engineered barriers or disposed wastes that may inhibit the migration of radioactive materials leaked from the disposed wastes to the human environment.

3 On Basic Site Conditions

From a viewpoint to avoid a big accident and to mitigate the effect of the accident, it is necessary to confirm that the safety is assured taking into considerations of the following events at the site of the waste disposal facility and the surroundings:

(1) Natural environment

a) Natural phenomena, such as the earthquake, tidal waves, landslide, cave-in, typhoon, high tide, flood, abnormal cold wave, and heavy snowfall,

b) Geology, geographical features, etc., such as the subsoil, bearing capacity of soil, geology of faults and topographic features,

c) Meteorological conditions, such as the wind direction, wind speed, and amount of precipitation, and

d) Hydraulics and hydraulic phenomena such as the river, underground water, etc.

(2) Social environment

a) The fire, explosion, etc. in the neighbor factories etc., and

b) Usage of the river water, underground water, etc., land usage situations, etc. for foods, such as agriculture, livestock raising, fishing, etc. and the population distribution, etc.

c) Natural resources, such as the coal and ore

4 On Dose Evaluation

(1) Evaluation for Normal Conditions

The radiation dose of the general public due to leakage or migration of radioactive materials from the waste disposal facility, release of the radioactive gaseous and the liquid waste, etc. from the associated facilities of the waste disposal facility, etc. at normal conditions shall be evaluated and confirmed not to exceed the dose limit specified in regulations, and be evaluated and confirmed to be as low as reasonably achievable at the planning and design of the step-wise control, in relation with the conditions of the site and its vicinity.

(2) Safety Evaluation

a) Since the business continues over a long period of time, the radiation dose of a general public shall be evaluated technically assuming unusual leakage or migration of radioactive materials from the waste disposal facility. This evaluation is for the purpose to confirm the safety assurance to the general public, even in such an event as exceeding the event considered for normal conditions.

b) The possibility of occurrence of the following accidents shall be examined at the associated facilities of the waste disposal facility, and the radiation dose of the general public shall be evaluated on the selected

accidents considered to be important from a viewpoint of the exposure of the general public:

- i Scattering of radioactive materials accompanied by dropping of wastes by operational error etc.;
 - ii Leakage of radioactive materials caused by damage of piping etc., failure of various equipment, etc.;
- and
- iii Fire etc.

c) When measures for mitigating the effect is taken against the accident, the radiation dose of the general public due to the radioactivity leaked, migrated and release during the accident shall be evaluated taking in to account of time delay till the detection of abnormality, time necessary to mitigation work completion as appropriate.

d) "No excess radiation exposure to the general public" means in consideration of the balance of frequency and the magnitude of accident consequences, and the decision criteria shall be "no excess risk of radiation exposure to the general public", the application to specific situations shall be based on the followings:

According to the 1990 recommendation of the revised ICRP, the annual effective dose limit to the public

exposure is recommended to be 1mSv, but in a special situation, the effective dosage of one single year higher than this limit may be permitted if the average over five years does not exceed 1mSv per year. Although it is a concept of the radiation exposure in normal times, this concept may be applied to "accident" if the frequency of occurrence is small, and the "risk" can be judged to be small provided that the evaluated value of the effective dosage of the general public does not exceed 5mSv per specific accident.

5 On Radiation Control

"Disposal step" means the time period from the start of disposal activities until the covering soil is stabilized.

6 On Design Considerations for Earthquakes and Natural Phenomena other than Earthquake

"Appropriate time period" means the time period of the first step for the waste disposal facility, and it is the required time period for proceeding the waste repository business appropriately for the associated facilities of the waste disposal facility.

In addition, "preserve required safety functions" means to preserve confinement function etc. for the waste disposal facility.

7 On Termination of Control Time Period

(1) In the case of disposal in engineered barriers type disposal facility, from 300 to 400 years shall be used as the guide value of "the limited time span", as the amount of Cobalt-60, Cesium-137, etc. which are major part of radioactivity and important from radiation protection views, in the waste generated at reactor facilities decays less to 1/1000 or 1/10,000 of initial during this time period, and similar time periods for the waste disposal facility are referred in foreign countries. In addition, in the case of disposal in non-engineered barriers type disposal facility, about 50 years of the disposal step and the subsequent preservation step shall be used as the guide value of "the limited time span", as non-solidified concrete, etc. are disposed wastes which radioactivity level is low by nature.

(2) "Radiation dose so low as the control is not required from a viewpoint of the exposure control" means that the evaluated value of the radiation dose not exceed the regulation exclusion dose, 10micro-Sv per year, as the guide value, which is specified in the report by the Basic Committee of the Radiation Review Council, "On the Regulation Exclusion Dose in the Near Surface Disposal of Radioactive Solid Wastes", December, 1987.

In addition to, the evaluated value of the radiation dose not exceeding 10micro-Sv per year extremely shall be the guide value for the event possible to be considered that the frequency of occurrence is small.

(6) Clearance levels in Main Nuclear Facilities (Excerpt)

(The Special Committee on the Safety Standards of the Radioactive Waste, NSC, March 17, 1999)

Contents

- 1. Introduction
 - 1.1 On clearance levels
 - 1.2 Background
 - 1.3 Objectives and Scope of this Report
- 2. International (e.g., IAEA) Trends on clearance levels
- 3. Calculation of clearance levels
 - 3.1 Basic Concepts for Calculation of clearance levels
 - 3.1.1 Fundamental Concept for Calculation Methods
 - 3.1.2 Application Criteria of Radiation Doses
 - 3.1.3 Evaluation Candidates
 - 3.1.4 Evaluation Items

- 3.1.5 Evaluation Routes
- 3.1.6 Calculation Models and Evaluation Parameters
- 3.2 Calculation Results for Disposal
- 3.3 Calculation Results for Reuse
- 3.4 Calculation Results
- 4. Derivation of Standard Values Based on Calculation Results of clearance levels
 - 4.1 Adequacy of Scenarios
 - 4.2 Comparison with IAEA Technical Document, “TECDOC-855”
 - 4.3 Selection of Important Radionuclides
 - 4.4 Fundamental Concepts for Verification Methods
- 5. Conclusion
 - 5.1 Meaning of this Report and Methods to Address Future Investigations and Examinations
 - 5.2 Scope of Future Investigations and Examinations
 - 5.3 Schedule for Institutionalization and Subjects for Future Considerations
- Glossary of Main Terms
- Attachment

3. Calculation of Clearance Levels

3.1 Basic Concepts for Calculation of Clearance Levels

Basic concepts for calculation of clearance levels is shown with respect to each subject in sections 3.1.1 through 3.1.5, and the arranged procedure for calculation based on the concepts is shown in Fig. 3-5 of the final section.

3.1.1 Basic Concepts for Calculation Methods

Clearance levels for solid wasted materials in the main reactor facilities (i.e. light water reactors and gas cooled reactors) was determined to be obtained by calculation according to the following methods as provided in the IAEA technical document, “TECDOC-855”:

- (1) The guide values of radiation dose shall be established with consideration of superposition of practices, evaluation routes, etc. with a target as “doses which is sufficiently small compared with the radiation level of the nature, and the risk to human health can be disregarded”; and
- (2) Concentrations of radionuclides corresponding to the guide values of dose shall be calculated according to the following prerequisites.
 - a) Clearance levels shall be unconditional where the use or destination of the material are not limited after removed from the system of regulations concerning radiation protection (referred to hereafter, as “cleared”).
 - b) All the evaluation routes shall be considered (for disposal or reuse) assumed to be occurred actually due to the evaluation item. The probability of occurrence shall not be taken account as a conservative approach, because it is not appropriate to assume the probability of occurrence since the use or destination of the cleared evaluation item is not limited.
 - c) The minimum concentration shall be determined for each radionuclide by calculating the concentration according to the evaluation route using realistic parameters for the evaluation item. And the evaluation route that gives the minimum concentration is specified as the “Critical Route”.

