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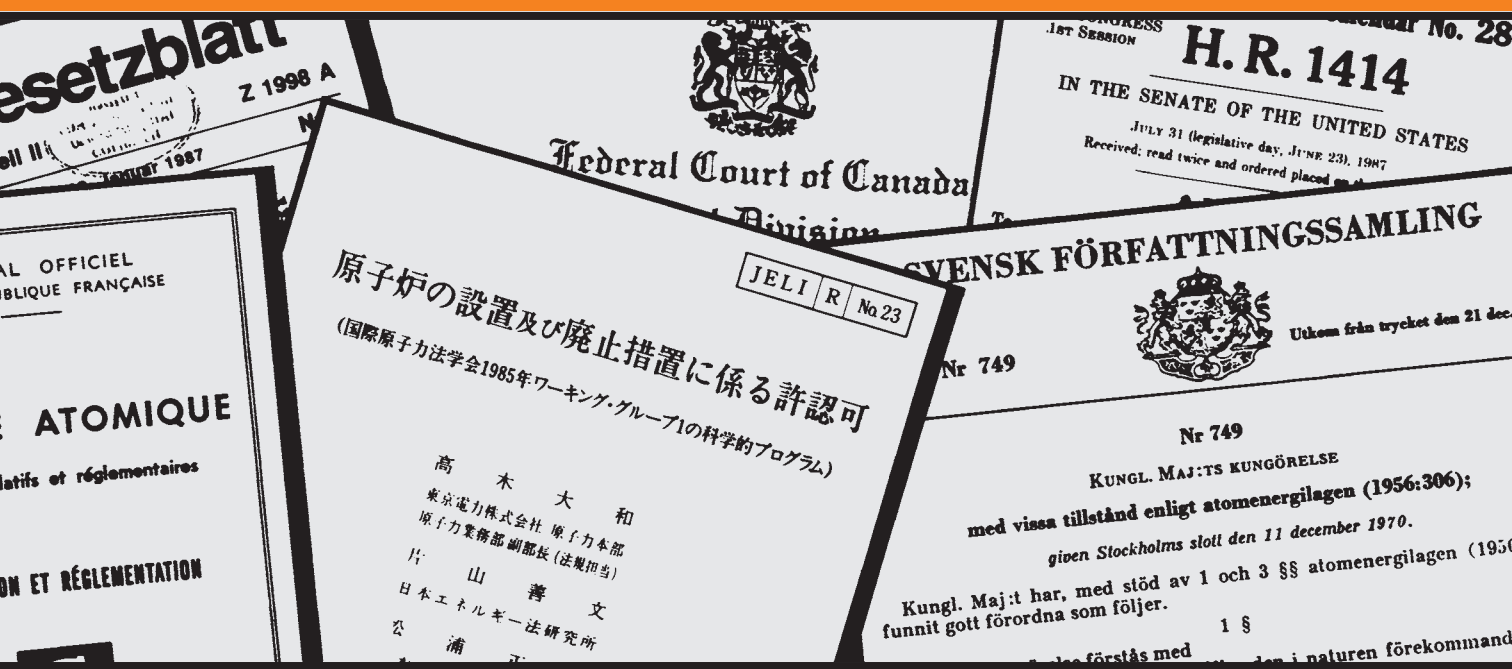

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Contents

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original Member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became Members subsequently through accession at the dates indicated hereafter: Japan (28th April 1964), Finland (28th January 1969), Australia (7th June 1971), New Zealand (29th May 1973), Mexico (18th May 1994), the Czech Republic (21st December 1995), Hungary (7th May 1996), Poland (22nd November 1996), Korea (12th December 1996) and the Slovak Republic (14 December 2000). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

NUCLEAR ENERGY AGENCY

The OECD Nuclear Energy Agency (NEA) was established on 1st February 1958 under the name of the OEEC European Nuclear Energy Agency. It received its present designation on 20th April 1972, when Japan became its first non-European full Member. NEA membership today consists of 27 OECD Member countries: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, Norway, Portugal, Republic of Korea, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities also takes part in the work of the Agency.

The mission of the NEA is:

- to assist its Member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes, as well as
- to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development.

Specific areas of competence of the NEA include safety and regulation of nuclear activities, radioactive waste management, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability, and public information. The NEA Data Bank provides nuclear data and computer program services for participating countries.

In these and related tasks, the NEA works in close collaboration with the International Atomic Energy Agency in Vienna, with which it has a Co-operation Agreement, as well as with other international organisations in the nuclear field.

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The 2002 Amendment to the German Atomic Energy Act Concerning the Phase-out of Nuclear Power

by Dr. Axel Vorwerk*

I. Introduction

One of the German Government's main legislative projects in the 14th legislative period of the German *Bundestag* was the legal regulation of the phase-out of the use of nuclear power. The Act on the structured phase-out of nuclear power for the commercial production of electricity entered into force on 27 April 2002.[1] Section 1 of this Act contains amendments to the Act on the Peaceful Utilisation of Atomic Energy and the Protection against its Hazards (Atomic Energy Act) of 23 December 1959 (the 1985 consolidated text of this Act is reproduced in the Supplement to *Nuclear Law Bulletin* No. 36);[2] Sections 2 and 3 contain amendments to the Ordinance on Financial Security Pursuant to the Atomic Energy Act of 25 January 1977 (the text of this Ordinance is reproduced in the Supplement to *Nuclear Law Bulletin* No. 18);[3] and the Cost Ordinance Pursuant to the Atomic Energy Act of 17 December 1981.[4]

According to the decision of the German Government and the legislator, the further use of nuclear energy for commercial electricity production will only be permitted for a limited period due to the high risks associated with it, despite the high standard of safety at German installations in an international comparison. Even though, pursuant to the German Atomic Energy Act, precautionary action is to be taken against possible damage resulting from the operation of nuclear installations in accordance with the state of the art in science and technology, it is not possible to fully rule out the possibility of accidents resulting in major releases of ionising radiation. According to the Kalkar

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* Dr. Axel Vorwerk is Head of the Nuclear Legislation Division in the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. This text reflects the personal opinion of the author.

1. Federal Law Gazette 2002, Part I, page 1351.

2. Federal Law Gazette 1959, Part I, page 814, as amended and promulgated on 15 July 1985 (Federal Law Gazette 1985 Part I, page 1565), last amended by the Act of 13 December 2001 (Federal Law Gazette 2001, Part I, page 3586).

3. Federal Law Gazette 1977, Part I, page 220, last amended by the Act of 9 September 2001 (Federal Law Gazette 2001, Part I, page 2331 and 2002, Part I, page 615).

4. Federal Law Gazette 1981, Part I, page 1457, last amended by the Act of 9 September 2001 (Federal Law Gazette 2001, Part I, page 2331).

Decision taken by the Federal Constitutional Court in 1978, the fundamental decision for or against the use of nuclear power is incumbent on the legislator. The draft Act submitted by the German Government represents a reassessment of the risks of atomic energy on the basis of the experience and knowledge that have been gained throughout the world since atomic energy was first used for electricity production. The legislator therefore no longer stood by the fundamental decision taken in favour of atomic energy in the Atomic Energy Act of 1959. Research in the field of atomic technology, in particular regarding safety, remains unaffected.

Intensive preparation was carried out both within the Government and in discussions between the Government and the energy utilities. First, in 1999, a Government working group at State Secretary level reviewed the framework conditions of national and international law. This was used as a basis *inter alia* to clarify the question of the extent to which the restriction of thus far unrestricted operating licences for German nuclear power plants was permissible according to constitutional law. The discussion since the clarification of this issue at the end of 1999 between the German Government and the energy utilities led to an Agreement on 14 June 2000 (see *Nuclear Law Bulletin* No. 66).[5] In this Agreement, the Government and the utilities agreed on the restriction of the future operation of existing nuclear power plants. Furthermore, a high standard of safety is to be maintained for the remaining period of use of these nuclear power plants. This Agreement was initialled on 14 June 2000 and signed on 11 June 2001. In keeping with the wishes of both parties, this Agreement is a political Agreement, not a legally binding contract. The draft Acts from the Government and the coalition parties of September 2001[6] implement the fundamental elements of this Agreement. The German *Bundestag* approved this Act on 14 December 2001, and it was passed by the *Bundesrat* on 1 February 2002.

II. Overview of the key provisions

1. New purpose of the Atomic Energy Act

The new purpose of the Act is to end the use of nuclear energy for the commercial generation of electricity in a structured manner, and to ensure ongoing operation up until the date of discontinuation (Section 1, No. 1 of the Atomic Energy Act – AtG).

2. Ending the use of nuclear power and safety during the residual operating period

- No further licences will be issued for the construction and operation of new nuclear power plants or reprocessing facilities (Section 7, paragraph 1, sentence 2 AtG).

- The authorisation to operate a nuclear power plant shall expire once the electricity volume listed in the Act for that plant or the electricity volume derived from transfers has been produced [Section 7, paragraph 1(a)-1(d) AtG]. The electricity volume listed in Appendix 3 of the Atomic Energy Act corresponds to a standard operating life of 32 years per plant.

5. Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (ed.), Umwelt No. 7-8/2000, pages I to IX (special section).

6. Draft Act of the SPD and Bündnis 90/Die Grünen parties of 11 September 2001, BT printed paper 14/6890 and draft Act of the Government of 1 November 2001, BT printed paper 14/7261.

- In order to improve safety during the residual operating period, a legal obligation to carry out a periodic safety review of nuclear power plants shall be introduced [Section 19(a) AtG].

3. New waste management provisions

- The new Atomic Energy Act shall make unlawful as of 1 July 2005 the current option of delivering irradiated nuclear fuel originating from German nuclear power plants for reprocessing [Section 9(a), paragraph 1, sentence 2 AtG].

- The operator of a nuclear power plant is now required to set up a local interim storage facility and to store irradiated fuels there until their surrender to a facility for final disposal [Section 9(a), paragraph 2, sentence 3 AtG].

- The Act contains a legal provision on providing proof of relevant disposal precautions, comprising both proof of the regulated disposal of irradiated fuels and proof of re-use of the plutonium already extracted or to be extracted from reprocessing in nuclear power plants [Section 9(a), paragraph 1(a)-1(c) AtG].

4. Tenfold increase in financial security for nuclear power plants to EUR 2.5 billion

The maximum limit of financial security to be provided by the licensee of a nuclear power plant for damage resulting from the operation of the plant has been increased tenfold from 500 million Deutsch Marks (DEM) to 2.5 billion Euros (EUR) (Section 13, paragraph 3, sentence 3 AtG).

5. Repealing the amended Atomic Energy Act of 1998

The controversial amendments made as a result of the eighth amendment to the Atomic Energy Act of 6 April 1998 (see *Nuclear Law Bulletin* No. 61) have been repealed. This concerns *inter alia* regulations on safety requirements for material changes and regulations on expropriation for the purpose of constructing and operating final disposal facilities.

III. Ending the use of nuclear power and safety during the residual operating period

1. No licences for constructing and operating new nuclear power plants

Section 7, paragraph 1, sentence 2 of the Atomic Energy Act prevents the issuing of licences for the construction and operation of nuclear power plants and reprocessing facilities. This puts into effect the new purpose of the Act, i.e. to end the use of nuclear power for electricity production. New licences will not be granted for NPPs, although licences may still be issued for a material alteration to such plants or the operation thereof pursuant to Section 7, paragraph 1, sentence 3 AtG. This will ensure high safety standards.

With regard to Constitutional law, the ban on new licences represents the abstract general exclusion of options for use that were permissible thus far. In relation with this measure, the "old rights" based on the previous legislation are adapted to the new legislation [Section 7, paragraph 1(a) AtG; operating licences that were originally unrestricted are now restricted as the licence to operate a

nuclear power plant will expire once a certain volume of electricity has been produced; see details in the next section]. The German Government is of the opinion that both these provisions concerning new and existing nuclear power plants represent a permissible stipulation of the terms and limits of property rights according to Constitutional law. This opinion is supported by the Federal Constitutional Court's decisions. The phase-out of nuclear power therefore does not require compulsory purchase. The key factor here is that the "old rights" of the operators of nuclear power plants are not abolished immediately or within a very short space of time, and that instead a pay-back period for their investments and a suitable profit is possible within an appropriate transitional period.

Other nuclear installations, such as research reactors, fuel fabrication plants and uranium enrichment plants are not affected by the new legislation.

2. Restricting the operating period of existing nuclear power plants

Section 7, paragraph 1(a) of the Atomic Energy Act regulates the expiry of the operating licence of existing nuclear power installations once the electricity volume listed in the new Appendix 3 of the Act or the electricity volume derived from transfers according to paragraph 1(b) has been produced. An average operating period of 32 years from the date of the start-up of a plant was used as a basis for calculating the electricity volumes listed in Appendix 3. This corresponds to an average residual operating period for German nuclear power plants of about 11.5 years. The operating licence expires pursuant to the Act once the electricity volume allocated to a nuclear installation has been produced. No action is required on the part of the licensing or supervisory authorities. Further operation without the operating licence would be a punishable offence. Other provisions concerning the licence, for example the regime for shutting down operations, remain unaffected and therefore applicable.

Section 7, paragraph 1(b) AtG regulates the options for transferring electricity volumes. This provision should prevent an inflexible specification of standard residual operating periods in order to enable operators of nuclear power plants to transfer these legally allocated electricity volumes between individual plants giving due account to commercial aspects. This does not mean an increase in the overall determined residual electricity volumes. In order to lengthen the operating period of one nuclear power plant, it is necessary to shorten the operating period of another plant. This means that it is possible to fall short of or exceed the residual electricity volumes calculated on the basis of an average operating period of 32 years for a nuclear power plant.

According to Section 7, paragraph 1(b) AtG, the electricity volumes pursuant to Appendix 3, column 2 may be wholly or partially transferred from one installation to another, provided the receiving installation commenced commercial power operation later than the donating installation. Notwithstanding this provision, electricity volumes may also be transferred from an installation which began commercial power operation later than the receiving installation, subject to the approval of the transfer by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in agreement with the Federal Chancellery and the Federal Ministry of Economics and Technology. This approval is not necessary if the donating installation is to permanently discontinue operation and an application for decommissioning of the plant pursuant to Section 7, paragraph 3, sentence 1 of the AtG has been submitted.

Furthermore, Section 7, paragraphs 1(a) and (1c) AtG contain obligations to measure the volume of electricity produced, to organise controls by expert organisations as well as by an auditor or audit company and to notify the volume of electricity produced, the results of the controls and transfers of electricity volumes between installations. Section 7, paragraph 1(d) of this Act contains a

special provision on the transfer of the electricity volumes listed in Appendix 3 of the AtG for the Mülheim-Kärlich nuclear power plant.

3. Periodic safety reviews of nuclear power plants

The new Section 19(a) of the Atomic Energy Act provides for a safety review to determine the current standard of safety (safety status analysis – SSA and probability safety analysis – PSA). The responsibility and costs for this lie with the operator. The results of the safety review must be submitted to the supervisory authority by the date given in Appendix 4 of the AtG, so long as this date falls after 27 April 2002. The results of a new safety review are to be submitted ten years after the date given in Appendix 4. The obligation to submit the results of a safety review does not apply if the licensee makes a binding declaration to the supervisory and the licensing authorities stating that operation of the installation will be permanently discontinued no later than three years after the date specified in Appendix 4. The authorisation to operate the installation shall expire on the date cited in this statement.

This safety review supplements the ongoing supervisory review of nuclear power plants pursuant to Section 19 AtG. Whereas operators carried out these safety reviews on a voluntary basis in the past, they are now legally obliged to do so on the basis of the new Act. The safety review pursuant to Section 19(a) AtG is to be based on the guidelines for carrying out periodic safety reviews for nuclear power plants in the Federal Republic of Germany in the version of the notification of 18 August 1997.[7] In the event that these guidelines require further development, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety will involve the Länder, the Reactor Safety Commission (RSK) and the operators of nuclear power plants, as provided for in the Agreement of 14 June 2000.

The object of the safety review shall be to carry out a comprehensive review of safety systems and measures. This makes it possible to recognise weaknesses – particularly the interplay of the installation components – that may not previously have been identified. Furthermore, new operating procedures and technical developments can be taken into account. The actual status of existing installations is to be assessed according to the latest scientific and technological developments. The competent authority will make a decision on any necessary measures pursuant to Sections 17 and 19 AtG on the basis of the results of the safety review. As a result, it may be necessary to apply for licences for alterations.

IV. New waste management provisions

1. Ban on the delivery of spent fuel elements for reprocessing

According to Section 9(a), paragraph 1, sentence 2 AtG, the delivery of irradiated nuclear fuel originating from the operation of nuclear power plants for electricity production to a reprocessing installation shall become unlawful as of 1 July 2005. This regulation takes due account of the contracts concluded by the energy utilities under private law and the accompanying Exchange of Notes under international law between the Federal Republic of Germany and France and Great Britain. This also results from the fact that the planned provisions do not infringe the private-law contracts and the agreements binding under international law do not go further than these private-law contracts. Should it not be possible to terminate reprocessing activities in good time for reasons beyond the control of

7. Federal Gazette No. 232(a) of 11 December 1997.

the operators of nuclear power plants, suitable solutions will be sought in accordance with the Agreement of 14 June 2000. This excludes economically detrimental consequences for the respective contracting parties resulting from this legislation.

The date of 1 July 2005 is based on the Agreement of 14 June 2000 and the evidence presented by the energy utilities concerned that an end to deliveries of spent fuel elements for reprocessing could be guaranteed by 30 June 2005. By this date – and the German Government also shares this conviction – the contractually agreed volumes will have been delivered for reprocessing, thereby ruling out inconsistency with international commitments. Independently of this, the energy utilities have agreed to use all reasonable available contractual options to bring a swift end to reprocessing.

The German Government carried out a comprehensive review of the compatibility of the decision to terminate delivery of spent fuel elements for reprocessing with the primary and secondary law of the European Atomic Energy Community. It is of the opinion that Section 9(a), paragraph 1, sentence 2 of the AtG is compatible with the "nuclear Common Market" in accordance with Chapter 9 of the Euratom Treaty, in particular Article 93. Section 9(a), paragraph 1, sentence 2 does not establish a quantitative restriction on exports as is expressly prohibited by Article 93, sentence 1 of the Euratom Treaty. This ban is to be understood to mean that only targeted, trade-specific regulation of foreign trade is not permitted. This would also be applicable if Article 93 of the Euratom Treaty also identified measures having equivalent effect, as there would also be a lack of trade-specific regulation for this type of measure.

2. On-site interim storage facilities at nuclear power plants

The operator of a nuclear power plant is now obliged to set up a local interim storage facility and to store irradiated fuels there until their surrender to a facility for final disposal [Section 9(a), paragraph 2, sentence 3 AtG]. The option to deliver irradiated fuels for reprocessing until 30 June 2005 remains unaffected. According to Section 9(a), paragraph 2, sentence 4, upon application, the responsible authority will concede exemptions from the precautionary obligation to set up and use an interim storage facility, provided the operator of the plant has submitted an application for decommissioning and has made a binding declaration to permanently discontinue operations at the plant before 1 July 2005. Should the competent authority issue an exemption, the operating licence of the nuclear power plant will expire on the date cited by the operator in the application. To bridge the period until operations commence at the on-site interim storage facilities, Section 6, paragraph 4 AtG sets out measures to accelerate the procedure governing temporary interim storage facilities.

The move away from the central interim storage facilities at Gorleben and Ahaus linked to this concept leads to a considerable reduction in shipments of irradiated fuel elements. Greater consideration is given to the principle that the burden should be born regionally in those regions where there is the greatest benefit. The storage of vitrified residues is not affected by this regulation. The obligation in Section 9(a), paragraph 2, sentence 3 AtG does not apply to research reactors.

This provision also makes it possible for a licensee of a nuclear installation to comply with his commitments by providing proof of storage options in the vicinity of the installation. An interim storage site can be considered in the vicinity of an installation if the transport route to these facilities is shorter than the route to the nearest central interim storage site in Ahaus or Gorleben. Pursuant to Section 4, paragraph 2, No. 7 AtG, shipments to the central interim storage sites are permissible if the operator has complied with his obligation to set up interim storage facilities, but such interim storage facilities cannot be used for legal or practical reasons.

All nuclear power plants submitted applications for a licence for the interim storage of irradiated fuels at the respective power plant site before the entry into force of the new legislation. The Federal Office for Radiation Protection is currently carrying out the licensing procedures.

3. Proof of disposal precautions

According to Section 9(a), paragraph 1(a) of the AtG, operators of nuclear power plants are required to prove that they have taken adequate precautions to comply with their disposal obligations pursuant to Section 9(a), paragraph 1 in respect of the irradiated fuel produced and the spent fuel yet to be produced during the remainder of the operating period envisaged in accordance with Section 7, paragraphs 1(a) and 1(b), including any radioactive waste to be returned in the case of reprocessing (proof of disposal precautions). According to Section 9(a), paragraph 1(b), for the purposes of regulated disposal, proof must be provided to demonstrate that the safe storage of both irradiated nuclear fuel and returned radioactive waste from the reprocessing of irradiated nuclear fuel in interim storage facilities is guaranteed until such time as it is surrendered to a facility for final disposal. Furthermore, the Act contains detailed provisions on how to provide proof of the safe disposal of irradiated fuels. These provisions, as well as the provisions in paragraphs 1(c) and 1(d) in Section 9(a) of the AtG, were based on intensive discussions between the German Government and the energy utilities.

Insofar as the permissible non-detrimental utilisation of irradiated nuclear fuel pursuant to Section 9(a), paragraph 1, sentence 2 is envisaged, proof must be provided to show the guaranteed re-use of plutonium extracted from reprocessing as well as any future plutonium to be extracted in nuclear power plants. This shall not apply to plutonium which has already been re-used by 31 August 2000, or to plutonium which has already been extracted and for which the utilisation and consumption rights have already been transferred to third parties by the above date. Pursuant to Section 9(a), paragraph 1(d) of the AtG, the parties responsible for disposal are required to provide proof of safe storage of uranium extracted from the reprocessing of irradiated nuclear fuel in the form of realistic projections showing the availability of adequate interim storage facilities according to requirements.

V. Tenfold increase in financial security to EUR 2.5 billion

The maximum amount of financial security to be provided by a licensee for damage caused by the operation of a nuclear power plant has been increased tenfold from DEM 500 million to EUR 2.5 billion (Section 13, paragraph 3, sentence 2 AtG). This amount, available for every nuclear power plant operating in Germany, thus provides considerably improved protection of victims. Furthermore, on the basis of the maintenance of the real value of the financial security called for in Section 13, paragraph 3, sentence 2, the financial security for other installations and activities was also increased by 40% (Sections 8 and 11 of the Ordinance on Financial Security Pursuant to the Atomic Energy Act).

Section 14, paragraph 2 of the AtG was also revised. According to this amendment, the financial security can be provided by some other form of financial security rather than by third party liability insurance in respect of which the provisions of Section 14, paragraph 1 apply. This new version gives greater consideration to the wording of Section 10(a) of the Paris Convention on Third Party Liability in the Field of Nuclear Energy and the necessary preconditions for the use of nuclear energy for commercial electricity production. Thus it is possible to use private or mutual guarantees made by nuclear power plant operators as financial security.

In June 2001, the energy utilities submitted a proposal to the German Government on how the increased financial security envisaged in the new Atomic Energy Act could be achieved. In a statement of intent, *Energie Baden-Württemberg AG*, *E.ON Energie AG*, the *Hamburg Electricitäts-Werke AG* and *RWE AG*, committed themselves to enabling operators of German nuclear power plants that are subsidiaries of these enterprises to comply with their obligation to pay compensation up to the sum of EUR 2 244 billion per accident, and with reference to this statement of intent to comply with their obligation regarding financial security pursuant to Sections 13 and 14. The enterprises listed above commit themselves to paying the licensee of a nuclear power plant if this licensee must comply with liability to pay compensation as the result of a nuclear accident, and if neither he nor the parent company is in the position to provide compensation of EUR 2 244 billion. In addition to the statement of intent, an certificate demonstrating proof of financial security by an auditor will be submitted every year by 30 June at the latest, confirming that the available cash resources of the respective enterprise on a certain cut-off date exceed the sum to be provided in accordance with the statement of intent (double quota of the respective enterprise of the sum of EUR 2 244 billion). The verification by the auditor is based on the result of his review of the enterprise's year-end statements, for which the auditor has issued an unrestricted audit certificate containing the confirmation (pursuant to Section 233, paragraph 3 of the German Commercial Code) that the report provides an accurate reflection of the enterprise and accurately highlights the risks of future development.

The difference with regard to the financial security of EUR 2.5 billion, i.e. EUR 256 million (DEM 500 million) will continue to be covered by insurance.

VI. Summary

The phase-out of the use of nuclear power for electricity production has now been legally regulated by the 2002 Atomic Energy Act, based on the Agreement between the German Government and the energy utilities. The provisions of this Act comply with constitutional and European law, and take account of Germany's international commitments.

The new 2002 Atomic Energy Act is supplemented by additional steps towards the phase-out, in particular in the area of nuclear disposal. These steps are being taken primarily within the framework of a planned national disposal plan and a procedure to be developed for the selection of a location for a final disposal site for radioactive wastes. The key task for the Länder authorities and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety continues to be to ensure that operators of nuclear power plants comply with a high standard of safety during the residual operating periods of their plants.

Dissertations Submitted Following the 2001 Session of the International School of Nuclear Law

Participants at the 2001 Session of the International School of Nuclear Law – ISNL (see in this respect the announcement in the Chapter "Newsbriefs" of this *Bulletin*) were invited, as a complement to this educational programme, to write a short dissertation on a subject chosen in conjunction with the organisers of this course.

A number of high-quality contributions were thus received by the OECD Nuclear Energy Agency and were submitted to the appreciation of the teaching staff of the School. Following a selection procedure which was necessarily somewhat arbitrary, three of these dissertations were chosen to be published in this edition of the *Nuclear Law Bulletin*. As with standard policy in relation to articles and studies published in the *Bulletin*, the facts and ideas contained in these dissertations are the sole responsibility of their authors. Exceptionally, it was decided to publish these texts in their original language only.

The Problems Facing Nuclear Power in Japan Emphasising Law and Regulations

by Yoshio Baba*

I. Introduction

Japan was the first country to experience a nuclear attack when atomic bombs were dropped during World War II. After the war, the use and development of nuclear energy in Japan were limited to peaceful purposes, such as electric power generation, medical treatment, industry and fundamental research. Certainly, the most indispensable of these uses is nuclear power. Nuclear power now plays a very important role in the lives of Japanese people.

Japan has few natural energy resources, so it has regarded nuclear power as a necessary energy source that can help to achieve a stable supply of energy. The first commercial nuclear power plant in Japan, Tokai Power Station of the Japan Atomic Power Company Ltd., commenced operations in July 1966. At the present time, 51 nuclear power plants with an installed capacity of 44 917 MW provide about 30% of Japan's electricity produced by the electric power companies. Japan ranks third worldwide in terms of installed nuclear capacity. Thus, nuclear power has made a big contribution to a stable supply of electric power in Japan.

Nevertheless, in Japan today, the general public has a negative view of nuclear power development. There is no doubt that three incidents: the December 1995 sodium leakage at the prototype "Monju" fastbreeder reactor (hereinafter, referred to as the "FBR"); the March 1997 fire at the bituminisation facility for low-level radioactive waste at the Japan Nuclear Cycle Development Institute (hereinafter referred to as the "JNC") Tokai Facility; and the September 1999 criticality accident at JCO, a nuclear fuel conversion company in Tokai-mura, lbaraki Prefecture – contributed significantly to this view. These three accidents damaged the nation's confidence in nuclear development. The government conducted thorough investigations and compiled reports concerning the causes of these incidents, following which it acted upon the lessons learned and proposals put forward during these investigations and reports.

Thirty years have passed since Japan started to develop and utilise nuclear power. The circumstances underlying nuclear power policies have substantially changed. The various problems that must be addressed in order to further develop the nuclear power industry in Japan are increasing.

In this paper, I will introduce Japan's three major nuclear energy-related laws. I will also discuss the present situation surrounding nuclear power in Japan, including various problems that the government and electric power companies are facing, with the emphasis on law and regulations.

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* Mr. Baba is Researcher at the Japan Energy Law Institute. The facts contained and ideas expressed in this article are the responsibility of the author alone.

II. Japan's primary nuclear energy-related laws

The starting point for discussion of Japan's nuclear legislation is the Basic Atomic Energy Law (hereinafter referred to as the "Basic Law"). Other laws and ordinances derive from the Basic Law which sets out the framework governing the regulation of nuclear power.

1. The Basic Atomic Energy Law (the Basic Law) of 19 December 1955

The Basic Law states that its objectives are to secure energy resources for the future and to promote the research, development and use of nuclear energy for peaceful purposes. It goes on to establish a framework for the regulation of nuclear activities, specific aspects of which are to be dealt with in subsequent, separate laws.

Article 2 of the Basic Law sets out the three basic principles of democracy, independence and public disclosure governing the peaceful use of nuclear energy. Article 4 provides for the establishment of the Atomic Energy Commission (hereinafter referred to as the "AEC") and the Nuclear Safety Commission (hereinafter referred to as the "NSC") in the Cabinet Office to ensure a democratic approach to nuclear energy administration.

2. The Law for the Regulation of Nuclear Source Material, Nuclear Fuel and Reactors of 10 June 1957 (hereinafter referred to as the "Regulation Law")

This Law governs the location, construction and operation of nuclear facilities in Japan. The purpose of the Regulation Law is to ensure the peaceful use of nuclear source material, fuel and reactors, and to ensure public safety by preventing the hazards that arise from these materials and reactors. Specifically, it establishes the licensing regime governing all stages of nuclear activities and sets out essential rules to observe in international conventions.

The Regulation Law also provides for control over nuclear material and equipment, and restricts the transfer, importation and exportation of nuclear fuel material to those who are engaged in refining, manufacturing or reprocessing such material and to operators of nuclear facilities. These restrictions do not apply where the government receives or transfers nuclear fuel material at the national level or in accordance with international arrangements. Concerning nuclear materials, as internationally controlled materials, this Act provides that premises where nuclear fuel is present may be subject to inspection by the safeguards division at any time. Japan applies International Atomic Energy Agency (hereinafter referred to as "IAEA") Safeguards to nuclear material in conformity with its obligations under the Nuclear Non-Proliferation Treaty.

The Regulation Law also provides that operators of nuclear facilities are responsible for establishing security rules and procedures at their installations and in relation to specified nuclear materials contained therein. The operators must report any loss or theft of nuclear materials.

3. The Law Concerning Prevention from Radiation Hazards due to Radioisotopes etc. of 10 June 1957 (hereinafter referred to as the "Prevention Law")

The aim of the Prevention Law is to regulate the use, sale, disposal or any other handling of radioisotopes and radiation-emitting equipment in order to prevent radiation hazards and to secure public safety.

III. The Tokai-mura criticality accident

1. Revision of the Regulation Law and establishment of the Special Law on Emergency Preparedness for Nuclear Disaster

The Tokai-mura criticality accident was the worst in Japan's history of nuclear development and utilisation. The direct cause of the accident is understood to be repeated use of working procedures that did not comply with those proscribed in the licence.

After the criticality accident in Tokai-mura, the revised Law for the Regulation of Nuclear Source Material, Nuclear Fuel and Reactors (hereinafter referred to as the "revised Regulation Law") was adopted on 13 December 1999, taking into account the need to drastically enhance nuclear safety regulations in the wake of the accident. In addition, a new Special Law on Emergency Preparedness for Nuclear Disaster was adopted on 17 December 1999 based on lessons learned from current nuclear disaster prevention measures.

The revised Regulation Law entered into force on 1 July 2000, and the Special Law on Emergency Preparedness for Nuclear Disaster took effect as a special law to modify and complement the Basic Law for Countermeasures against Disaster on 16 June 2000. Assurance of prompt initial response, systematic linkage of national government with local governments, a strengthened national system for emergencies, and specification of the responsibilities of nuclear operators are the main points of this Law.

a) Revision of the Regulation Law

i) Inspection of facilities

The amendment of the Regulation Law reinforces the safety regulations governing the management and operational procedures of nuclear processing plants and nuclear energy facilities. Up until now, nuclear fuel fabrication and conversion facilities, unlike other major nuclear facilities, were not subject to inspection by the government to check their performance even where the form of nuclear business had been changed.

ii) Introduction of inspection system on compliance with safety regulations applicable to nuclear installations

This system was established considering that the working procedures, which deviated from those proscribed for such a licensed facility, directly caused the JCO criticality accident. This inspection system is now applicable to all nuclear businesses including the fuel fabrication business.

iii) Assignment of nuclear safety inspectors to main facilities

This system is also intended to verify compliance with safety regulations.

iv) Employee education and proposals for safety improvements for workers

These systems are intended to deal with the factors which indirectly caused the accident, including lack of knowledge of and interest in the safety aspects and ignorance in relation to breach of the laws and ordinances.

b) Adoption of the Special Law on Emergency Preparedness for Nuclear Disaster

This Special Law establishes the following principles:

i) Ensuring prompt initial actions

- The Nuclear Disaster Prevention Manager is required to notify the operator in the case of designated events.
- The Prime Minister is responsible for issuing a Declaration of a Nuclear Emergency Situation and establishing the Government Countermeasures Headquarters.

ii) Ensuring systematic linkage of national government with local government

- The Nuclear Disaster Prevention Specialist is required to reside in the community where the nuclear facility is located.
- Expert members of staff of national government are assigned to the local government to support the chief of the local government.
- The Government designates an emergency response facility (off-site centre).
- The disaster prevention training jointly conducted by the national and local governments and the operator is based on the programme developed by the national government for this purpose.
- Co-operation of the Nuclear Safety Commission with the Disaster Prevention Committees of the local governments.
- The related local governments, as well as a competent minister, are allowed to collect reports from the nuclear operator and to perform on-the-spot inspections on its facilities to determine whether the nuclear operator is fulfilling all his obligations.

iii) Strengthened national emergency system

- More extensive authority is assigned to the manager of the Government Countermeasures Headquarters so that he can give the necessary directions to the related administrative offices, local governments, nuclear operators and others.
- The main authority is provided to the manager of the on-site countermeasures headquarters by the manager of the Governmental Countermeasures Headquarters.