The IAEA technical document, “TECDOC-855”, provide clearance levels obtained by comparing and examining information of published references. In Japan, on the other hand, it is decided that clearance levels shall be calculated on the basis of circumstances of the daily life, social environment, etc. in Japan, and that the dose evaluation of existing nuclear facilities (e.g., dose evaluations for the general public in the vicinity of low-level radioactive waste disposal facilities, commercial power reactor facilities etc.) shall be also referred.

3.1.2 Application Criteria of Radiation Doses

The application criteria of radiation doses from which clearance levels is calculated shall be as sufficiently low so that anyone of the neighboring public surrounding a nuclear facility does not receive radiation exceeding the individual dose limit (i.e. 1 mSv/year, excluding the radiation dose received from the nature) specified by regulations. Moreover, the application criteria shall be sufficiently low as not needed to take consideration of protection from the radiation, as the radiation dose caused by the cleared material is “sufficiently small as compared with the radiation level by the nature, and negligibly small in risk to the human health”.

In order to satisfy the above mentioned concept, the guide value of radiation doses from which clearance levels is calculated has been established as follows with references, “Regulation Exclusion Dose for the Near Surface Disposal of Radioactive Solid Wastes” prescribed by the Radiation Review Council in 1987, and “Fundamental Concepts for the Safety Review of Radioactive Waste Disposal Facilities” prescribed by the NSC in 1988, and references by ICRP, IAEA, etc.

- (1) The application criteria for individual radiation dose based on realistic scenario (referred to as “scenario” that is combinations of evaluation routes and evaluation parameters) is determined as 10 μ Sv/year (0.01 mSv/year: less than one-hundredth of the averaged radiation level of the natural background of 2.4 mSv/year) with consideration of superposition of human behavior, evaluation routes,

etc., that is one-tenth of 100 $\mu\text{Sv}/\text{year}$ (0.1 mSv/year) which is equivalent to the risk level that any individual might consider as negligible ($10^{-6}/\text{year}$).

(2) Although the probability of occurrence of evaluation routes shall not be taken account as a conservative approach in the estimation of clearance level for unconditional usage and destination of cleared material, but the lower limit value of the 97.5% tail of one side confidence interval (Refer to chapter 4) by combination of parameters considering the fluctuation of evaluation parameters (probabilistic analysis) shall be treated as one of “ low probability scenario”, and the individual radiation dose for this scenario shall be confirmed not exceeding 100 $\mu\text{Sv}/\text{year}$, which is the same as specified in the IAEA technical document “TECDOC-855”.

3.1.3 Evaluation Candidates

The concept of critical group shown by ICRP etc. is important as a fundamental concept to select evaluation candidates and evaluation parameters in calculating clearance levels. The concept of critical group is as follows, which is also adopted as a reference in the IAEA technical document “TECDOC-855”;

- Select a group of members who receives the highest radiation dose caused by the evaluation items.
- Select a homogeneous group. (One representative of the group is modeled in evaluation.)
- Select typical values as for the behavior of daily life, etc., and select representative values as for metabolic parameters.

The clearance levels were determined based on the calculations selecting a homogeneous group, which represents those individuals who receive the highest radiation dose in realistic scenarios, as evaluation candidates, referring to the pre-described concept for critical group shown by ICRP etc., reports of this Special Committee, “Reference Values for the Safety Regulation of the Land Disposal of Low Level Radioactive Wastes (Interim Report and Second Interim Report)” (December, 1986, and February, 1992) (referred to hereafter, as “the Report on the Government Ordinance Concentration Limit Value”) in which the upper limits on radioactive material concentration in radioactive wastes (referred to hereafter, as “the Government Ordinance Concentration Upper Limits”) were derived, by which the license of waste disposal business can be applied under Article 13-9 of “the Ordinance for the Enforcement for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors”, and the License Application for the Radioactive Waste Disposal Business of the Rokkasyo Low-Level Radioactive Waste Disposal Center by Japan Nuclear Fuel Limited (hereafter called “low level radioactive waste disposal facility application”), etc.

3.1.4 Evaluation Items

(1) Type and Amount of Evaluation Items

The type and amount of evaluation items in this report are based on the type and estimated amount of wastes etc. generated by the decommissioning and operation (referred to hereafter, as “decommissioning etc.”) of major nuclear facilities (light water reactors and gas cooled reactors).

The estimated amount of wastes etc. to be generated by decommissioning one unit of 1,100 MW class boiling water reactor (BWR) or pressure water reactor (PWR), or a 160 MW gas cooled reactor (GCR) is shown in Table 3-3.

Major parts of wastes etc. considered to be below the clearance level are those of metals and concretes (including thermal insulators etc.) among wastes etc. generated by decommissioning, and the amount is, for example, assumed as 530,000 tons for BWR (including wastes etc. according to the report, “Fundamental Concept of Wastes of Non-Radioactive Wastes” by this Special Committee in February, 1992).

As to these wastes etc., it is assumed for evaluation that metals and concrete will be reused and disposed of in the same manner as industrial wastes, respectively, as shown in Fig. 3-1. Combustible wastes shall not be included in the items for this evaluation.

Since the IAEA technical documents, “TECDOC-855” etc. describe that the clearance level shall be calculated for each practice, it has been decided that the clearance level shall be calculated based on the estimated amount of wastes generated by decommissioning of one unit of commercial power reactor facility, specified as one practice in this case. Accumulation of practice like decommissioning two or more units of commercial power reactor facilities is already taken into consideration since the application criteria of radiation dose is established as one-tenth of 100 $\mu\text{Sv}/\text{year}$.

Since the amount of wastes etc. to be generated by decommissioning of research reactor facilities (excluding heavy water reactors and fast neutron reactors) and by operation of main nuclear facilities (i.e. light water reactors and gas cooled reactors) is very small compared with that of wastes etc. generated by decommissioning of commercial power reactor facilities, it can be regarded as included for evaluation in the amount of wastes etc. generated by decommissioning of commercial power reactor facilities. (Refer to Attachment 4-1 and Attachment 4-2)

(2) Selection of Typical Radioactive Nuclides

In calculation of the clearance level, twenty (20) radioactive nuclides considered to be representative for radiation dose evaluation were selected of the radionuclides important for the

following purposes;

- Since the wastes etc. generated by decommissioning of reactor facilities etc. may contain radionuclides from secondary contamination due to adhesion, penetration, etc. of reactor coolant etc. and from activation by neutron beams of reactor, these radionuclides shall be evaluated.
- In decommissioning of a nuclear facility, safe storage period after the reactor shutdown is provided for about five to ten years before dismantling and removal starts, and short half-lived radioactive nuclides shall be decayed sufficiently before the waste repository disposal or reuse starts. Therefore, short half-lived radioactive nuclides are neglected from the scope of evaluation items.
- Those radioactive nuclides, whose concentration is provided in the Government Ordinance Concentration Limit Value and those specified in the application for the low level radioactive waste disposal facility, shall be taken into consideration.
- The radioactive nuclides described in the IAEA technical document, "TECDOC-855" shall be taken into consideration for reference. However, as some of those radioactive nuclides described in TECDOC-855 are supposed to exist in facilities other than nuclear reactors, such nuclides having short half-lives and small yields in nuclear facilities shall be excluded from consideration.

When the application criteria in order to institutionalize "wastes that do not need to be treated as radioactive materials" for major nuclear facilities (i.e. light water reactors and gas cooled reactors), is determined radioactive nuclides which are relatively important in dose evaluations of solid materials (important radionuclides) will be extracted based on the calculation results of clearance levels and the composition of radionuclides in evaluation items, etc. This respect shall be discussed in Chapter 4.

3.1.5 Evaluation Routes

(1) Evaluation Routes for Waste Repository Disposal

Evaluation routes for waste repository disposal are selected referring the Report on Government Ordinance Concentration Limit Values and Application for the Low Level Radioactive Waste Disposal facility, etc.

The evaluation routes which are taken into consideration in the calculation of clearance levels must be selected so that all the evaluation routes assumed to occur realistically after wastes were cleared should be included comprehensively, based on the actual conditions and the regulations on handling and transportation of wastes to disposal facility, the regulations on industrial waste repositories, actual conditions of the repository, natural conditions in the vicinity, social environments, and daily life of general public, etc. But, it is not necessary to cover all the routes in the calculation of clearance levels, clearance levels can be evaluated by selecting representative routes which are considered to be comprehensive. That is, the routes to be evaluated will be selected by removing such routes that radiation doses can be judged to be negligibly small compared with those of other routes even if without performing dose evaluation, and evaluation results are included in those of other routes, under the prerequisites described below.

Although the probability of occurrence is considered to be different for each evaluation route, it was decided not to take the probabilities into account as a conservative approach, because it is not appropriate to assume probabilities by identifying natural conditions and social environments in the calculation of unconditional clearance levels of the materials of which uses or destinations are not limited.

[Prerequisites]

a. Evaluation starting time of the cleared wastes shall be when the wastes are shipped from a nuclear facility, after certification of the waste is completed, and confirmed to be below the clearance level.

b. The wastes generated by decommissioning of a nuclear facility are concrete and metal materials, and assumed to be disposed of to the disposal facility of similar structures to "stable type disposal facility" for industrial wastes, as such assumption is considered to be a conservative approach for the evaluation purpose since the migration of radioactive nuclides to the groundwater is large in case of such type disposal facility.

c. Reclamation disposal (including water surface reclamation disposal) and sea disposal are carried out in Japan as methods of waste disposal. Among these methods, the sea disposal is forbidden for metal rubbish, construction debris, etc. according to the provision of Article 6, Section 1 of "the Ordinance for Enforcement of Law on Processing and Cleaning of Wastes". Eighteen (18) of total 2,636 facilities for the reclamation disposal are sea surface reclamation disposal facilities, and the rest are inland reclamation facilities as of April, 1993. (Handbook of Industrial Waste Processing, 1996) In view of these circumstances, the inland reclamation disposal and the sea surface reclamation disposal shall be subject to the evaluation as disposal methods, since the inland water surface reclamation will not be carried out as a stable type disposal.

d. Since other site conditions of repository cannot be specified, natural environments and social environments of other disposal sites shall be comprehensively assumed.

e. The evaluation routes shall be selected assuming that the site will be used after the completion

of disposal and closure of the disposal facility.

The selected evaluation routes by approaches as mentioned above for calculation of the clearance levels (for waste repository disposal) are shown in Fig. 3-2. The evaluation routes subject to the calculation are 41 routes selected comprehensively out of 125 routes. (Refer to Attachment-2.)

The evaluation routes selected at this time include all of the evaluation routes for waste repository disposal specified in the IAEA technical document "TECDOC-855" excluding the routes for combustible wastes.

The report, TECDOC-855 includes the selected evaluation routes of fire at disposal facility and incineration disposal considering the disposal of combustible wastes, but combustible wastes are not included in the present evaluation items for evaluation as indicated in Section 3.1.4 of this report.

(2) Evaluation Routes for Reuse

It is important for the evaluation for reuse to confirm widely the safety of reuse assuming various possibilities with reference to the IAEA technical document, "TECDOC-855". Consequently, the evaluation routes for reuse have been selected using the same method as used for waste repository disposal to confirm widely the safety of reuse actually assumable.

The evaluation routes which are taken into consideration to calculate the clearance levels must be selected so that all the evaluation routes assumed to occur actually are included comprehensively after the materials are cleared, based on regulations and current status on handling and transportation of wastes to reuse as final products, current status on recycle, production process and utilization form of the products, and circumstances of daily life of general public, etc. But, it is not necessary to cover all the routes in calculation of the clearance level. Some representative routes that are comprehensive are selected and evaluated for the clearance level. That is, the routes which shall be evaluated has been selected under the following prerequisites after removing the routes of which radiation doses can be judged to be negligibly small compared with those of other routes without performing dose evaluation, and the routes of which evaluation results are included in those of other routes.

Although the probability of occurrence is considered to be different for each evaluation route, it was decided that the probabilities are not accounted for as a conservative approach, because it is not appropriate to assume the probabilities by identifying the use specifically for calculation of the unconditional the clearance level of materials of which uses or destinations are not limited.

[Prerequisites]

- a. The evaluation starting time of the objects by which clearance was carried out shall be the point of time when the wastes are shipped from a nuclear facility after the certification of being below the clearance level is completed.
- b. The evaluation routes for reuse shall be investigated separating conditions for the daily life and for the working, hours and further, separating situations for processing the materials into reuse products and for reusing the products. Furthermore, reuse products shall be investigated by identifying each item after classifying the products into consumer goods and construction materials.
- c. The reuse products shall be selected referring to the Survey Items of Main Consumer Durable Goods (Trends in Housekeeping Consumption, 1995, Research Bureau, Economic Planning Agency of Japan) as items generally assumed, provided that the use conditions and the recycle conditions are considered to have comprehensibility in consideration of purposes of use.
- d. The reuse routes whose possibilities are extremely low, e.g., reuse of special materials, shall not be assumed. For example, the route to get on an airplane made of reused metals, or the route of medical equipments made of reused materials shall not be assumed.
- e. The case of local radiation exposure caused by reuse of the material for a wrist watch or a belt buckle shall not be selected as the evaluation route, since the effect to the whole body is small as size of the source is small.

(7) On Methods of monitoring Compliances with clearance levels for reactor facilities (Excerpt)

(The Special Committee for Nuclear Safety Standards, the NSC, March 14, 2001)

Contents

I. Preface

II. Roles of the Government and the Reactor Establisher

III. Evaluation Items for Certification and Classification

1. Evaluation Items for Certification

2. Categories of Classification of Evaluation Items

IV. Judgment for Wastes to be below clearance levels

1. Basis of Judgment for Wastes to be less or equal to clearance levels

2. Judgment by Sum of D/Cs of Evaluation Items to be less or equal to one

2.1 Radionuclides for Evaluation

2.2 Determination of Composition Ratios of Radionuclides

- 2.3 Evaluation Units of Concentrations of Radionuclides
- 2.4 Judgment
 - 2.4.1 The Judgment Combination of Activation Calculation and Measurement for Verification
 - 2.4.2 The Judgment by Determining the Concentration of Radionuclides by Measurement
- 3. Judgment for Evaluation Items not Contaminated Evidently
 - 3.1 Judgment Criteria for Evaluation Items not Activation Contaminated Evidently
 - 3.2 Judgment Criteria for Evaluation Items not Secondary Contaminated Evidently
- V. Storage and Control of Evaluation Items Judged to be below clearance levels
- VI. Methods of Recording
- VII. Miscellaneous
 - 1. Education And Training
 - 2. Keeping Reliability of Measurements, Etc.

Explanation of Terms

III. Evaluation Items for Certification and Classification

1. Evaluation Items for Certification

Evaluation items for certification are solid materials mainly generated by decommissioning of major reactor facilities (light water reactors and gas cooled reactors). And the materials are metals and concrete (including heat insulation materials).

2. Categories of Classification of Evaluation Items

For the judgment that the evaluation items are below clearance levels, the evaluation items are classified as follows with consideration of the possibility of contamination by both activation and secondary contamination:

- (1) The evaluation items that have the possibility of contamination by either activation or secondary contamination
- (2) The evaluation items that evidently have no possibility of contamination by activation or secondary contamination

IV. Judgment for Materials to be below Clearance Levels

After classification of evaluation item, the judgment that the evaluation items are below clearance levels shall be made by methods as shown in the followings.