- The advice of the Nuclear Safety Commission to the manager of the Governmental Countermeasures Headquarters is clearly positioned. In addition, assigning the Nuclear Safety Commission with the investigators for the emergency countermeasure strengthens the disaster countermeasure system.

iv) Identifying the responsibilities of the nuclear operator

- The nuclear operator is obliged to develop its own programme of disaster prevention in order to promptly implement tasks required for prevention and mitigation of nuclear accidents.

In accordance with its disaster prevention programme, the nuclear operators shall establish a Nuclear Disaster Consequences Prevention Organisation which will be responsible for the prevention and mitigation of nuclear disaster at each of its nuclear facilities.

- The nuclear operators shall nominate a Nuclear Disaster Prevention Manager and Deputy Manager at each nuclear facility.

- The nuclear operator shall provide and maintain radiation-measuring equipment.

- An "Off-site Centre" is to be designated in each Prefecture where nuclear installations are located. When a competent minister designates an off-site centre, the nuclear operator shall submit the materials that will be required for implementing emergency countermeasures at the off-site centre.

2. Subjects which yet remain to be reviewed in relation to the revised Regulation Law and the Special Law on Emergency Preparedness for Nuclear Disaster

It is highly laudable that two bills were enacted in Japan in a short space of time, where previously there was no single law governing nuclear disasters of such a specific nature. However, there remain subjects yet to be reviewed. For example, according to the revised Regulation Law, the newly established inspection systems for compliance with safety regulations are very extensive, and nuclear safety inspectors may constitute an unjustifiable intrusion into business activities. Although thorough inspections are necessary, a system that would not overly burden operators should be considered.

On the other hand, the Special Law on Emergency Preparedness for Nuclear Disaster does not provide details on countermeasures to be used in respect of incidents such as nuclear fuel transport accidents, destruction of nuclear facilities and nuclear terrorism. Responses to these questions should be discussed further.

Public trust, lost in the wake of the JCO accident, is gradually being restored. It is important for the national and local governments and nuclear operators to fulfil their duties and continue their efforts to ensure nuclear safety.

IV. The referendum at Kariwa-mura for the Plu-Thermal Project

In line with efforts to maximise efficiency in the use of uranium resources, plutonium recovered from reprocessed spent fuel is to be converted into plutonium-uranium mixed oxide (MOX) fuel for conventional nuclear power plants and thus re-used. This is, as mentioned above, the Plutonium-Thermal Project. The final goal of Japan's nuclear fuel cycle policy is to re-use recovered uranium at the Fast Breeder Reactor (FBR). The FBR, however, is still at the research and development stage and is not commercialised yet; therefore this Plu-Thermal Project constitutes a compromise pending further developments in relation to the FBR.

In another blow to Japan's beleaguered nuclear power policy, residents of Kariwa-mura, Niigata Prefecture, voted against a plan to use MOX fuel at a local power plant. More than 50% of the villagers who voted on 27 May 2001 in the nation's first referendum on the use of the controversial fuel opposed the plan. Turnout was 88.14% of the village's 4 090 eligible voters. At issue was the plu-thermal project at the No. 3 reactor of the nuclear power generation plant operated by Tokyo Electric Power Co. (TEPCO), which is located on the border of Kariwa and the neighbouring city of Kashiwazaki.

Such referenda are problematic. The most controversial point is whether or not the results of these referenda are legally binding. The Japanese Constitution is based on indirect democracy. Referenda are employed only in restricted cases as follows:

- voting on special laws applicable to a local government;
- voting on dissolving local assembles and dismissing public officials; and
- referenda based on municipal bylaws.

Hence, it goes without saying that the results of such referenda do not bind national energy policies or local operator policy.

However, it is hard to imagine that a mayor would take actions running counter to the results of such a referendum. It can be said that while the results of such referenda are not legally binding, they are binding in practice. Moreover, other issues concerning referenda include:

- referenda are not necessarily suitable for resolving issues that require comprehensive and long-term study, or issues that need judgements involving highly specialised technologies;
- these referenda may be influenced more by emotion than by reason, making it possible that people will make irrational decisions;
- when there is only a slight difference between vote tallies, such a close outcome might lead to emotional confrontations;
- it is perhaps not appropriate that the siting of any nuclear power plants, an important aspect of the government's national energy policy, be left to the judgement of the residents of one local government.

Many people have low opinions of the wide use of referenda, but a certain number of people support such a system. In the end, the Kariwa-mura case is assumed to be postponed for now and has been left undecided.

It is possible that another municipal government with a specific plan for the Plu-Thermal Project may hold a referendum and residents could thus express their opinions in the near future.

V. The final disposal of high-level radioactive waste

Since the onset of its nuclear development, Japan has consistently promoted a policy focusing on the establishment of the nuclear fuel cycle, in order to ensure energy security and the most efficient use of resources. The policy includes reprocessing spent fuel arising from nuclear power generation and using plutonium recovered from spent fuel as nuclear fuel. Under this policy, a basic concept has been established, which specifies that high-level radioactive waste (hereinafter referred to as "HLW") is to be solidified in a stable form (vitrification), and vitrified units are to be stored for cooling for some 30 to 50 years, after which it will be subjected to deep geological disposal.

Thus far, Japanese electric utilities have entrusted overseas contractors in the United Kingdom and France with the reprocessing of spent fuel generated in Japan. The first shipment of vitrified units reprocessed by the overseas contractors returned to Japan in February 1995. The returned vitrified units are now stored at a facility at Rokkasho-mura, Aomori Prefecture for cooling.

Despite the situation as described above, no legal regime governing the entity in charge of HLW final disposal has been established; neither have measures concerning the financing of this final disposal or disposal site selection procedures been developed. Out of the Japanese nuclear-related laws, only the Regulation Law sets out certain conditions regarding disposal and management of low level radioactive waste and off-site interim storage of spent fuel.

It is planned to reprocess spent fuel in Japan at the reprocessing plant which is to be built at Rokkasho-Mura in the near future, as the number of vitrified units is expected to increase steadily over a long period of time. Under the circumstances, it became urgent to develop a legal regime governing the final disposal of HLW in Japan.

The Programme defining the basic concepts governing HLW was established by the Atomic Energy Commission in June 1994. The "HLW Disposal Conference," established under the AEC, then worked to prepare legislation for HLW final disposal. In 1998, the HLW Disposal Conference issued a report, in which it presented proposals for the preparation of laws concerning the establishment of the implementing entity, assurance of funds, and a disposal site selection procedure. In response to these proposals, the Co-ordination Subcommittee of the Advisory Committee for Energy, which was established under the auspices of the Ministry of International Trade and Industry, prepared a report in March 1999 in which specific issues, such as the estimate of disposal costs, features of the implementing entity, and measures to ensure steady availability of funds, were summarised. Subsequently, legislation was prepared based on these reports, and finally, the Law on Final Disposal of High Level Radioactive Waste (hereinafter referred to as the "HLW Law") was enacted on 31 May 2000.

The HLW Law represents a revolutionary milestone when looking back more than a decade over the difficulties faced in the course of the legislation. However, there are many legal problems to be solved in further promoting the HLW final disposal project.

The first problem is that the HLW Law does not directly specify safety regulations for implementation of final disposal (Article 20) and dissolution of the Management Organisation (Article 71). The HLW Law specifies that the safety regulations and dissolution of the Management Organisation be defined under another law to be enacted in the future because the final disposal project will last for an extremely long period of time and because uncertainties such as changes in economic conditions and technological developments are expected to occur in the course of the project.

The second problem concerns the existing laws that are expected to apply to the implementation of the final disposal project. The applicability of some of these laws to the HLW final disposal project has not been clarified and amendment of or additions to the existing laws and ordinances may be required. For example, the question of environmental assessment requirements will arise in relation to the effects of changing the landscape and construction of buildings during the final disposal process when site characterisation and construction of the final disposal facilities are conducted. The Environmental Impact Assessment Law sets forth procedures governing environmental assessment. However, this Law, which was enacted in 1997, does not provide for procedures in relation to siting and construction of final disposal facilities. Therefore, related laws and ordinances will need to be prepared in the future.

The third problem is that there are factors lacking in the HLW Law from the legal point of view in proceeding with the final disposal project. For example, the HLW Law does not specify provisions concerning easements or governmental appropriation rights according to the public law when the Management Organisation conducts site characterisation or acquires land for the site and its neighbouring areas. In addition, the HLW Law does not clearly mention the measures, including grants, to promote the development of the sites which are to host the HLW final disposal facilities although such measures are currently undertaken of behalf of local governments that host nuclear facilities.

The HLW Law was a revolutionary milestone that showed national movement towards resolution of the pending problems concerning HLW final disposal. However, in promoting the final disposal project, there are many legal problems to be solved. Beside legal problems, there are a number of difficulties, such as obtaining the consensus of local residents during the site selection stage, in promoting the final disposal project. In this respect, the HLW Law is just a starting point to complete HLW final disposal.

VI. Storage of spent nuclear fuel

Spent fuel from nuclear power plants must be safely stored until it is sent for reprocessing. Up until now, spent fuel in Japan has been stored in storage facilities at each nuclear power plant site (except that which is sent to Britain and France for reprocessing based on a written contract). A commercial-size domestic reprocessing plant is now being constructed, but the construction process has been delayed. Also, it is clear that the capacity of storage facilities at nuclear power plant site is about to reach its limit. Some operators have built extra storage facilities at their sites recently, but it has also been necessary for operators to built storage facilities outside their nuclear power plants.

Therefore, the Regulation Law was revised in June 1999 to allow spent nuclear fuel to be stored outside nuclear power plants until it can be reprocessed. Consequently, this revision made it possible for nuclear power plant operators to set up an “outside storage business” under licence in the same manner as with other nuclear installations. Of course, the licensing process to commence construction

and the safety regulation system for operation and maintenance will be organised in the same way as for other nuclear installations.

Mutsu-Shi in Aomori Prefecture requested that a siting feasibility study be carried out by Tokyo Electric Power Co. (TEPCO) in November 2000. TEPCO is holding briefings of the siting feasibility study for local people and the meteorological observation investigation etc. has been underway since April 2001.

VII. Transportation of nuclear fuel material, etc.

1. Regulations governing transportation

In advancing nuclear power generation, transportation of nuclear fuel and radioactive waste in and out of the country is necessary.

Safety regulations governing the transport of nuclear fuel and radioactive material derive from the IAEA Regulations on Radioactive Material. Regulations governing transport by road and rail are established in the Prevention Act. Regulations governing transport by sea are set out in the Ship Safety Law. As for ocean vessels, regulations are set out by the regulation law of each country, the IAEA Regulations for the Safe Transport of Radioactive Material and international conventions governing transportation.

In addition, when nuclear matter, such as natural or enriched uranium, is transported from the United States, it is regulated under the Agreement for Co-operation between the Government of Japan and the Government of the United States of America Concerning Peaceful Uses of Nuclear Energy (hereinafter referred to as the "Japan-US Nuclear Agreement").

The former Japan-US Nuclear Co-operation Agreement, which was signed in 1968, had required Japan to obtain advance approval from the US Government for any international transfer of nuclear material of US origin. Under that former Japan-US nuclear agreement, Japanese utilities had to submit "MB-10" applications and obtain shipment-by-shipment approvals from the US Government prior to transporting spent fuel to overseas reprocessors. However, the current Japan-US Nuclear Agreement, which came into force in July 1988, provides for the following:

- Advance approval from the supplier country shall be required for transfer of spent fuel to third countries and transport of recovered plutonium from such countries.

- However, if these transfers are made between specified facilities in accordance with specified requirements and guidelines, such advance approval shall be given on a long-term, predictable and reliable basis (Programmatic Approval).

It is a well-known fact that the international transportation of plutonium can be a target for terrorists. Pursuant to our reprocessing service contracts with BNFL and COGEMA, the recovered plutonium is transported back from the United Kingdom and France to Japan. Therefore, the transport of plutonium requires far stricter protection than that of uranium in its various forms. The existing criteria and associated issues are as follows:

As mentioned above, US advance consent is required for the transport of recovered plutonium back from the United Kingdom and France, if such plutonium is recovered from US-origin spent fuel.

In fact, most plutonium to be recovered in the United Kingdom and France is of US origin. Under the Japan-US Nuclear Agreement, however, Programmatic Approval will be given if recovered plutonium is transported in accordance with the Guidelines set forth in Annex 5 of the Implementing Agreement for the new Japan-US Nuclear Agreement. The Guidelines for air shipment and sea shipment respectively specify the requirements for Programmatic Approval as follows:

Guidelines for Air Shipment

- Use of exclusive cargo-carriers.
- Use of an arctic route or other selected safe routes.
- Presence of armed guard on board.
- Use of crash-proof container.
- 24-hour monitoring of the aircraft by the operation centre.
- Preparation of an emergency plan including the relevant countries en route.

Please note, however, that Japan does not arrange for such shipments by air.

Guidelines for Sea Shipment

- Use of exclusive vessels.
- Use of selected safe routes.
- No transit calls at ports en route, except for emergency.
- Presence of armed guard on board.
- Escort by an armed vessel in principle (this can be avoided only if some alternative security measures effectively compensate for the absence of an armed escort vessel).
- Measures to prevent transfer to another vessel while on the sea.
- 24-hour monitoring of the vessel and the cargo by the operation centre.
- Preparation of an emergency plan including the relevant countries en route.

The most critical point of the Guidelines is, however, the fact that a transportation plan must be prepared involving all relevant parties including the countries en route prior to each shipment.

2. Current Situation concerning Transportation

a) Transportation of nuclear fuel

In Japan we use low-enriched uranium as fuel for nuclear power generation and almost all of this material is imported. Uranium is enriched at overseas enrichment plants, and then transported by ocean vessels from the US or France to Japan in the chemical form of uranium hexafluoride or uranium dioxide. Upon arrival in Japan, it is transported by road to reconversion plants or fuel fabrication plants. The imported uranium is processed into fuel assemblies under fuel fabrication contracts between the utilities and reactor constructors (or fuel manufacturers), and the fuel assemblies are transported from fuel fabrication plants to nuclear power facilities by road or, in some cases, by sea.

b) Transportation of spent fuel etc.

The utilities have reprocessing services contracts with JNC, and transport spent fuel from nuclear power stations to JNC's reprocessing plant at Tokai-mura, Ibaragi prefecture. Furthermore, the utilities also have reprocessing contracts with BNFL in the United Kingdom and COGEMA in France, and contracts for spent fuel transportation with BNFL.

On the other hand, Japan Nuclear Fuel, Ltd. is constructing Japan's first commercial-use reprocessing plant to begin operations in July 2005 in Rokkasho-mura. The spent fuel is to be transported by sea from nuclear power stations to the reprocessing plant.

The Nuclear Fuel Transportation Co. (NFT) is in charge of the domestic transport to JNF's plant while Pacific Nuclear Transportation Limited (PNTL), a company established jointly by companies of Japan, the United Kingdom and France, conducts overseas transport to BNFL and COGEMA. For sea transport, vessels dedicated only for spent fuel shipments are used. They are specially designed with double-hulls, unsinkable structures that can resist damage due to a collision with another vessel.

Transport of high-level radioactive waste which has been reprocessed abroad is done based on an offshore reprocessing consignment contract concluded between the Japanese electric utility and the reprocessing firms in Britain and France. Recently, HLW was transported between December 2000 and February 2001 to Aomori Prefecture Rokkasho-mura following reprocessing in France past Cape Horn in South America by "the Pacific Swan" route. Several nations, including Chile, Argentina, Brazil, and Uruguay, and environmental organisations protested fearing that this would become a fixed route in the future.

It is necessary in the future for the country and the firms carrying out reprocessing activities to consider these transport concerns. This should include an effort to promote understanding and explain safety and emergency measures to the coastal countries en route. Moreover, when the nuclear fuel cycle policy of our country is further advanced in the future, it will be necessary to reconsider the trend for such transport.

VIII. The Nuclear Damage Compensation Law of 17 June 1961 (hereinafter referred to as the "Compensation Law")

The Compensation Law establishes a national regime governing compensation for nuclear damage. This Law is intended to compensate nuclear damage caused by reactor operation, fuel fabrication, reprocessing, utilisation of nuclear fuel material, storage of spent fuel, and disposal of nuclear fuel material or other material contaminated by nuclear fuel material, conducted by nuclear facility operators.

The compensation regime defined by this Law stipulates that the nuclear facility operators shall be strictly (no-fault) and exclusively liable and that their liability is unlimited. Operators are obliged to take out measures to cover their liability including the conclusion of a liability insurance contract and an indemnification contract with the government.

The Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, adopted under the auspices of the IAEA in 1997, defined the international guidelines according to which the minimum amount of operator liability should be increased from USD 5 million to 300 million Special Drawing Rights (SDRs) (approximately JPY 50 billion). Accordingly, a review of operator liability was initiated in Japan and an amendment to the Nuclear Damage Compensation Law was adopted in April 1999.

Japan is not a party to the Vienna Convention. The reason why Japan has not expressed interest in acceding to this Convention is that the number of parties is not enough and the level of liability is insufficient, and more specifically, it has been pointed out that the limitation of liability established in this Convention conflicts with the unlimited liability regime in the Japanese Compensation Law.

However, circumstances have gradually changed. Namely, the number of parties to the Vienna Convention has increased little by little, and several more states are showing interest in the Convention. Furthermore, in the Protocol to Amend the Vienna Convention, conflicts between the limited liability regime and unlimited liability regimes have been intentionally avoided. Also, in 1997, the Convention on Supplementary Compensation for Nuclear Damage was adopted.

The development and use of atomic energy in Asia is expected to progress tremendously in the near future. In order to promote the sound development and use of nuclear energy and to ensure rapid and efficient remedies for victims of nuclear incidents in an emergency, it is desirable to consider participation in any international framework for compensation for nuclear damage through ratification of international conventions or by other means, and to form regional frameworks in the area around Japan.

IX. Conclusion

In this report, I introduced the present situation of nuclear power in Japan, including various problems that the government and electric power companies are facing, especially with respect to laws and regulations. In addition to these problems, we cannot forget deregulation concerning electric utilities.

It is thought that the role which nuclear power generation should play in the future is a large one from the point of view of the stability of fuel supply and the prevention of global warming. But can nuclear power generation compete effectively in terms of cost? Are there some changes in the nuclear power programme policy of the government in relation to the liberalisation of the power market?

Moreover, there are still numerous problems relating to the possibility of securing cost-effective safety measures for nuclear power generation.

However, we assume that we will continue to promote nuclear power while addressing these problems in Japan.

The US National System for Disposal of High-level and Transuranic Radioactive Wastes: Legislative History and its Effect on Regulatory Approaches

by Betsy Forinash*

1. Introduction

The United States (US) has two radioactive waste disposal facilities of particular interest to the international community. Both are deep geologic disposal sites aimed at containment of very long-lived radionuclides. The first is the Waste Isolation Pilot Plant (WIPP). Located in bedded salt deposits in the southwestern US, it is currently operating for the disposal of transuranic waste (containing high concentrations of nuclides heavier than uranium), the legacy of past production of atomic weapons. The second is the Yucca Mountain facility proposed for the disposal of high-level radioactive waste and spent nuclear fuel, chiefly from commercial power plants.

The management and long-term performance of these facilities are subject to two separate sets of safety standards. These two Regulations establish different criteria for judging the adequacy of each facility. The differences between the Regulations cannot be attributed solely to technical differences in the form or characteristics of the wastes. Rather, some significant differences derive from the legislative history in the US, legislation aimed both at national nuclear policies overall and at waste disposal in particular. In fact, the existence of separate standards for the WIPP and Yucca Mountain is itself a direct outcome of the underlying legislative foundation.

This paper will examine the legislative history that led to the safety standards for WIPP and Yucca Mountain. Examples from the safety standards will be used to illustrate how differences stem from relevant legislative action. First in the paper, early legislation addressing national US nuclear programs will be discussed. Next will be presented the establishment and responsibilities of the major agencies involved in nuclear waste disposal, the US Environmental Protection Agency, US Nuclear Regulatory Agency, and US Department of Energy. Then follows a discussion of how legislation focused on nuclear waste disposal has modified the traditional roles of these Agencies and directed the form and content of safety standards. This information provides context for understanding the approaches for regulating the WIPP and Yucca Mountain. The standards will be described, and examples of similarities and differences between the standards will be discussed, with attention to how such differences can be traced to the underlying legislation.

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2. Establishing Regulatory Agencies and Roles

2.1. Early National Nuclear Policies: The Atomic Energy Acts of 1946 and 1954

The earliest nuclear-related legislation in the US came quickly on the heels of the "atomic age" ushered in by the use of atomic bombs at Hiroshima and Nagasaki. The Atomic Energy Act of 1946 was aimed at maintaining strict control over nuclear technology and directing it toward military purposes. It emphasised the need for secrecy, availability of raw materials, and production of nuclear weapons. The 1946 Law allowed no use of atomic energy by private parties or commercial purposes; its use was restricted solely to the Federal government. A five-member Atomic Energy Commission (AEC) was established to manage the US's atomic energy programs.

Succeeding years produced a growing interest in the potential peaceful uses of atomic energy. The progress of other nations, notably Great Britain and the Soviet Union, in the field led to concerns that the US might sacrifice its leadership role if further investments were not made in nuclear energy. This interest was further spurred by long-term energy requirements. In response to these concerns, the US Congress passed the Atomic Energy Act of 1954.

In contrast to its predecessor, the 1954 Act sought specifically to "encourage widespread participation in the development and utilisation of atomic energy for peaceful purposes." To accomplish this goal, the legislation greatly expanded the role of the existing AEC. Three primary responsibilities were assigned to the AEC:

- to continue its weapons programme,
- to promote private use of atomic energy for peaceful application, and
- to protect public health and safety from the hazards of nuclear power.

The AEC was given broad discretion in carrying out these responsibilities.

Experience garnered after 1954 showed, however, that the placement of promotion and regulatory functions in the same body was problematic. Political events soon after passage of the 1954 Act exerted intense pressure on the AEC to demonstrate progress in expanding the commercial uses of atomic energy. This climate made the promotion responsibilities of the AEC more immediate than the regulatory functions. There were also concerns that restrictive or inflexible Regulations could discourage private investments in nuclear technology. In this atmosphere, the AEC adopted a regulatory strategy that emphasised partnerships with industry and a desire to produce Regulations that were not "overly burdensome".

A series of events over the 20 years after the 1954 Act engendered intense criticism of the AEC's regulatory programs. The AEC's handling of issues such as secret reactor tests, licensing delays, thermal pollution, and other environmental issues reinforced concerns over Regulation. Internal AEC reforms and legislation aimed at increasing public scrutiny of AEC licensing decisions did little to alleviate the controversy.

3. Establishment of the Nuclear Regulatory Commission: The Energy Reorganization Act of 1974

In response to concerns over the AEC's regulatory objectiveness, as well as concerns over the gradual lengthening of the licensing process, Congress in 1974 passed the Energy Reorganization Act. The twin goals of this legislation were to increase the efficiency and reliability of energy sources and assure public health and safety. Congress recognised that it was in the public interest to separate licensing and regulatory functions from other functions. The Act abolished the AEC and divided its functions between two newly created Federal Agencies: the Energy Research and Development Administration, charged with the responsibility of promoting nuclear power, and the Nuclear Regulatory Commission (NRC), devoted to Regulation.

4. Establishment of the Environmental Protection Agency: Reorganization Plan No. 3 of 1970

Meanwhile, concern was growing about pollution and environmental issues. There was recognition that all environmental media were interrelated, and that these links were not effectively addressed by existing Federal agencies which were generally devoted to specific media, air, water, or land. To provide better control of pollutants, President Nixon decided that a single Agency should be formed to address research, monitoring, regulation, and enforcement on environmental issues. This was accomplished through Reorganisation Plan No. 3 of 1970.

The Plan established a new US Environmental Protection Agency (EPA). Importantly for our purposes, radiation was recognised as one of the pollutants that could appear in all media. Accordingly, some functions of the AEC under the Atomic Energy Act of 1954 were transferred to the EPA. Specifically, EPA was provided authority to establish "generally applicable environmental standards for the protection of the general environment from radioactive material. As used herein, standards mean limits on radiation exposures or levels, or concentrations or quantities of radioactive material, in the general environment outside the boundaries of locations under the control of persons possessing or using radioactive material" [Section 2(a)6]. The authority to issue licenses under such generally application environmental standards, as well as to regulate activities within the boundaries of nuclear facilities, continued to reside with the AEC (later to be transferred to the NRC, as described above).

5. Establishment of the Department of Energy: The Department of Energy Organization Act of 1977

In response to the US energy crisis in the mid-1970s, Congress passed the Department of Energy Organization Act of 1977, thereby establishing the US Department of Energy (DOE, or the Department). The new Department was intended to unify Federal organisation and planning of energy resources from production through delivery. Among the responsibilities assigned to the new Department were those formerly managed by the Energy Research and Development Administration (created by the split of the Atomic Energy Commission in 1974). These responsibilities include management of programmes for nuclear weapons, naval reactors, and energy development. Most relevant to our purpose, the DOE is authorised to "provide for safe storage, processing, transportation, and disposal of hazardous waste (including radioactive waste) resulting from nuclear materials production, weapons production and surveillance programs, and naval nuclear propulsion programs" [Section 91(a)3 of the Atomic Energy Act of 1954].

6. Summary of Agency Roles and Responsibilities Based on National Nuclear Legislation

As described above, legislation aimed generally at national nuclear and energy policies established the key agencies and their roles related to the regulation, licensing, and disposal of radioactive waste. In summary, the regulatory scheme for radioactive materials was established:

- The EPA was to establish generally applicable safety standards related to radioactive material.

- The NRC was to establish and implement licensing requirements for radioactive material used in commercial and industrial applications, under its AEA authority and consistent with any Regulations established by EPA under its AEA authority.

- The DOE was to oversee and control all aspects of safety related to military application of nuclear energy, including waste disposal. While EPA regulations could apply, NRC licensing requirements related to such regulations would be enforced by DOE at its own sites.

Ensuing actions modified this general scheme as it applies specifically to disposal of spent nuclear fuel and of high-level and transuranic radioactive waste.

7. History of Safety Standards for Nuclear Waste Disposal

Over the course of the development of nuclear energy for both military and civilian purposes, radioactive waste disposal emerged as a critical issue. The sweeping Atomic Energy Act, and the establishment of the various regulatory agencies described previously, provided the instruments to begin addressing the challenges of radioactive waste disposal. As we will see, however, the evolution of the regulatory scheme and safety standards would be affected by ongoing legislative actions aimed directly at waste disposal issues.

8. EPA's Initial Action

EPA first took action in the 1970s to address waste disposal under its authorities provided by the Atomic Energy Act and Reorganization Plan Number 3. A series of public workshops was conducted to gather information on public concerns and issues associated with radioactive waste disposal. In 1978, EPA issued draft Criteria for Radioactive Wastes. This generic guidance was intended to apply to all radioactive wastes. It became evident that such guidance was impractical to implement because it did not account adequately for the characteristics of different types of waste. The guidance was withdrawn in 1981 [40 CFR Part 191: Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-level and Transuranic Radioactive Wastes; Final Rule. US Federal Register, Volume 58, p. 66399 (58 FR 66399), published 20 December 1993].

9. The Nuclear Waste Policy Act of 1982

Impetus was soon provided for EPA to develop more specialised standards. The Nuclear Waste Policy Act (NWPA) of 1982 affirmed the Federal government's responsibility to provide for safe and environmentally sound disposal of commercial high-level radioactive waste and spent fuel (while also acknowledging that the costs of such disposal are primarily the responsibility of the generators and

owners of such waste). The NWPA excluded waste generated from any defence-related activities, focusing only on waste from civilian nuclear power plants [Section 111(a)(4), section 8(a)]. For these civilian wastes, the NWPA clearly focused the national policy on mined geologic repositories.

For the DOE, the NWPA placed the burden of evaluating and selecting candidate sites for repositories, and for developing the disposal system. It established formal procedures for evaluating and selecting sites and specified certain geologic and population factors to be considered in evaluations. Also included were necessary steps to be taken to inform and involve State and local governments in the decision making process [Section 112]. These requirements established a scheme for narrowing the number of candidate sites from five or more, to three, then to a final selection to be approved by Congress and the US President [Section 112; see also 50 FR 38067].

For the EPA, the NWPA reiterated the Agency's responsibility to establish safety standards for the performance of repositories for high-level waste and spent nuclear fuel. The Act did not provide additional authority, instead emphasising that EPA's existing authorities were sufficient to accomplish its charge.

Finally, the NWPA affirmed NRC's authority to evaluate and license any such repositories for commercial wastes. The Act required NRC to establish licensing criteria consistent with the safety standards to be issued by EPA.

10. Standards for Disposal of Spent Nuclear Fuel, High-level and Transuranic Radioactive Wastes

Following the mandate of the NWPA, EPA in 1985 issued safety standards for waste. As directed by the NWPA, these standards apply to disposal of spent nuclear fuel and high-level waste [Chapter 40, Part 191 of the US Code of Federal Regulations (40 CFR 191)]. EPA chose also to include transuranic waste under the same standards; in doing so, the Agency stated that "because transuranic wastes have very long half-lives and represent a potential hazard for very long times… [they require] the same controls… as would be required for high-level wastes" [47 FR 58197, 29 December 1982]. Although developed primarily through consideration of mined geologic repositories, the standards apply to any type of disposal allowed under Law (i.e., excluding ocean disposal) [58 FR 66399].

The NRC and DOE were to be responsible for implementing the standards, NRC for disposal of commercial wastes, and DOE for disposal of defence-related wastes at its own facilities.

Shortly after EPA issued the safety standards at 40 CFR 191, hereafter referred to as the "disposal standards", a number of States and environmental groups challenged the standards in Federal court. The Court found that several portions of the standards relating to individual dose limits and protection of ground water had not been adequately justified. Although the validity of most provisions was upheld, the Court in 1987 suspended the application of the disposal standards in their entirety [58 FR 66399].

11. The Nuclear Waste Policy Act Amendments of 1987

Meanwhile, the DOE had progressed in identifying and evaluating candidate sites for geologic disposal of high-level waste and spent nuclear fuel from power plants, and a separate site for disposal of transuranic waste from defence nuclear activities. The extensive nomination, recommendation, and

evaluation process mandated in the 1982 NWPA was dramatically simplified by amendments made to the Act in 1987. The amendments restricted site characterisation studies for disposal of high-level waste and spent fuel to only the Yucca Mountain site which had previously been recommended as a candidate site by the DOE to the President as part of the original evaluation process [Section 2(30), Section 113].

No characterisation activities were to be conducted at any other candidate sites. The NWPA Amendments emphasised that DOE should consult extensively with the State of Nevada, in which the Yucca Mountain site is located. The amendments also retained the requirements for final Presidential and Congressional approval of the site.

DOE also had identified a candidate site for disposal of transuranic wastes, long-lived radioactive wastes generated during the production of nuclear weapons and through subsequent (and ongoing) decontamination and decommissioning of production sites. The authorisation to proceed with such a facility had been approved in 1979 with the passage of the DOE National Security and Military Applications of Nuclear Energy Act [Public Law 96-164]. By 1987, construction of a test facility (known as the Waste Isolation Pilot Plant) had been completed, shipping containers had been designed, and the disposal system was poised to begin accepting waste.

After 1987, therefore, the US waste disposal programme found itself in the position of having two potentially viable disposal sites but no safety standards applicable to them, since application of EPA's standards had been suspended by the court decision that year. In 1992, Congress resolved this situation with two key pieces of legislation.

12. The Waste Isolation Pilot Plant Land Withdrawal Act of 1992

The Waste Isolation Pilot Plant (WIPP) Land Withdrawal Act (WIPP LWA) of 1992 solidified the decision to use the WIPP site for disposal of defence-related transuranic waste. Management authority for the land containing the site was transferred to the Department of Energy for continuing characterisation, construction, and operation of the WIPP. Other land uses such as mining, drilling, and grazing were strictly prohibited unless found not to interfere with WIPP-related purposes and expressly approved by the Department of Energy [Section 3].

The legislation also settled the question of what safety standards would apply to disposal at the WIPP. The LWA reinstated all portions of the EPA's disposal standards (40 CFR 191, issued in 1985) except the specific provisions found unjustified by the Court. EPA was directed to reissue those portions of the standards, which the Agency did just over a year later. Thus, in 1993, there existed complete safety standards at 40 CFR 191 with applicability to radioactive waste disposal sites in general, and to the WIPP as a member of this category.

The WIPP LWA did not, however, allow unilateral application of EPA's safety standards. The legislation specifically exempted from EPA's safety standards any site required to be characterised under the NWPA as a candidate site for disposal of high-level waste and spent nuclear fuel. The list of such sites had been narrowed to Yucca Mountain by amendments to the NWPA. Therefore, the language in the WIPP LWA effectively exempted only Yucca Mountain from the existing disposal standards [Section 8(a) and (b)].

The LWA also significantly modified the licensing and oversight regime for the WIPP. Prior to passage of the LWA, the Department of Energy (under its Atomic Energy Act and DOE Organisation Act authority) was to serve as owner and operator of the WIPP. In addition, DOE would have retained

responsibility for implementing EPA's regulations at the WIPP. In effect, this meant that DOE would be assessing for itself, without independent oversight, whether its disposal facility complied with the disposal standards. Significant concerns had been raised, particularly by officials and citizens in the State of New Mexico (where the WIPP is located), regarding this lack of independent oversight.

Congress addressed these concerns in the WIPP LWA by designating EPA as the regulatory agency responsible for implementing and enforcing the disposal standards at the WIPP. The LWA required EPA to certify whether or not the WIPP will comply with the disposal standards, and to establish criteria for making such a decision. A positive certification of compliance was required before the WIPP could begin operation. The LWA also established an ongoing oversight role for EPA during the operating life of the facility, with periodic evaluations to ensure that the WIPP would continue to comply with the disposal standards [Section 8].[1]

13. The Energy Policy Act of 1992

While the WIPP LWA had resolved the regulatory scheme regarding disposal of defense-related transuranic waste, it had, by exempting Yucca Mountain from EPA's existing disposal standards, left a gap in regulation of high-level waste and spent fuel disposal. This gap was filled with the passage of the Energy Policy Act (EnPA) in 1992. The EnPA directed EPA to establish "public health and safety standards for protection of the public from releases of radioactive materials stored or disposed of in the repository at the Yucca Mountain site." These standards "shall be the only such standards applicable to the Yucca Mountain site" [Section 801(a)(1)].

Beyond establishing the narrow applicability of these new standards, to Yucca Mountain only, the EnPA (in contrast to previous legislation) also provided considerable guidance on the form and content of the safety standards. Primarily, the EnPA required a study by the US National Academy of Sciences (an independent scientific organisation) on the technical basis for such standards, with particular attention to how the issue of potential human intrusion into the repository should be treated in safety standards [Section 801(a)(2)]. The Act further required that EPA's safety standards for Yucca Mountain shall be "based upon and consistent with the findings and recommendations of the National Academy of Sciences".

Under the EnPA, DOE retained its role as developer, operator, and owner of the proposed Yucca Mountain facility. NRC's role was solidified as the licensing and oversight authority, with emphasis on its responsibility to conduct its role in concert with EPA's safety standards.

In response to the EnPA, the National Academy of Sciences (NAS) completed its study in 1995 and EPA issued final Yucca Mountain safety standards in 2001. These standards are found at Chapter 40, Part 193 of the US Code of Federal Regulations (40 CFR Part 193).

1 . EPA accomplished the primary tasks mandated by the WIPP LWA and is continuing its oversight of the WIPP facility. "Compliance Criteria" for implementing the disposal standards and judging compliance with the disposal standards were issued in 1996 at 40 CFR 194 and a certification of compliance in 1998. The WIPP began operation and received its first shipment of waste in 1999. The first "recertification" is expected to occur in 2003.

14. Comparison of Safety Standards For Nuclear Waste Disposal

As described above, there are two major sets of safety standards that have been developed for disposal of spent nuclear fuel (SNF) and high-level (HLW) and transuranic radioactive waste. These are:

- The "disposal standards" at 40 CFR Part 191. These apply generally to facilities for disposal of SNF, HLW and transuranic waste, except that they do not apply to Yucca Mountain. The major facility to which these standards apply is the WIPP. For convenience and clarity, these standards will be referred to as the "WIPP standards" for the remainder of the discussion.

- The "Yucca Mountain standards" at 40 CFR Part 193. By legislative mandate, these standards apply only to the proposed Yucca Mountain facility for disposal of SNF and HLW.

The following discussion describes the WIPP and Yucca Mountain facilities and outlines the safety standards that apply to each facility. Similarities between the two standards will be highlighted. Finally, several differences between the two standards will be discussed, with an emphasis on how these differences derive from the legislative history underlying the safety standards.

15. The Waste Isolation Pilot Plant (WIPP)

The WIPP, located in the southwestern US, is already in operation for the disposal of transuranic waste. Waste is located nearly 655 meters (2150 feet) underground in bedded salt deposits. EPA's disposal Regulations at 40 CFR Part 191, which apply to the WIPP, address performance over a 10 000 year time frame. The Regulations limit the amount of waste released into the environment (activity of each radionuclide, in terms of Becquerels or curies); performance assessments to show compliance with these "release limits" must include both natural events and potential human intrusion. The Regulations also include separate limits on individual doses and concentrations of radionuclides in ground water; compliance is demonstrated using performance assessment. These also carry a 10 000 year regulatory time frame, but apply solely to "undisturbed performance" of the disposal system, which does not include consideration of human intrusion.

In addition to the quantitative performance measures discussed above, the disposal regulations also include several "assurance requirements," sometimes also known as "defense-in-depth measures." These qualitative requirements are intended to compensate for some of the inherent uncertainties in predicting performance over such long time frames. The assurance requirements call for active and passive institutional control for given periods of time, monitoring of the site, use of engineered barriers, consideration of the presence of resources, and some capacity for removal of waste after disposal.

16. The Yucca Mountain Disposal Facility

The Yucca Mountain site is proposed for disposal of spent fuel and high-level radioactive waste, but has not been fully built nor licensed for operation. The site is located in a desert climate in the western US. Waste would be placed 300 meters below the surface; two aquifers lie another 300 meters below the proposed waste rooms. Like the WIPP Regulations, EPA's Regulations for Yucca Mountain apply over a 10 000 year time frame. A performance assessment is used to demonstrate compliance

with an individual protection standard, but must take into account only releases from the "undisturbed" Yucca Mountain disposal system i.e. including natural events but not potential human intrusion. DOE also must comply with a separate ground water standard that limits the concentrations of radionuclides in nearby aquifers, based on undisturbed performance. Performance assessment may be used to demonstrate compliance with the ground water limits but is not required for that purpose.

The potential effects of human intrusion are analysed entirely separately from those due to unlikely natural events (and included in undisturbed performance scenarios). EPA's Yucca Mountain standards specify certain assumptions that must be made in analysing the human intrusion scenario. The key assumptions are that only a single borehole is considered and that this borehole must be assumed to penetrate a degraded waste package and then reach an underlying aquifer. As with the ground water standard, conduct of a performance assessment is optional for demonstrating compliance with the dose limit for human intrusion; a deterministic analysis may be used instead.

Finally, the regulations require that DOE calculate the peak individual dose that would occur after 10 000 years following disposal but within the period of geologic stability. No numeric standard is applied to the results of this analysis, but it is considered an indicator of long-term disposal system performance.

17. Similarities Between the WIPP and Yucca Mountain Safety Standards

There are many similarities in the regulatory approaches for WIPP and Yucca Mountain. Some of these are based on the fact that both are deep geologic disposal facilities and that there are some analogous waste properties. Others can be attributed to the precedent set by the WIPP Regulations. That is, unless there was a need, technically, legally, or politically, to depart from provisions established for WIPP, generally they were maintained. The advantage of retaining provisions, unless conditions dictated otherwise, is to promote consistency which is readily understandable to the public. Furthermore, such consistency reduced the regulatory workload because the WIPP provisions had been developed, justified, and successfully implemented before the Yucca Mountain safety standards were completed.

Among the key similarities between the two sets of standards are:

- Use of a 10 000 year regulatory time frame.
- Inclusion of standards for individual protection, with identical dose limit.
- Inclusion of standards for protection of ground water, with identical concentration limits, based on pre-existing regulations for drinking water.
- No consideration of human intrusion in judging compliance with the individual and ground water limits.
- Recognition that complete certainty in performance assessments is neither necessary nor attainable; use of the concept of establishing a "reasonable expectation" of compliance.

If the WIPP Compliance Criteria, i.e. the regulations that implement the disposal standards specifically at the WIPP, with EPA as the implementing and licensing agency, are also considered, several other similarities emerge. These provisions are generally directed at defining the scope of performance assessments:

- Extremely unlikely events are excluded from performance assessments. These are defined as events estimated to have less than one chance in 10 000 of occurring within 10 000 years of disposal.

- To limit unreasonable speculation about essentially unknowable characteristics of the future, e.g. evolution of society or human biology, knowledge, and technology, such factors are assumed to remain constant throughout the regulatory time frame. The constant values are based on conditions and knowledge at the time a license application is prepared.

- Performance assessments must consider changes in factors which are reasonably predictable over the 10 000 years after disposal: climate, geology, and hydrology.

The similarities between the two sets of safety standards reflect EPA's priorities of protection of public health and of ground water as a valuable resource. They further reflect a common approach to the scope of performance assessments and the need to accommodate the substantial uncertainties that accompany projections of performance over very long time periods.

18. Differences Between the WIPP and Yucca Mountain Safety Standards

The differences between the WIPP and Yucca Mountain standards can be grouped into two main categories: those due to differences in the site or waste characteristics, and those due to the underlying legislation. The very existence of separate safety standards for Yucca Mountain is a direct result of legislative action regarding the US disposal program. However, the Energy Policy Act of 1992, in particular, contained specific directions affecting the form and content of the Yucca Mountain standards. This Congressional direction necessitated some departures from the approaches established by the already existing WIPP safety standards.

The differences due to site characteristics are relatively few in number. Site characteristics are more likely to become relevant in the performance assessment and/or licence application when more specific information is gathered and presented. Therefore, site-specific characteristics typically would be addressed in licensing criteria rather than in generalised performance or safety standards. Generally, the standards that apply to WIPP provide broad guidelines, a reasonable approach since they have the potential to be applied at other types of disposal sites, while the Yucca Mountain standards provide specific direction, since they are intended to apply only to a single site. The most significant differences due to site characteristics are related to assumptions about the location and characteristics of individuals who must be considered in projecting individual doses. For example, the WIPP standards contain only general guidelines for considering patterns of individual consumption and activities. In contrast, the Yucca Mountain standards specify that, when evaluating potential pathways and exposures, the affected individuals must be assumed to have a diet and living style similar to those people currently residing in the town nearest the proposed Yucca Mountain facility. Similarly, the location for judging compliance with the ground water standards is significantly further away from the disposal facility for Yucca Mountain than for the WIPP; this is due to differences in ground water flow and the location of populations near the respective sites.

Differences that derive from legislation are more numerous than those attributable to site characteristics. Some may be explained by the fact that NRC has been designated the licensing agency for Yucca Mountain; this role was established by general legislation related to atomic energy programmes, and affirmed by the Energy Policy Act of 1992. For example, EPA justified its decision not to include assurance requirements (qualitative requirements for monitoring, etc.) in the Yucca Mountain standards by stating that NRC was expected to impose such requirements as part of its licensing process. At the WIPP, for which DOE was self-regulating during the development of the safety standards, there was no assurance that such requirements would be considered, so EPA found it necessary to include them.

Most differences between the WIPP and Yucca standards, however, may be traced directly to provisions of the Energy Policy Act of 1992. As noted previously, this Act required the development of separate standards for Yucca Mountain and provided some specific direction on the form and content of those standards. In particular, the statute stated that

> "the [EPA] Administrator shall, based upon and consistent with the findings and recommendations for the National Academy of Sciences, promulgate by rule, public health and safety standards for the protection of the public from releases from radioactive materials stored or disposed of in the repository at the Yucca Mountain site. Such standards shall prescribe the maximum effective dose equivalent to individual members of the public from releases to the accessible environment from radioactive materials stored or disposed in the repository…" [Section 801(b)]

The study by the National Academy of Sciences, which was to serve as the basis for EPA's standards, was required to address whether a dose-based standard provided adequate protection; whether active institutional controls can control intrusion into the repository; and whether it is possible to make supportable predictions of the probability of human intrusion into the repository over a period of 10 000 years. In response to this charge, the National Academy concluded:

- that an individual risk-based standard would protect public health;
- that it is not possible to predict the societal factors related to exposure scenarios in the far future;
- that it is not reasonable to assume that active institutional controls can prevent an unreasonable risk of intrusion into the repository;
- that it is not possible to make scientifically supportable predictions of the probability that human intrusion will occur over 10 000 years; and
- that there is no scientific basis for incorporating the ALARA (as low as reasonably achievable) principle into the safety standards.

The Academy issued a detailed report that included these conclusions and a number of other recommendations on specific aspects of the standards. The conclusions and technical advice of the Academy departed from technical advice that had been provided to EPA by a different peer review panel during development of the WIPP Regulations.

EPA determined that it was not bound absolutely to follow the recommendations of the National Academy of Sciences. Such a binding requirement would have eliminated the Agency's rulemaking discretion, dictating all aspects of the safety standards and eliminating the consultative public

rulemaking process required by other statutes. Nevertheless, the recommendations were highly influential in shaping the Yucca Mountain standards.

Two examples serve to highlight the effect of the National Academy recommendations on the Yucca Mountain standards. The first is the decision not to include "containment requirements" such as those in the WIPP standards. These containment requirements restrict the amount (in Becquerels or curies) of radionuclides which can escape the boundary of the WIPP disposal facility over 10 000 years. They serve to limit population doses and encourage disposal methods that rely on containment rather than dilution. However, because Yucca Mountain is a deep geologic repository clearly intended to contain (rather than dilute) waste, there is no need to discourage dilution. Furthermore, for Yucca Mountain, the National Academy stated that an individual dose limit is adequate to provide protection of human health and that other limits are not necessary for that purpose (in contrast, the peer review panel for the WIPP Regulations endorsed the "use of a societal objective as an upper bound of acceptable health effects" and "the focus on performance standards in terms of release limits rather than individual exposures"). EPA accepted the National Academy's conclusion for the case of Yucca Mountain.[2] Therefore, EPA's Yucca Mountain standards do not include containment requirements, but instead rely solely on an individual dose limit to provide protection of human health (the separate ground water limits in the Yucca Mountain standards, which go beyond the recommendations of the National Academy of Sciences, are aimed primarily at protecting ground water as a natural resource and for future use).

The different approaches to human intrusion in the two sets of standards also illustrate the effect of the National Academy's recommendations. In the WIPP standards, "all significant events", including human intrusion, are included in the performance assessment used to determine compliance with the containment requirements. The performance assessment is explicitly defined in the standards to be a probabilistic analysis. Thus, by including human intrusion in the performance assessment for WIPP, EPA essentially required that such events be treated probabilistically, that is, that DOE must try to predict the rate and consequences of such an event. This point was reinforced by guidance accompanying the WIPP standards, which discussed factors to be considered by the implementing agency to establish the "frequency and severity" of human intrusion. Such an analysis is possible for the WIPP site, where there are economically viable natural resources and significant drilling and mining activity occurring nearby. Past and current resource exploration and extraction rates provided a basis for establishing future intrusion rates used in the performance assessments. The peer review for the WIPP Regulations did not raise concerns regarding EPA's decision to treat human intrusion events probabilistically in the performance assessment.

In contrast, the National Academy of Sciences' Yucca Mountain report stated that there was no scientifically supportable basis to predict the probability of human intrusion over 10 000 years. The Academy also said that there was no supportable way to predict the exact location (and thus consequences) of an intrusion event. For Yucca Mountain, no mining or drilling occurs in the immediate vicinity of the proposed disposal system. In fact, the US Federal Government owns much of the surrounding land and access is strictly controlled. Nevertheless, there is no scientifically defensible way to preclude intrusion for such long time periods (as the National Academy recognized in its conclusion regarding active institutional controls). For this reason, the Academy recommended that a single "stylised" intrusion event, with set parameters, should be assumed to occur. The results of such an analysis can provide important information about the containment capabilities of a disposal

2. The National Academy of Sciences recommended the use of a *risk-based* individual standard, thus creating a conflict with the language of the Energy Policy Act. EPA resolved this conflict by deferring to the language of the Statute, which clearly stated that the Yucca Mountain standards should "prescribe the maximum effective dose equivalent to individual members of the public".

system. Taking into account site specific information from Yucca Mountain, EPA agreed with the recommendations of the National Academy of Sciences. Therefore, the Yucca Mountain standards include a separate analysis of human intrusion. For this analysis, only a single borehole is considered and this borehole must be assumed to penetrate a degraded waste package and then reach an underlying aquifer. The intrusion is assumed to occur at the time when waste packages have degraded to the point that a driller would not be expected to recognise that he had encountered an unexpected obstacle. Only long-term releases through ground water are considered (in contrast to the WIPP standards, which also consider immediate releases through the borehole to the surface). Long-term releases from the event are subject to the same dose limits that apply to individual doses from undisturbed performance.

Further differences in the safety standards may become evident in the future, since the statutes established different licensing agencies for the WIPP and Yucca Mountain. NRC may choose to adopt different approaches to Yucca Mountain than those used by EPA at the WIPP. Thus, the influence of past legislation will continue to permeate the implementation of the safety standards at these disposal facilities.

19. Conclusion

The US has a relatively long history of national legislation directed at atomic energy and other nuclear issues. The US national programme for disposal of spent nuclear fuel and high-level and transuranic waste has been shaped by both general and specific legislation. General legislation has established the authority for various federal agencies to own, develop, regulate, and license radioactive waste disposal facilities. Legislation on disposal specifically directed the development of WIPP and Yucca Mountain as promising sites for deep geologic disposal. Legislation also modified the licensing authority for the WIPP and required separate safety standards to be developed for Yucca Mountain. The influence of legislative action can be seen even in the safety standards for WIPP and Yucca Mountain; different approaches and requirements for the two facilities can be traced directly to legislative requirements.

It is likely that past legislation will continue to affect the implementation of the safety standards at these disposal facilities, as the WIPP continues operation, and the DOE seeks licensing of the Yucca Mountain facility. It is also possible that future legislative action will influence the disposal of radioactive waste. In fact, the current US Congress is considering statutes which would require additional analyses of terrorist risks, particularly related to transportation of waste, before any recommendation could be made regarding the suitability of Yucca Mountain as a disposal site. The interplay between legislative and regulatory responsibilities will continue to affect policy-making in the US and to be of interest abroad.

La participation de l'industrie nucléaire à l'élaboration de la norme internationale

Approche du phénomène en droit de la radioprotection

par Olivier Lajoinie*

> « La Bruyère emploie le mot *industrie*, je crois, avec défaveur, une légère défaveur, une défaveur naissante qui a pris tout son mauvais sens dans l'expression *chevalier d'industrie*. On s'élève par son industrie, par tous les moyens, les bons et les mauvais... » (Jules Renard, *Correspondance*, 1905, p. 321).

Se demander si l'industrie nucléaire se révèle un acteur de l'élaboration de la norme internationale surprendra qui conçoit l'ensemble des sources du droit international comme résultant exclusivement de la volonté de l'État[1]. À y regarder de plus près, l'association au processus normatif n'est cependant pas la même chose que la reconnaissance du statut de créateur du droit international public. Les effets de l'étonnement dissipés, on fera néanmoins remarquer que l'une peut précéder l'autre, et que d'ores et déjà il existe au moins une variété de norme internationale[2] attribuable *en propre* à l'industrie nucléaire : les contrats internationaux conclus entre un État et une entreprise étrangère. C'est dire que la question envisagée n'a pas qu'une portée théorique[3] puisqu'elle touche au

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1 . Sur les limites de la conception volontariste du droit international public, voir Christian TOMUSCHAT, « *Obligations arising for States Without or Against their Will* », *RCADI*, 1993, Vol. IV, tome 241, p. 195 à 374. Également, Alain PELLET, « *The normative dilemna: will and consent in international law-making* », *Australian YBIL*, 1992, p. 22 à 53.

2 . On ne discutera pas la qualité d'actes juridiques internationaux du contrat d'État, au sens où il s'agit d'un contrat passé par un État en tant que sujet de droit international et régi par l'ordre juridique international. Pour une défense de cette thèse, voir Charles LEBEN, « Retour sur la notion de contrat d'État et sur le droit applicable à celui-ci », in *L'évolution du droit international. Mélanges offerts à Hubert THIERRY*, Pedone, 1998, p. 247 à 280, et plus particulièrement p. 248 à 263. Il convient d'ajouter que qualifier des contrats internationaux en tant que contrat d'État nécessite la validation de plusieurs critères distinctifs, qu'il faudrait donc vérifier s'agissant des contrats conclus par les entreprises impliquées dans l'industrie nucléaire.

3 . Qu'elle a assurément. S'il était besoin de requérir la tutelle d'une éminence, on pourrait par exemple invoquer le paragraphe 22 de la « Théorie du droit international coutumier » de Hans KELSEN (*Écrits français de droit international*, PUF, collection Doctrine juridique, 2001, p. 77 et 78), où l'auteur laisse ouverte la possibilité pour la personne privée physique de devenir créateur du droit international. Voir également les commentaires de Charles LEBEN dans la Préface de l'ouvrage (*Ibid.*, p. 15 et 16).

procès *concret* d'élaboration de la norme internationale à l'heure de la mondialisation. Étant donné son caractère quelque peu hétérodoxe, elle requiert par ailleurs prudence et circonspection.

Ainsi, convient-il d'indiquer d'emblée le sens retenu des mots formant le titre du présent travail. Conformément à un usage fort répandu[4], l'industrie nucléaire sera comprise dans son acception organique, le terme permettant de désigner commodément l'ensemble des entreprises, qu'elles appartiennent au secteur public ou privé[5], impliquées dans les activités supposant l'utilisation de sources de rayonnement et de matières radioactives. Quant à l'expression norme internationale, elle devra s'entendre largement comme comprenant ses occurrences dépourvues de caractère juridiquement contraignant.

Compte tenu de cette dernière remarque, l'objet de cette étude[6] précisé en sous-titre dépassera le droit de la radioprotection *stricto sensu*. Ce dernier a pu être défini comme « l'ensemble des normes *juridiques* visant la protection des travailleurs et du public (donc également l'environnement naturel du public) contre les dangers des rayonnements ionisants »[7]. Il s'agira d'élargir le regard à celles ne prétendant pas à la juridicité.

Un tel choix, s'il condamne à la particularité les futures conclusions, est commandé par la place ici disponible. Une considération l'a essentiellement guidé, que l'on donnera en préalable. Partant du postulat que l'industrie nucléaire est qualifiable de personne privée, le processus normatif à étudier devait s'élire parmi ceux susceptibles d'impliquer amplement celle-ci, hors des modes de production normative exclusivement interétatiques. C'est pourquoi les champs du droit international nucléaire bénéficiant d'un traitement conventionnel particulièrement fourni ont été écartés[8], compte tenu du fait

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4 . Le droit international conventionnel ne paraît cependant pas connaître l'industrie nucléaire en tant qu'institution. Ainsi, si l'on se fonde sur la lettre de la Convention sur la notification rapide d'un accident nucléaire, on devrait plutôt concevoir l'industrie nucléaire comme une notion non organique. En effet, le paragraphe 2 de son article 1, sous la lettre e, inclut sous les *« fins […] industrielles »* non pas des « *installations* » mais exclusivement des « *activités* ».

5 . On est proche en cela de la Convention sur la notification rapide d'un accident nucléaire. En effet, par l'emploi du terme « *fins* », son article 1, paragraphe 2 retient une conception *fonctionnelle* de l'industrie nucléaire, en ce sens que ce qui importe est la *destination* assignée aux « *radio-isotopes* ». Et non pas le régime juridique sous lequel sont conduits « *[leur] fabrication, [leur] utilisation, [leur] stockage provisoire, [leur] stockage définitif et [leur] transport…* ».

6 . Le corpus normatif considéré privilégiera le droit international *stricto sensu*. Ce qui n'interdira pas de faire parfois référence aux normes Euratom.

7 . Selon la formulation proposée par Anne RAINAUD (« Introduction à la problématique juridique de la radioprotection en droit international », in *Radioprotection et droit nucléaire. Entre les contraintes économiques et écologiques, politiques et éthiques*, sous la direction de Ivo RENS et Joël JAKUBEC, Georg Editeur, collection Stratégies énergétiques, Biosphère et Société, p. 126). Les juristes s'accordent sur cette définition du droit de la radioprotection. Sur le champ matériel du droit de la radioprotection, voir *infra*, II, A.

8 . Ainsi, sera d'emblée écarté le régime de responsabilité civile en cas de dommage nucléaire, construit par plusieurs conventions internationales. On s'attachera donc avant tout à l'étude d'ensembles normatifs de faible valeur juridique. Sur ce problème, voir l'article pionnier d'A. HERRERO DE LA FUENTE : « La valeur juridique de la réglementation internationale en matière de risques nucléaires », (*Bulletin de droit nucléaire* n° 30, décembre 1982, p. 49 à 62), ainsi que les travaux plus récents, et très stimulants, de Katia BOUSTANY : « La normativité nucléaire : Quelques réflexions » (*Bulletin de droit nucléaire* n° 51, juin 1993, p. 7 à 24), et « Le développement de la normativité nucléaire ou l'art de l'évasion juridique » (*Bulletin de droit nucléaire* n° 61, décembre 1998, p. 43 à 58).

que la conclusion de conventions internationales reste réservée aux sujets traditionnels du droit international public que sont les États et les organisations intergouvernementales.

Selon ce critère, deux domaines *au moins* du droit international nucléaire paraissaient à considérer : la protection contre les rayonnements ionisants et la sûreté nucléaire. En dépit de la tendance actuelle du droit international nucléaire à défendre une approche non sectorielle du risque nucléaire, et de la connexité certaine de ces matières, ne seront ici étudiées que les normes internationales relatives au premier domaine mentionné[9].

Si le discours sur l'objet est dicté par l'objet, étant donné le caractère délicat du problème de l'activité normative de l'industrie nucléaire, une approche pertinente de son rôle dans la formation de l'ensemble normatif relatif à la radioprotection se devra d'être progressive. Ainsi, en asseoir la probabilité est un préliminaire nécessaire pour parvenir à constater plus tard la participation de l'industrie nucléaire à l'élaboration de la norme internationale. L'intention des lignes qui suivent est donc de montrer que, considérant l'ensemble normatif relatif à la protection contre les rayonnements ionisants, la participation de l'industrie nucléaire à son élaboration paraît vraisemblable[10]. En effet, si l'aptitude de la personne privée à participer au processus normatif ne fait pas de doute (I), celle de l'industrie peut se prévaloir d'une légitimité limitée mais réelle (II).

I. L'industrie nucléaire, personne privée : une qualification n'altérant pas sa possibilité de participer au processus normatif

Quand bien même l'on retiendrait une acception organique de la notion d'industrie nucléaire, la qualification subséquente de celle-ci en tant que personne privée n'empêche pas de poser qu'elle peut participer au processus normatif. En effet, cette aptitude ne requiert nullement l'attribution préalable d'une compétence normative à son profit (A). Cela est d'ailleurs confirmé par le fait que, dans ces mêmes conditions[11], des personnes privées interviennent déjà dans la formation de la norme internationale de radioprotection (B).

A. Une aptitude de la personne privée ne nécessitant pas de compétence normative

Regarder l'industrie nucléaire *au moins* comme auteur indirect de la norme internationale revient à lui attribuer un rôle qui ne rencontre aucun obstacle théorique. En effet, le refus du formalisme juridique[12] à reconnaître une capacité normative profitant à la personne privée doit être

9 . Lesquelles ne sont pas toutes juridiquement contraignantes, comme le prouve notamment l'existence de standards. Voir l'intitulé significatif du cours dispensé par Ted LAZO à la première session de l'École internationale de droit nucléaire : « *Adopting International Standards* ». Sur la notion de standard en tant que source de droit international public, voir Eibe RIEDEL, « *Standards and Sources. Farewell to the Exclusivity of the Sources Triad in International Law*? », *EJIL*, Vol. 2 (1991) n° 2, p. 58 à 84.

10 . C'est pourquoi le présent travail, comme son intitulé l'indique, ne constitue qu'une *approche* du phénomène, prélude à sa véritable saisie. Au risque de décevoir quelque peu les sceptiques. Lesquels sont cependant invités à se reporter à la conclusion.

11. Voir *infra*, note 32.

12. On entendra cette expression comme désignant l'« approche doctrinale du droit international selon laquelle la tâche du juriste (et du juge en particulier) est d'assurer une compréhension de l'ordre juridique positif […] » (définition proposée par l'entrée « Formalisme » du *Dictionnaire de droit international public*, sous la direction de Jean SALMON, Bruylant/AUF, collection Universités Francophones, 2001, p. 516). Le formalisme juridique se distingue en ce qu'il pose que « le juriste n'est en revanche pas

bien mesuré[13]. Il s'adresse à une situation bien particulière, celle dans laquelle la personne privée prétend être un authentique *créateur* de la norme internationale. En revanche, le formalisme juridique est tout prêt à admettre l'ascendant de l'industrie nucléaire sur les diverses instances élaborant le droit international positif, comme le fait qu'elle engendre des normes, dans la mesure où et seulement si ces dernières ne bénéficient pas d'un caractère juridiquement contraignant. En effet, selon cette vue, le processus normatif compte alors l'industrie nucléaire comme acteur tout *indirect* de la création du droit.

Par ailleurs, il faut ajouter que qualifier l'industrie nucléaire de personne privée n'est pas en soi suffisant pour lui dénier toute capacité normative. En effet, selon la doctrine formaliste, cette compétence devient envisageable dès le moment où les producteurs traditionnels de la norme juridique internationale (États et organisations intergouvernementales) en habilitent la personne privée[14]. Cependant, pour peu qu'il accepte de délaisser le credo de la stricte identité des créateurs et des sujets du droit international, le formalisme juridique ne regardera pas ce résultat comme facilement atteint. Ainsi, saisi du problème de l'activité normative de l'industrie nucléaire, il réclamera enquête du droit international positif, et enquête dépassant la simple question de la personnalité juridique internationale[15]. Que celle-ci se résolve positivement[16], comme cela est d'ailleurs parfaitement envisageable[17], n'induirait rien quant à la possibilité pour l'industrie nucléaire de créer du droit international. En effet, le formalisme juridique tiendrait un tel résultat pour insuffisant, étant donné la relation logique entre la capacité normative et la personnalité juridique, laquelle n'est pas d'équivalence[18]. Y manquerait la preuve d'un transfert de compétences, y compris normatives[19], et

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qualifié pour émettre un jugement portant sur la légitimité, *le rôle ou les fonctions du droit positif* dans la société internationale » (*ibid.* ; souligné par l'auteur). Voir également les critiques éclairantes de Charles CHAUMONT reproduites sous l'entrée « Formalisme » du *Dictionnaire de droit international public*, *op. cit*, *supra*, p. 516.

13. Pour une défense de la thèse inverse, considérant la personne privée comme apte à créer du droit international par la voie conventionnelle, voir Charles LEBEN, *op. cit.*, *supra*, note 2.

14. Celle-ci apparaît alors comme un sujet de droit *dérivé*, au sens où elle doit son existence à la volonté des sujets originaires de droit international.

15. Sur l'industrie nucléaire comme destinataire « ultime » de la norme internationale nucléaire, notamment si celle-ci est un instrument de *soft law*, voir Katia BOUSTANY, « Un code de conduite sur la sûreté des sources de rayonnement et sur la sûreté des matières radioactives. Une approche nouvelle pour la maîtrise normative d'un risque nucléaire ? », *Bulletin de droit nucléaire* n° 65, juin 2000, p. 7 à 13, plus particulièrement p. 10 et suivantes.

16. La réticence de la doctrine volontariste à reconnaître la personne privée comme sujet de droit international public est bien connue. Voir par exemple la position symptomatique de Dionisio ANZILOTTI dans son *Cours de droit international* (réédition à la L.G.D.J., Éditions Panthéon Assas, collection « Les introuvables », 2000, p. 134).

17. Des exemples historiques et des arguments théoriques démontrent en effet qu'il n'y a aucune *impossibilité* à considérer la personne privée (physique et morale) comme sujet de droit international public. Il suffit pour cela de constater que la personne privée est le *destinataire* d'un droit ou d'une obligation établis par l'ordre juridique international. Une analyse d'inspiration kelsénienne ajouterait qu'il faut également qu'il s'agisse du destinataire *direct et effectif* (voir Julio BARBERIS, « Nouvelles questions concernant la personnalité juridique internationale », *RCADI*, 1983, Vol. I, tome 179, p. 145 à 304, et plus particulièrement p. 165 à 168).

18. Ces deux notions sont différentes, parce qu'être sujet de droit n'emporte pas nécessairement l'attribution d'une capacité juridique. De sorte qu'abordant la situation de la personne privée dans l'ordre juridique international, la doctrine d'inspiration volontariste accole souvent au terme sujet de droit un qualificatif comme incomplet ou passif.

suffisamment pertinent[20], à l'adresse de l'industrie nucléaire. Pour trouver pleinement à s'appliquer, l'approche formaliste suppose donc une distribution des compétences relativement précise[21].

Or, en ce qui concerne l'utilisation pacifique de l'énergie nucléaire, l'ordre juridique international ne délimite pas toujours dans les moindres détails les compétences de ses différents sujets, même si le droit de la radioprotection peut se prévaloir de davantage de clarté, surtout au plan communautaire[22]. En outre, force est de reconnaître qu'il n'y a pas eu, pour l'instant, de prise de position jurisprudentielle favorable à la capacité normative de l'industrie nucléaire. Ce silence est notamment le fait de la sentence arbitrale du 30 avril 1982, *Framatome et autres c. Atomic Energy Organization of Iran*[23], laquelle ne porte que sur la compétence du tribunal arbitral[24].

Ainsi, l'argument établi par le formalisme juridique, selon lequel une habilitation préalable est nécessaire pour que la personne privée puisse créer du droit international, n'affecte *au mieux* qu'une partie du rôle éventuel de l'industrie nucléaire dans la production normative. À une telle approche, quelque peu arc-boutée sur des positions de principe, on préfèrera l'examen du processus normatif pratiquement à l'œuvre. Or, il laisse apparaître que la personne privée y participe déjà.

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19. La précision est donnée pour souligner le fait que la doctrine formaliste prend soin de distinguer les diverses compétences internationales, notamment la compétence normative et la compétence contentieuse. Pour un exemple de cette dernière concernant l'investisseur, personne privée, voir Florence POIRAT, « L'article 26 du Traité relatif à la Charte de l'énergie : procédures de règlement des différends et statut des personnes privées », *RGDIP*, 1998/1, p. 45 à 84, et plus particulièrement p. 79 à 82.

20. On rappellera cependant que la dévolution de compétences par l'ordre juridique international peut s'effectuer de manière tacite. C'est ce que reconnaissait fort judicieusement, après la CIJ dans son avis consultatif du 11 avril 1949 sur la *Réparation des dommages subis au service des Nations Unies*, Marcel SIBERT : « Le droit international détermine, expressément *ou de manière implicite*, quels sont les groupements politiques dotés de la *capacité de traiter* » (*Traité de droit international public*, Dalloz, 1951, p. 200 ; souligné par l'auteur).

21. Il n'est pas certain que celle-ci s'observe (encore) à l'heure de la mondialisation.

22. En effet, selon Jean-Michel COURADES : « La Communauté européenne possède une compétence attribuée, générale et exclusive pour arrêter les normes de base dans le domaine de la radioprotection. Les États Membres disposent quant à eux d'une compétence d'exécution pour adopter les mesures nécessaires dans ce domaine dans le cadre des normes fixées au niveau communautaire » (« La nouvelle Directive 96/29/Euratom sur les normes de base relatives à la protection de la population et des travailleurs contre les rayonnements ionisants », *Bulletin de droit nucléaire* n° 58, décembre 1996, p. 51).

23. Voir le texte français de la sentence arbitrale du 30 avril 1982, *Framatome et autres c. Atomic Energy Organization of Iran*, *JDI* (Clunet), 1984, p. 58 à 80, et son commentaire par Bruno OPPETIT, *Ibid.* p. 37 à 57.