1. Basis of Judgment for Materials to be Below Clearance Levels

The decision that the evaluation item is below clearance levels shall be made by confirming that either one of the following two criteria (1) and (2) is met.

- (1) The sum of concentrations of the radioactive nuclide 'i' of each evaluation items contained in the wastes to be evaluated (D) divided by clearance levels (C) (referred to hereinafter, as "D/C") is below one (1), i.e. the following inequality is satisfied:

“Sum of {(the concentration of radioactive nuclide 'i') / (clearance levels of radioactive nuclide 'i')} < 1

- (2) Activation contamination or secondary contamination does not exist evidently on the evaluation items.

2. Judgment by Sum of D/Cs of Evaluation Items to be Below One

The decision method by sum of D/Cs to be below one (1) is shown as follows as one of the basis for decision that the evaluation item is below clearance levels.

2.1 Radionuclides for Evaluation

Nuclides for evaluation (referred to hereinafter, as “radionuclides for evaluation”) using the judgment by summing D/Cs to be less than one (1) shall be the important radionuclides, i.e. H-3, Mn-54, Co-60, Sr-90, Cs-134, Cs-137, Eu-152, Eu-154, and all alpha nuclides.

2.2 Determination of Composition Ratios of Radionuclides

Composition ratios of radionuclides shall be determined by the analyzed value of representative samples for secondary contamination, and shall be determined mainly by calculation for activation contamination. The representative samples shall be those in the range of evaluation items where the compositions of radionuclides are the same, and shall be selected as appropriate representatives of the composition of the radionuclides in the range.

2.3 Evaluation Units of Concentrations of Radioactive Nuclides

Evaluation of concentrations of the radionuclides of the evaluation items for judgment to be made by dividing the evaluation items into appropriate units depending on their shapes and dimensions. Less than several tons of the weight are generally appropriate as a unit size for concentration evaluation of radionuclides, but larger unit size may be adopted if the concentration of the radionuclides of the evaluation items is homogeneous.

2.4 Judgment

Concentrations of radionuclides of the evaluation items shall be determined by the following methods for judgment that the evaluation items is below clearance levels by confirmation that the sum of D/Cs of radionuclides of the evaluation items is below one (1).

Concentrations of radionuclides in the materials of activation contamination and secondary contamination may be determined by measurement. And in the case of activation contamination, concentrations of radionuclides may be determined by a combination method of activation calculation and

verification measurement of representative samples.

2.4.1 Judgment by Combination of Activation Calculation and Measurement for Verification

For the method by combination of activation calculation and measurement for verification, concentrations of radionuclides by activation shall be obtained by activation calculation and the concentration of important radionuclides shall be measured for respective sample to verify the calculated values. For activation calculation, general computer codes such as ORIGEN may be used. Parameters for the calculation shall be determined as follows:

Density distribution of neutron fluxes

The density distribution of neutron fluxes shall be determined by calculation (neutron transportation calculation), by combination of calculation and measurement, or by measurement. When the distribution is determined by calculation, appropriate distribution shall be used with considerations of the past experiences.

(2) Element composition

Element compositions are determined by using analytical values, standards, or referenced documents.

(3) Irradiation histories

Irradiation histories shall be obtained from the past irradiation histories of each plant. When the evaluation items are dismantled parts of a plant, the elapsed time of dismantling after reactor shutdown may be considered.

The measurements of radionuclides concentrations for the verification of the calculation results shall be performed in accordance with "Section 2.4.2, Method to Determine the Radionuclides Concentration by Measurement".

2.4.2 Methods to Determine Radionuclides Concentrations by Measurement

Appropriate measurement methods and measuring devices shall be selected corresponding to the types of radioactivity and the type/states of contamination in the measurement to determine the concentration of radionuclides of each evaluation item for judgment that the evaluation item is below clearance levels. Methods of measurement to determine the concentration of radioactive nuclides for the evaluation item are shown in (1), the selection of measuring device for radioactivity and the determination of measuring conditions is shown in (2), and the selection of the measuring points are shown in (3).
(followings are omitted)

3. Judgment for Evaluation Items not Contaminated Evidently

Any of those materials may be judged to be below clearance levels by confirming the classification is appropriate, if the evaluation items are classified as "materials not activation contaminated and not secondary contaminated evidently". For confirming the classification, it is necessary to evaluate with viewpoints of both activation contamination and secondary contamination do not exist, and the principle of Paragraph 3.1 and Paragraph 3.2 are applicable as described in "the Second Interim Report".

3.1 Judgment Criteria for Evaluation Items are not Activation Contaminated Evidently

(1) Concrete wastes (including contained steel reinforcements etc.)

The evaluation items corresponding to any of the following 1) to 3) may be classified as "materials not activation contaminated evidently" as a whole:

1) The materials evidently unnecessary to consider the activation effect by neutron beams from structural viewpoint of the facility such that it was shielded with enough radiation shielding materials;

2) The materials evaluated by calculation etc. that there are no meaningful differences of the effect of neutron activation from the general concrete materials; or

3) The materials evaluated by calculation etc. that some parts of the material are meaningfully different in the effect of neutron activation from the general concrete materials and are removed the activated parts.

(2) Metal wastes

The same principles as mentioned in (1) above may be applied.

3.2 Judgment Criteria for Evaluation Items is not Secondary Contaminated Evidently

The evaluation items corresponding to any of the following 1) to 2) may be classified as "materials not secondary contaminated evidently" as a whole;

1) The materials that are evidently not secondary contaminated by adhesion or permeation of radioactive materials judging from the histories of usage or conditions of installation; or

2) The materials that evidently the spreads of secondary contamination by adhesion or permeation of radioactive materials are restricted judging from the histories of usage or conditions of installation and are removed the contaminated parts.

(followings are omitted)

(8) On Clearance Levels for Heavy Water Reactors and Fast Neutron Reactors (Excerpt)
(The Special Committee for Nuclear Safety Standards, the NSC, March 14, 2001)

Contents

1. Preface
2. Principles of Calculation of Clearance Levels for Heavy water reactors, Fast neutron reactors, etc.
3. Calculation of clearance levels
 - 3.1 Types and Quantities of Evaluation Items
 - 3.2 Representative Radioactive Nuclides
 - 3.3 Evaluation Routes, Calculation Models and Evaluation Parameters
 - 3.4 Calculation Results of clearance levels
4. Derivation of Standards Based on Calculation Results of clearance levels
 - 4.1 Selection of Important Radioactive Nuclides
5. Conclusion

Appendix 1: On Radionuclides to be Added for Evaluation

Explanation of Important Terms

2. The Principles of Calculation of Clearance Levels for heavy water reactors, Fast neutron reactors, etc.

Solid materials generated at the major reactor facilities (light water reactors and gas cooled reactors) were selected as evaluation items for clearance levels investigation in the “Clearance Levels Report”, based on the following reasons: 1. For reactor facilities, there are experiences of rule making on safety criteria etc. concerned to disposal of low level radioactive waste and their applications, 2. For reactor facilities, contents and compositions of radionuclides are relatively homogeneous as the radioactive materials are originated by neutron activation, 3. For light water reactors and gas cooled reactors, various kinds of data are accumulated.

On solid materials generated at heavy water reactors, fast neutron reactors, etc out as the evaluation items, the investigation was carried on since March of 1999.

This investigation was carried on using the evaluation methods used in the “Clearance Levels Report” with due consideration of the difference between heavy water reactors, fast neutron reactor etc. and the major reactor facilities (light water reactors and gas cooled reactors), because the evaluation items of heavy water reactors, fast neutron reactor etc. are solid materials and the composition of the nuclides etc. is relatively homogeneous, that is similar to the evaluation items of the main reactor facilities (light water reactors and gas cooled reactor). In this investigation, clearance levels to be applied for heavy water reactors, fast neutron reactors, etc. were calculated after surveying of classification of evaluation items and their quantities from those reactor facilities, and the standard values based on the calculation results were derived.

3. Calculation of Clearance Levels

For calculation of clearance levels to be applied for heavy water reactors, fast neutron reactors, etc., Paragraph 3.1 of Chapter 3, “Calculation of clearance levels” of “clearance levels Report” was followed, and “application criteria of radiation dose” and “evaluation candidates” are regarded as equivalent to the report, and types and quantities of wastes generated by decommissioning and by operation of the reactor facilities were evaluated after surveying on heavy water reactors, fast neutron reactors, etc. Based on the results, differences from clearance levels of light water reactor and gas cooled reactors were investigated as the followings.

3.1 Types and Quantities of Evaluation Items

(1) Wastes etc. generated by decommissioning etc. of heavy water reactors

The estimated quantities of the wastes etc. generated by decommissioning of the heavy water reactor, “Fugen”, are as shown in table 1-1. Wastes etc. estimated to be below clearance levels are mostly metals and concrete. The estimated quantity is about 360,000 tons (including wastes etc. according to the report, “Fundamental Concept for Wastes of Non-radioactive Wastes” by the old Special Committee in February, 1992), and there are no big differences in the quantity and the types of wastes from those generated by decommissioning of commercial nuclear power reactor facilities.

Wastes considered below clearance levels among the wastes generated by decommissioning of the heavy water reactor, “JRR-2”, are mostly metals and concrete, and the quantity is estimated to be about 300 tons (including wastes etc. reported in “Fundamental Concept for Wastes of Non-radioactive Wastes” by the old Special Committee in February, 1992). As “JRR-2” is a reactor facility of 10MW thermal output, the quantity of wastes generated is very small as compared with that by decommissioning of commercial power reactor facilities. Therefore, the quantity of wastes for evaluation is regarded as included in that generated by decommissioning of commercial power reactor facilities. The difference is that the heavy concrete containing barite (the main component is BaSO₄) of coarse aggregate is used for the biological shield that is not used for light water reactors or gas cooled reactors.

(2) Wastes generated by decommissioning of fast neutron reactors

The estimated quantities of the wastes etc. generated by decommissioning of fast neutron reactor, “Joyo”,

are shown in Table 1-1. Wastes etc. estimated to be below clearance levels of the wastes generated by decommissioning are mostly metals and concrete, and the quantity is estimated to be about 280,000 tons (including wastes etc. reported in “Fundamental Concept for Wastes of Non-radioactive Wastes” by the old Special Committee in February, 1992), and there are no big differences in quantities and types from the estimated quantities of wastes generated by decommissioning of commercial power reactor facilities. The difference is that the graphite shield material is used around the reactor vessel.

And, as enough shields are provided around the core and as the core size of “Joyo” is small, the weight of “wastes of Non-radioactive wastes is estimated larger and the weight of clearance evaluation wastes (the wastes whose activity level is below clearance levels and excluded the Non-radioactive wastes, the same terminology is used, hereinafter) is smaller as compared with that of light water reactors or gas cooled reactors.

For the fast neutron reactor, “Monju” which is under construction, the total quantity of wastes etc. is estimated to be about three times of the wastes etc. from “Joyo”, as a result of approximate evaluation of the quantity of generated wastes etc. based on the evaluation for “Joyo”, which is because the facilities are larger and the steam generation system and the power generation system are added as compared with “Joyo”. However, the weight of “Non-radioactive wastes” is estimated large and the weight of clearance evaluation wastes is small accordingly, that is similar to “Joyo” as described above, and it is included for evaluation.

As the quantity of wastes etc. generated during operation of heavy water reactors and fast neutron reactors are very small as compared with the amount of wastes etc. generated by decommissioning, the quantity of the wastes etc. is regarded as included in the wastes generated by decommissioning for evaluation.

(3) The wastes etc. generated by decommissioning of other reactor facilities

For reactor facilities such as criticality facilities etc. other than the heavy water reactors and fast neutron facilities, same evaluation process can be applied as the materials of main components are similar to those used for heavy water reactors or fast neutron reactors, and as the radioactive materials are originated mainly by neutron activation, and the radioactive nuclides and their composition are relatively homogeneous.

For criticality facilities, the quantity of wastes is regarded as included in the quantity of wastes generated by decommissioning of above mentioned reactor facilities for evaluation as the amount of wastes etc. are estimated to be very small as compared with the wastes generated by decommissioning of the above mentioned reactor facilities

3.2 Representative Radionuclides

Twenty (20) radionuclides and Ba-133 are selected which are considered to be representative in the evaluation of radiation doses for the calculation of clearance levels of heavy water reactors and fast neutron reactors, as calculated in the “Clearance Levels Report” based on the following reasons.

- The same materials as used for light water reactors are used for heavy water reactor, “Fugen” basically, though the core structure is different. And the types of radioactive nuclides of the wastes etc. generated at the heavy water reactor, “Fugen” is basically the same as those generated at light water reactors because the materials used for the heavy water system are similar to those used for light water reactors.
- For heavy water reactor, “JRR-2”, the same materials as used for light water reactors are used basically as used for the heavy water reactor, “Fugen”. However, as the heavy concrete containing barite (the main component is BaSO₄) of coarse aggregate is used as the main body of biological shield, the build-up of Ba-133 by activation shall be considered.
- For the fast neutron reactor, “Joyo” and “Monju”, the same core materials are used as used for light water reactors basically except the coolant (sodium). And, the effect of thermal neutron is dominant at structures, materials and clearance items outside of the reactor vessel as light water reactor, though the neutron spectrum is harder and the density of the neutron flux is higher in the reactor core of fast neutron reactors than those of light water reactors. Generation of C-14 by activation of the graphite shielding installed outside of the reactor vessel of “Joyo” shall be considered, but C-14 is included in the twenty (20) radioactive nuclides considered to be representative for evaluation of radioactive dose calculated in the “clearance levels Report”.

3.3 Evaluation Routes, Calculation Models and Evaluation Parameters

As described in Paragraph 3.1 and Paragraph 3.2, the types of wastes etc. and their quantity generated by decommissioning of heavy water reactors and fast neutron reactors is not largely different from those of the main reactor facilities (light water reactors and gas cooled reactors) except that additional consideration to be taken on the effect of Ba-133 for heavy concrete used for the biological shield of heavy water reactor, “JRR-2” which contain barite (main component is BaSO₄) of coarse aggregate and the effect of C-14 for the graphite shielding installed outside of reactor vessel of fast neutron reactor “Joyo”. Therefore, the same evaluation routes, calculation models and evaluation parameters as shown in “clearance levels Report” can be selected basically. Comparison of the evaluation parameters and results of investigation about the types and quantities of wastes generated at the light water reactors and gas cooled reactors versus heavy water reactors and fast neutron reactors are shown in the Table 1-2. For Ba-133 that was added as a new item for investigation, evaluation parameters are selected about nuclide-element dependent parameters.

(referred to the separate paper 1).
(followings are omitted)

(9) Philosophy for Safety Assurance and Safety Regulations on the Decommissioning of Commercial Power Reactor Facilities (Excerpt)

(Decommissioning Safety Subcommittee, the Nuclear and Industrial Safety Subcommittee, the Advisory Committee for Natural Resources and Energy, August 2, 2001)

Contents

1. Introduction
2. Basic Concepts of Measures for Safety Assurance
3. Main Discussion Subjects
 - (1) Dividing Decommissioning Plans
 - (2) Prior Partial Dismantling of the Facility
 - (3) Completion Time Limit for Decommissioning

4. Basic Concepts for Safety Regulation

Separate Sheet: Items Considered for Safety Assurance of Decommissioning of Commercial Power Reactor Facilities

2. Basic Concepts of Measures for Safety Assurance

For decommissioning of a reactor facility, it is important to provide measures to prevent the effect of radioactive materials to the peripheral environment, since radioactive materials remained in the reactor facility are dealt with. For this reason, it is important to adopt construction methods to prevent appropriately the radioactive material to diffuse out of the facility and also it is important to make efforts to maintain and to utilize the existing barriers, filter equipment, etc.