24. Ainsi, le droit nucléaire ne peut se prévaloir d'une jurisprudence internationale du même ordre que celle constituée, pour le droit pétrolier, par la sentence arbitrale du 24 mars 1982 dans l'affaire *Aminoil c. Koweït*. Cette dernière a pu, en effet, être interprétée comme montrant que « les normes élaborées par [des sujets de droit privé] l'emportent en terme d'effectivité sur les démarches normatives concertées des États dans le cadre de leurs organisations intergouvernementales internationales ou régionales » (Katia BOUSTANY, en collaboration avec Normand HALDE, « Mondialisation et mutations normatives : Quelques réflexions en droit international », in *Mondialisation des échanges et fonctions de l'État*, ouvrage collectif sous la direction de François CREPEAU, Bruylant, collection « Mondialisation et droit international », 1997, p. 42).

B. Une aptitude de la personne privée se réalisant déjà dans le processus normatif

Un trait caractéristique du processus normatif relatif à la protection contre les rayonnements ionisants est d'y impliquer la personne privée. En effet, ces normes internationales sont fondamentalement issues de l'activité d'une organisation non gouvernementale, la Commission internationale de protection radiologique (CIPR), ensuite relayée par les instruments juridiques élaborés par les différentes organisations intergouvernementales compétentes dans le domaine de la radioprotection[25].

Or, la situation de la CIPR dans le processus normatif impose, à elle seule[26], le constat suivant : la personne privée – en tant que telle[27] – peut activement participer à des procédures débouchant sur la formation de norme juridique internationale. Telle est bien, en effet, la nature juridique de cette institution : exclusivement composée de scientifiques spécialistes de la radioprotection, la CIPR ne comprend pas de représentants d'État[28]. La proposition rompt potentiellement avec le prétendu monopole de la personne publique en ce domaine. Or, comme il y a unanimité quant au travail matriciel de la CIPR[29], le débat se déplace sur le caractère juridiquement contraignant de la norme produite par cette dernière.

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25. Pour un récapitulatif précis des activités de ces différentes institutions, voir le rapport du quatrième groupe de travail au Nuclear Inter Jura 85 « *International Radiation Protection Standards* », in Norbert PELZER, *International Harmonization in the Field of Nuclear Energy Law*, Nomos Verlagsgesellschaft, 1986, p. 490 à 527.

26. On fera remarquer que la CIPR n'est pas l'unique organisation non gouvernementale prenant part à l'élaboration de la norme internationale de radioprotection. En effet, d'autres personnes privées prennent part au processus normatif, comme la Commission internationale des unités et mesures radiologiques (voir le rapport du quatrième groupe de travail au Nuclear Inter Jura 85, *op. cit., supra*, note 25, avec indication précise de sa production normative aux pages 520 et 521).et de l'Organisation internationale de normalisation (voir Enrico JACCHIA, *Atome et sécurité. Les risques de radiations à l'âge nucléaire*, Librairie Dalloz, 1964, p. 89 et 90). En outre, selon Roger BELBEOCH (« Comment sommes-nous « protégés » contre le rayonnement ? Les normes internationales de radioprotection. Le rôle de la CIPR », in *Radioprotection et droit nucléaire, op. cit., supra*, note 7, p. 45), une autre personne privée intervient dans le processus normatif : le comité BEIR (*Biological Effects of Ionizing Radiation*) de l'Académie des sciences des États-Unis. Enfin, on ajoutera que le rôle effectif de ces institutions dans le processus normatif semble moins considérable que celui rempli par leur homologue plus connue.

27. Et non pas en tant qu'elles représentent des gouvernements nationaux. On écarte ainsi une fraction des comportements individuels que Georges SCELLE théorisait par le dédoublement fonctionnel de la fonction exécutive, lorsqu'il considérait le rôle des gouvernants et des agents internationaux. Voir sur cette théorie, Antonio CASSESE, « *Remarks on Scelle's Theory of 'Role Splitting'* (*dédoublement fonctionnel*) *in International Law* », *EJIL*, Vol. 1 (1990), No. 1/2, p. 210 à 231.

28. La CIPR « est composée d'un Président et de 12 membres au maximum, choisis par le "Comité exécutif international du Congrès international de radiologie" sur une liste de noms proposée par les délégations nationales et par [la CIPR] elle-même. […] Les membres de [la CIPR] sont choisis – aux termes du Statut – *en fonction de leur compétence reconnue dans le domaine de la radiologie, de la protection radiologique, de la physique, de la biologie, de la génétique, de la biochimie et de la biophysique, sans aucune considération de nationalité* » (Enrico JACCHIA, *op. cit., supra*, note 26, p. 86 ; souligné par l'auteur).

29. En effet, les normes internationales de radioprotection sont fondamentalement issues de l'activité de la CIPR, ensuite relayée par les instruments juridiques élaborés par les différentes organisations intergouvernementales compétentes dans le domaine de la radioprotection. Or, l'actualité confirme ce rôle d'impulsion de la production normative dévolu. Ainsi, les dernières Normes fondamentales internationales de protection contre les radiations et de sûreté des sources de rayonnement (BSS),

Comment appréhender cette participation constatée de la personne privée à la formation de la norme internationale ? Certains ont recours à la typologie des sources formelles du droit international public[30]. La valeur juridique des recommandations émises par la CIPR se détermine alors aisément : elles sont source *doctrinale*[31] du droit de la radioprotection, en raison du statut privé du producteur de la norme considérée[32]. En refusant aux recommandations émises par la CIPR la qualité de source formelle[33], cette approche formaliste préserve ainsi l'identité étatique des producteurs de la norme *juridique* internationale. Bien entendu, ce traitement du phénomène s'avère recevable, et peut même s'autoriser d'une déclaration expresse de la CIPR[34], selon laquelle ses recommandations n'ont pas, par elles-mêmes, de valeur juridiquement contraignante.

Par contre, si l'on entend limiter la place et le rôle de l'analyse selon les sources formelles[35], une autre approche est possible. Maintenant la distinction entre la substance de la règle internationale et ses diverses manifestations formelles, cette vue consiste à s'attacher à son contenu indépendamment de l'instrument la supportant[36]. Il s'agit donc d'une analyse matérielle de la norme internationale, qui n'est pas foncièrement incompatible avec l'analyse formelle. En effet, elle conçoit bien le recours à cette dernière comme nécessaire pour déterminer si l'obligation concernée présente un caractère incontestablement juridique, mais en circonscrit l'utilité à cette opération de distinction entre *lex lata* et *lex ferenda*. À cet égard, l'analyse matérielle fait preuve de réalisme juridique : qu'aucune source

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adoptées en 1994-1995 par l'AIEA, l'AEN, le BIT, la FAO, l'OMS, et l'Organisation panaméricaine de la santé, « ont été prises à la lumière des nouvelles recommandations de la Commission internationale de protection radiologique (CIPR) » (*Bulletin de droit nucléaire* n° 55, juin 1995, p. 53 et 54).

30. Dont la version la plus autorisée est dressée à l'article 38 du Statut de la Cour internationale de Justice. Sur les limites de la référence à ce texte, voir Pierre-Marie DUPUY, « Typologie des sources formelles », in *Droit international public*, Dalloz, troisième édition, 1995, p. 195 et 196, n° 226.

31. Le terme revient constamment chez Henri PAC. Voir *Droit et politiques nucléaires*, PUF, collection Droit fondamental, 1994, les paragraphes 111 (p. 147), 259 (p. 293), 264 intitulé significativement « la doctrine de radioprotection » (p. 297).

32. Ce raisonnement est sous-jacent dans l'affirmation suivante : « *The ICRP Standards have the legal character of recommendations because the ICRP have not the power to enact binding regulations* » (rapport du quatrième groupe de travail au Nuclear Inter Jura 85, *op. cit., supra*, note 25, p. 496). On retrouve l'argument étudié précédemment.

33. On rappellera qu'en considérant la doctrine comme « moyen auxiliaire de détermination des règles de droit », l'article 38 du Statut de la CIJ, à la lettre de son premier paragraphe, leur refuse la qualité de source formelle du droit international public. Sur ce point, voir André ORAISON, « Réflexions sur "la doctrine des publicistes les plus qualifiés des différentes nations" », *Revue belge de droit international*, 1991/2, p. 507 à 580, et plus particulièrement p. 513 à 516. On ajoutera cependant que ce refus ne concerne expressément que la seule doctrine académique, et que la CIPR est elle engagée dans des procédures de nature normative.

34. Voir le paragraphe 5 de sa recommandation 26, reproduit dans le rapport du quatrième groupe de travail au Nuclear Inter Jura 85 (*op. cit., supra*, note 25, p. 497).

35. En sens inverse, sur l'importance du critère formel dans le droit international public, voir le second chapitre du bel ouvrage de G.M. DANILENKO, *Law-Making in the International Community*, Martinus Nijhoff Publishers, Collection Developments in International Law, Vol. 15, 1993, p. 16 à 43, et plus particulièrement p. 16 à 22.

36. Cette démarche s'autorise de l'observation suivante faite par Katia BOUSTANY : « … il faudrait distinguer la nature de *l'instrumentum* de son contenu : la première renvoie à la *soft law*, mais le second engendre *de facto* une véritable obligation technologique » (« Le développement de la normativité nucléaire ou l'art de l'évasion juridique », *op. cit., supra*, note 8, p. 48). Cette citation intervient dans le contexte d'une analyse des Codes de sûreté produits par l'AIEA.

formelle reconnue du droit international ne vienne consacrer l'obligation, rendant difficile sa qualification de juridique, n'empêche pas qu'elle soit en fait respectée[37], et même que le juge lui fasse produire des effets[38]. S'agissant de la protection contre les rayonnements ionisants, une telle approche impliquerait, par exemple, la tâche suivante : apprécier la mesure dans laquelle les actes unilatéraux des organisations intergouvernementales compétentes, notamment ceux disposant d'un effet juridiquement contraignant (les directives Euratom), se font l'écho des différentes recommandations de la CIPR[39].

Ainsi, l'activité de la CIPR vient confirmer qu'il n'y a aucune impossibilité à considérer que la personne privée participe à l'élaboration de la norme internationale de radioprotection. Surtout si la production normative concernée n'entend pas aboutir à des actes juridiquement contraignants[40].

N'étant pas subordonnée à la reconnaissance d'une compétence normative, du moins en ce qu'elle concerne des normes juridiquement non contraignantes, la participation de la personne privée au processus normatif existe déjà s'agissant de la radioprotection, comme suffit à le montrer l'exemple de la CIPR. Pour autant, une telle conclusion n'implique pas que l'industrie y ait un rôle d'une conséquence comparable à celui de la CIPR. En effet, si l'aptitude normative de l'industrie nucléaire est ainsi fixée, son exercice ne saurait se prévaloir d'une légitimité de principe, étant donné la nature des intérêts qu'elle défend.

II. L'industrie nucléaire, personne défendant des intérêts particuliers : une identification restreignant sa légitimité à participer au processus normatif

Une approche réaliste de son éventuelle activité normative prescrit d'appréhender les intérêts propres de l'industrie nucléaire, qu'elle serait normalement amenée à défendre. Encore faut-il parvenir à les identifier de façon juste. Selon une première approximation, leur particularité parmi ceux des divers acteurs de l'utilisation pacifique de l'énergie nucléaire[41] tient à leur nature éminemment

37. Pour peu de considérer qu'il existe d'autres ordres normatifs que le droit international. Dans ce sens, voir les rapports donnés par Michel VIRALLY sur « La distinction entre textes internationaux de portée juridique et textes internationaux dépourvus de portée juridique (à l'exception des textes émanant des organisations internationales) » à l'Institut de droit international (*Annuaire de l'Institut de Droit International*, Vol. 60, tome 1, session de Cambridge, p. 166 à 257 pour le rapport provisoire, p. 328 à 357 pour le rapport définitif.

38. C'est ce que montre l'arrêt de la Cour de Justice des Communautés Européennes, rendu le 25 novembre 1992 dans l'affaire C-376/90 opposant la Commission Européenne à la Belgique. Voir son commentaire par Pierre BRINGUIER dans son cours de DEA, promotion 2001-2002, *Les normes internationales de la protection contre les effets néfastes du progrès scientifique et technique*, chapitre 1 sur le droit nucléaire, section 2.

39. La Directive 96/29/Euratom se réfère expressément à « la recommandation n° 60 de la CIPR » dans le sixième considérant de son préambule (*JOCE*, n° L 159/2). Il est à noter que le classement des travailleurs exposés en deux catégories A et B a été maintenu, alors que les dernières recommandations de la CIPR ne reprennent plus cette distinction.

40. Compte tenu du contexte actuel, un tel comportement, de la part d'acteurs du processus normatif non dotés *officiellement* de la compétence normative, est sans doute beaucoup plus logique qu'il ne paraît. À cet égard, on se contentera ici d'émettre l'hypothèse selon laquelle, dans la mondialisation, ce qui importe n'est plus la *qualité* de la règle (savoir si elle est juridiquement contraignante ou pas), mais plutôt *l'uniformité* de celle-ci.

41. Quant à l'identification de ces derniers, Katia BOUSTANY en donne un aperçu crédible, lorsqu'elle évoque le « compromis entre les milieux de la science, de l'industrie, des pouvoirs publics et,

commerciale. Or, au vu du champ matériel de la norme internationale de radioprotection, il apparaît que de semblables intérêts sont étrangers à ceux qu'il considère (A). Et un tel constat réduit évidemment la légitimité de l'industrie nucléaire à participer au processus normatif. En revanche, pour asseoir cette légitimité, l'industrie nucléaire peut s'autoriser de la fonction de la norme (B).

A. Une légitimité affaiblie : les intérêts de l'industrie nucléaire, étrangers au champ matériel de la norme

Comme déjà indiqué[42], le champ matériel de la norme internationale de radioprotection comprend la protection sanitaire des travailleurs et de la population. Ainsi, il concerne deux catégories différentes d'individus. En premier lieu, les individus dont le rapport avec les sources de rayonnement est déterminé par un lien professionnel. Parmi ceux-ci figurent des employés de l'industrie nucléaire, mais sont également comprises dans la catégorie des personnes intervenant dans un contexte autre que celui de l'usage strictement industriel de l'énergie nucléaire[43]. C'est notamment le cas des médecins, des chercheurs, des personnels manipulateurs, etc. En second lieu, la norme s'intéresse à la situation d'autres personnes, celles dont le rapport avec les sources de rayonnement ne dépend nullement d'un quelconque lien professionnel. Or, même si ce dernier souci semble relativement récent[44], il est désormais bien établi. Les expressions de « population » ou de « personnes du public »[45] servent à désigner juridiquement ce second ensemble.

Compte tenu de ce champ matériel, et étant donné le caractère potentiellement antagoniste des intérêts de l'industrie nucléaire d'une part et de ceux des travailleurs et de la population d'autre part, il n'y aurait aucune raison impérieuse à faire concourir l'industrie nucléaire à l'élaboration de la norme internationale de radioprotection. Or, une telle position a encore plus de poids d'un point de vue historique. Créée en 1928 sous le nom de Commission internationale de protection contre les rayons X

éventuellement, d'autres groupes économiques ou sociaux », dont les associations militant contre l'utilisation de l'énergie nucléaire (*op. cit.*, *supra*, note 8, p. 12).

42. Voir *supra*, en introduction, la définition du droit international de la radioprotection donnée par Anne RAINAUD, ainsi que la note 7.

43. On rappellera que la Convention sur la notification rapide d'un accident nucléaire invite à retenir une telle conception restrictive de la notion d'industrie nucléaire. En effet, son article 1, paragraphe 2, distingue explicitement entre quatre utilisations différentes de l'énergie nucléaire dans sa lettre e, lorsqu'il vise : « La fabrication, l'utilisation, le stockage provisoire, le stockage définitif et le transport de radio-isotopes *à des fins agricoles, industrielles et médicales, à des fins scientifiques connexes et pour la recherche* » (souligné par l'auteur).

44. Selon Roger BELBEOCH (*op. cit.*, *supra*, note 26, p. 52), c'est l'article 15 des recommandations de 1956 (publiées en 1959 sous le titre *Publication CIPR 1*) qui s'intéresserait pour la première fois à : « l'établissement de limites admissibles pour l'exposition des personnes demeurant au voisinage d'installations génératrices de rayonnement ».

45. L'article 1 de la Directive 96/29/Euratom donne la définition suivante de ce terme : « individus de la population, à l'exception des travailleurs exposés, des apprentis et des étudiants pendant leurs heures de travail et des individus soumis à une exposition prévus à l'article 6, paragraphe 4, points a), b), et c) » (*JOCE*, n° L 159/5). L'article 6, paragraphe 4 concerne « l'exposition de personnes pour les besoins des diagnostics et traitements médicaux qu'elles subissent » (point a), « de personnes qui, en connaissance de cause et de leur plein gré, participent à titre privé au soutien et au réconfort de patients subissant un diagnostic ou un traitement médical (point b), « de volontaires participant à des programmes de recherche médicale et biomédicale » (point c) (*JOCE*, n° L 159/7 et 8).

et le radium[46], la CIPR a en effet commencé son travail normatif assez tôt, en tout cas une trentaine d'années avant que ne se développe l'utilisation industrielle de l'énergie nucléaire[47] dans les années 70[48]. Ainsi, les applications de l'énergie nucléaire visées par les premières recommandations[49] de la CIPR n'étaient pas industrielles, mais liées à l'expérimentation scientifique et médicale des rayons X et du radium. En outre, si l'on continue à considérer les personnes qui n'ont aucun lien avec l'industrie nucléaire, c'est-à-dire celles qui n'en sont ni membres, ni employées, il apparaît que leur situation ne relève pas d'un temps juridique révolu, puisqu'elle continue à préoccuper la norme internationale[50]. C'est ce que montrent notamment l'existence de normes spécifiques à l'usage médical de l'énergie nucléaire, et l'intérêt relativement récent[51] envers le personnel employé dans les mines d'uranium[52].

Ainsi l'éventualité d'une production normative attribuable à l'industrie nucléaire est en butte à un obstacle. En substance, cet obstacle tient au double objectif poursuivi par la norme de radioprotection, à savoir la protection *sanitaire*[53] des travailleurs, mais aussi de la population. Seul le premier touche directement l'industrie nucléaire, puisque, au sein de l'ensemble des personnes dont le risque d'exposition aux rayonnements ionisants est dû à leur activité professionnelle, se trouvent bien celles employées dans une installation nucléaire. Or, il est concevable que les intérêts de l'industrie

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46. Voir Henri PAC, *op. cit., supra,* note 31, paragraphe 248, p. 283. Son actuelle dénomination a été adoptée à Londres en 1950.

47. À cet égard, les observateurs des relations internationales s'accordent à considérer 1942 comme date pertinente, avec la mise en marche du réacteur de Fermi à Chicago le 2 décembre. Sur cet événement « qui marque la naissance de l'âge atomique », voir Laura FERMI, *L'histoire de l'énergie nucléaire*, Fernand Nathan, collection Histoire et documents, 1964, p. 60 à 72.

48. Voir Henri PAC, *op. cit., supra,* note 31, paragraphe 111, p. 147.

49. *« The first publication of ICRP was "International Recommendations for X-ray and Radium Protection" of July 27, 1928 based on a proposal of the British Society of Radiology and its "X-ray and Radium Protection Committee" »* (rapport du quatrième groupe de travail au Nuclear Inter Jura 85, *op. cit., supra*, note 25, p. 496). Quant à lui, Roger BELBEOCH (*op. cit., supra*, note 26, p. 46) date de 1934 la première recommandation.

50. Du côté cette fois de l'ordre juridique interne, un autre phénomène va dans le même sens : alors même qu'ils n'ont pas de centrale nucléaire, certains États n'en ont pas moins élaboré des réglementations sur la radioprotection.

51. Comme le prouve le silence des normes de radioprotection émises par la CIPR en 1950, selon Roger BELBEOCH : « Les mineurs échappent à la réglementation alors que l'exploitation des mines, après 1945, est une des préoccupations majeures des pays en voie de nucléarisation. *Cela est particulièrement grave car les mineurs d'uranium ont été (et sont encore) les travailleurs de l'industrie nucléaire les plus exposés, du moins en dehors des catastrophes.* Il faut mentionner que les filons d'uranium exploités en priorité à cette époque étaient des filons riches particulièrement dangereux » (*op. cit., supra*, note 26, p. 48 ; souligné par l'auteur).

52. En droit interne français, cette différence de traitement se retrouve : à la différence de l'utilisation des radioéléments artificiels, celle des radioéléments naturels n'a pas de régime juridique particulier, et n'est soumise qu'à la loi sur la pharmacie et la législation sur les substances vénéneuses (Henri PAC, *op. cit., supra*, note 31, paragraphe 112, p. 148 et 149).

53. Comme l'écrit Henri PAC : « Ce fait de primauté de la considération sanitaire est marquant et décisif. Il constitue, dans le domaine socio-juridique de la sécurité nucléaire, le pendant de la considération matérielle liée au bon fonctionnement de l'INB révélée par la sûreté nucléaire » (*op. cit., supra*, note 31, paragraphe 110, p. 146).

nucléaire se situent *a priori* à l'encontre de ceux de ses employés[54]. Si cela peut faire douter de la légitimité de cette dernière à concourir à l'élaboration de la norme internationale de radioprotection, il est un élément qui va résolument en sens inverse : la fonction du droit international nucléaire considère les intérêts de l'industrie nucléaire[55].

B. Une légitimité établie : les intérêts de l'industrie nucléaire, considérés par la fonction de la norme

Étant donné son champ matériel, il est à première vue surprenant que la norme internationale de radioprotection ait pour résultat de protéger les intérêts de l'industrie nucléaire. En effet, la norme internationale de radioprotection agit fondamentalement comme une contrainte à son égard. En établissant notamment un régime de déclaration ou d'autorisation préalable auquel est soumis l'exercice des activités, et un régime d'organisation du travail extrêmement policé dans les installations nucléaires, le droit international de la radioprotection fait certes peser un poids incontestable sur l'industrie nucléaire. Mais penser que la norme internationale de radioprotection présente une perspective toute dissuasive à l'industrie serait conclure un peu vite. À y regarder de plus près, telle n'est pas, en effet, la *fonction*[56] première du droit international nucléaire envers l'industrie nucléaire. Celui-ci se révèle obéir à une logique déterminée, consistant en fin de compte à permettre l'activité industrielle. Un tel effet du droit international nucléaire résulte d'une pondération entre deux objectifs concurrents, dont il organise la balance : ne pas empêcher le développement industriel d'une part, tout en assurant d'autre part l'acceptabilité sociale de l'industrie nucléaire[57].

Or, cette fonction générale du droit international nucléaire trouve bien à s'exercer dans le droit international de la radioprotection. C'est ce que l'on montrera brièvement, à partir d'un seul exemple : celui du principe ALARA, parce qu'il révèle bien l'ambivalence constitutive de la fonction principale

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54. Pour un exemple d'analyse rigoureuse du droit matériel fondée sur ce postulat, voir Anne MILLET-DEVALLE, « Radioactivité et droit du travail », dans *Radioprotection et droit nucléaire,. op. cit., supra*, note 42, p. 207 à 216.

55. Un indice de ce phénomène est la rédaction même de la norme internationale de radioprotection. C'est l'argument avancé par Katia BOUSTANY : « le milieu techno-industriel… cherche en même temps à éviter l'instauration de règles qui pourraient entraver son développement ; aussi va-t-il établir ses normes spécifiques de fonctionnement, qu'il est *seul* à pouvoir identifier parce qu'il détient, *à l'exclusion du monde juridique*, les connaissances requises à cet effet » (*op. cit., supra*, note 8, p. 12 ; souligné par l'auteur). En note, l'auteur donne judicieusement la directive n° 80/836/Euratom comme exemple de « textes normatifs qui… vont refléter par leur technicité la nature scientifique des connaissances sur lesquelles se fondent leurs énoncés ». Cette dernière a été abrogée par la Directive 96/29/Euratom. Or, son article premier, consacré aux définitions, ne comprend pas moins de dix équations (*JOCE*, n° L 159/3 à 5).

56. Sur ce point, voir la synthèse remarquable de Vincenzo FERRARI, « Fonction du droit », in *Dictionnaire encyclopédique de théorie et de sociologie du droit*, sous la direction d'André-Jean ARNAUD, L.G.D.J., deuxième édition, 1993, p. 266 à 268.

57. On reprend ici l'analyse pénétrante de Henri PAC. Lequel décrit ainsi la fonction du droit international nucléaire économique : « fournir au développement de l'énergie atomique l'environnement juridique qui permette tout à la fois de favoriser l'industrialisation nucléaire et de la rendre humainement praticable, c'est-à-dire un cadre juridique s'avérant adéquat à l'intégration de la nouvelle source d'énergie dans l'ordre social » (*op. cit., supra*, note 31, paragraphe 256, p. 289).

du droit international nucléaire, et qu'il est le plus important des trois grands principes[58] autour desquels s'organise le droit matériel de la radioprotection.

Fruit d'un travail de formalisation de longue haleine, celui-ci consiste à réduire les expositions « au niveau le plus bas que l'on pourra raisonnablement atteindre, compte tenu des facteurs économiques et sociaux »[59]. L'énoncé suppose de porter une estimation en fonction de considérations financières, parmi lesquelles les intérêts du secteur industriel vont peser d'un poids certain. Dans sa logique, le principe ALARA se révèle donc à même de recevoir les préoccupations commerciales de l'industrie nucléaire, qui seront bien prises en compte dans l'analyse coût-bénéfice[60] qu'il implique. À cet égard, on fera remarquer que, considérant les différents concepts forgés par la CIPR, leur effet potentiellement dissuasif sur l'industrie nucléaire était plus marqué chez ceux ayant précédé le principe ALARA[61]. Toutefois, étant donné son objectif premier, à savoir la réduction des expositions aux rayonnements ionisants, c'est dans l'aménagement de cette exigence primordiale que le principe ALARA fait montre de son adéquation au développement de l'activité industrielle.

Ainsi, cet effet de fond laisserait à penser que le principe ALARA, parmi les deux objectifs soutenus par la norme internationale de radioprotection, fait primer celui consistant à assurer la confiance du public. Or, et c'est là où le phénomène normatif acquiert une complexité quasi irréductible[62], les choses ne sont pas aussi simples. En effet, le principe ALARA fait certes apparaître, comme partie intégrante de sa fonction, cet objectif : la défense de l'acceptabilité sociale de l'industrie nucléaire. Mais il permet, dans le même temps, d'envisager qu'il s'agit là d'une dimension plus esquissée qu'accomplie. Car, si la règle considère la représentation dans la population des dangers liés à l'industrie nucléaire, elle limite également cette attention.

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58. À savoir le principe de justification, le principe de réduction des expositions « ALARA », et le principe de limites de doses individuelles. Voir par exemple, Marie-Claude BOEHLER, « Le principe de précaution et la radioprotection », in *Radioprotection et droit nucléaire*, *op. cit., supra*, note 7, p. 152. Le titre IV de la Directive 96/29/Euratom reprend ces trois principes fondamentaux de la radioprotection qui innervent les recommandations de la CIPR.

59. Pour reprendre la formulation employée par la CIPR dans sa *Publication 26* (citée par Katia BOUSTANY, *op. cit.*, *supra*, note 8, p. 11).

60. « La mise en œuvre du principe ALARA est souvent associée au concept économique d'optimisation, et donc à l'analyse coût-bénéfice ainsi qu'à la définition d'un équivalent monétaire des doses évitées (valeur monétaire de l'homme-sievert ou valeur alpha » (Marie-Claude BOEHLER, *op. cit.*, *supra*, note 58, p. 153). L'auteur tient cependant à relativiser l'obédience envers les sciences économiques de cette modélisation du comportement responsable : « même si tous les paramètres doivent être exprimés en termes monétaires pour rendre possibles les comparaisons, les coûts de protection *devraient* inclure plus que l'aspect financier et le détriment devrait prendre en compte plus que le détriment sanitaire » (p. 154 ; souligné par l'auteur). L'emploi du conditionnel laisse entendre que le droit positif ne pose pas de véritables obligations juridiques en la matière.

61. Voir le commentaire de Roger BELBEOCH sur les normes de radioprotection de la CIPR de 1950, recommandant de réduire toutes les irradiations au « niveau le plus bas possible » : « Réduire le plus possible les expositions au rayonnement aurait eu des conséquences économiques assez redoutables pour l'industrie nucléaire. […] Plus tard la CIPR reprendra ce concept *au niveau le plus bas possible* sous la forme plus acceptable pour l'économie nucléaire d'ALARA » (*op. cit.*, *supra*, note 26, p. 47).

62. Une semblable complexité est observable dans le régime juridique de la responsabilité civile. Voir sur ce point, l'article stimulant de Marcus RADETZKI, « Limitation de la responsabilité civile : causes, conséquences et perspectives », *Bulletin de droit nucléaire* n° 63, p. 7 à 25, plus particulièrement la partie intitulée « responsabilité de l'industrie électronucléaire par rapport au droit commun de la responsabilité civile », p. 10 à 11.

C'est ce qu'il convient d'expliquer davantage, en partant du fait que le principe ALARA privilégie l'approche selon les niveaux de dose. Une telle modélisation inclut bien les facteurs sociaux parmi les critères à considérer pour déterminer la dose admissible. Cependant, il n'en reste pas moins qu'elle a pu s'apprécier de façon diverse, et notamment comme manifestant une conception quelque peu restrictive de l'impératif social, auquel est confrontée la norme internationale de radioprotection. C'est pourquoi des schémas alternatifs ont été envisagés, lesquels proposent, par exemple, de s'intéresser également à « la nature des sources ainsi qu'[à] la perception des risques qui leur sont associés », estimées « déterminantes en matière de tolérabilité »[63].

Ainsi, l'étude proposée du principe ALARA[64] suffit pour montrer la chose suivante : le droit international de la radioprotection obéit bien à la fonction précédemment dessinée du droit international nucléaire, soit *permettre l'activité industrielle*[65]. Donc, il est indéniable que les intérêts de l'industrie nucléaire sont considérés par la fonction de la norme. Alors, il convient de se poser une dernière question : en quoi un tel constat influence-t-il l'éventualité d'une activité normative de la part de l'industrie nucléaire ? En ce qu'il met à jour l'intéressement certain de l'industrie nucléaire à ce que la norme existe, et ce dans la mesure où cette dernière légitime, en fin de compte, son activité. Or, une telle réponse entraîne quelques conséquences. Ainsi, croire que l'industrie nucléaire manifeste une hostilité de principe envers tout accroissement[66] de son encadrement normatif semble exagéré. Compte tenu de ce qui précède, si l'industrie nucléaire se montre réticente envers une nouvelle norme internationale de radioprotection, il faudra plutôt en chercher la raison dans un éventuel désaccord sur l'arbitrage qu'elle contient entre l'objectif de promotion de l'industrialisation nucléaire et celui de défense de son acceptabilité sociale. Ainsi, si la fonction principale[67] du droit international nucléaire révèle l'avantage que tire l'industrie nucléaire à participer au processus normatif, celui-ci indique également l'orientation générale de cette activité normative : faire en sorte que la future norme internationale de radioprotection propose l'arbitrage le plus favorable à ses propres intérêts. Ce qui ne signifie pas parvenir à ce que la norme internationale de radioprotection les prenne *exclusivement* en

63. Marie-Claude BOEHLER, *op. cit.*, *supra*, note 58, p. 154.

64. On mentionnera une autre considération montrant la propriété d'accompagnement normatif de l'activité industrielle que déploie le principe ALARA : l'interprétation de celui-ci, qui l'appréhende comme porteur d'une « obligation de comportement à caractère incitatif » ayant pour destinataire l'industrie nucléaire elle-même. Dans ce sens, l'affirmation suivante de Marie-Claude BOEHLER : « L'obligation de comportement à caractère incitatif *qui sous-tend* le principe ALARA *motive les exploitants* à faire diligence pour atteindre les objectifs dosimétriques – aussi bas que raisonnablement possible – *qu'ils se sont fixés* en matière de gestion des niveaux d'exposition résiduels tout en agissant au mieux des intérêts de la collectivité et *de leurs intérêts propres dans le milieu concurrentiel où ils se trouvent placés* » (*op. cit.*, *supra*, note 58, p. 157 ; souligné par l'auteur). L'hypothèse selon laquelle l'industrie nucléaire est bien l'agent devant faire application concrète du principe ALARA paraît recevable dans une approche réaliste de la norme internationale de radioprotection.

65. Au double sens de protéger les intérêts de l'industrie nucléaire et d'en assurer l'acceptabilité sociale.

66. Le terme est ici à prendre dans son sens numérique, et non pas comme désignant un *approfondissement* de l'encadrement normatif : on vise l'hypothèse d'une norme supplémentaire, et non d'un étoffement des contraintes que les normes font peser sur l'industrie nucléaire.

67. On introduit cet adjectif pour respecter un des apports de la théorie du droit à l'analyse fonctionnelle : la pluralité des fonctions du droit. En effet, c'est bien cette polyvalence de la règle de droit qui est mise en lumière par tous les travaux théoriques, quel que soit leur statut particulier (Vincenzo FERRARI, *op. cit.*, *supra*, note 56). C'est à l'enseignement ainsi fourni qu'il convient de confronter l'ensemble normatif étudié. Pour être clair, si le droit international nucléaire peut s'avérer associer l'industrie nucléaire à sa formation, une telle fonction apparaîtrait comme seconde par rapport à celle qui consiste à permettre l'activité industrielle. Notamment, elle ne paraît pas bénéficier de la même généralité.

compte. En effet, dans cette dernière hypothèse, la norme internationale de radioprotection constituerait pour l'industrie nucléaire un instrument contre-productif : guidé par le souci sanitaire, le droit de la radioprotection influe sur l'acceptabilité sociale du risque nucléaire ; l'oubliant, il handicape l'intégration de l'industrie nucléaire dans l'ordre social[68].

Étrangers à son champ matériel, les intérêts de l'industrie nucléaire n'en sont pas moins pris en compte par la fonction de la norme internationale de radioprotection. Alors que la première position met en doute la probabilité appartenant à l'industrie nucléaire de participer à l'élaboration normative, la seconde motive cette personne à défendre ses propres intérêts en s'associant au processus normatif.

Au terme de cette étude, les lecteurs sceptiques envers le phénomène que constitue la participation de l'industrie à l'élaboration de la norme internationale seront, sans doute, déçus. Déçus de s'être confrontés à des lignes par trop théoriques, se cantonnant à montrer la seule probabilité du phénomène. Déçus de n'y rencontrer aucune preuve de la réalité de ce dernier.