There are sufficient experiences of radiation protection for the occupational personnel who works in the nuclear reactor facility through replacement of core shrouds which is a construction work of the equipment of highly activated core internals, and through replacement of steam generators which is a large-scale construction work of the equipment of high radioactive material concentration. Therefore, it is important that measures for radiation protection are selected and implemented appropriately depending upon the characteristics of decommissioning works fully based on the knowledge acquired from such experiences as described.

Moreover, it is indispensable that detailed processing and disposal methods, disposal facility and storage places are established in advance of the dismantling and removal works, as radioactive wastes are generated by dismantling and removal works of reactor facilities. Furthermore, at the actual dismantling and removal works, the wastes shall be classified according to the concentration and characteristics of radioactive materials contained and the processing and disposal of the wastes shall be carried out in appropriate manners. And also, it is important to grasp exactly the flow of wastes from the generating places to the disposal facility.

Prior to these decommissioning, it is inevitable to confirm the prospect for assured implementation of decommissioning by planning the whole decommissioning program, since the operation of the whole decommissioning continues over a long period of time. After that, a more detailed plan for each step should be drawn up prior to the execution of individual decommissioning work, so that assured implementation of -planning of the concerned dismantling and removal works in the site where other reactor facilities are in operation, it is required to consider its effect on these facilities.

The separate sheet provides considerations comprehensively arranged on the safety assurance based on the basic concept of the above-mentioned safety assurance.

3. Main Discussion Subjects

The main subjects selected from the above discussions were as follows.

(1) Dividing Decommissioning Plans

Since decommissioning is construction activity extending to a long period of time and technical progresses in the meantime are expected, it is not necessarily rational to make the detailed planning about the whole processes of decommissioning works at the beginning. For this reason, the details of decommissioning processes should be admitted to be divided and to be decided later step by step. Though decommissioning converts a facility into safer conditions by dismantling and removal works, unstable conditions, such as loss of shielding function or release of radioactive dust, etc., might occur occasionally in the processes. For this reason, it is important to secure the prospect of decommissioning to be carried out steadily and continuously prior to decommissioning.

Therefore, it is considered to be acceptable to make a decommissioning plan specifying the outline of the project to secure the prospect covering the whole processes in the overall projects at the beginning, and

to decide detailed plans one by one prior to the start of each process taking in the newest knowledge. In this case, it is divided into three processes of system decontamination, safe storage, dismantling and removal in consideration of the highly activated or contaminated equipments as a standard (refer to Figure 1). When there is a process not included in these three processes (for example, a prior dismantling process during the system decontamination process or the safe storage process), it can be expected to secure the prospect of steady implementation of decommissioning by additional sufficient explanation about the concerned process in the overall plan (refer to Figure 2).

(2) Prior Dismantling of a Part of the Facility

The standard process provided in the report of the Nuclear Advisory Committee in 1985 is based on the concept that the whole facility is at first decontaminated and successively kept in stable storage conditions, and then the dismantling and removal is carried out. However, the part of the facility that has no activation or no contamination, or has the low activation or contamination can be disassembled without system decontamination or without safe storage period to attenuate radioactive material. Therefore, it is possible to accept to carry out the prior dismantling of the facility when highly activated and/or contaminated parts of the facilities are under system decontamination or under safe storage.

However, it is necessary to satisfy the following requirements in this case.

a. Prevention of bad effects on the facilities under system decontamination and safe storage

Bad effects on the facilities under system decontamination and safe storage shall be prevented and management of the concerned facilities shall not be interrupted limiting the scope and methods of prior dismantling.

b. Management during the prior dismantling

In order to carry out the prior dismantling safely, radiation control, maintenance and control of the facilities, preventing propagation of contamination, etc. shall be carried out.

c. The safety assurance after the prior dismantling

The facilities shall not be in the un-safe condition after the prior dismantling by limiting the scope and methods of the prior dismantling.

d. Radioactive disposal

Radioactive wastes generated by the prior dismantling shall be possible to be stored and disposed of appropriately.

e. Release of radioactive materials

The total amount of discharged radioactive materials shall not be significantly increased by the prior dismantling.

f. Reservation of funds

Sufficient funds shall be remained for the subsequent processes after the prior dismantling.

(3) Completion Time Limit for Decommissioning

Unlike new constructions, the expense for decommissioning work cannot be recovered later. Moreover, if the nuclear reactor facility were left indefinitely, degradation of the retarding the radioactive material migrating to environment and of the shielding function would occur, and the hazard caused by the facility would be expected

From such a viewpoint, it is supposed to be important that decommissioning should be appropriately completed within a certain time period.

The time period for decommissioning works by the above-mentioned three processes of system decontamination, safe storage, and dismantling and removal takes about fifteen (15) to sixteen (16) years as provided in the report of the Nuclear Advisory Committee in 1985. Therefore, it is considered as the first prospect, that the time period until completion of decommissioning works is about 30 years referring to the new knowledge. In this case, even if taking consideration to include terms for operation and fuel removal, etc. prior to decommissioning works after shut-down, it is considered that the preventing function of radioactive materials migrating to outside of the facility and the shielding function of the concrete walls remain in sound until completion of decommissioning.

When it is expected that decommissioning works cannot be completed in about 30 years due to relating restraints with other reactor facilities in the site, individual measures are necessary to be verified for the safety assurance in such conditions.

4. Basic Concepts for Safety Regulation

The government agencies need to appropriately apply the regulations (Notification of the Dismantling Plan, the Safety Preservation Rules) specified by the present legislations and regulations so that nuclear business operators can implement the safety assurance measures for their decommissioning assuredly. The government agencies need to assure exactly the methods and the processes relating to decommissioning according to the Notification of Dismantling Plan, and the safety preservation management and organization such as the maintenance management of facilities, radiation control and disposal according to the Safety Preservation Rules.

On the other hand, in view of continuation of decommissioning works for a long period of time, it is necessary to accept the nuclear business operator, as above-mentioned, to make the whole plan of decommissioning and the detailed plan required for the time being at the beginning, and to make detailed

plans one by one according to the progress of decommissioning. It is considered to be appropriate for the purpose to realize implementation of the rational and effective regulations that the government agencies to execute such a practical application as to implement regulatory procedures corresponding to one by one planning (partial acceptance of the detailed plan of the Notification of Dismantling Plans) (refer to Figure 2).

Moreover, it is necessary to change the Safety Preservation Rules when the management rules such as the area management, the facility management, etc. are changed according to the progress of decommissioning, and also the government agencies should correspond appropriately to such changes.

(10) Safety Examination Guideline for the Spent Fuel Interim Storage Facility Using Metal Dry Casks

(NSC Special Committee on Safety Standards, July 10, 2002)

Preface

The guideline was established as guidelines for the safety examination of the facility, which receives the spent fuels of commercial power reactors contained into metal dry casks and takes out ones after the long-term storage (hereinafter referred to as the "spent fuel interim storage facility") in accordance with the Basic Guidelines for Safety Examination of Nuclear fuel cycle facilities (decision by the NSC, February 7, 1980), in order to implement the safety examination objectively and rationally concerning the application for establishment license (including the application of the license alteration, the same, hereinafter) of the spent fuel interim storage facility.

In establishing this guideline, the report of the Special Committee for Nuclear Safety Standards titled "Storage of Spent Fuels in Dry Casks at the Nuclear Power Plant Site" (approved by the NSC, August 27, 1992) was referred. And, the survey and review were performed considering the spent fuel interim storage facilities planned by a private organization at present. The storage period of spent fuels in the spent fuel interim storage facilities taking into consideration at the survey and review is about 40 to 60 years.

This guideline shall be fully satisfied at the stage of safety examination because it includes basic requirements considered as important to the safety examination of the spent fuel interim storage facility mentioned above. Although in case the contents of application by the operator are inconsistent to the guidelines, and when it is judged that the application that is reflecting the technical improvement or progress, may accomplish the safety which is required by the guideline, the application will not necessarily be rejected.

This guideline should be reviewed, when needed, based on the new knowledge and experiences in the future.

I. Scope of application

This guideline is applied to the spent fuel interim storage facility, which is a spent fuel storage facility to be established independently from nuclear power plant sites as described in Article 43-4 of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (hereinafter referred to as the "Reactors Regulations Law".), where spent fuels contained in metal dry casks for transport outside plants are to be received and stored without changing the casks, and to be shipped out after storage., It is not assumed to open the cap of the metal dry cask for inspection of the spent fuel assemblies at this facility.

This guideline shall be applied assuming that spent fuels to be stored satisfy the following conditions:

Spent fuels to be stored are uranium dioxide and mixed oxide fuels irradiated in commercial power plants, and the integrity of fuel cladding is judged that it can be maintained throughout the design storage periods based on the scientific and technical knowledge.

Spent fuels to be stored had been cooled for the period necessary to maintain the integrity of fuel cladding throughout the design storage periods etc. in the spent fuel storage pools of nuclear power plants etc. after unloading from reactors.

At the loading of the spent fuel assemblies into the metal dry casks, the integrity of spent fuels are confirmed with the reactor operation data or by sipping inspection of fuel assemblies, etc., as required.

II. Definitions

In this guideline, the meaning of terms falling under any of the following subparagraphs shall be as defined in the following respective subparagraphs concerned.

"Personnel engaged in radiation work" shall mean the personnel engaged in radiation work defined in the Reactors Regulations Law and its related regulations.

"Facility important to safety" shall mean the structure, system and equipment that may, when its functions is lost, cause excess radiation exposure to the general public and personnel engaged in radiation work, or the structure, system and equipment installed to mitigate excess radiation exposure of the general public and personnel engaged in radiation work in an accident.

"Metal dry cask (hereinafter referred to as "metal cask")" shall mean a container made of metal to contain spent fuel assemblies for transport and storage, which is a dry-type container containing spent fuels encapsulating with inert gases. It consists of the main body, cap, basket etc.

"Basket" shall mean a structure to maintain the specified geometrical arrangement of spent fuels contained

in the metal cask.

"Metal cask handling equipment" shall mean the equipment for handling such as transfer of metal casks at the spent fuel interim storage facility.

"Storage building" shall mean a building in where metal casks, the metal cask handling equipment, etc are placed at the spent fuel interim storage facility.

"Design storage period" shall mean the maximum length of time that the metal casks are placed at the spent fuel interim storage facility assumed in the design of metal cask.

"Fundamental safety function" shall mean the confinement function, radiation shielding function, criticality prevention function, and heat removal function.

"Confinement function" shall mean a function to appropriately confine radioactive materials contained in spent fuel assemblies in metal casks to prevent excessive radioactive exposure of the general public and personnel engaged in radiation work.

"Radiation shielding function" shall mean a function to appropriately shield the radiation from spent fuels contained in metal casks to prevent excessive radioactive exposure of the general public and personnel engaged in radiation work .

"Criticality prevention function" shall mean a function to prevent criticality of spent fuels contained in metal casks.

"Heat removal function" shall mean a function to remove the decay heat of spent fuels as required to maintain integrity of spent fuel as well as integrity of the structure of metal cask so as to maintain the safety function of metal casks.

"Maximum Assumed Accident" shall mean an accident that may cause the maximum dose effect to the general public that may be technically credible in consideration with the facilities important to safety.

III. Site conditions

Guideline 1. Basic conditions

The following events shall be investigated for the site and its surroundings of the spent fuel interim storage facility, and it shall be confirmed that the adverse effects against ensuring safety do not exist.

1. Natural environment

(1) Natural phenomena such as earthquake, tsunami, landslides, depression, typhoon, high tide, flood, abnormal cold weather, heavy snowfall.

(2) Geological conditions such as ground conditions, soil bearing capacity, fault and geography.

(3) Meteorological conditions such as wind direction, wind velocity, waterfall.

(4) Hydrological and hydraulic conditions of rivers, underground water, etc.

2. Social environment

(1) Fire, explosion at a neighboring factory etc.

(2) Missiles etc. by air craft crash, etc.

(3) Conditions of land use in food production such as agriculture, livestock farming, fishery and population distribution etc.

Guideline 2. Normal conditions

The dose in normal condition of the general public due to the spent fuel interim storage facility shall be lower than the dose limit specified by the law and regulation, and it shall be as low as reasonably achievable.

Guideline 3. Accident conditions

Under the occurrence of the maximum assumed accident at the spent fuel interim storage facility, the general public shall not receive excessive radiation exposure.

Selection of accidents

In the design of the spent fuel interim storage facility, accidents that may be caused by (1) Wrong operation etc. during transfer in the facility and (2) Natural disaster etc, and those, considered important in view of radiation exposure to the general public, shall be selected by thoroughly studying the possibility of occurrence of worst accidents that may significantly fail the fundamental safety functions of metal casks from the technical point of aging of metal cask components by long term storage:

2. Calculation of the amount of radioactive materials released.

The amount of radioactive materials release shall be calculated for each accident selected in accordance with the paragraph 1 above, applying -appropriate analytical model and parameters and setting appropriate conditions with safety margin, by thoroughly studying the followings:

(1) Amount of radioactive materials leakage from the fuel cladding

(2) Integrity of metal casks concerning their confinement function and radiation shielding function

(3) Assumed number of metal casks that causes the leakage of radioactive materials

(4) Conditions of atmospheric dispersion of radioactive materials

(5) Period of release for the evaluation

3. Dose evaluation

It shall be confirmed that the general public does not receive excess radiation exposure from the maximum

credible accident, which is defined as the accident of which the dose of the general public is the maximum among accidents selected by the paragraph 1 with the calculation in accordance with the paragraph 2 above. However, these evaluations are not required when it is judged that there is no radiation exposure to the general public due to the accident selected by the paragraph 1.

IV. Radiation control

Guideline 4. Confinement function

The spent fuel interim storage facility shall be designed to confine radioactive materials in the limited area with the following measures.

1. The metal cask shall be designed to maintain the negative pressure in the space where spent fuel assemblies are contained throughout the design storage period.
2. The metal cask shall be designed to isolate the space where spent fuel assemblies are contained from outside of the cask with the multi-layered confinement structure at the cap portion. And its confinement function shall be monitored.
3. The metal cask shall be designed with considerations of the restoration capability of confinement function such a design as that allows the attachment of an additional cap to cope with unlikely event of confinement function abnormality of cap structure.
4. The metal cask shall be designed to maintain the temperature of fuel claddings low throughout the design storage period in view of maintaining the integrity of fuel cladding.
5. The metal cask shall be designed to keep the temperature within the range to maintain the integrity of the structures throughout the design storage period in view of maintaining its confinement function.

Guideline 5. Radiation shielding

The spent fuel interim storage facility shall be appropriately shielded to lower the exposure dose of the general public by the direct and sky shine ray.

In addition, the sufficient radiation shielding shall be provided considering working conditions of personnel engaged in radiation work.

In case the radiation shielding of concrete etc is used, in addition to the metal cask, the shielding material shall be designed to maintain the temperature low enough not to impair its radiation shielding capability.

Guideline 6. Radiation exposure control

1. Radiation exposure control in working environments

- (1) In order to monitor and control working environments of personnel engaged in radiation work, the monitoring system and measuring equipment for dose rates etc. and alarm system for unusual increase in the dose rate should be prepared.
 - (2) The important information from the above-mentioned monitoring system and alarm system should be designed that the centralized monitoring is possible at an appropriate place.
2. Equipments, such as dosimeters required for individual exposure control for personnel engaged in radiation work should be prepared.
 3. The control area of the spent fuel interim storage facility shall be designed so that appropriate access control etc. is possible, if needed, with appropriate classification of the area in accordance with the dose rate and surface contamination density.