Comment répondre convenablement à cette compréhensible contrariété ? Une première façon serait d'invoquer la difficulté à donner un panorama complet des diverses institutions intervenant dans le processus d'élaboration de la norme internationale de radioprotection. À cet égard, il faut relever que la prééminence incontestable de la CIPR au sein du processus normatif, si elle rend légitime la focalisation sur son activité, occasionne comme inconvénient de concentrer l'attention, faisant courir le risque d'occulter les autres acteurs de la formation du droit, et notamment l'industrie nucléaire[69].

Mais la manière la plus conforme à leurs souhaits reste encore d'énumérer quelques exemples manifestant l'influence de l'industrie nucléaire sur les diverses instances élaborant le droit international positif : les initiatives prises par l'industrie nucléaire pour se doter d'un code de bonne

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68. D'autres arguments que ce raisonnement par l'absurde sont d'ailleurs invocables. Par exemple, l'obligation de comportement à la charge de l'industrie nucléaire induite du principe ALARA peut être perçue comme la garantie d'un « savoir-faire de qualité » (Marie-Claude BOEHLER, *op. cit., supra*, note 58, p. 156 à 158, et plus particulièrement p. 158) au même titre que la culture de sûreté. En ce sens, les entreprises qui la respectent en tirent finalement bénéfice, en comparaison à leurs concurrentes moins avisées, qui ne pourront pas s'en prévaloir sur le marché. Sur un plan totalement différent, on peut émettre l'hypothèse suivante : la situation concrète de l'industrie nucléaire justifie qu'elle soit autre chose qu'un simple objet de réglementation. Ainsi, son inclusion dans le processus normatif devrait être recherchée, si tant est qu'y soit suivie l'évolution contemporaine, au bénéfice d'une règle négociée plutôt qu'imposée.

69. À la question impertinente de savoir si l'industrie nucléaire et les experts en radioprotection ne se confondent jamais, on précisera que le bon sens impose de constater que la CIPR regroupe exclusivement des scientifiques, et non pas des personnes officiellement impliquées dans la production industrielle de l'énergie nucléaire. Cette situation correspond d'ailleurs aux règles régissant le recrutement des membres de la CIPR, lesquelles réclament de leur part des compétences d'ordre scientifique. Voir cependant la thèse de Roger BELBEOCH : « La participation d'experts *salariés de l'industrie nucléaire* et du lobby médical, utilisateurs et producteurs de rayonnement, est largement assurée dans ces organismes » (*op. cit., supra*, note 26, p. 45 ; souligné par l'auteur). Effectivement, la réalité sociale incite à interroger plus avant la différence affirmée des activités d'expertise et d'industrie. Si l'on raisonne en termes de milieux sociaux, il est alors permis de poser l'hypothèse suivante : l'industrie nucléaire, la CIPR, et les institutions apparentées, appartiennent sans doute à un cercle relativement déterminé et homogène. Pour un exemple tiré du droit interne français, illustrant le rapprochement des compétences scientifiques et industrielles au sein du CEA, voir Anne-Sophie MILLET, *L'invention d'un système juridique : nucléaire et droit*, thèse de doctorat en droit, Université de Nice-Sophia Antipolis, 1991, p. 96.

conduite[70], l'implication très importante de celle-ci au sein des organismes internationaux qui veillent à l'élaboration de normes techniques standardisées, la constitution de groupes de pression agissant sur la prise de décision nationale[71] et supranationale[72].

> « Comment parvenir à voir du premier coup les choses pour la seconde fois ? » (Jean Paulhan)

70. Voir le récent Code de conduite de l'AIEA sur la sûreté et la sécurité de sources radioactives, *Bulletin de droit nucléaire* n° 67, juin 2001, p. 73 à 81. Voir également les commentaires de son processus d'élaboration par Katia BOUSTANY : « Un code de conduite sur la sûreté des sources de rayonnement et sur la sûreté des matières radioactives. Une approche nouvelle pour la maîtrise normative d'un risque nucléaire ? », *Bulletin de droit nucléaire* n° 65, juin 2000, p. 7 à 13, et « Le Code de conduite de l'AIEA sur la sûreté des sources de rayonnement et la sécurité des matières radioactives. Progrès ou régression ? », *Bulletin de droit nucléaire* n° 67, juin 2001, p. 7 à 18. L'auteur précise judicieusement que la négociation ayant débouché sur cet acte ne comprenait pas de membres de l'industrie nucléaire : « Il aurait d'ailleurs été plus conforme aux tendances récentes de l'élaboration normative d'inviter des membres de la société civile autour de la table de discussion du Code, autrement dit des représentants de fournisseurs et d'utilisateurs de sources de rayonnement » (*ibid.*, *Bulletin de droit nucléaire* n° 65, juin 2000, p. 11).

71. En France, tel semble avoir été le rôle de la Commission pour la production d'électricité d'origine nucléaire (PEON), selon Anne-Sophie MILLET, *op. cit., supra*, note 69, p. 96 à 99.

72. Sur FORATOM, organisation fondée en juillet 1960, bénéficiant du statut consultatif des institutions non gouvernementales auprès de l'AIEA, voir Henri PAC, *op. cit., supra*, note 31, p. 285.

CASE LAW AND ADMINISTRATIVE DECISIONS

CASE LAW

Finland

Supreme Administrative Court Judgement rejecting an application to prevent construction of a new NPP (2001)

On 15 November 2000, the electric utility *Teollisuuden Voima Oy* (TVO) submitted an application for a "Decision in Principle" to the Ministry of Trade and Industry, in accordance with Section 11 of the Nuclear Energy Act of 1987 (see *Nuclear Law Bulletin* No. 41; the text of the Act is published in the Supplement to that *Bulletin*) on the construction of a new nuclear power plant unit. The application proposed that the unit be constructed either in Eurajoki, near TVO's existing two-unit Olkiluoto NPP or in Loviisa, on Hästholmen island, near Fortum's existing NPP of the same name. The municipalities concerned gave their formal consents to the project in March 2001. One local citizen challenged the consent of Eurajoki before the Turku Administrative Court. He claimed that the Eurajoki local municipality had supported the application by TVO based on inadequate information. The Administrative Court of Turku rejected this challenge, but an appeal was filed before the Supreme Administrative Court on 11 October 2001.

On 21 December 2001, the Supreme Administrative Court rejected this claim, leaving the way clear for the Finnish government to decide on the application made by TVO. Consequently, on 17 January 2002, the Council of State (Government) made a Decision in Principle that the application to construct this NPP is "in line with the overall good of society". This Decision has been submitted to Parliament for approval.

France

Judgement of the Council of State specifying the law applicable to storage facilities for depleted uranium (2001)

Following the Prefect of Haute-Vienne's decision of 20 December 1995 to grant a licence to Cogema to operate a storage facility for depleted uranium oxide, the Association for the Protection of the Environment in the Aredian and Limousin region (*Association pour la défense de l'environnement du pays arédien et du Limousin* – ADEPAL) lodged an application to annul the Order setting out this licence. In its judgement of 9 July 1998, the Administrative Tribunal of Limoges annulled the Order on the grounds that it did not conform to the requirements of the 1975 Act on Disposal of Waste and Recovery of Material.

In its judgement of 5 November 1998, the Administrative Appeal Court of Bordeaux overruled this judgement on appeal. It first considered that in light of the radiotoxicity of depleted uranium oxide and the total activity of the stock, even including that of the impurities produced during the reprocessing procedure, only the 1976 Act on Installations Classified for the Purposes of Environmental Protection (see *Nuclear Law Bulletin* No. 18) was applicable, and not the 1963 Decree on Major Nuclear Installations (the text of which is reproduced in the Supplement to *Nuclear Law Bulletin* No. 12). It then considered that depleted uranium is not waste but rather is a product obtained at an intermediary stage of a transformation process, as it remains possible for it to be enriched for future use. Therefore the 1991 Act on Radioactive Waste Management (see *Nuclear Law Bulletin* Nos. 49 and 50; the text of this Act is reproduced in *Bulletin* No. 49) is not applicable.

Upon further appeal by ADEPAL, the Council of State (Supreme Administrative Court of France) confirmed the conclusions of the Administrative Appeal Court of Bordeaux in its judgement of 23 May 2001.

Russian Federation

Supreme Court Decision overturning "exemption" for foreign spent fuel (2002)

In February 2002, the Russian Supreme Court annulled a decision made by the government in 1998, which exempted waste resulting from the reprocessing of Hungarian spent nuclear fuel from being returned to Hungary. This governmental decision was related to a 1997 exemption approved by the heads of Minatom (the Ministry of Atomic Energy), the State Environment Protection Committee and Gosatomnadzor (the nuclear safety inspectorate) whereby the Russian Federation allowed Hungarian radioactive waste to remain on Russian territory after reprocessing, specifically providing that "solidified radioactive waste and reprocessing products" would not be returned to Hungary.

Action was taken against this decision by a non-governmental organisation entitled "For Nuclear Safety", based in the Chelyabinsk region, and supported by Greenpeace Russia. The plaintiffs argued that the decision contradicted the legislation in force at the time, whereby import of radioactive materials to the Russian Federation for disposal was forbidden and the waste left after reprocessing of spent nuclear fuel had to be returned to the country of origin. Furthermore, a new Law on Environmental Protection signed in January 2002 declared the "priority rights of Russia to return radioactive waste resulting from reprocessing to the country of origin". The Russian Supreme Court annulled this decision on 26 February 2002.

United Kingdom

Court of Appeal Judgement on Government decision to allow the start up of a MOX fuel plant (2002)

Two environmental associations (Friends of the Earth and Greenpeace) sought judicial review of the decision of the Secretaries of State for Health and for the Environment, Food and Rural Affairs, that the proposed manufacture of mixed oxide (MOX) fuel at BNFL's Sellafield MOX plant (SMP) was justified in accordance with Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers

arising from ionising radiation (see *Nuclear Law Bulletin* No. 58). The grounds for the challenge were that the Secretaries of State erred in law in that, in assessing the economic case for SMP, they had failed to take into consideration the capital cost of construction which had already been incurred at the time of BNFL's application (known as the "sunk costs"). The High Court in London ruled on 15 November 2001 that the plant should be allowed to go ahead because the British Government, in granting permission for the plant to begin production, had applied the correct economic tests.

On appeal, the Court of Appeal on 7 December 2001 held that, although capital costs were inherent in a new type of practice and so relevant to evaluating the overall economic benefit or detriment of a practice, where those costs had already been expended there is nothing in Article 6 of the Directive to suggest that the standard approach to sunk costs (that they should be ignored) should not be applied. The Court of Appeal also rejected the argument that, because Article 6 requires a generic assessment of justification, sunk costs should be considered because in any future MOX plant those costs would be incurred. The judges took the view that, in this instance, there was going to be only one MOX plant, and it would be wrong to refuse the approval on the theoretical possibility of a second MOX plant being constructed.

The plaintiffs have not requested a further appeal to the House of Lords.

Judgement on lawfulness of authorisations granted by the Environment Agency: Marchiori v. the Environment Agency (2002)

On 25 January 2002, the Court of Appeal upheld the decision of the Administrative Court on 29 March 2001 that the Environment Agency had acted lawfully in granting certain authorisations under the Radioactive Substances Act 1993 (see *Nuclear Law Bulletin* No. 54) in respect of the Atomic Weapons Establishment's licensed nuclear sites at Aldermaston and Burghfield. The applicant had argued that the authorisations could be lawful only if the Environment Agency had decided when granting them that the activity was "justified" within the meaning of Article 6(1) of Council Directive 80/836/Euratom laying down the basic safety standards for the health protection of the general public and workers against the dangers of ionising radiation (see *Nuclear Law Bulletin* No. 26). She argued that the Environment Agency had wrongly treated the nuclear defence programme as a benefit for the purpose of justification. The Court of Appeal held that it was not for the court to judge the merits or demerits of national defence policy. Given that the merits of defence policy are not justiciable, the Environment Agency could not be criticised for treating criticisms of the weapons programme being outside its remit, and so regarding its status as a benefit as axiomatic for the purposes of the justification principle. The Court of Appeal judges expressed different views as to whether Chapter III or Title 2 to the Euratom Treaty applied to military activities, but the Court did not find it necessary to decide the issue for the purposes of determining the case.

United States

Kennedy v. Southern California Edison Co. (2001)

Following the death of his wife in 1996, Joe Kennedy, a former worker (from 1982 to 1990) at a nuclear power plant owned by the utility Southern California Edison Co. (SCE), and his children sued the SCE and Combustion Engineering Inc. (CE) in federal court asserting jurisdiction pursuant to the Price-Anderson Act (see *Nuclear Law Bulletin* No. 15; the text of this Act as amended in 1988 is reproduced in the Supplement to *Bulletin* No. 42). Mr. Kennedy claimed that his wife died of leukemia

because of exposure to microscopic particles of radioactive material (known as "fuel fleas") that he brought home from the NPP on his clothing, hair and tools. He alleged negligence on the part of SCE in this respect. Additionally, he brought a products liability claim against CE for the alleged faulty production of nuclear fuel rods.

In March 1998, the US District Court for the Southern District of California dismissed all the products liability claims against CE on the grounds that Mrs. Kennedy was not a user or consumer of the nuclear fuel rods produced by CE and thus CE could not reasonably foresee that Ellen Kennedy would be injured by its product. The case went to trial on the remaining personal injury claims. The plaintiffs requested the Court to instruct the claims on the basis of *Rutherford v. Owens-Illinois, Inc.* (1997) 16 Cal. 4th 953, which altered the traditional burden of proof in cases involving asbestos exposure. *Rutherford* held that plaintiffs in asbestos cases may prove causation by demonstrating to a reasonable medical certainty that their exposure to defendant's asbestos-containing product was a substantial factor in contributing to the aggregate dose of asbestos they inhaled or ingested. The District Court refused in this case to fulfil the plaintiffs' request and the jury found for SCE after a five-week trial.

An appeal was submitted on 10 February 2000 on the grounds that the Court misunderstood the principle of multiple causation and misconstrued Californian law with respect to the burden of proof in toxic substance exposure cases. In July 2000, a panel of the 9th US Circuit Court of Appeals in California said that the federal jury had been given an improper instruction by the trial judge, and also that the jury should have been allowed to consider CE's liability under California's strict product liability standards which were consistent with the federal Price-Anderson Act. The panel remanded the case for a new trial.

On 26 September 2001 the 9th US Circuit Court of Appeals in California ruled in favour of SCE. The Court held that, even assuming that *Rutherford* could be applied outside the asbestos context, the failure to provide a *Rutherford* instruction in this case was harmless error because the plaintiffs failed to prove that the fuel fleas were a substantial factor in causing Ellen Kennedy's cancer. The undisputed expert testimony indicated that even if she were exposed to fuel fleas, there was only a one in 100 000 chance that her cancer was caused by that exposure. Thus, even if the fuel fleas did exist, they only played an infinitesimal or theoretical part in causing the injury and no reasonable jury could conclude they were a substantial factor. The Court went on to say that as Joe Kennedy did not meet the burden on causation, it was not necessary to address whether California's strict liability law applies under the Price Anderson Act.

International Tribunal for the Law of the Sea

Judgement concerning Ireland's application to prevent operation of BNFL's MOX facility at Sellafield: Ireland v. United Kingdom (2001)

Ireland's Attorney-General entered an application before the International Tribunal for the Law of the Sea in Hamburg (hereinafter referred to as the "ITLOS Court") on 25 October 2001 to commence arbitration proceedings against the UK government concerning its authorisation of 3 October 2001 pertaining to the full operation of the Sellafield mixed oxide (MOX) fabrication facility. Sellafield is on the Cumbrian coast and is located 112 miles from Ireland. The Irish application claimed that the UK government had violated numerous provisions of the 1982 UN Convention on the Law of the Sea (UNCLOS), and expressed concern in relation to the risk of pollution of the Irish Sea and dangers posed by the transport of radioactive materials to and from the

plant. The Irish government requested that its dispute with the UK be resolved through an international arbitration tribunal, pursuant to Article 287 of the UNCLOS Convention.[1] It noted, however, that such a tribunal could take several months to be constituted, and therefore stated that if the UK government had not suspended the authorisation of the facility and ceased international movements of radioactive materials associated with the facility within two weeks, it would enter an application before the ITLOS Court to obtain interim measures based on Article 290(5) of that Convention.[2]

As the UK did not take the measures requested, the Irish government submitted its application for interim measures to the ITLOS Court on 9 November 2001, pending establishment of the arbitral tribunal. On 3 December 2001, the ITLOS Court rejected the application for interim measures. It first examined the question of whether the arbitral tribunal to be constituted pursuant to Annex VII had jurisdiction over this issue. Ireland claimed that the dispute with the UK concerned the interpretation and the application of certain provisions of the UNCLOS Convention and based its request for constitution of the arbitral tribunal on Article 288(1).[3] The UK, on the other hand, asserted that, pursuant to Article 282 UNCLOS,[4] the arbitral tribunal lacked jurisdiction as the principal subjects of the dispute are governed by regional agreements (Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), and the EC and Euratom Treaties) which establish compulsory dispute settlement procedures. The ITLOS Court rejected the latter claim, stating that the dispute settlement procedures in those instruments related to disputes concerning the interpretation or application of those instruments, and not disputes relating to UNCLOS. The Court therefore concluded that the arbitral tribunal had jurisdiction to rule on this dispute.

The Court then examined the question of whether interim measures were justified pending the constitution of the arbitral tribunal. In light of the UK assurances that there would be no additional marine transport operations of radioactive material to or from Sellafield as a result of the commissioning of the MOX plant until summer 2002, the Court concluded that "the urgency of the situation did not require the prescription of the provisional measures". However, the Court considered

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1. The relevant section of Article 287 reads as follows: "When signing, ratifying or acceding to this Convention or at any time thereafter, a State shall be free to choose, by means of a written declaration, one or more of the following means for the settlement of disputes concerning the interpretation or application of this Convention: […] (c) an arbitral tribunal constituted in accordance with Annex VII".

2. Article 290(5) reads as follows: "Pending the constitution of an arbitral tribunal to which a dispute is being submitted under this section, any court or tribunal agreed upon by the parties or, failing such agreement within two weeks from the date of the request for provisional measures, the International Tribunal for the Law of the Sea or, with respect to activities in the Area, the Seabed Disputes Chamber, may prescribe, modify or revoke provisional measures in accordance with this article if it considers that *prima facie* the tribunal which is to be constituted would have jurisdiction and that the urgency of the situation so requires. Once constituted, the tribunal to which the dispute has been submitted may modify, revoke or affirm those provisional measures, acting in conformity with paragraphs 1 to 4."

3. Article 288(1) reads as follows: "A court or tribunal referred to in article 287 shall have jurisdiction over any dispute concerning the interpretation or application of this Convention which is submitted to it in accordance with this Part."

4 Article 282 reads as follows: "If the States Parties which are parties to a dispute concerning the interpretation or application of this Convention have agreed, through a general, regional or bilateral agreement or otherwise, that such dispute shall, at the request of any party to the dispute, be submitted to a procedure that entails a binding decision, that procedure shall apply in lieu of the procedures provided for in this Part, unless the parties to the dispute otherwise agree."

that the obligation to co-operate, pursuant to Part XII of UNCLOS and general international law, was a basic principle in preventing marine pollution and that therefore Ireland and the UK were requested to proceed without delay on consultations relating to the possible consequences for the Irish Sea arising out of the commissioning of the MOX plant, to monitor the risks and effects which could occur during its operation, and to take, where necessary, measures to prevent ocean pollution.

European Court of Human Rights

Balmer-Schafroth & Others v. Switzerland (2001)

Following the decision of the Swiss Federal Council on 28 October 1998 to renew *Bernische Kraftwerke AG*'s licence to operate the Mühleberg nuclear power plant (see *Nuclear Law Bulletin* No. 63) for a further ten years, persons living in the vicinity of the plant have entered an application before the European Court of Human Rights based on Article 6(1) of the European Convention on Human Rights on the grounds that they have not had a fair hearing by an independent tribunal as is guaranteed by the Convention. Although the applicable law and the complaints made by the applicants here were identical to those put forward in the former *Balmer-Schafroth & Others v. Switzerland* case, judged on 26 August 1997 by the Court (see *Nuclear Law Bulletin* No. 60), the applicants distinguished this application from the previous one by submitting new scientific support for their claim that the Mühleberg nuclear power station presents a serious, specific and imminent danger for them within the meaning of the Court's case-law.

On 13 September 2001, the European Court of Human Rights declared this application inadmissible, on the grounds that Article 6(1) of the Convention is not applicable in this case as the applicants have not demonstrated a direct link between the decision of the Federal Council and their right to the protection of their physical integrity pursuant to Swiss law. According to the Court, the applicants did not demonstrate that they were personally exposed, through the operation of the plant, to a danger that was not only serious but also specific and, above all, imminent.

ADMINISTRATIVE DECISIONS

Sweden

Parliamentary decision rescinding the shutdown date for Barsebäck-2 (2001)

On 11 December 2001, at the request of the Government, the Swedish Parliament decided to rescind the date of 1 July 2002 which had been approved for shutdown of unit 2 of the Barsebäck nuclear power plant. The Government had requested that a new review of the Swedish energy situation be carried out in 2003 before making any decision on the shutdown date.

Members of Parliament expressed the opinion that the necessary requirements for shutdown would be met by the end of 2003. These include: sufficient domestic electricity supply to meet Sweden's needs; a guarantee that electricity prices will not increase due to the shutdown of the unit; and assurance of no negative environmental effects.

United States

Decision of the International Trade Commission regarding imposition of countervailing and antidumping duties on imports of low enriched uranium from the European Union (2002)

Following a petition filed by the United States Enrichment Company (USEC), the US Department of Commerce (DOC) made a preliminary determination in 2001 that countervailing and antidumping duties should be imposed on imports of low enriched uranium from the European Union carried out by the European enrichment companies Urenco and Eurodif (see *Nuclear Law Bulletin* No. 68).

On 21 January 2002, the US International Trade Commission (ITC) confirmed the conclusions of the DOC, ruling that the American enrichment industry had suffered material injury due to the subsidies and dumping practices of the two European companies. Pursuant to this decision, the ITC authorised the DOC to impose antidumping duties of 19.57% and countervailing duties of 13.21% on Eurodif as of February 2002. With regard to Urenco, the ITC ruled that the subsidies amounted to 2.26% and authorised the imposition of countervailing duties of the same magnitude. These measures took effect on the date when the DOC had issued its preliminary conclusions i.e. 8 May 2001 in relation to the countervailing duties and 6 July 2001 for the antidumping duties.

Yucca Mountain Site Recommendation (2002)

The Nuclear Waste Policy Act of 1982, as amended (see *Nuclear Law Bulletin* Nos. 26, 28, 30, 31 and 41), established the Federal Government's responsibility to dispose of spent nuclear fuel and high-level radioactive waste and provided for the setting up of a geological repository that would be operational by 1998. This deadline was not met and since then efforts have been made to address this situation.

In his recommendation made to the US President on 14 February 2002, putting forward the Yucca Mountain site in Nevada for development as a repository for spent nuclear fuel and high-level radioactive waste,[5] the Secretary of Energy noted that the Department of Energy has engaged in over 20 years of extensive scientific and technical investigation of the site and that "a repository at Yucca Mountain will bring together the location, natural barriers, and design elements necessary to protect the health and safety of the public, including those Americans living in the immediate vicinity, now and long into the future". He added that the investigation has been thoroughly reviewed by the Nuclear Regulatory Commission (NRC) and other oversight entities such as the Nuclear Waste Technical Review Board and US Geological Survey and subjected to scientific peer reviews, including review by the International Atomic Energy Agency. The Secretary of Energy cited "compelling national interests" for a repository such as national security, non-proliferation, energy security, homeland security, defence wastes, and the past 1998 deadline.

Following the Energy Secretary's recommendation, the US President notified Congress on 15 February 2002 that he considers the Yucca Mountain site sufficiently qualified to apply to the NRC for a construction permit. The Governor of the State of Nevada submitted an "Official Notice of

5. Letter dated 14 February 2002 from Secretary Spencer Abraham to President George Bush. The "Yucca Mountain Site Recommendation", Final Environmental Impact Statement and Secretary Abraham's letter are available at the Department of Energy's site at: http://www.ymp.gov

Disapproval" with a detailed Statement to the US Senate on 5 April 2002. Under Section 115 of the Nuclear Waste Policy Act of 1982, as amended, Congress had 90 calendar days of continuous session to override the State's veto by passing a resolution of siting designation. However, on 8 May 2002, Congress rejected Nevada's claims and voted 309 to 117 in favour of the resolution designating Yucca Mountain as the site for the nation's spent nuclear fuel repository. The US Senate is now required to vote on the suitability of the site.

NATIONAL LEGISLATIVE AND REGULATORY ACTIVITIES

Argentina

Organisation and Structure

Reorganisation of the National Atomic Energy Commission and the Nuclear Regulatory Authority (2001-2002)

The composition of the National Atomic Energy Commission (*Comisión Nacional de Energía Atómica* – CNEA) was modified by Decree No. 1065 adopted by the National Executive Power on 23 August 2001 (Official Register of 28 August 2001). The governing body of the CNEA is now comprised of one president and one vice-president, rather than the six directors, including the President, who previously held office.

Furthermore, Decree No. 357 of 21 February 2002 (Official Register of 22 February 2002) ratified the decision to place the CNEA and the Nuclear Regulatory Authority (*Autoridad Regulatoria Nuclear* – ARN) under the authority of the President, through the General Secretary of the Presidency (see *Nuclear Law Bulletin* No. 68).

Belarus

Organisation and Structure

Restructuring of Promatomnadzor (2001)

Pursuant to Decree No. 516 on Improvement of the System of Bodies of State Administration and other State Organisations adopted by the President of the Republic of Belarus on 24 September 2001, a radical reform of the state administration system was carried out. The Committee for Supervision of Industrial and Nuclear Safety under the authority of the Ministry for Emergencies of the Republic of Belarus (*Promatomnadzor*) was transformed into the Department for Supervision of Industrial and Nuclear Safety of the Ministry for Emergencies of the Republic of Belarus (title remains *Promatomnadzor*) which has legal personality.

On 29 November 2001, the Ministry for Emergencies adopted Resolution No. 17 approving an Order setting out the tasks of the newly-established Department. *Promatomnadzor* is habilitated to carry out special functions, *inter alia* of a regulatory, control, supervisory and executive nature, in the

fields of industrial, technical, nuclear and radiation safety, safe transportation of dangerous goods, and protection and rational use of mineral resources. It is also responsible for the prevention of technology-related accidents at hazardous industrial and other facilities posing an abnormally high danger on the territory of the Republic of Belarus, and for regulating activities of organisations responsible for ensuring safety and prevention of accidents at such installations.

Belgium

Radiation Protection

Amendment of the Radiation Protection Act (2000)

The Act of 1994 on Protection of the Population and the Environment against the Dangers of Ionising Radiation and providing for the setting up of the Federal Agency for Nuclear Control, amended on numerous occasions (see *Nuclear Law Bulletin* Nos. 53, 54, 59, 61 and 64) was further amended by an Act of 10 February 2000 [Official Journal (*Moniteur belge*) of 6 April 2000, second edition, p. 10827].

This Act established a transitional regime pending the establishment of the Federal Agency for Nuclear Control. This regime, which provided for the transfer of certain responsibilities of the Agency, ceased to exist when the Agency became fully operational on 1 September 2001.

Pursuant to this Amending Act, the operators of nuclear installations were obliged to entrust licensed bodies with the permanent control over the physical protection service, the reception of new installations and the approval of certain decisions taken by the physical protection service.

Royal Order establishing General Regulations for the Protection of the Population, Workers and the Environment against the Dangers of Ionising Radiation (2001)

This Order was adopted on 20 July 2001 by the Minister of the Interior in implementation of the Act of 1994 on Protection of the Population and the Environment against the Dangers of Ionising Radiation and providing for the setting up of the Federal Agency for Nuclear Control (see *Nuclear Law Bulletin* Nos. 53, 54, 59, 61 and 64). This Order implements Council Directives 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation (see *Nuclear Law Bulletin* No. 58) and 97/43/Euratom of 30 June 1997 on health protection of individuals against the dangers of ionising radiation in relation to medical exposure (see *Nuclear Law Bulletin* No. 60). It aims to ensure the protection of workers, the public and the environment against the risk of exposure to ionising radiation, of natural or artificial origin, in relation to professional practices or activities which involve such a risk, or to measures in an emergency situation or in relation to long-term exposure.

This Order sets out in particular:

- regulations governing classified installations;
- the licensing and control regime governing nuclear installations; in this respect, the King is responsible for granting construction and operating licences for Class I installations,

including in particular nuclear reactors and installations for the storage or disposal of radioactive waste; the Federal Agency for Nuclear Control is, for its part, responsible for delivering construction and operating licences for the other types of installation, as well as licences for the destruction, recycling or reuse of solid radioactive waste produced in Class I, II or III installations;

- the basic standards of radiation protection, in particular the principles of justification, optimisation and dose limitation during practices and interventions: in relation to practices, the dose limit is set at 20 millisieverts (mSv) over 12 consecutive months for exposed workers, and at 1 mSv per year for members of the public; the Order furthermore provides that dose limits and guidance in relation to exposure levels during a radiological emergency for the workers and the emergency personnel concerned, may be established by the Agency;

- the regulation of the physical control of installations and equipment, including the delimitation of controlled zones, the medical control of workers, protection of the premises and individual protection of persons in controlled zones;

- the information and training systems for exposed workers;

- the radiation protection regime in relation to the management of radioactive waste;

- the regime governing transport and import of radioactive substances;

- measures for the radiological surveillance of the territory and the population, and emergency planning;

- the regulation of medical applications of ionising radiation;

- the regime governing natural radioactivity.

Brazil

Radioactive Waste Management

Law on Radioactive Waste Repositories (2001)

Although a first draft of this Law was initially submitted to the National Congress at the end of the 1980's (see *Nuclear Law Bulletin* No. 46), its final adoption only came about on 20 November 2001 (Official Journal of 21 November 2001). Law No. 10.308 establishes the legal framework governing the final disposal of radioactive waste produced in Brazil: siting, construction, operating licence, control, costs, compensation, third party liability and financial cover governing radioactive waste repositories.

The Federal Union is responsible for storing radioactive waste produced on national territory, through its National Nuclear Energy Commission (*Comissão Nacional de Energia Nuclear* – CNEN). The Commission is the competent authority for delivering licences for such repositories, in particular

in relation to aspects concerning transport, use and storage of radioactive waste and the safety and radiological protection of these facilities. Such activities must be carried out according to criteria, procedures and standards established by the CNEN.

Pursuant to this Law, it is permitted to construct and operate radioactive waste repositories divided into three categories: "initial", "intermediary", and "final". In the event of a radiological or nuclear accident, the construction of temporary repositories will exceptionally be allowed.

The responsibility, including financial responsibility, in relation to the siting, design, construction, installation, management, operation and physical protection maintenance of initial repositories, lies with the producers of radioactive waste, whereas for the other categories of repository, the CNEN is responsible for these same activities.

During the transfer of radioactive waste from initial repositories to intermediary or final repositories, the licence-holder transfers to the CNEN any rights it has in relation to the waste.

The licence-holder and the CNEN are furthermore held responsible, within their respective fields of competence, for damage to persons, property or the environment resulting from the release of radioactive emissions related to the activities of the repository over which they have control. Financial security such as that set out in Article 13 of Law No. 6.453 of 17 October 1977 (see *Nuclear Law Bulletin* Nos. 12 and 21; the text of this Law is reproduced in the Supplement to *Bulletin* No. 21) must consequently be obtained to cover such damage.

Canada

General Legislation

Anti-Terrorism Act (2001)[1]

On 18 December 2001, the Canadian Government enacted the Anti-Terrorism Act (Statutes of Canada 2001, Chapter 41). The Act provides for measures to identify, prosecute, convict and punish terrorist groups and provides new investigative tools to law enforcement and national security agencies. The Anti-Terrorism Act has relevance to the nuclear field in that it defines as "terrorist activity" the existing offences in the Canadian Criminal Code that implement the 1980 Convention on the Physical Protection of Nuclear Material (see Section 4 – which adds a new Part II.1 to the Criminal Code) (the text of the Physical Protection Convention is reproduced in *Nuclear Law Bulletin* No. 24).

The Anti-Terrorism Act defines terrorist activity as an act or omission, in or outside Canada, that takes place or is threatened for political, religious or ideological purposes and threatens the public or national security by killing, seriously harming or endangering a person, causing substantial property damage that is likely to seriously harm people or by interfering with or disrupting an essential service, facility or system.

1 . The Anti-Terrorism Act is available on the Web in English and French at the following urls:
English version:
http://www.parl.gc.ca/37/1/parlbus/chambus/house/bills/government/C-36/C-36_4/C-36_cover-E.html
French version:
http://www.parl.gc.ca/37/1/parlbus/chambus/house/bills/government/C-36/C-36_4/C-36_cover-F.html

The Act creates new offences in relation to terrorist activity including financing, participating in or facilitating terrorist activity or terrorist groups. Maximum sentences for these offences are in the range of 10 to 14 years' imprisonment.

Czech Republic

General Legislation

Amendment to the Act on the Peaceful Uses of Nuclear Energy and Ionising Radiation (2001)

Act No. 18/1997 on the Peaceful Uses of Nuclear Energy and Ionising Radiation (the text of which is reproduced in the Supplement to *Nuclear Law Bulletin* No. 61; see also *Bulletin* No. 59) was amended by Act No. 13/2002. This Amending Act, adopted on 18 December 2001, will enter into force on 1 July 2002, with the exception of certain provisions which will enter into force upon the date of accession of the Czech Republic to the European Union.

The main purpose of this Amending Act is to ensure the full implementation of the relevant EC legislation into national law, in particular Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation (see *Nuclear Law Bulletin* No. 58) and to guarantee observance of the Czech Republic's international obligations under the Comprehensive Nuclear Test Ban Treaty and the Additional Protocol to the Safeguards Agreement between the Czech Republic and the International Atomic Energy Agency. The Amending Act also introduces modifications deemed necessary for the practical implementation of the 1997 Act.

The Amending Act maintains both the structure of the 1997 Act and the basic principles governing the peaceful uses of nuclear energy and ionising radiation. The principal amendments are in the fields of radiation protection, emergency preparedness, international movements of radioactive materials and radioactive contamination of foodstuffs and feedingstuffs.

With regard to radiation protection, new provisions specify the various types of exposure (occupational exposure, medical exposure, emergency exposure of individuals or of emergency personnel, long-term exposure and potential exposure) and deal with supervised and controlled areas, radiation workers, and clearance levels.

Outside workers are now required to have a personal radiological monitoring document. Intentional addition of radioactive substances to foodstuffs, toys, jewellery or cosmetic products, or the import or export of such contaminated products, are prohibited. The shipment of radioactive waste to some specific zones is also prohibited.

Amendments to the Regulations implementing the 1997 Act are under preparation.

Egypt

Regime of Radioactive Materials

Decision establishing the List of Hazardous Nuclides Emitting Ionising Radiation (2000)

Pursuant to Law No. 4 of 1994 on the Environment, the Atomic Energy Authority issued Decision No. 636 establishing the List of Hazardous Nuclides Emitting Ionising Radiation on 1 August 2000. Pursuant to this Decision, it is prohibited to handle hazardous substances emitting ionising radiation during the import, export, production, storage, transport, and use of such substances, without a licence issued by the Atomic Energy Authority in compliance with established procedures.

Radioactive Waste Management

Regulations on the Safety of Radioactive Waste Produced by Users of Radioactive Materials (1998)

These Regulations No. 1166, issued by the Atomic Energy Authority on 26 November 1998, aim to ensure safety at all stages of radioactive waste management, i.e. collection, segregation, treatment, conditioning, transportation, storage and disposal, in particular by the establishment of criteria to monitor the release of radioactive effluent, and of an effective control and disposal system to ensure the protection of the workers, the public and the environment.

These Regulations do not apply to the waste associated with nuclear power plants, nuclear fuel cycle activities or chemical processing of minerals or other substances containing naturally occurring radionuclides.

The Regulations provide that any activity involving radionuclides is subject to licensing by the regulatory authority, i.e. the Hot Laboratory and Waste Management Centre of the Atomic Energy Authority, and they list information which must be included in the licensing application. After issuing a licence, the regulatory authority must carry out controls to ensure that radioactive waste management activities are performed in a safe manner.

The Regulations lay down the responsibilities of the user of radioactive materials in order to ensure the safe management of the radioactive waste produced. User responsibilities are limited to the segregation, collection, interim storage, controlled release, monitoring and documentation, while responsibility for other activities lies with the Hot Laboratory and Waste Management Centre of the Atomic Energy Authority. Under the Regulations, the user of radioactive materials is, in particular, required to minimise the quantities of radioactive substances used and the volumes of radioactive waste produced; to observe the specified limits when discharging radioactive waste; to set up a system for the collection and segregation of radioactive waste; to regularly report to the regulatory authority on the disposal of radioactive waste and on any accident that occurred. There are also requirements regarding information which must be kept and updated. Furthermore, the radioactive material co-ordinator, appointed by the user, is responsible for exercising control over the radioactive waste management performed by the user.

The Regulations also establish principles governing waste collection and segregation, controlled releases of radioactive waste and its interim storage.

The responsibilities of the Hot Laboratory and Waste Management Centre of the Atomic Energy Authority in respect of the transportation, treatment, and interim storage pending conditioning or burial of waste are set out in detail in Part II of these Regulations. The Laboratory must obtain a licence for the transportation, treatment and conditioning of radioactive waste, and for the siting, design, operation and closure of a waste burial site. The Regulations establish criteria to be taken into account during siting, including the protection of the general public from radioactive releases, which must not cause exposure equivalent to an annual dose exceeding 0.25 mSv to the whole body. Protective measures for individuals operating the facility are also prescribed.

France

Organisation and Structure

Decree establishing the General Directorate for Nuclear Safety and Radiation Protection (2002)

Decree No. 2002-255 of 22 February 2002 amends Decree No. 93-1272 on the Organisation of the Central Administration of the Ministry for Industry, Postal Services, Telecommunications and Foreign Trade (see *Nuclear Law Bulletin* No. 53). It establishes, within the Ministry for Economy, Finance and Industry, a General Directorate for Nuclear Safety and Radiation Protection (*Direction générale de la sûreté nucléaire et de la radioprotection* – DGSNR). This new Directorate, which takes over the functions of the former Directorate for the Safety of Nuclear Installations (DSIN) at the Ministry for Industry and those of the former Office for Protection against Ionising Radiation (OPRI), is placed under the authority of the Ministers for Industry, the Environment and Health.

Its objective is to elaborate, propose and implement the Government's nuclear safety and radiation protection policies, with the exception of those relating to defence installations and activities.

To achieve this objective, the new DGSNR is required in particular to:

- prepare and implement all measures relating to the safety of major nuclear installations and the transport of radioactive and fissile material for non-military purposes;
- prepare and implement, in conjunction with the other competent bodies, all measures intended to prevent or limit health risks relating to exposure to ionising radiation;
- organise safety inspections of major nuclear installations and, in co-operation with the competent services of the Minister for Transport, inspections of transport operations involving radioactive and fissile material for non-military purposes;
- organise radiation protection inspections as required pursuant to the Public Health Code;
- organise permanent monitoring in relation to radiation protection, particularly the radiological control of the environment over the whole of the national territory;
- control releases of gaseous and liquid effluent produced in major nuclear installations;

- gather all pertinent information in the fields of nuclear safety and radiation protection, and on measures taken in this field in France or abroad, and to disseminate this information to the administrative bodies concerned;

- contribute to the information of the public on subjects related to nuclear safety and radiation protection.

Decree establishing the Institute for Radiation Protection and Nuclear Safety (2002)

Decree No. 2002-254 establishing the Institute for Radiation Protection and Nuclear Safety (*Institut de radioprotection et de sûreté nucléaire* – IRSN) was adopted on 22 February 2002, in implementation of the 2001 Act establishing the French Agency for Environmental Health Safety (see *Nuclear Law Bulletin* No. 68). This Decree aims in particular to set out the structure and tasks of the IRSN.

The new Institute, which merges the former Institute for Nuclear Safety and Protection (IPSN) and the former Office for Protection against Ionising Radiation (OPRI) into a new public utility company (an EPIC – *établissement public à caractère industriel et commercial*), is placed under the joint authority of the Ministers for Defence, the Environment, Industry, Research and Health. Its Board of Management is made up of 24 members whose term of office runs for 5 years, and a Director General nominated upon proposal of the Chairperson of the Board of Management. The Director General is assisted by a Deputy Director General. A Scientific Commission and Professional Ethics Commission have also been established.

The IRSN is entrusted with expert and research tasks in the following fields:

- nuclear safety;

- safety of transport of radioactive and fissile material;

- radiation protection;

- protection and control of nuclear materials;

- protection of nuclear installations and transport of radioactive and fissile materials against acts of malicious intent (theft or misappropriation of nuclear materials, or sabotage).

To fulfil this role, the IRSN carries out the following activities:

- it carries out expert studies, research, analyses, measurements or dose calculations, for public or private bodies;

- it defines research programmes in order to maintain and develop the necessary competence to ensure excellence in its fields of activity;

- it contributes to the radiation protection training of health professionals and professionally-exposed persons;

- it provides technical assistance to the General Directorate for Nuclear Safety and Radiation Protection, to the Delegate for nuclear safety and radiation protection for activities and

installations used for defence purposes (see *Nuclear Law Bulletin* No. 68), and to other State authorities and services which request such assistance; in the event of an incident or accident involving ionising radiation sources, it proposes technical, health and medical measures to these authorities, in order to ensure the protection of the public, workers and the environment and to restore the safety of the installation;

- it participates in the continual monitoring of radiation protection, especially by carrying out the radiological monitoring of the environment and through the management and use of dosimetric data concerning workers exposed to ionising radiation, and the management of the inventory of ionising radiation sources.

Amendment of the Decree on the Organisation of the Central Administration of the Ministry for Industry (2001)

The 1993 Decree on the Organisation of the Central Administration of the Ministry for Industry, Postal Services, Telecommunications and Foreign Trade (see *Nuclear Law Bulletin* No. 53) was amended by Decree No. 2001-1048 of 12 November 2001. This Decree redefines the responsibilities of the Directorate General for Energy and Raw Materials (DGEMP) which is now composed of a Directorate for Energy and Raw Mineral Resources and a Directorate for Energy Demand and Energy Markets.

The DGEMP is now responsible for the supervision, on behalf of the Minister for Energy, of all public establishments and public enterprises in its field, including the Atomic Energy Commission (CEA), National Agency for Radioactive Waste Management (ANDRA) and the Institute for Nuclear Safety and Protection (which has now become the Institute for Radiation Protection and Nuclear Safety).

The DGEMP is entrusted in particular with the following tasks:

- to elaborate and implement policy to ensure the security of supply of energy and raw materials, under competitive economic conditions, and also Governmental decisions concerning the civil nuclear sector, subject to the powers attributed to the nuclear safety and radiation protection authorities;

- to propose all measures necessary for the development in France and abroad of nuclear industry policy;

- to participate in the controls over exports of sensitive materials and nuclear equipment, in the co-ordination of preparatory work relating to transport of waste produced during the reprocessing of foreign spent fuel, and in the elaboration of regulations governing, in particular, nuclear third party liability and non-proliferation.

Order on the Organisation of the Ministry of Defence in Relation to the Operation of Military Nuclear Systems and Major Nuclear Installations Classified as Secret in the Fields of Nuclear Security (2001)

This Order of 27 July 2001, which entered into force on 1 January 2002, gives power to the General Delegate for Procurement, the Chief of Naval Staff, the Chief of Air Force Staff and the *Directeur du service à compétence nationale*, to exercise operating responsibilities in relation to

nuclear military systems, major nuclear installations classified as secret and associated means of support, which are within the realm of the Minister for Defence.

These responsibilities are divided between:

- the principal authorities (*autorités de synthèse*), which define the general principles of organisation in order to achieve and maintain the safety level specified by the Ministry of Defence for nuclear military systems, major nuclear installations classified as secret or the transport of associated fuel components. They participate in the drafting of safety and radiation protection rules and co-ordinate, at central level, actions to be taken in relation to accident prevention, to the manner to react to accidents, and to the radiological monitoring of the environment;

- the authorities in charge of implementation, which deploy the necessary material and human resources, apply rules and regulations in the field of nuclear security and ensure their application by subordinate bodies whose responsibilities lie also in the areas of nuclear military systems, major nuclear installations classified as secret or the transport of associated fuel elements;

- military territorial authorities which co-ordinate actions taken by, on the one hand, the directors of armies, bases, or military nuclear systems, or by directors of establishments and operators of major nuclear installations, of individual installations or of transport operations of fuel elements and on the other, the competent State bodies in the fields of accident or incident prevention and the radiological monitoring of the environment.

Each of these authorities is responsible for organising an internal control, the head of which (the "inspector of nuclear security" measures) reports directly to them.

Regime of Nuclear Installations

Order on the Setting Up of an Emergency Alert Procedure Around a Major Nuclear Installation which has an Off-site Emergency Response Plan (2001)

This Order of 30 November 2001 sets out the obligations of the nuclear operator in relation to the emergency response procedure established by a Decree of 1988 on emergency planning. It provides that:

- the operator is required to ensure the setting up and maintenance of means to communicate this alert to the neighbouring population;

- it should be possible for the operator to activate these measures from the nuclear installation under the conditions set by the prefect in the off-site emergency response plan (*plan particulier d'intervention* – PPI);

- the zone covered by the emergency alert procedure is to be established, on the basis of the risk study, by the prefect in the off-site emergency response plan upon advice of the administrative authority responsible for control of nuclear safety according to the terms of the risk study;

- the location of the alert mechanisms, the functional details of which are proposed by the operator and approved by the prefect in the off-site emergency response plan, must take into account local conditions such as the topography, population density and compass card.

The implementation of the emergency alert procedure for neighbouring populations concerning operational nuclear installations should be completed by 14 December 2002.

Regulation of Nuclear Trade (including Non-Proliferation)

Decree on Export, Import and Transfer Controls over Dual-Use Goods and Technologies and Implementing Orders (2001)

This Decree No. 2001-1192 of 13 December 2001 repeals Decree No. 95-613 of 5 May 1995 on Export Controls over Dual-Use Goods and the Order of 12 March 1996 on the Issue of an International Import Certificate and a Verification Certificate for the Import of Dual-Use Goods. It also re-defines the regime applicable to dual-use goods and technology in accordance with Council Regulation No. 1334/2000 of 22 June 2000 setting up a Community regime for the control of exports of dual-use items and technology in terms of customs procedures.

Pursuant to this Decree, importers of dual-use goods mentioned in Annex I of the Council Regulation, originating in a non-European Community country, may from now on request issue of an international import certificate, in order to allow their foreign supplier to obtain permission from his national authorities to export the product. This certificate is issued by the Minister responsible for Customs according to criteria established by an order.

Two Implementing Orders were adopted on 13 December 2001 in order to establish first those formalities which must be carried out by persons exporting dual-use goods to third countries or transferring them to the Member States of the European Community (Order on Export Control to Third Countries and on Transfer to Member States of the European Community of Dual-Use Goods and Technologies), and secondly, the formalities necessary to obtain and to use the international import certificate and the delivery verification certificate (Order on the Issue of an International Import Certificate and a Delivery Verification Certificate for the Importation of Dual-Use Goods and Technologies).

Food Irradiation

Decree on Treatment by Ionising Radiation of Foodstuffs Destined for Human or Animal Consumption (2001)

This Decree No. 2001-1097 of 16 November 2001 implements into French law Directives 1999/2/EC and 1999/3/EC of the European Parliament and of the Council, adopted on 22 February 1999, on the approximation of the laws of the Member States concerning foods and food ingredients treated with ionising radiation (see *Nuclear Law Bulletin* No. 67). It repeals the Decree of 1970 on the Prevention of Fraudulent Practices relating to Trade in Irradiated Goods which may be Used as Human or Animal Foods (see *Nuclear Law Bulletin* No. 6).

Pursuant to the Decree, it is forbidden to import, possess, offer for sale, sell or distribute for free foodstuffs, products and drinks which may be destined for human or animal consumption and which have been treated by ionisation, except subject to the conditions set out in this Decree including in particular the following:

- the foodstuffs must be exclusively treated by gamma rays emitted by the radionuclides cobalt 60 or cesium 137, by x-rays produced by apparatus emitting nominal energy less than or equal to 5 MeV or electrons produced by apparatus emitting nominal energy less than or equal to 10 MeV;

- foodstuffs subjected to treatment by ionising radiation must figure on the list which is to be established by order, and must be below the maximum irradiation doses authorised and, where applicable, must conform to the particular hygiene conditions applicable before and after treatment;

- the labelling of irradiated foodstuffs must include the words "treated by ionising radiation" or "treated by ionisation".

Germany

General Legislation

Act on the Phase-out of Nuclear Power (2002)

The Act of 22 April 2002 (published in *Bundesgesetzblatt* 2002 I, p. 1351) on the structured phase-out of nuclear power for the commercial production of electricity entered into force on 27 April 2002. The Act implements the Agreement of 11 June 2001 between the German Federal Government and the leading national electricity-generating companies on the phase-out of nuclear energy (see *Nuclear Law Bulletin* Nos. 66 and 68).

The purpose of the Act is in a general way reflected in the amendment of Section 1(1) of Act No. 1959/1985 on the Peaceful Utilisation of Atomic Energy and the Protection against its Hazards (Atomic Energy Act) of 23 December 1959, as last amended on 13 December 2001 (*Bundesgesetzblatt* 2001 I, p. 3586; see also *Nuclear Law Bulletin* Nos. 37, 44, 54, 59, 61 and 67; the text of this Act is reproduced in the Supplement to *Bulletin* No. 36). Whereas the original version of this provision provided that the promotion of the peaceful use of nuclear energy was one of the purposes of this Act, the amended version reads as follows:

"The purpose of this Act is

1. to phase out the use of nuclear energy for the commercial generation of electricity in a structured manner, and to ensure on-going operation up until the date of discontinuation, ..."

The Act amends the following legislative instruments:

- the Atomic Energy Act;

- the Financial Security Ordinance 1977, as last amended on 9 September 2001 (*Bundesgesetzblatt* 2002 I, p. 615; see also *Nuclear Law Bulletin* Nos. 16, 18 and 19; the text of this Ordinance is reproduced in the Supplement to *Bulletin* No. 18);

- the Ordinance on Nuclear Costs 1981, as last amended on 9 September 2001 (*Bundesgesetzblatt* 2001 I, p. 2331; see also *Nuclear Law Bulletin* Nos. 29 and 51).

Details of the Act on the Phase-Out of Nuclear Power are set out in a study by Dr. Axel Vorwerk published in the Chapter "Studies" of this *Bulletin*.

Hungary

Radiation Protection

Decree Laying Down Basic Standards on Radiation Protection (2000)

Decree No. 16/2000 was adopted by the Minister of Public Health to implement the 1996 Atomic Energy Act (see *Nuclear Law Bulletin* No. 59; the text of this Act is reproduced in the Supplement to *Bulletin* No. 60). It establishes the legal framework governing radiation protection based upon the 1990 Recommendation of the International Commission on Radiological Protection (Publication No. 60) (see *Nuclear Law Bulletin* No. 47) and the Basic Safety Standards of the International Atomic Energy Agency (Safety Series No. 115).

Pursuant to this Decree, a radiation protection service must be established at all installations using nuclear energy. Operators of such installations are also required to prepare internal radiation protection standards to be approved by the State Public Health and Medical Officer's Service. The Decree furthermore sets dose limits: the maximum effective dose limits for workers and members of the public are set at 100 millisievert (mSv) over five consecutive years subject to a maximum effective dose of 50 mSv in any single year, and at 1 mSv per year respectively.

The Decree also identifies the radiation safety principles which apply in the workplace and sets out provisions on radiation protection training, dosimetric control, the treatment of persons suffering from a radiation injury, the tasks of the radiation protection service, accident handling, and the special radiation protection requirements for nuclear power plants.

Ireland

Organisation and Structure

Establishment of an Office of Emergency Planning (2001)

Following a review of the structures under which emergency planning is conducted, particularly in light of the new threats posed by global terrorism, the Irish Government established an Office of Emergency Planning within the Department of Defence. The task of this Office is to take the lead role

in emergency planning to meet the new threat from international terrorism and from any escalation in international tensions, including co-ordination of the responses by various agencies involved. It is also responsible for overseeing peacetime planning in order to ensure the best possible use of resources and compatibility between the different planning requirements. The existing responsibilities of government departments and agencies in respect of specific emergency planning arrangements remain in place.

Radiation Protection

European Communities (Drinking Water) Regulations (2000)

These Regulations were adopted as Statutory Instrument No. 439 of 2000 on 18 December 2000 and will come into operation on 1 January 2004. The Regulations give effect to provisions of EU Council Directive 98/83/EC on the quality of water intended for human consumption. They prescribe quality standards to be applied in relation to certain supplies of drinking water. This instrument stipulates that the radiation dose arising from one year's consumption of drinking water should not exceed 0.1 mSv. It further stipulates that the dose calculation should include contributions from all natural and artificial radionuclides with the exception of tritium, potassium-40, radon and radon decay products.

Italy

Radiation Protection

Community Law introducing Amendments to Legislative Decrees Nos. 230/95 and 187/2000 (2002)

Article 39 of Community Law No. 39 of 1 March 2002 amends Legislative Decree No. 230/95 (which implemented all the Euratom Directives adopted until then, with the exception of those relating to the use of ionising radiation in medicine; see *Nuclear Law Bulletin* No. 56 and, for the text of this Decree, see the Supplement to *Bulletin* No. 58) and Legislative Decree No. 187/2000 (which specifically implemented Directive 97/43 of 30 June 1997 on health protection of individuals against the dangers of ionising radiation in relation to medical exposure; see *Nuclear Law Bulletin* No. 66). Community Laws are passed yearly to allow for national legislation to be brought into line with Community legislation (see *Nuclear Law Bulletin* Nos. 46, 49, 53 and 63).

The amendments to Legislative Decree No. 230/95 are related to Article 108 on scientific clinical research, and stipulate that the exposure of persons for this purpose is subject to a binding opinion of the Ethics Committee established in 1998. The amendments to Legislative Decree No. 187/2000 mainly concern its Annex III and result from the amendments made to Decree No. 230/95. They require the Ethics Committee to take into account the principles laid down in ICRP 62 (Recommendations of the International Commission on Radiological Protection) and the indications in the guide adopted by the European Commission on medical exposure and biomedical research (Radiation Protection 99).

Japan

Organisation and Structure

Governmental Decision to merge the Japan Atomic Energy Research Institute and the Japan Nuclear Cycle Development Institute (2001)

In the context of a wide-ranging reform of government-funded organisations launched at the initiative of the Prime Minister, on 19 December 2001 the Japanese Government decided to establish a new entity merging the Japan Atomic Energy Research Institute (JAERI) and the Japan Nuclear Cycle Development Institute (JNC) by 2005. These organisations will be replaced by a new independent body, which will be responsible for research and development relating to all aspects of nuclear energy.

Details of this merger are currently under discussion in the Task Force set up within the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The Law establishing this new entity is to be approved in 2004.

Latvia

General Legislation

Regulations Implementing the Act on Radiation Safety and Nuclear Safety (2001-2002)

In order to implement the 2000 Act on Radiation Safety and Nuclear Safety (see *Nuclear Law Bulletin* No. 67; the text of this Act is reproduced in the Supplement to *Bulletin* No. 67), the Cabinet of Ministers has issued a series of Regulations:

- Regulations No. 132 on the Statute of the Radiation Safety Board of 20 March 2001;
- Regulations on the Statute of the Radiation Safety Centre of 22 May 2001;
- Regulations No. 288 on Activities involving Ionising Radiation Sources which do not require a Special Permit (Licence) or Permit of 3 July 2001;
- Regulations No. 289 on the State Duty in relation to the Issue of a Special Permit (Licence) or Permit for Activities Involving Ionising Radiation Sources of 3 July 2001;
- Regulations No. 290 on the Criteria to be Fulfilled for a Special Permit (Licence) or Permit for Activities involving Ionising Radiation Sources of 3 July 2001;
- Regulations No. 294 on Minimum Insurance of the Civil Liability of the Operator where Activities involving Ionising Radiation Sources are Carried Out of 3 July 2001 (see below);

- Regulations No. 301 on the Procedure for the Issue of a Special Permit (Licence) or Permit for Activities involving Ionising Radiation Sources and Procedure for Public Consultation on the Establishment of Ionising Radiation Facilities of State Significance or on Essential Modifications thereto of 3 July 2001;

- Regulations on Protection against Ionising Radiation during the Transport of Radioactive Materials of 3 July 2001;

- Regulation No. 402 on the Procedure for Completion and Transmission of Safety Data Sheets on Ionising Radiation Sources of 18 September 2001;

- Regulations No. 406 on the Procedure for Packaging and Marking of Ionising Radiation Sources of 18 September 2001;

- Regulations on the Procedure for Accounting and Control of the Exposure of Workers of 23 October 2001;

- Regulations on Medical Contraindications for Practices Involving Ionising Radiation Sources of 28 December 2001;

- Regulations No. 5 on the Procedure for the Dismantling of Ionising Radiation Equipment which does not Contain Radioactive Substances of 3 January 2002;

- Regulations on Protection against Ionising Radiation in Relation to Medical Exposure of 5 March 2002 (see below).

Furthermore, other Regulations were approved by the Commission of the Cabinet of Ministers but have not yet entered into force:

- Regulations on Protection against Ionising Radiation;

- Regulations on Radiometric Control of Cargo and Goods on the State Border;

- Regulations on Practices Involving Radioactive Waste and Related Materials.

Finally, other Regulations are currently under preparation:

- Regulations on Physical Protection of Ionising Radiation Sources;

- Regulations on the Procedure Governing Activities Involving Nuclear Materials, Related Materials and Equipment;

- Regulations on Generic Principles for Exchange of Radioactive Waste.

Organisation and Structure

Establishment of the Radiation Safety Centre (2001)

The Radiation Safety Centre (RSC) was established on 9 July 2001 as a state authority supervised by the Ministry of Environmental Protection and Regional Development. It is responsible for ensuring the safe use of ionising radiation sources and protecting the public and the environment against their potential harmful effects while encouraging the maximum benefit from use of radiation sources.

The main tasks of RSC include *inter alia*: drafting policy proposals for supervision and control of radiation safety and nuclear safety; licensing practices involving radiation sources; co-ordinating measures against illicit trafficking of radioactive and nuclear materials; encouraging introduction of new technologies to minimise the possible harmful effects of nuclear activities; co-ordinating technical co-operation in the field of radiation safety; preparing national reports; ensuring that RSC staff receive proper education and training for their tasks; maintaining data bases on practices, sources and exposures; and ensuring an operational 24-hour emergency preparedness system.

Radiation Protection

Regulations on Protection against Ionising Radiation in Relation to Medical Exposure (2002)

These Regulations of 5 March 2002 aim to implement Council Directive 97/43/Euratom of 30 June 1997 on health protection of individuals against the dangers of ionising radiation in relation to medical exposure (see *Nuclear Law Bulletin* No. 60). The Regulations are divided into nine chapters dealing respectively with:

- scope and main principles, including the requirement according to which only a radiologist is entitled to decide upon medical exposure and has responsibility for justification of such exposure;
- justification, in particular basic requirements, introduction of reference levels as guidance for justification, special requirements for new types of examinations and equipment, biomedical research;
- responsibilities of the licensee;
- medical radiological procedures covering diagnostics, therapy, and nuclear medicine;
- requirements for education of personnel;
- technical requirements for equipment, including non-compliance indicators, prohibition of certain types of equipment;
- dose control system;
- special precautions in case of pregnancy and breast feeding;

- unplanned events.

Third Party Liability

Regulations on Minimum Insurance of the Civil Liability of the Operator where Activities involving Ionising Radiation Sources are Carried Out (2001)

These Regulations No. 294 of 3 July 2001, implementing the 2000 Act on Radiation Safety and Nuclear Safety, provide for the requirement for the operator to maintain financial security of:

- 4 million Latvian Lats (LVL)[2] for nuclear facilities;
- 800 000 LVL for other facilities of state significance, defined in the 2000 Act as "nuclear facilities, radioactive waste disposal or management facilities and other facilities in which practices involving radioactive substances are conducted, where the total radioactivity of those substances exceeds by 1 billion times the prescribed limit by the Cabinet of Ministers, which require a special permit (licence) or a permit";
- 400 000 LVL for high dose rate sources, i.e. sources whose radioactivity is from 1 million to 1 billion times above exemption level or where the dose rate at a distance of one metre from an unshielded source exceeds 10 Sv/h;
- 80 000 LVL for medium dose rate sources, whose radioactivity is from a thousand to a million times above exemption level or where the dose rate is from 0.1 to 10 Sv/h;
- 1 000 LVL for low dose rate sources.

Lithuania

General Legislation

Law amending Articles 16 and 32 of the Law on Nuclear Energy (2001)

This Law amending the 1996 Law on Nuclear Energy (see *Nuclear Law Bulletin* No. 59; the text of this Law is reproduced in the Supplement to *Bulletin* No. 60) was adopted on 8 November 2001 by the Seimas (Parliament) of the Republic of Lithuania. The amendments are related to the supervision of the construction of nuclear facilities. Previously, permits for the construction of nuclear facilities were issued by the administration of the District Governor. These amendments provide that the Government will decide which state institution shall deliver such permits. It is foreseen that the competent authority of the Ministry of Environment will now take over this responsibility. Furthermore, the scope of the Law has been extended so that it now governs not only construction but also modification of nuclear facilities.

2. 1 Special Drawing Right = 0.8 LVL.

Law amending Articles 1, 2, 48-51 and the Title of Chapter 9 of the Law on Nuclear Energy (2001)

This Law amending the 1996 Law on Nuclear Energy was adopted on 13 November 2001 by the Seimas (Parliament) of the Republic of Lithuania. The amendments are related to the improvement of physical protection of nuclear facilities and nuclear materials.

In 1999, the International Physical Protection Advisory Service (IPPAS) of the International Atomic Energy Agency (IAEA) comprehensively assessed Lithuania's physical protection system and submitted a report containing recommendations and proposals to improve the physical protection of nuclear facilities and materials. The main recommendations involved clarification of the functions of state institutions in this area and establishment of regulations governing the physical protection of all nuclear materials, rather than simply those which are used in the production of nuclear energy.

On 26 September 2000, the Seimas adopted Resolution No. VIII-1967 approving the Programme for the Improvement of Safety of Ignalina NPP Exploitation. This programme included measures to strengthen physical protection at Ignalina and to implement the IPPAS recommendations and proposals. It was therefore necessary to amend the Law on Nuclear Energy as follows:

- VATESI (Lithuanian State Nuclear Power Safety Inspectorate) is now responsible for adopting regulations governing physical protection and monitoring their implementation;
- the definition of nuclear safety has been improved and now covers physical protection;
- the scope of the Law of Nuclear Energy has been extended to regulate physical protection of all nuclear materials, rather than only those which are used in the production of nuclear energy.

Radiation Protection

Hygiene Standard on General Norms of Radiation Safety (2001)

By Order No. 663 of 21 December 2001, the Minister of Health Protection approved this Standard HN 73:2001, repealing and replacing Standard HN 73:1997. The purpose of the Standard is to implement Council Directives 96/29/Euratom laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation (see *Nuclear Law Bulletin* No. 58) and 97/43/Euratom on health protection of individuals against the dangers of ionising radiation in relation to medical exposure, (see *Nuclear Law Bulletin* No. 60) and the IAEA Safety Series Nos. 115 and 120.

Order on Certification of Persons Responsible for Radiation Safety Training of Workers (2001)

By Order No. 607 of 21 November 2001, the Minister of Health Protection established the rules governing the certification of persons responsible for training workers in relation to radiation safety.

Radioactive Waste Management

Resolution approving the Strategy on Radioactive Waste Management and the Programme of Activities of the Radioactive Waste Management Agency for 2002-2004 (2002)

By Resolution No. 174 of 6 February 2002, the Government of the Republic of Lithuania approved the above-mentioned Strategy which sets out provisions covering the strategic objectives, basic principles, means of implementation and financing of the management of solid radioactive waste, spent nuclear fuel, liquid radioactive waste from Ignalina NPP, radioactive waste generated by small producers and radioactive waste resulting from research at and the decommissioning of Ignalina NPP.

Luxembourg

Regulations on Nuclear Trade (including Non-Proliferation)

Law approving an Additional Protocol on the Strengthening of Non-Proliferation of Nuclear Weapons in order to Detect Clandestine Nuclear Activities (2001)

Luxembourg approved the Additional Protocol on the Strengthening of Non-Proliferation of Nuclear Weapons in order to Detect Clandestine Nuclear Activities in its Law of 1 August 2001. This Additional Protocol to the Safeguards Agreement concluded between the 13 Member states of the European Atomic Community (Euratom) which are not nuclear-weapon states, Euratom and the International Atomic Energy Agency (IAEA), in implementation of Article III(1) and (4) of the Treaty on the Non-Proliferation of Nuclear Weapons, was signed by these Member states on 22 September 1998.

This Protocol aims to strengthen the effectiveness and to improve the efficiency of the IAEA international safeguards system, and aims to detect any clandestine nuclear activity. When it enters into force, certain non-nuclear material and equipment, activities and research involving them, and their import or export, shall be controlled. Controls will be extended to nuclear raw materials to which the safeguards agreement does not apply.

Although Euratom, Party to the Protocol, is only, pursuant to the Euratom Treaty, competent to control nuclear materials, and is not habilitated to control non-nuclear material and equipment, Luxembourg decided pursuant to an agreement with the European Commission to confer responsibility for national obligations resulting from the Additional Protocol in relation to non-nuclear material and equipment to Euratom.

Mexico

Radioactive Waste Management

Official Norm establishing Requirements Governing Installations for the Treatment and Conditioning of Nuclear Waste (2001)

This Norm was adopted on 10 September 2001 and was published in the Official Federal Bulletin on 26 September 2001. It aims to optimise procedures in relation to the handling, transportation and temporary or permanent storage of radioactive waste. Facilities used for these purposes must be sited, designed, operated and decommissioned in order to avoid unacceptable risks for personnel, the public and the environment.

Some of the requirements established by this Norm are as follows:

- all facilities must have the necessary safety mechanisms and radiation monitoring equipment;
- facilities must be designed according to the physical and chemical characteristics of the radioactive waste and materials which will be on the premises;
- all equipment for the treatment and conditioning of radioactive waste must be located in areas which would minimise the release of ionising radiation in the event of an accident;
- measures must be in place to protect personnel from the risks generated from the storage, handling, control and inventory of the substances present; personnel should also receive the appropriate training in order to fulfil their tasks;
- a quality assurance programme must be established to ensure that all facilities are constructed in accordance with the approved design and that any modifications are approved by the National Nuclear Security and Safeguards Commission;
- an emergency plan must be established to guarantee the safety of personnel and the public.

Netherlands

Organisation and Structure

Establishment of new General Inspectorate for Housing, Spatial Planning and the Environment (2002)

The new Inspectorate for Housing, Spatial Planning and the Environment (*VROM-Inspectie*), began operating on 1 January 2002. The new Inspectorate brings together into a single organisation the formerly separate inspectorates dealing with each of the Ministry's three core policy areas. The Minister for Housing, Spatial Planning and the Environment has primary responsibility for the implementation of the 1963 Nuclear Energy Act (see *Nuclear Law Bulletin* Nos. 3 and 64).

The purpose of integrating the original three inspectorates to form a single Ministry Inspectorate is to facilitate more effective enforcement of legislation and regulations in the fields of the environment, land use and housing, and to improve monitoring of compliance with those rules. The Nuclear Safety Department will also form part of the new General Inspectorate.

Poland

General Legislation

Amendments to the Atomic Energy Act (2001)

Following the adoption of the Act on the Organisation of the Central Authorities in the Republic of Poland on 21 December 2001 (Official Journal of 2001, No. 54, Item 1800), Articles 109 and 113 of the 2000 Atomic Energy Act (the text of which is reproduced in the Supplement to *Nuclear Law Bulletin* No. 68; see also *Bulletin* No. 67) related to the President of the National Atomic Energy Agency were amended. These amendments entered into force on 1 January 2002.