V. Environmental safety etc.

Guideline 7. Discharge control of radioactive wastes

The spent fuel interim storage facility should be designed so that the concentration of radioactive materials released to the environment is as low as reasonably achievable with appropriate treatment of radioactive wastes generated during the storage.

Guideline 8. Consideration for long-term storage etc.

The spent fuel interim storage facility should be designed to maintain the integrity of spent fuel assemblies and the integrity of the components that have fundamental safety functions throughout the design storage period by taking the following measures, in considerations of degradation etc. accompanied by the long-term storage.

1. Components of metal cask important to maintain fundamental safety functions should be designed not to lose required safety function maintaining required strength and performance by selecting materials that have sufficient reliability in the environments such as temperature and radiation during design storage period and to the degradation such as corrosion, creeping, and stress corrosion cracking under the above environments.
2. The metal cask should contain and store the spent fuel assemblies together with sealing inert gases.
3. The metal cask should be designed to be able to remove the decay heat from spent fuels in view of maintaining the integrity of spent fuel assemblies and the integrity of the components that have fundamental safety functions.
4. The storage building should be designed to be able to maintain the room temperature in the building low in view of the heat removal from the surface of a metal cask. And, it should be designed to be able to monitor that the room temperature in the storage building will not elevate to the unusual level.

Guideline 9. Radiation monitoring

The spent fuel interim storage facility should be provided with measures to monitor the concentration etc. of radioactive materials in the release path of radioactive wastes appropriately. Moreover, measures to monitor the dose rates, concentrations etc. of radioactive materials in the surrounding environment should be taken appropriately in consideration to the potential release of radioactive materials.

VI. Criticality safety

Guideline 10. Criticality safety of a single metal cask

A single metal cask in the spent fuel interim storage facility should be designed to prevent the criticality under any technically conceivable conditions when spent fuel assemblies are contained in the cask.

In case the internal basket shares the criticality prevention function, the metal cask should be designed to maintain the temperature within the range to keep the structural integrity of the basket throughout the design storage period.

Guideline 11. Criticality safety of multiple metal casks

The spent fuel interim storage facility should be provided with measures to prevent the criticality under any technically conceivable conditions considering the neutron interference among metal casks in the facility.

Guidelines 12. Consideration for nuclear criticality accidents

If any possibility of a nuclear criticality accident caused by operational error etc. at the spent fuel interim storage facility should not be neglected, appropriate measures for the unlikely event of nuclear criticality accident shall be prepared.

When Guideline 10 and Guideline 11 are conformed and when spent fuels are contained in the metal cask, criticality could not physically occur, so that the application of this guideline is exempted.

VII. Other safety measures

Guideline 13. Consideration for earthquake

The spent fuel interim storage facility should be designed to maintain the fundamental safety functions against design earthquake force considered to be the most appropriate referring to the results of site investigation of past records at the site and its peripheral area.

Guideline 14. Consideration for natural phenomena other than earthquakes

The facilities important to safety of the spent fuel interim storage facility should be designed considering the severest natural force of natural phenomena other than earthquake referring to the results of site investigation of past records at the site and its peripheral area.

Guideline 15. Consideration for fire and explosion

The spent fuel interim storage facility should be provided with appropriate measures to prevent occurrence of a fire and an explosion, and measures to prevent propagation of fire and explosion, and to control excessive release of radioactive materials into the outside of facility.

1. The spent fuel interim storage facility should be designed to use nonflammable or fire-retardant materials as much as reasonably possible.
2. In case nonflammable material is used in the spent fuel interim storage facility, appropriate measures such as elimination of fire source, prevention of unusual temperature rise, prevention of leakage-out or leakage-in of flammable material etc. should be taken.
3. In order to prevent propagation of a fire, the appropriate measures to reduce the influence by fire should be taken in addition to installation of appropriate detection and alarm systems and the fire protection equipment.

Guideline 16. Consideration for loss of electric power

A power supply system with sufficient capacity and reliability to operate following equipments required for safety should be installed in the spent fuel interim storage facility to be prepared for the loss of function of external power supply systems such as blackout.

1. Monitoring equipment for confinement function of metal casks
2. Radiation monitoring equipment
3. Equipment such as fire alarm equipment, emergency communication equipment, and emergency lightning equipment

Guideline 17. Consideration for transfer of metal casks

The spent fuel interim storage facility should be provided with appropriate measures for maintaining fundamental safety functions in the transfer during reception, storage and shipping-out of metal casks containing spent fuels.

Guideline 18. Consideration of accident

The spent fuel interim storage facility should be provided with the appropriate measures, such as alarm, communication and evacuation of radiation workers depending on the accident condition.

1. Appropriate radiation measuring devices, the radiation protection equipment etc. should be available as required.
2. In the design of the facility, the lighting equipment for evacuation, which function is not lost in a case of loss of normal lighting power source, should be installed and safety evacuation passages with simple, clear and durable signs should be established.

Guideline 19. Consideration for common use

The facilities important to safety of spent fuel interim storage facility, which are commonly used with nuclear facilities other than the concerned spent fuel interim storage facility or commonly used within the concerned spent fuel interim storage facility, should not cause any inconvenience on the safety of the concerned spent fuel interim storage facility by the common use judging from its function, structure etc.

Guideline 20. Applicable codes and standards

The design, material selection, manufacturing, construction, and inspection of the facilities important to safety of the spent fuel interim storage facility should be in conformity with codes and standards recognized as appropriate.

1. The spent fuel interim storage facility should be in conformity with Japanese laws and regulations such as the "Reactor Regulation Law", "Construction Standard Law", "Fire Protection Law" etc.
2. The design, material selection, manufacturing, construction, inspection etc. of facilities important to safety should be in conformity with domestic codes and standards recognized as appropriate. For items for which no domestic applicable codes or standards exist, the codes or standards of foreign countries that are experienced and reliable may be applied.

Guideline 21. Consideration for inspection, repair etc.

The spent fuel interim storage facility should be made to be able to perform inspection, test, maintenance and repair with appropriate methods according to the importance to safety and the needs.

Blank Page

Annex 2 :
Glossary

Blank Page

Glossary

AEC	Atomic Energy Commission
ALARA	As Low As Reasonably Achievable
ANRE	Agency for Natural Resources and Energy
CRIEPI	Central Research Institute of Electric Power Industry
HLW	High-Level Waste
HPB	Health Policy Bureau
IAEA	International Atomic Energy Agency
ICAO	International Civil Aviation Organization
ICRP	International Commission on Radiation Protection
INPO	Institute of Nuclear Power Operations
JAERI	Japan Atomic Energy Research Institute
JANTI	Japan Nuclear Technology Institute
JAPEIC	Japan Power Engineering and Inspection Corporation
JNC	Japan Nuclear Cycle Development Institute
JNES	Japan Nuclear Energy Safety Organization
JNFL	Japan Nuclear Fuel Ltd
JPDR	Japan Power Demonstration Reactor
LLW	Low-Level Waste
METI	Ministry of Economy, Trade and Industry
MEXT	Ministry of Education Culture, Sports, Science and Technology
MHLW	Ministry of Health, Labor and Welfare
NISA	Nuclear and Industrial Safety Agency
NSC	Nuclear Safety Commission
NUMO	Nuclear Waste Management Organization of Japan
OECD/NEA	Organization for Economic Cooperation and Development/Nuclear Energy Agency
PFSB	Pharmaceutical and Food Safety Bureau
QA	Quality Assurance
RWMC	Radioactive Waste Management Funding and Research Center
SOLAS	International Convention for the Safety of Life at Sea
STPB	Science and Technology Policy Bureau
TRU	Transuranic
WANO	World Association of Nuclear Operators

Blank