Pursuant to the new Organisation Act which provides for a transfer of the supervisory authority over the National Atomic Energy Agency from the Prime Minister to the Minister of the Environment, Article 109(2) of the Atomic Energy Act is to read as follows: "The Agency's President shall be nominated by the Prime Minister upon proposal of the Minister competent in environmental matters. The Agency's President shall be recalled by the Prime Minister".

In addition, another minor amendment was made to the Act as a result of the adoption of the Environmental Protection Law on 27 July 2001 (Official Journal of 2001, No. 100, Item 1085). The phrase "and human health" is now deleted from Article 33(2)(4) of the Atomic Energy Act.

Organisation and Structure

Regulations approving the Statute of the National Atomic Energy Agency and establishing a Council for Atomic Affairs (2001)

On 7 and 17 December 2001 respectively, the Council of Ministers issued a Regulation approving the Statute of the National Atomic Energy Agency and a Regulation establishing a Council for Atomic Affairs in order to implement the 2000 Atomic Energy Act.

The first Regulation provides details on the internal organisation of the National Atomic Energy Agency, and the main tasks, powers and procedures of the different services within the Agency.

The second Regulation establishes a Council for Atomic Affairs as a consultative and advisory body to the President of the National Atomic Energy Agency. The Council is mainly responsible for providing specialised knowledge and opinions related to the main fields of nuclear energy, including radiological protection and nuclear safety. The Council's chairman is nominated by the Prime Minister, the other members being appointed by the Agency's President.

Regime of Radioactive Materials

Regulations on the Physical Protection and on the Accountancy of Nuclear Materials (2001)

Both of these Regulations were adopted on 31 July 2001 to implement the Atomic Energy Act.

The Regulation on the Physical Protection of Nuclear Materials sets out the various categories of nuclear materials and establishes adequate protection levels for each of them. It further determines the organisational methods and technologies which should be used in the field of physical protection, as well as the appropriate procedures for the periodic controls carried out by the President of the National Atomic Energy Agency.

The Regulation on the Accountancy of Nuclear Materials defines nuclear materials subject to accountancy requirements, specifies methods and means of maintaining balance, establishes control procedures, and presents detailed models of the documents to be submitted.

Romania

Radiation Protection

Norms on Medical Surveillance of Workers Occupationally Exposed to Ionising Radiation and on Radiation Safety (2001)

During 2001, a number of Orders were adopted in order to implement European legislation in the field of radiation protection. The implementation of Council Directive 96/29/Euratom laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation (see *Nuclear Law Bulletin* No. 58) was completed through the adoption by the Minister of Health and the Family of Order No. 944 of 28 December 2001 approving the Norms on Medical Surveillance of Workers Occupationally Exposed to Ionising Radiation and the adoption by the President of the National Commission for the Control of Nuclear Activities (CNCAN) of Order No. 366 on 22 September 2001 approving the Norms on Radiological Safety.

Transport of Radioactive Materials

Norms on the Transport of Radioactive Materials (2001)

Order Nos. 373 and 374 adopted on 3 October 2001 by the CNCAN President approve the Norms on Safe Transport of Radioactive Materials and the Norms on International Shipments of Radioactive Materials over Romanian Territory, both of which are designed to implement Council Regulation (Euratom) No. 1493/93 of 8 June 1993 on shipments of radioactive substances between Member States (see *Nuclear Law Bulletin* No. 52).

Third Party Liability

Law on Civil Liability for Nuclear Damage (2001)

This Law was adopted on 3 December 2001 and was published in the Official Bulletin of 19 December 2001. It aims to regulate civil liability for the compensation of damage resulting from activities involving the utilisation of nuclear energy for peaceful purposes. Romania is a Party to the 1963 Vienna Convention on Civil Liability for Nuclear Damage and to the 1997 Protocol to Amend this Convention. This Law establishes the fundamental principles underlying the international nuclear liability regime – strict and exclusive liability of the nuclear operator for damage occurring in his nuclear installation or involving nuclear material being sent to or from that facility, limitation of liability in amount and time and compulsory financial security.

The minimum amount of liability of the nuclear operator is the equivalent in Romanian currency of 300 million Special Drawing Rights (SDR). Such liability can be reduced to SDR 150 million where the difference is provided by the State from public funds. There is also a phasing-in provision providing for the possibility of limiting the operator's liability to SDR 75 million for a ten-year period. The liability for low-risk installations and transport activities can be reduced to SDR 30 million (in certain cases, SDR 20 million) and SDR 5 million respectively (however, there must be at least SDR 25 million cover for the transport of nuclear fuel). Rights to claim compensation are extinguished where an action is not brought within 30 years in respect of loss of life or personal injury, or 10 years for other nuclear damage. In all cases, an action must be brought within three years of the date upon which the person suffering damage had knowledge of the damage and the liable operator.

This Law shall enter into force on 19 December 2002. The text of the Law is reproduced in the Supplement to this *Bulletin*.

Slovenia

Third Party Liability

Decree on Establishment of the Amount of Operator's Limited Liability and the Corresponding Amount of Insurance for Nuclear Damage (2001)

This Governmental Decree No. 443-02/2001-1, which repeals and replaces a 1998 Decree on the same subject (see *Nuclear Law Bulletin* No. 63), was adopted on 19 December 2001 (Official Gazette No. 110 of 29 December 2001) and entered into force on 1 January 2002. This Decree aims to harmonise the domestic legislation with the Paris Convention on Third Party Liability in the Field of Nuclear Energy, which was ratified by Slovenia on 16 October 2001 (see *Nuclear Law Bulletin* No. 68).

Pursuant to this Decree, the operator of a nuclear installation is liable for nuclear damage up to the equivalent in Slovenian Tolars of 150 million Special Drawing Rights (SDR) and must subscribe insurance to cover his liability up to this amount. However, insurance for a nuclear research reactor whose thermal power is less than 10 kW is set at the equivalent in Tolars of SDR 5 million and insurance for transport of nuclear materials is set at the equivalent in Tolars of SDR 20 million.

Furthermore, should nuclear damage exceed the amount insured by the operator, the Republic of Slovenia will cover the difference up to the equivalent in Tolars of 150 million SDRs.

Spain

Organisation and Structure

Reorganisation of the Nuclear Safety Council (2000)

Following the strengthening of the Nuclear Safety Council's functions in the field of radiation protection of the public and the environment (see *Nuclear Law Bulletin* No. 66), it was deemed necessary to introduce changes into the organisational structure of the Council in order to reflect the separation between nuclear safety and radiation protection issues. Accordingly, under Royal Decree No. 469/2000 of 7 April 2000 amending Article 41 of the Council's Statute (see *Nuclear Law Bulletin* Nos. 30, 44 and 57), the former Technical Directorate of the Council has been disbanded and two new Technical Directorates responsible for Nuclear Safety and Radiation Protection respectively have been created.

The former structure of the sub-directorates has also been modified: three Sub-Directorates responsible for Nuclear Installations, Engineering and Nuclear Technology respectively now report to the Technical Directorate for Nuclear Safety. The Technical Directorate for Radiation Protection is also composed of three Sub-Directorates responsible respectively for Radiation Protection of the Environment, Occupational Radiation Protection and Emergencies.

Tanzania

Radioactive Waste Management

Radioactive Waste Management for the Protection of Human Health and Environment Regulations (1999)

These Regulations were adopted on 1 September 1999 (Government Notice No. 276 published on 17 September 1999) pursuant to Section 40 of the Protection from Radiation Act No. 5 of 1983 (see *Nuclear Law Bulletin* No. 37). They set out the basic technical and organisational requirements to be met by waste generators and operators of waste management facilities in order to ensure the protection of human health and the environment from the hazards associated with radioactive waste.

The Regulations apply to all types of waste – solid, liquid and gaseous – whose activity leads to the intake of a dose higher than 10 microsieverts, all users of ionising radiation sources whose activity is subject to licensing, and operators of radioactive waste management facilities.

Under the Regulations, the radioactive waste generator is primarily responsible for ensuring its safe management. Accordingly, he is required in particular to segregate, collect and classify waste and, for safety purposes, ensure that any releases of radioactive waste are within the specified limits, minimise the volume of radioactive waste produced, and appoint a Radioactive Materials Co-ordinator

or Radioactive Waste Co-ordinator. The Co-ordinator shall be responsible *inter alia* for establishing and keeping up-to-date an inventory of radioactive materials and waste; setting up and maintaining a record keeping system in order to facilitate identification, classification, collection and storage of radioactive materials; ensuring appropriate labelling and physical security of waste packages; and reporting any accident to the facility management.

However, where the waste generator is incapable of managing the radioactive waste appropriately or where such an entity no longer exists, the Regulatory Body, i.e. the National Radiation Commission, shall take responsibility for managing the radioactive waste.

Radioactive waste generation and management is subject to licensing. The power to issue, suspend or revoke such licences lies with the National Radiation Commission.

The Regulations also provide for the establishment of a Central Radioactive Waste Management Facility as a centre for collection and transportation of all radioactive waste from the waste generators' establishments and for treatment, conditioning and storage of radioactive waste requiring more than a one-year decay period to bring down the activity level to below clearance levels. This Facility is operated by the Commission.

Ukraine

Third Party Liability

Law on Civil Liability for Nuclear Damage and its Financial Security (2001)

This Law was adopted on 13 December 2001 and entered into force on 16 January 2002. It establishes rules and procedures governing liability for and indemnification of damage caused by a nuclear incident, including measures to ensure financial cover of such liability. This Law incorporates the principles established in the 1963 Vienna Convention on Civil Liability for Nuclear Damage, to which Ukraine acceded on 20 September 1996 (see *Nuclear Law Bulletin* No. 61), into domestic legislation. It provides for the strict and exclusive liability of the nuclear operator, limited to the equivalent of 150 million Special Drawing Rights per nuclear incident. It further provides that liability for loss of life is limited to the equivalent of 2 000 times the official untaxed minimum income[3] and liability for personal injury or damage to property is limited to 5 000 times that sum.

Pursuant to this Law, the operator is required to secure a financial guarantee to cover his liability, through insurance or other authorised types of financial security. The Cabinet of Ministers of Ukraine may grant the operator a state guarantee for this purpose. Insurers who provide such civil liability insurance must be licensed to provide this type of insurance and also be members of a nuclear insurance pool. Insurers may enter into re-insurance contracts with foreign insurers as long as the foreign insurers are members of the relevant foreign nuclear insurance pool. The Law further provides that if the operator in bankrupt, the state will grant funds to compensate nuclear damage.

The Cabinet of Ministers is required, within six months of the entry into force of this Law, to draw up and approve specific licensing terms for activities with civil liability insurance for nuclear

3. This is estimated at 17 Hryvias (UAH), i.e. approx. 3 US Dollars (USD), in April 2002.

damage, a Statute on a national nuclear insurance pool, a standard form of agreement for mandatory civil liability insurance for nuclear damage and a procedure for calculating premiums for such insurance.

The text of this Law is reproduced in the Supplement to this *Bulletin*.

United Kingdom

General Legislation

Anti-Terrorism, Crime and Security Act (2001)

This Act, a response to the events of 11 September 2001, received Royal Assent on 14 December 2001, and the majority of its provisions came into force on the same date. Part 8 of the Act made some changes to the law relating to the security of the nuclear industry. The most important changes are as follows:

- an expansion of the jurisdiction of the United Kingdom Atomic Energy Authority's constabulary (see *Nuclear Law Bulletin* No. 18), most importantly to enable it to exercise its powers on all licensed nuclear sites (Section 76);

- the creation of a new power to make regulations for the purposes of ensuring the security of nuclear sites and nuclear material, which will form the basis of a comprehensive nuclear security regime. No such regulations have yet been made;

- the creation of a new criminal offence of disclosing information, the disclosure of which might prejudice the security of nuclear sites or nuclear material (Section 79); and

- the creation of a new power to make regulations prohibiting the disclosure of information about the enrichment of uranium. Again, no such regulations have yet been made (Section 80).

Radiation Protection

Radiation (Emergency Preparedness and Public Information) Regulations (2001)

These Regulations came into force on 20 September 2001 and implement Title IX, Section 1 (intervention in cases of radiological emergency) of Council Directive 96/29/Euratom of 13 May 1996 laying down basic standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation (see *Nuclear Law Bulletin* No. 58). The Regulations apply to work which involves having on premises, or transporting, radioactive substances in quantities exceeding specified thresholds. They impose obligations on operators and carriers to make an assessment as to hazard identification and risk evaluation and to take all reasonably practical steps to prevent a radiation accident, and to limit the consequences of such an accident. Operators, carriers and local authorities are also required to prepare, review, revise and test emergency plans at regular intervals, and to provide information to the public in specified circumstances.

United States

Radioactive Waste Management

Disposal of High-level Radioactive Wastes in a Proposed Geologic Repository at Yucca Mountain (2001)

On 2 November 2001, the Nuclear Regulatory Commission (NRC) published its new licensing criteria entitled "Disposal of High-Level Radioactive Wastes in a Proposed Geologic Repository at Yucca Mountain, NV".[4] Consistent with requirements of Section 801(2) of the Energy Policy Act of 1992 (see *Nuclear Law Bulletin* No. 51), the NRC modified its technical requirements and criteria to conform with the Public Health and Environmental Radiation Protection Standards for Yucca Mountain adopted by the Environmental Protection Agency (EPA) (see *Nuclear Law Bulletin* No. 68) and most notably imposed the 15 mrem per year dose limit. The regulations also include criteria for long-term repository performance, licensing procedures, records and reporting, monitoring and testing programmes, performance confirmation, quality assurance, personnel training and certification and emergency planning. To import the EPA Standards as "transparently" as possibly, the NRC added EPA Subpart A for storage and Subpart B for disposal to its new licensing criteria at 10 C.F.R. Part 63 as Subparts K ("Preclosure Public Health and Environmental Standards") and L ("Postclosure Public Health and Environmental Standards") respectively. Subpart L includes Postclosure Individual Protection, Human Intrusion and Ground-Water Protection Standards that reflect those set by the EPA.

Thus, the Department of Energy must ensure that no member of the public in the general environment (i.e. outside the Yucca Mountain site, Nellis Air Force Range and Nevada Test Site) receives more than an annual dose of 15 mrem from a combination of factors during the preclosure period (management and storage).[5] During the post-closure period (disposal), the Department must demonstrate a reasonable expectation that the RMEI[6] receives no more than an annual dose of 15 mrem as a result of human intrusion for 10 000 years after disposal – from all potential environmental pathways.[7] The NRC also adopts the EPA's separate 4 mrem per year standard for groundwater.[8]

The key aspects of the criteria are the following:

- Postclosure Individual Protection Standard (63.311) with adoption of a 15 mrem per year dose limit for the RMEI for 10 000 years after disposal from releases from the Yucca Mountain disposal system. The Department must demonstrate a reasonable expectation with analysis including all potential pathways of radionuclide transport and exposure.

4. 10 C.F.R. Part 63.

5. 10 C.F.R. Subpart K 63.204.

6. "reasonably maximally exposed individual".

7. 10 C.F.R. Subpart L 63.321.

8. 10 C.F.R. Subpart L 63.331. The average individual exposure from natural background radiation in the United States is approximately 300 mrem per year total effective dose equivalent.

- Radiation Standards for Human Intrusion (63.321-322) with adoption of the 15 mrem per year dose limit for the RMEI as a result of human intrusion. The Department must demonstrate a reasonable expectation that if complete waste package penetration is projected to occur within 10 000 years after disposal, that the RMEI will receive no more than 15 mrem per year.

- Ground-Water Protection Standards (63.331-332) with adoption of separate standards for protection of ground-water whereby the Department must demonstrate a reasonable expectation that for 10 000 years after disposal, releases of radionuclides from the Yucca Mountain disposal system will not cause radioactivity in the representative volume of ground water in the accessible environment to exceed 4 mrem per year to the whole body or any organ based on drinking two litres per day from the representative volume.

Yucca Mountain Site Suitability Guidelines (2001)

In 1984, the General Guidelines for the Recommendation of Sites for the Nuclear Waste Repositories were promulgated by the Department of Energy (DOE) for use in considering and recommending sites for characterisation under Section 112(a) of the Nuclear Waste Policy Act (see *Nuclear Law Bulletin* Nos. 26, 28, 30, 31 and 41).[9] In order to clarify and focus those Guidelines by adding a new site specific Subpart E that would apply only to Yucca Mountain and contain preclosure and postclosure system guidelines,[10] the DOE issued on 14 November 2001 its Yucca Mountain Site Suitability Guidelines, codified at 10 C.F.R. Part 963, with criteria based on the Regulations for Licensing a Repository at Yucca Mountain of the Nuclear Regulatory Commission (NRC) (see above).[11]

Subpart A states the purpose which is to establish criteria to guide the Department's determination regarding suitability of Yucca Mountain and contains definitions consistent with those in the NRC rule. Thus, when using the term "applicable radiation protection standard" at Subpart A of Part 963.2, the Department means the numerical radiation dose or concentration limits contained in the NRC's 10 C.F.R. Part 63 which in turn incorporates the public health and environmental standards promulgated by the EPA in 40 C.F.R. Part 197.[12] The numeric radiation dose limits applicable in the preclosure period refer to the numerical dose limits in 10 C.F.R. Part 63.111(a) and (b) and 63.204. Subpart K of Part 63 contains the preclosure public health and environmental standards adopted from 40 C.F.R. Part 197. The preclosure standard will *inter alia* require that the Department demonstrate at licensing a reasonable assurance that no member of the public in the general environment (i.e., outside the Yucca Mountain site, Nellis Air Force Range and Nevada Test Site) will receive more than an annual dose of 15 mrem from the management and storage of radioactive material both inside and outside the Yucca Mountain repository (Part 63.204). The Department will also be required to demonstrate a reasonable assurance that during normal operations any radiation exposures and releases

9. 10 C.F.R. Part 960 (49 Fed. Reg. 47714) (6 December 1984).

10. 61 Fed. Reg. 66158 (1996).

11. The "Yucca Mountain Site Suitability Guidelines", published in the Federal Register at 66 Fed. Reg. 57298, summarize the history of the programme and describe the structure and interplay of the EPA, NRC and Department rules for Yucca Mountain. The rule, as well as updated information on all aspects of the programme, are available at Office of Civilian Radioactive Waste Management's web site at: www.rw.doe.gov

12. 66 Fed. Reg. 57324 (2001).

of radioactive materials to a member of the public – outside the Yucca Mountain site – are within numerical radiation dose limits contained at Part 63.204 and a related NRC regulation at Part 20 specifying radiation protection standards for workers and the public involving licensees. In the postclosure period, radiation limits refer to the numerical dose limits in Parts 63.311 and 63.321, and numeric radionuclide concentration limits in Part 63.331. The postclosure public health and environment standards are contained in L of 10 C.F.R.[13]

Subpart B describes various facets of the Department's suitability determination for Yucca Mountain during both the preclosure and postclosure periods. Within each period there are three subsections addressing the: 1) site suitability determination; 2) evaluation method; and 3) criteria for evaluation. The preclosure and postclosure periods are addressed separately because of different issues relevant to suitability during these two periods. This is also consistent with the original and revised NRC Regulations which also have separate performance objectives for the preclosure and postclosure periods. Preclosure criteria (Parts 963.12 through 963.14) will guide the Department's suitability considerations on operation of the repository before it is closed, as waste is received, stored and emplaced. Postclosure criteria (Parts 963.15 through 963.17) will guide evaluation of the long-term repository behaviour.[14]

13. 66 Fed. Reg. 57324 (2001).

14. 66 Fed. Reg. 57326-57327 (2001).

INTERNATIONAL REGULATORY ACTIVITIES

International Atomic Energy Agency

Adoption of Action Plan against Nuclear Terrorism (2002)

On 19 March 2002, the IAEA Board of Governors adopted an action plan against nuclear terrorism.

The Report on Protection against Nuclear Terrorism, formally presented to the Board of Governors on 30 November 2001, identified four main categories of potential threat: acquisition of a nuclear weapon; acquisition of nuclear material to construct a nuclear weapon or to cause a radiological hazard; acquisition of other radioactive materials to cause a radiological hazard; and violent acts against nuclear facilities to cause a radiological hazard. The report makes clear that activities within the action plan are not a substitute for national measures, but rather are designed to supplement and reinforce national efforts in areas where international co-operation is indispensable to strengthening nuclear security.

It is estimated that the programme will cost 11.5 million United States dollars (USD) per year for IAEA activities, with a further USD 20 million per year to upgrade emergency response. Although some countries favoured introducing assessments to fund the programme from the outset, it was finally decided that this action plan would be financed entirely by voluntary contributions. A number of pledges were made immediately, including financial contributions, secondment of cost-free experts and contribution of expertise.

European Union

Recommendation on the protection of the public against exposure to radon in drinking water supplies (2001)

On 20 December 2001, the Commission of the European Communities adopted Recommendation 2001/928/Euratom on the protection of the public against exposure to radon in drinking water supplies (OJ L 344 of 28 December 2001, p. 85). This Recommendation, which concerns the radiological quality of drinking water supplies regarding radon and long-lived radon decay products, supplements Council Directive 96/29/Euratom of 13 May 1996 laying down the basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation (OJ L 159 of 29 June 1996, p. 1; see *Nuclear Law Bulletin* No. 58), and completes the guidelines on radon contained in Commission Recommendation 90/143/Euratom, of

21 February 1990, on the protection of the public against indoor exposure to radon (OJ L 80 of 27 March 1990, p. 26; see *Nuclear Law Bulletin* No. 46).

The Recommendation aims to minimise exposure of the general public to radon and its decay products with a view to reducing the related health risk and to provide guidance to Member States on means to control such exposures. In order to reduce the concentrations of radon and its decay products in drinking water supplies, the Commission recommends the Member States to:

- conduct surveys to determine the activity concentration of radon and certain decay products in ground water sources and wells;
- set suitable reference levels for radon and its most relevant decay products both for private wells and public water supplies;
- if reference levels are exceeded, take remedial action and inform the concerned consumers;
- provide guidance on methods for removing radon and its decay products from water.

Amendment to the legislation implementing the Regulation on imports of agricultural products originating in third countries following the Chernobyl accident (2001)

On 8 August 2001, the European Commission adopted Regulation (EC) No. 1621/2001, amending Regulation (EC) No. 1661/1999 as regards the export certificate required for agricultural products and the list of customs offices permitting the declaration of products for free circulation in the Community (OJ L 215 of 9 August 2001, p. 17). Regulation (EC) No. 1661/1999 lays down detailed rules for the application of Council Regulation (EEC) No. 737/90 on the conditions governing imports of agricultural products originating in third countries following the accident at the Chernobyl nuclear power station (the text of which is reproduced in *Nuclear Law Bulletin* No. 45).

The purpose of the amending Regulation is to revise Annexes II and III of Regulation (EC) No. 1661/1999. Annex II contains the model of the export certificate which must be provided for each consignment of non-cultivated mushrooms, originating in certain third countries, imported into the European Union. Annex III contains the list of customs offices in which imported non-cultivated mushrooms may be declared for free circulation in the European Union.

Resolution on the Commission Green Paper Towards a European Strategy for the Security of Energy Supply (2001)

In response to the Commission Green Paper Towards a European Strategy for the Security of Energy Supply, the European Parliament approved this Resolution on 15 November 2001 to be forwarded to the EU Council, the Commission and the parliaments of the Member States.

While recognising the need to increase the proportion of renewable energy sources in electricity generation, the European Parliament considers that the most appropriate strategy to ensure energy supply consists in diversifying energy sources and origins of supply. Accordingly, it suggests retaining nuclear energy as an electricity generation source.

Furthermore, in order to reach the objectives as set by the Kyoto Protocol to the UN Framework Convention on Climate Change in relation to reduction of greenhouse gas emissions, the Parliament "calls on all EU institutions to encourage the shift towards zero-carbon emission fuels for power",

notably electricity generation from nuclear energy, by removing the existing legislative and fiscal barriers. In addition, according to the Parliament, achieving the targets for 22.1% electricity from renewable energy sources by 2010, maintaining the present level of nuclear electricity production and building new clean coal power plants are all essential for security of supply and in order to attain the Kyoto emission reduction targets.

The Parliament also recommends that the Commission take the necessary measures to ensure that current human resource levels in the nuclear sector do not shrink to such an extent as to jeopardise the existence of the valuable wealth of knowledge and experience in the field of safety and security of operating reactors, decommissioning or waste management. It also calls on those Member States who presently enjoy the benefits of nuclear generation of electricity but which have not already made provision for the treatment and disposal of their own radioactive waste material, to adopt appropriate measures as soon as possible.

International Maritime Organisation

Declaration of Mandatory Nature of the International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-level Radioactive Wastes on Board Ships (1999)

On 27 May 1999, the Maritime Safety Committee (MSC) of the International Maritime Organisation (IMO) adopted amendments to the International Convention for the Safety of Life and Sea (SOLAS) 1974, aimed at making the International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Waste on Board Ships (INF Code) mandatory. The amendments relate to Chapter VII of SOLAS (Carriage of Dangerous Goods).

The INF Code sets out how the material covered by the Code should be carried, including specifications for ships. It applies to all ships regardless of the date of construction and size, engaged in the carriage of INF cargo. Ships are assigned to one of three categories, depending on the radioactivity of their INF cargo. The INF Code contains eleven chapters respectively entitled: General Provisions; Damage Stability; Fire Safety Measures; Temperature Control of Cargo Spaces; Structural Consideration; Cargo Securing Arrangements; Electrical Power Supplies; Radiological Protection; Management and Training; Shipboard Emergency Plan; and Notification in the Event of an Incident involving INF Cargo.

The INF Code provides that an International Certificate of Fitness for the Carriage of INF Cargo must be issued to every ship involved in transporting a cargo of packaged irradiated nuclear fuel, plutonium or high-level radioactive waste. The ship is then subject to inspections and surveys in order to ensure that the structure, equipment, fittings, arrangements and material comply with the provisions of the Code.

The Code reproduces a Model International Certificate of Fitness for the Carriage of INF Cargo. This Certificate must be established in the official language of the issuing State; if the official language is not English, Spanish or French, it must provide a translation in one of these languages.

The INF Code was first adopted as a recommendatory code by the IMO Assembly on 4 November 1993. The amendments making the INF Code mandatory entered into force on 1 January 2001.

AGREEMENTS

BILATERAL AGREEMENTS

Belarus – Ukraine

Agreement on Early Notification of a Nuclear Accident and Co-operation in the Field of Radiation Safety (2001)

This Agreement, which lays the foundations for co-operation in the event of any accident involving nuclear facilities and activities and ensures a high level of radiation safety, was concluded by the Governments of Belarus and Ukraine on 16 October 2001.

It provides that, in the event of any accident involving nuclear facilities or activities which has affected or may affect the radiation safety of the other Party, the Party in the territory of which the accident has occurred shall promptly notify the other Party. The Party shall also provide any information available with a view to minimising the radiological consequences and to protecting the public.

The Parties shall also exchange on a regular basis information related to the radiation safety of nuclear facilities which are being used or designed, constructed, put into operation or shut down in their territory as well as on activities which pose a risk of radioactive contamination of the environment. They shall also inform each other of offences involving nuclear materials, radioactive waste and other sources of ionising radiation in their territory if such crimes are believed to affect the interests of the other Party. Scientific and technical co-operation in the field of nuclear and radiation safety, including environmental monitoring, are to be encouraged.

The competent authorities responsible for the implementation of the Agreement are, in Belarus, the Ministry for Emergencies, and in Ukraine, the State Nuclear Regulatory Committee. Representatives of the competent authorities shall meet at least once a year to discuss issues related to the implementation of the Agreement and to establish joint programmes aimed at ensuring a high level of radiation safety.

Croatia – Slovenia

Agreement on Ownership of Krško Nuclear Power Plant (2001)

On 19 December 2001, the governments of Croatia and Slovenia signed a formal agreement with a view to resolving a long-standing dispute as to the ownership of the Krško nuclear power plant, located in south-east Slovenia, in operation since 1981.

This Agreement, which remains to be ratified by both parliaments, provides that:

- ownership of the plant is to be shared by the two countries on a 50/50 basis;
- 50% of output is to be delivered to Croatia as of mid-2002;
- Croatian citizens may once again be employed by the operating company, the Slovenian utility *Nuklearna Elektrarna Krško*;
- two separate decommissioning funds are to be maintained, in Croatia and Slovenia;
- a final decision on strategy for the disposal of radioactive waste is postponed until the plant ceases operations;
- the agreement paves the way for possible privatisation of the operating company.

Slovenia and Croatia also agreed to settle financial damages and outstanding payments that led to Slovenia ending the delivery of power to Croatia in 1998.

France – Romania

Arrangement on the Exchange of Information and on Co-operation in the Field of Nuclear Safety (2001)

On 8 August 2001, the National Commission for Nuclear Activities Control in Romania and the Directorate for the Safety of Nuclear Installations in France signed an Arrangement on the Exchange of Information and on Co-operation in the Field of Nuclear Safety. This instrument, which was concluded for a renewable period of five years, provides for the exchange of technical information in relation to the safety of nuclear installations and the regulations applicable to these facilities.

The type of information covered by this Arrangement includes in particular: specific reports on technical safety which are used as a basis or as support for regulatory decisions; documents dealing with important licensing procedures or with decisions on the safety of nuclear installations; reports of operating experience; the prompt notification of important events such as serious operating incidents; information on the intervention levels in the event of an emergency; and emergency planning.

The Arrangement also contains provisions on the manner in which information should be disseminated.

France – Russian Federation

Agreement on Co-operation on the Safe Disposal of Nuclear Weapons in Russia and on the Use for Peaceful Purposes of Nuclear Materials from Weapons (1992)

By Decree No. 2001-1056 of 12 November 2001, France published this Agreement between the French Government and the Government of the Russian Federation, which was signed on 12 November 1992.

The Agreement provides for co-operation between France and the Russian Federation in the following fields:

- transport of nuclear weapons on the territory of the Russian Federation;
- dismantling of nuclear weapons on the territory of the Russian Federation;
- storage of nuclear materials from these nuclear weapons on the territory of the Russian Federation;
- use for peaceful purposes of nuclear materials from these weapons;
- systems of accounting and control of materials;
- scientific research.

France – United Kingdom

Agreement on the Exchange of Classified Information in the Field of Nuclear Defence (2001)

The Government of France and the Government of the United Kingdom concluded on 7 and 9 February 2001 an Agreement in the form of an exchange of letters on the above subject. This Agreement provides in particular that:

- links are to be established between the French and British Defence Ministries with a view to exchanging information in the nuclear defence field;
- each of the Parties shall ensure that all information produced or exchanged in the nuclear defence field will be subject to the same degree of protection as that which applies in that State for information of a similar classification;
- enquiries shall be held in each case where it is determined that classified information has been lost or divulged.

Latvia – Ukraine

Agreement on Early Notification of Nuclear Accidents, Exchange of Information and Co-operation in the Field of Nuclear Safety and Radiation Protection (2001)

This Agreement was concluded by the Latvian and Ukrainian Governments on 17 October 2001 for a renewable period of ten years. It shall apply in the event of an accident involving any nuclear facility, such as a nuclear reactor, nuclear fuel cycle facility or radioactive waste management facility, or nuclear activity, such as the transport and storage of nuclear fuel or radioactive waste, or the manufacture, use, storage, disposal and transport of radioisotopes, where such an accident occurs on the territory of one of the Parties and results or may result in a transboundary release of radioactive substances which is significant in terms of the radiological safety of the other Party.

The Agreement provides for the early notification of such accidents and of any relevant information to the other Party as well as mutual co-operation to minimise the radiological

consequences of the accident and to protect the public, property and the environment from the effects of the radioactive releases.

The Parties also agree:

- on further exchange of information related to the safety of nuclear facilities in operation, planned, or under construction, commissioning or decommissioning within their territories and on activities which may cause the release of radioactive substances in quantities exceeding maximum permissible levels.
- on early notification of any case of illicit trafficking of nuclear materials, ionising radiation sources and radioactive waste discovered on their territories.
- to encourage and facilitate the development of scientific and technical co-operation between the relevant authorities in the field of nuclear safety and radiation protection, including radioactive release monitoring, emergency planning and radioactive waste management.

Romania – Russian Federation / Romania – Slovak Republic

Agreements on Early Notification of Nuclear Accidents and Information Exchange on Nuclear Facilities (2002)

Romania signed these bilateral Agreements with the Russian Federation and the Slovak Republic on 21 February 2002 and 19 February 2002 respectively.

The Agreements are based upon the Convention on Early Notification of a Nuclear Accident adopted on 26 September 1986 under the auspices of the IAEA (the text of this Convention is reproduced in *Nuclear Law Bulletin* No. 38), to which these countries are all Parties, and which provides in Article 9 that Contracting Parties may conclude bilateral agreements for the same purpose.

The Agreements define the incidents which give rise to the early notification obligation and the information procedure. Each Contracting Party must notify a list of its facilities and activities to which the Agreement applies to the other Party. The Parties agree to promptly communicate all relevant information on any accident which may result in transboundary releases of radioactive materials. The Parties furthermore agree to provide each other with information on a regular basis on the operational conditions of their nuclear installations (in operation or under construction/decommissioning) and on any other activities carried out in this field. The competent authorities are designated as the National Commission for Nuclear Activities Control (CNCAN) in Romania, the Ministry for Atomic Energy (Minatom) in the Russian Federation and the Nuclear Regulatory Authority in the Slovak Republic.

Each Agreement shall enter into force on the date of receipt of the last diplomatic note confirming that all internal requirements for its entry into force have been carried out, and shall remain in force for an unlimited duration.

Russian Federation – Ukraine

Protocol on Co-operation in the Field of the Peaceful Use of Atomic Energy (2002)

This Protocol was signed by the Minister of Fuel and Energy of Ukraine and the Minister of Atomic Energy of the Russian Federation on 22 February 2002. It regulates in particular the supply by Russia of fresh nuclear fuel for VVER-1000 and VVER-440 units in operation in Ukraine, and the export of spent nuclear fuel. It also sets out measures governing Russian participation in completing the construction of unit 4 of the Rovno NPP and unit 2 of the Khmelnitski NPP.

MULTILATERAL AGREEMENTS

Second Review Meeting of the Contracting Parties to the Convention on Nuclear Safety (2002)

The second Review Meeting pursuant to Article 20 of the Convention on Nuclear Safety, which entered into force on 24 October 1996 (see *Nuclear Law Bulletin* No. 58), was held at the Headquarters of the International Atomic Energy Agency (IAEA) from 15 to 26 April 2002. Forty-six Contracting Parties, including 45 countries and Euratom, participated in this Review Meeting, chaired by Mr. Gregoric, the Director of the Slovenian Nuclear Safety Authority. The OECD Nuclear Energy Agency was invited to attend as an observer. Indonesia, which could not participate as a full Contracting Party as it ratified the Convention only on 12 April 2002, was invited to attend the final plenary sessions.

The Review Meetings, which are held every three years, are devoted to the peer review process by which national safety reports, i.e. reports on steps and measures taken by each state to implement Convention obligations, are submitted by Parties to the Convention for collective examination by the other Contracting Parties.

These reports were submitted by the Contracting Parties six months before the Review Meeting. They were reviewed by the other Contracting Parties and then discussed in depth by six country groups, each group including countries with nuclear power programmes of different size, as well as countries not having nuclear power reactors, first during the Organisational Meeting which took place on 25-26 September 2001, and then in plenary session during this Review Meeting.

At the meeting, Contracting Parties observed clear improvements in the review process demonstrated by the quality of national reports, the number of Contracting Parties posing written questions, the number of countries participating in other Country Group sessions, the number of questions received [which showed a threefold increase compared to the First Review Meeting of April 1999 (see *Nuclear Law Bulletin* No. 63)], the increased scope of questions and the provision of written responses by all Contracting Parties to the questions asked. They also noted with satisfaction that their second Review Meeting provided evidence that the self-assessment process, starting with ratifying the Convention and preparing national reports and taking into account the results of the first Review Meeting, had initiated steps and measures by many countries to improve implementation of their obligations and to further enhance nuclear safety.

With the exception of some Contracting Parties in which legislation and regulations required by the Convention have not yet been promulgated, it was noted that the legislative and regulatory framework is well established in most countries. However, for some Parties, questions as to the effective independence and administrative position of their regulatory bodies are still relevant. The importance of international co-operation between regulatory bodies for the enhancement of nuclear safety was also emphasised.

Contracting Parties reported on the detailed safety assessments of their existing nuclear power plants, and on any upgrading programmes established for older plants. Periodic safety review is being increasingly used as a tool to identify safety upgrades necessary for licence renewal, ageing management and plant life extension. The important of human performance and organisational issues was noted in relation to important events that occurred in nuclear installations since the first Review Meeting. Contracting Parties were invited to provide further information in their next national report

on such important events, on the content of safety review processes for plant life extension and on measures for severe accident management.

With regard to radiation protection, it was noted that the ALARA principle (As Low As Reasonably Achievable) is applied by all Contracting Parties in respect of occupational doses and releases to the environment. On the other hand, full implementation of ICRP Recommendation No. 60 and the International Basic Safety Standards is not complete in some countries.

Furthermore, integrated emergency response plans are in place in all Contracting Parties with a nuclear power programme. Several countries also reported on clear progress achieved in the area of emergency preparedness since the first Review Meeting, including measures for informing the public and establishment of intervention levels.

Lastly, areas warranting special attention include safety management and safety culture; plant ageing and upgrading; maintaining staff competence; and effectiveness of regulatory practices.

Preparatory Meeting of the Contracting Parties to the 1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (2001)

The Joint Convention entered into force on 18 June 2001, 90 days after the date of deposit by Ireland of its instrument of ratification (see *Nuclear Law Bulletin* No. 67). The Preparatory Meeting pursuant to Article 29 of the Convention was held from 10 to 12 December 2001 at the headquarters of the International Atomic Energy Agency (IAEA) in Vienna. All 27 Contracting Parties to this Convention were in attendance, as follows: Argentina, Austria, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Luxembourg Morocco, Netherlands, Norway, Poland, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Ukraine and United Kingdom. The Meeting decided to invite the OECD Nuclear Energy Agency to participate as Observer pursuant to Article 33(2) of the Convention.

One of the principal points on the agenda was the adoption of working documents for the review process. Three informal meetings of the Convention had been convened by the IAEA in 1998 and 1999, in order to prepare the review process in general and in particular, to draft such documents. The three draft documents prepared at those meetings were examined, modified and adopted by the Preparatory Meeting: the Rules of Procedure and Financial Rules; Guidelines Regarding the Review Process; and Guidelines Regarding the National Reports. These documents are similar in form and content to those which were adopted for the review process under the Convention on Nuclear Safety (see *Nuclear Law Bulletin* Nos. 59 and 63).

Delegations decided, by consensus, that the first Review Meeting shall commence on 3 November 2003, with a suggested duration of two weeks, the exact duration to be determined by the Organisational meeting, which will be held from 7 to 11 April 2003. It was agreed that the detailed discussion of National Reports at the Review Meeting will be conducted in Country Groups, as is done under the Convention on Nuclear Safety. For the purposes of dividing countries into Country Groups, it was decided to rank Contracting Parties by the number of their nuclear power plant reactors that have achieved criticality, including those that are being decommissioned and those that have completed decommissioning. An Organisational Meeting may, in addition, decide to hold Topic Sessions to specifically address particular subjects which may not receive adequate consideration within the Country Groups.

The report of the meeting and the three documents approved at the meeting are available from the IAEA.

Status of Conventions in the Field of Nuclear Energy

1963 Vienna Convention on Civil Liability for Nuclear Damage

Since the last update in *Nuclear Law Bulletin* No. 68 (December 2001), Yugoslavia succeeded to this Convention with effect from 27 April 1992. Therefore, as of 9 April 2002, there are 33 Parties to this Convention, as set out in the table below.

Status of signatures, ratifications, acceptances, approvals or accessions

State	Date of Signature	Date of Deposit of Instrument
Argentina	10 October 1966	25 April 1967 (ratification)
Armenia		24 August 1993 (accession)
Belarus	27 May 1997	9 February 1998 (ratification)
Bolivia		10 April 1968 (accession)
Bosnia and Herzegovina		30 June 1998 (succession)
Brazil		26 March 1993 (accession)
Bulgaria		24 August 1994 (accession)
Cameroon		6 March 1964 (accession)
Chile	18 August 1988	23 November 1989 (ratification)
Colombia	21 May 1963	
Croatia		29 September 1992 (succession)
Cuba	10 December 1964	25 October 1965 (ratification)
Czech Republic		24 March 1994 (accession)
Egypt	19 August 1965	5 November 1965 (ratification)
Estonia		9 May 1994 (accession)
Hungary		28 July 1989 (accession)
Israel	19 August 1997	
Latvia		15 March 1995 (accession)
Lebanon	19 September 1995	17 April 1997 (ratification)
Lithuania		15 September 1992 (accession)
Macedonia, the Former Yugoslav Republic of		8 April 1994 (succession)
Mexico		25 April 1989 (accession)
Moldova, Republic of		7 May 1998 (accession)

State	Date of Signature	Date of Deposit of Instrument
Morocco	30 November 1984	
Niger		24 July 1979 (accession)
Peru		26 August 1980 (accession)
Philippines	21 May 1963	15 November 1965 (ratification)
Poland		23 January 1990 (accession)
Romania		29 December 1992 (accession)
Russian Federation	8 May 1996	
Saint Vincent & the Grenadines		18 September 2001 (accession)
Slovakia		7 March 1995 (accession)
Slovenia		7 July 1992 (succession)
Spain	6 September 1963	
Trinidad and Tobago		31 January 1966 (accession)
Ukraine		20 September 1966 (accession)
United Kingdom	11 November 1964	
Uruguay		13 April 1999 (accession)
Yugoslavia	21 May 1963	5 February 2002 (succession)

1979 Convention on Physical Protection of Nuclear Material

Since the last update in *Nuclear Law Bulletin* No. 68 (December 2001), seven States, namely Albania, Bolivia, Grenada, India, Israel, Kenya and Yugoslavia (by succession), have become Contracting Parties to this Convention. Therefore, as of 9 April 2002, there are 75 Parties to this Convention.

1986 Convention on Early Notification of a Nuclear Accident

Since the last update in *Nuclear Law Bulletin* No. 68 (December 2001), Yugoslavia succeeded to this Convention with effect from 27 April 1992. Therefore, as of 9 April 2002, there are 87 Parties to this Convention.

1986 Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency

Since the last update in *Nuclear Law Bulletin* No. 68 (December 2001), Yugoslavia succeeded to this Convention with effect from 27 April 1992. Therefore, as of 9 April 2002, there are 83 Parties to this Convention.

1996 Comprehensive Nuclear Test Ban Treaty

Since the last update in *Nuclear Law Bulletin* No. 68 (December 2001), six States, namely Ecuador, Jamaica, Latvia, Nauru, San Marino and Singapore, have become Contracting Parties to this Treaty. Therefore, as of 9 April 2002, there are 90 Parties to this Treaty, including 31 States whose signature and ratification are required for the Treaty to enter into force.

1997 Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage

Since the last update in *Nuclear Law Bulletin* No. 67 (June 2001), Latvia has become a Contracting Party to this Protocol. Therefore, as of 9 April 2002, there are four Parties to this Protocol, as set out in the table below.

Status of signatures, ratifications, acceptances, approvals or accessions

State	Date of Signature	Date of Deposit of Instrument
Argentina	19 December 1997	14 November 2000 (ratification)
Belarus	14 September 1998	
Czech Republic	18 June 1998	
Hungary	29 September 1997	
Indonesia	6 October 1997	
Italy	26 January 1998	
Latvia	7 March 2001	5 December 2001 (ratification)
Lebanon	30 September 1997	
Lithuania	30 September 1997	
Morocco	29 September 1997	6 July 1999 (ratification)
Peru	4 June 1998	
Philippines	10 March 1998	
Poland	3 October 1997	
Romania	30 September 1997	29 December 1998 (ratification)
Ukraine	29 September 1997	

BIBLIOGRAPHY AND NEWS BRIEFS

BIBLIOGRAPHY

OECD Nuclear Energy Agency

2001 Update of the Analytical Study on Nuclear Legislation in OECD Member Countries

The OECD Nuclear Energy Agency published in 2001 the first update of the 1999 Edition of the *Analytical Study on Nuclear Legislation in OECD Member Countries*. As with the former Edition, it is organised on the basis of a standardised format for all countries, thus facilitating the search for and comparison of information. The 2001 Update consists of replacement chapters for Australia, Canada, Hungary, Italy, Japan, Luxembourg, Norway and Spain. In addition, there is a completely new chapter for the Slovak Republic, which became a member of the OECD on 14 December 2000, and which was not previously covered by this publication. An Information Note is also provided on Poland, pending revision of this chapter upon adoption of legislation to implement the new Polish Atomic Law. This publication, which is also available in French, may be ordered from the OECD Online Bookshop at the following address: http://www1.oecd.org/scripts/publications/bookshop/redirect.asp?662002071P1

International Nuclear Law Association

Rechtsfragen des Umgangs mit abgebrannten Brennelementen und radioaktiven Abfällen – Legal Implications of the Management of Spent Nuclear Fuel and Radioactive Waste, Nomos Verlagsgesellschaft, Baden Baden, 2002, 352 pages

This publication contains the papers presented at the 8th Regional Meeting of the German branch of the International Nuclear Law Association, held in Potsdam on 7 and 8 December 2000. The theme of this Meeting was "The Legal Implications of the Management of Spent Nuclear Fuel and Radioactive Waste". The four working sessions addressed respectively the transportation of spent nuclear fuel and radioactive waste, the reprocessing and conversion of spent nuclear fuel, the on-site storage of spent nuclear fuel and final disposal of radioactive waste. More than 130 participants from 23 countries and 3 international organisations participated in the discussions under the chairmanship of Dr. Norbert Pelzer.

Russian Federation

Environmental Protection and the International Regulation of Peaceful Nuclear Activities, by Elena Molodtsova, Moscow, 2000, 224 pages (in Russian)

The author of this book, Elena Molodtsova, is Senior Researcher at the Institute of State and Law in Moscow. The main purpose of the book, which is of a combined informational and analytical character, is to identify within the body of international nuclear law – both "hard" and "soft" – those norms and recommendations which are aimed at the protection of the environment during the pursuit of nuclear activities, and to analyse them from the point of view of environmental safety.

Chapter I provides a philosophical and ethical basis for the subsequent legal study. The principal themes explored in this chapter are environmental safety and protection of the biosphere. The author emphasises the fact that environmental safety cannot be restricted to any one discipline but rather should underlie all regulatory activities in the legal, economic and technological fields. At the same time, there exists a body of law within international law where most of the environmental principles as well as other legal tools are to be found, i.e. international environmental law. These principles aim to prevent or reduce environmental damage and to ensure reversal of any damage accidentally caused to the environment.

Chapter II of the book is devoted to the regulation of environmentally safe uses of nuclear energy by two major international organisations – the International Atomic Energy Agency (IAEA) and Euratom. Both organisations employ standards to implement their regulatory activities, thus facilitating a comparative analysis of their respective roles in this domaine.

The material in Chapter III demonstrates that the international regulation of environmentally safe uses of nuclear energy has progressed to a higher level due to the fact that the "soft" law of the international organisations, in particular the IAEA, is gradually transformed into the "hard" law of international treaties. The recent Convention on Nuclear Safety, adopted in 1994, and Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, adopted in 1997, both of which were concluded under the auspices of the IAEA, deal, *inter alia*, with certain environmental issues within the context of nuclear activities and provide for standards, environmental impact assessments and consultations.

Chapter IV describes and analyses the regime of liability for nuclear damage.

The book concludes that although certain international environmental principles are taken into account in the regulation of environmentally safe nuclear activities, principles such as those of precaution, intergenerational equity and respect of all life forms should be more consistently and fully applied within the regulation of nuclear activities. Due to their inherent danger, nuclear activities should be governed by the principle of precaution which should constitute an essential starting-point for the regulatory process in this area.

United Kingdom

Energy Law and the Environment, by Patricia D. Park, published by Taylor and Francis, London, 2002, 266 pages

The author of this book, Patricia Park, is Professor of Environmental Law and Chair of the Law Research Centre at Southampton Institute in the United Kingdom. Her book is aimed at persons working in the energy sector, whether from academic circles or industry, in order to draw their attention to the increase in environmental legislation which will affect their activities.

Devoted to energy law, this book considers the interrelationship between energy law and the legal environment imperatives for the industrial sector. Reflecting the state of the law as of September 2000, the author deals with the following topics: the regulation of the energy sector and the environment; the regulatory bodies in the UK; international environmental law issues; European energy law and policy; trade, competition and the environment; the regulation of the coal, oil, gas and nuclear industries; the electricity supply industry; and the future of energy in the perspective of sustainable development.

Uruguay

Responsabilidad Civil Por Daños Nucleares y Radiologicos, by Ms Diva Puig, Uruguay, 2001, 109 pages

The author of this book devoted to nuclear third party liability teaches nuclear law at the Law Faculty of Montevideo and is the Chairperson of the Uruguayan Radiation Protection Association. After its introductory chapter, this study examines one-by-one the issues of nuclear damage, the nature and basis of liability for such damage, the various Conventions underlying the international nuclear third party liability regime, the system providing for limited liability of the nuclear operator and the situation of Latin American countries vis-à-vis these Conventions. It also contains a chapter setting out a case study of an accident involving a radioactive source, namely the Goiâna accident in Brazil in 1987. In the annex, the reader will find the Spanish language texts of various international Conventions on third party liability for nuclear damage, including the consolidated text of the Vienna Convention as amended in 1997.

NEWS BRIEFS

OECD Nuclear Energy Agency

2002 Session of the International School of Nuclear Law

The second session of the International School of Nuclear Law (ISNL), a teaching programme organised by the OECD Nuclear Energy Agency (NEA) and the University of Montpellier 1, will take place from 26 August to 6 September 2002 in Montpellier, France. This session will cover the main aspects of nuclear law: radiation protection, safety, third party liability, radioactive waste

management, non-proliferation, trade of nuclear materials, etc. Lectures will be delivered in English by renowned specialists in nuclear law, particularly from academic circles, specialised international organisations, the nuclear industry and insurance sector, and other nuclear experts.

The teaching programme of the ISNL is aimed more particularly at law students pursuing their studies at doctoral or masters level, who wish to follow an introductory course on nuclear law and familiarise themselves with career opportunities open to them in this field, and also young professionals who are already active in this sector and who wish to develop their knowledge.

Further information on the organisation of the ISNL and its programme may be obtained from the NEA Secretariat, Legal Affairs, 12 boulevard des Iles, 92130 Issy-les-Moulineaux, France, or on the NEA website at the following address: http://www.nea.fr/html/law.

International Nuclear Law Association

9th INLA Regional Meeting of the German Branch

The German Branch of the International Nuclear Law Association will hold its 9th regional meeting on 26 and 27 September 2002 in Wiesbaden. The theme of the conference will be "Nuclear Law Problems in Focus". Subjects discussed under this general theme shall be addressed from the point of view of national, comparative and international law and shall cover the ongoing revision of the Convention on Physical Protection of Nuclear Material, including consequences of large-scale acts of terrorism, final disposal of radioactive waste, new developments in nuclear liability law, e.g. the revision of the nuclear liability regime established by the Paris Convention on Third Party Liability in the Field of Nuclear Energy and the Brussels Supplementary Convention, and claims handling costs, as well as selected issues on the new German Atomic Energy Act.

The meeting will take place in German and English with simultaneous translation.

Further information on this conference may be obtained from Dr. Norbert Pelzer, Institut für Völkerrecht, Platz der Göttinger Sieben 5, 37073 Göttingen, Germany.

Morocco

Establishment of the Moroccan Radiation Protection Association

The Moroccan Radiation Protection Association (*Association marocaine de radioprotection* – AMR) was established pursuant to Royal Decree No. 1-58-376 of 15 November 1958 regulating the right of association in Morocco, as amended and completed.

The establishment of this Association results from:

- the interest in setting up, outside administrative and official channels, a framework for discussion and exchange of information between the different actors in the field of radiation protection and to work towards, where appropriate in liaison with other national or foreign associations, the strengthening of radiation protection in different sectors, through the organisation of seminars, conferences etc.;

- the idea to establish an African Radiation Protection Association, whose actions would be facilitated by the existence of active national associations;

- the proposal of the French Radiation Protection Society (*Société française de radioprotection*) to assist with the establishment and activities of a radiation protection association in Morocco, working towards similar goals.

Established on 30 January 2002, the governing body of the Moroccan Radiation Protection Association is composed of eleven members representing all sectors concerned: the National Centre for Nuclear Energy, Science and Techniques, and also the industrial, university and medical sectors.

The Association aims to:

- encourage activities and information exchange in the field of radiation protection and related areas;

- assist in informing both the public and the professionals concerned about the problems and requirements related to radiation protection for the protection of man and the environment;

- promote professional training in radiation protection.

The Association may co-operate with any other body or association, at national or international level, which has similar goals.

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Volume 2002/1

Romania

Law on Civil Liability for Nuclear Damage (3 December 2001)

Ukraine

Law on Civil Liability for Nuclear Damage and its Financial Security (13 December 2001)

AEN NEA

NUCLEAR • ENERGY • AGENCY

ROMANIA

Law on Civil Liability for Nuclear Damage*

adopted on 3 December 2001

Chapter I

GENERAL PROVISIONS

Article 1

The objective of this Law is to regulate civil liability for the compensation of damage resulting from activities involving the utilisation of nuclear energy for peaceful purposes.

Article 2

The provisions of this Law are applied without discrimination based upon nationality, domicile or residence.

Article 3

In this Law:

a) *nuclear accident* means any occurrence or series of occurrences having the same origin which causes nuclear damage or, from the perspective of preventive measures, creates a grave and imminent threat of causing such damage;

b) *the competent national authority* is the National Commission for Nuclear Activities Control;[1]

c) *nuclear fuel* means any material or mechanical assembly containing raw material or special fissionable material designed for the production of energy by a chain reaction of nuclear fission in a nuclear reactor;

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* Unofficial translation kindly provided by the Romanian authorities.

1. *Comisia Nationala pentru Controlul Activitatilor Nucleare* (CNCAN).

d) *nuclear damage* means:

1. any loss of life or personal injury;

2. any loss of or damage to property;

3. any economic loss resulting from damage referred to in sub-paragraphs 1 and 2, insofar as is not included in these provisions, if it affects a person entitled to claim indemnification in respect of such loss;

4. the cost of measures of reinstatement of impaired environment pursuant to the occurrence of a nuclear accident, if such damage is significant, if such measures are actually taken or are to be taken and insofar as they are not included under the provisions of sub-paragraph 2;

5. any loss of income deriving from an economic interest in any utilisation of the environment, due to a significant impairment of the environment, insofar as such loss is not included under the provisions of sub-paragraph 2;

6. the costs of preventive measures and any loss or damage caused by such measures;

7. any other economic loss, other than any resulting from the impairment of the environment, if provided under the legislation on civil liability of the competent court.

Loss or damage provided under sub-paragraphs 1-5 and 7 are deemed to be nuclear damage provided that such loss or damage:

- arises from ionising radiation emitted by any source of radiation located in a nuclear installation or emitted from nuclear fuel, radioactive products or radioactive waste in a nuclear installation or from nuclear material originating in, coming from or sent to a nuclear installation;

- results from the radioactive properties of such material or from a combination of radioactive properties with toxic, explosive or other hazardous properties of such material;

e) *radioactive waste* means those materials resulting from nuclear activities for which no utilisation has been assigned, which contain or are contaminated by radionuclides in concentrations exceeding the exemption limits;

f) *Special Drawing Right*, hereinafter referred to as SDR, means the unit of account defined by the International Monetary Fund and used by it for its own operations and transactions;

g) *nuclear installation* means:

1. any nuclear reactor, other than one with which a means of sea or air transport is equipped for use as a source of power, whether it is designed for propulsion purposes or for any other purpose;

2. any plant using nuclear fuel for the production of nuclear material and any plant processing nuclear material, including any plant for the reprocessing of irradiated nuclear fuel;

3. any installation in which nuclear material is stored, except for storage with a view to transport of nuclear material;

Nuclear installations belonging to one operator and located at the same site shall be considered as a single nuclear installation;

h) *the competent court* is the county court whose territorial area hosts the main place of business of the operator of the nuclear installation;

i) *nuclear material* means:

1. any nuclear fuel, other than natural or depleted uranium, capable of producing energy through a chain reaction of nuclear fission outside a nuclear reactor, either alone or in combination with other materials;

2. any radioactive product or waste, in compliance with the limits established by the Board of Governors of the International Atomic Energy Agency;

j) *reasonable measures* means any measures which are adequate and proportional to the extent of the damage meant to reduce the consequences of nuclear accidents;

k) *preventive measures* means any reasonable measures taken by any person after the occurrence of a nuclear accident, in order to prevent or minimise damage referred to under paragraph d), sub-paragraphs 1-5 and 7, in compliance with the decisions of the competent national authority;

l) *measures of reinstatement* means any reasonable measures approved by the competent national authority, and which aim to reinstate or restore damaged or destroyed components of the environment and to introduce, wherever possible, the equivalent of these components into the environment;

m) *operator* means the holder of the licence issued according to the provisions of Law No. 111/1996 on the Safe Deployment of Nuclear Activities,[2] republished;

n) *person* means any natural or legal, private or public person, any international organisation with a legal personality according to law and any state or any of its constituent subdivisions;

o) *radioactive product* means any radioactive material produced in or resulting from, or any material acquiring radioactive properties by exposure to the radiation incidental to, the production or utilisation of nuclear fuel but does not include radioisotopes which have reached the final stage of fabrication so as to be usable for any peaceful purpose other than the production of electrical energy;

p) *nuclear reactor* means any structure containing nuclear fuel in such arrangement that a chain reaction of nuclear fission can occur therein without an additional source of neutrons.

2. The text of this Law is reproduced in the Supplement to *Nuclear Law Bulletin* No. 59.

Chapter II

LEGAL REGIME APPLICABLE TO CIVIL LIABILITY FOR NUCLEAR DAMAGE

Article 4

(1) The operator of a nuclear installation is objectively and exclusively liable for any nuclear damage proved to have been produced by a nuclear accident:

a) occurring in this nuclear installation;

b) involving nuclear material originating in this nuclear installation, and occurring:

1. before liability for the nuclear damage regarding such material has been assumed, pursuant to a written agreement, by another operator;

2. in the absence of an express provision in this respect contained in the agreement mentioned under sub-paragraph 1, before another operator has taken charge of the material;

3. if the nuclear material was sent to a person within the territory of another state, before it has been unloaded from the means of transport by which it arrived on the territory of that state;

c) involving nuclear material sent to this nuclear installation, and occurring:

1. after liability for the nuclear damage regarding such material was transferred to him by the operator of another nuclear installation pursuant to a written agreement;

2. in the absence of an express provision in this respect contained in the written agreement, after he has taken charge of such material;

3. if such nuclear material was sent, upon the written consent of the operator, by a person on the territory of another state, only after the material has been loaded on the means of transport by which it is to be carried from the territory of that state.

(2) If the nuclear damage is caused by a nuclear accident occurring in a nuclear installation and involves nuclear material stored therein with a view to its transportation, the provisions of paragraph (1), sub-paragraph a) shall not apply where another operator or person is solely liable under the provisions of paragraph (1), sub-paragraph b) or c).

(3) In the event of a nuclear accident occurring during the transport of nuclear materials, the civil liability for nuclear damage lies entirely with the carrier, who shall be considered as an operator for all the purposes of this Law, at the request of and with the consent of the operator concerned.

(4) In the event that nuclear damage engages the liability of several operators, they are jointly and severally liable for the damage, insofar as the damage attributable to each operator is not reasonably separable. The liability of each operator may not exceed the amount applicable with respect to him pursuant to Article 8.

(5) Subject to the provisions of paragraph (3), where several nuclear installations belonging to the same operator are involved in a nuclear accident, such operator shall be liable in respect of each nuclear installation involved up to the amount applicable with respect to him pursuant to Article 8.

Article 5

(1) If the operator proves that the nuclear damage resulted, in whole or in part, either from the gross negligence of the person suffering the damage or from an act or omission of such person done with intent to cause damage, the competent court may relieve the operator, in whole or in part, from his obligation to pay compensation in respect of the damage suffered by such person.

(2) The operator shall be exonerated from liability if he proves that the nuclear damage is the direct result of an act of armed conflict, civil war, insurrection or hostilities.

(3) Whenever both nuclear damage and non-nuclear damage have been caused by a nuclear accident or jointly by a nuclear accident and one or more other occurrences, the non-nuclear damage, to the extent that it is not reasonably separable from the nuclear damage, shall be deemed, for the purposes of this Law, to be nuclear damage caused by that nuclear accident.

(4) The operator shall not be liable for nuclear damage caused to the nuclear installation itself or any other nuclear installation, including a nuclear installation under construction, on the site where that installation is located, or to any property on that same site which is used or to be used in connection with any such installation.

(5) An individual who has caused nuclear damage by an act or omission done with intent to cause damage and for which the operator is not liable according to the provisions of paragraph (1), shall be liable for the nuclear damage caused.

Article 6

(1) The nature, form and extent of the compensation, as well as the equitable distribution thereof, are established by the competent court, including when the nuclear accident has occurred in the exclusive economic zone of Romania.

(2) If the damage to be compensated in respect of claims brought against the operator exceeds the amounts established in Article 8, priority in the distribution of the compensation shall be given to claims in respect of loss of life or personal injury caused by or resulting from a nuclear accident.

Article 7

No person shall be entitled to recover compensation under the provisions of this Law to the extent that he has recovered compensation in respect of the same nuclear damage under another international convention on civil liability for nuclear damage.

Chapter III

NUCLEAR DAMAGE INDEMNIFICATION SYSTEM

Article 8

(1) The liability of the operator is limited to not less that the equivalent in ROL (Romanian Lei) of 300 million SDRs for any one nuclear accident.

(2) Based upon the approval of the competent national authority, the liability of the operator for any one nuclear accident may be limited to less than the equivalent in ROL of 300 million SDRs, but not less than the equivalent in ROL of 150 million SDRs, provided that the difference up to at least the equivalent in ROL of 300 million SDRs shall be made available by the State from public funds, with a view to covering nuclear damage under the terms of this Law.

(3) For a ten-year period from the date of entry into force of this Law, upon the approval of the competent national authority, the liability of the operator may be limited to less than the equivalent in ROL of 150 million SDRs, but not less than the equivalent in ROL of 75 million SDRs in respect of a nuclear accident occurring within that period, provided that the difference up to the equivalent in ROL of 150 million SDRs shall be made available by the State from public funds, with a view to covering nuclear damage under the terms of this Law.

(4) In the case of research reactors and installations for the storage of radioactive waste or spent nuclear fuel, the liability of the operator pursuant to the provisions of paragraphs (1) and (2) shall be at least the equivalent in ROL of 30 million SDRs, with the possibility of further reducing this sum to the equivalent in ROL of 10 million SDRs, provided that the difference up to at least the equivalent in ROL of 30 million SDRs shall be made available by the State from public funds, with a view to providing compensation for nuclear damage under the terms of this Law.

(5) With respect to the transport of nuclear materials, the liability of the operator pursuant to Article 4, paragraph (3) is limited to the equivalent in ROL of 5 million SDRs; with respect to the transport of the nuclear fuel used in a nuclear reactor, the liability of the operator pursuant to Article 4, paragraph (3) is limited to the equivalent in ROL of 25 million SDRs.

(6) The provisions of paragraphs (1)-(5) do not include interest and court costs.

(7) The provisions of paragraphs (1)-(6) shall be explicitly set out in the operator's licence issued pursuant to Law No. 111/1996 on the Safe Deployment of Nuclear Activities, republished.

Article 9

The compensation ordered by the competent court in relation to nuclear damage, interest and court costs shall be expressed in ROL in compliance with the provisions of Article 8.

Article 10

Persons suffering nuclear damage may enforce their rights to compensation by one single action, without having to bring separate proceedings according to the origin of the funds provided for such compensation.

Chapter IV

RIGHTS OF RECOURSE

Article 11

(1) The operator shall have a right of recourse only:

a) if this is expressly provided for by a contract in writing; or

b) if the nuclear accident results from an act or omission done with intent to cause damage, against the individual who has acted or omitted to act with such intent.

(2) The right to recourse shall also extend to the State, insofar as it has provided public funds pursuant to the provisions of this Law.

Chapter V

PRESCRIPTION OF COMPENSATION CLAIMS

Article 12

(1) The right to claim compensation from the operator shall be extinguished if an action is not brought within:

a) with respect to loss of life and personal injury pursuant to Article 3, paragraph d), sub-paragraph 1, 30 years from the date of the nuclear accident;

b) with respect to other nuclear damage pursuant to Article 3, paragraph d), sub-paragraphs 2-5 and 7, 10 years from the date of the nuclear accident.

(2) The right to claim compensation from the operator shall be extinguished if an action is not brought within three years from the date on which the person suffering damage had knowledge or ought reasonably to have had knowledge of the damage and of the identity of the liable operator, provided that the periods established pursuant to paragraph (1) shall not be exceeded.

(3) Any person who has suffered nuclear damage and who has brought an action for compensation, pursuant to the provisions of paragraph (1) may amend his claim to take into account any aggravation of the damage, even after the expiry of that period, provided that an irrevocable and irrefutable judgement has not been entered by the competent court.

UKRAINE

Law on Civil Liability for Nuclear Damage and its Financial Security*

adopted on 13 December 2001

This Law governs relations in respect of civil liability for nuclear damage, establishes the rules and procedures for compensation for damage caused by a nuclear incident, defines the methods of ensuring financial security of civil liability and establishes its limits.

Section I

GENERAL PROVISIONS

Article 1

Definition of terms

1. In this Law the terms "operating organisation", "nuclear installation operator" (hereinafter referred to as "the operator"), "nuclear installation", "nuclear material" and "nuclear damage" shall be used in the meaning given in the Law of Ukraine on the Use of Nuclear Energy and Radiation Safety.[1]

2. Other terms included in this Law have the following meanings:

   - "Special Drawing Rights": a unit of calculation established by the International Monetary Fund and employed by it in its transactions and agreements;

   - "agreement on compensation for nuclear damage": an agreement reached between the person who has caused the nuclear damage, the operator responsible for its occurrence and the insurer (or other financial guarantor) for compensation by the operator of nuclear damage.

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* Unofficial translation established by the NEA Secretariat.

1. The text of this Law is reproduced in the Supplement to *Nuclear Law Bulletin* No. 56.

Article 2

Legislation on Civil Liability for Nuclear Damage and its Financial Security

1. This Law governs relations in respect of civil liability for nuclear damage caused by a nuclear incident and the financial security for such liability. The rules of civil law, nuclear law, civil procedure and other legislation of Ukraine shall apply to relations not governed by this Law.

2. This Law prevails (*lex specialis*) over all other legislative acts of Ukraine governing relations in this field.

3. Nothing in this Law may be considered as terminating for Ukraine the validity of obligations of international agreements undertaken by decision of the Supreme Council of Ukraine. If rules other than those in this Law are established by international agreements, the rules of the international agreements shall apply.

Section II

BASIS FOR CIVIL LIABILITY FOR NUCLEAR DAMAGE

Article 3

Liability of the operator of a nuclear installation for nuclear damage

Liability of an operator for nuclear damage and the reasons for its occurrence shall be established in accordance with the Law of Ukraine on the Use of Nuclear Energy and Radiation Safety and the Vienna Convention on Civil Liability for Nuclear Damage.

Article 4

Damage subject to compensation and method of compensation

1. Nuclear damage is subject to compensation under this Law.

2. Compensation for nuclear damage shall be exclusively in monetary form.

Article 5

The procedure for compensation of nuclear damage

1. Compensation for nuclear damage may be effected on the basis of an agreement on compensation for nuclear damage or a court decision.

2. Nuclear damage may be compensated by an operator under the terms of an agreement on compensation for nuclear damage concluded by the operator between him and the victim with the participation of the insurer (or other financial guarantor). An agreement on compensation for nuclear damage must:

   - meet the requirements of Article 6, paragraphs 2-4, of this Law;
   - be notarised if a party to the settlement is a physical entity;
   - not violate the rights of the victims or other persons;
   - be registered under the procedure established by the Cabinet of Ministers of Ukraine .

   When concluding an agreement on compensation for nuclear damage, a victim is implementing his right to compensation for nuclear damage.

3. In the event of agreement not being reached between the parties a dispute on compensation for nuclear damage shall be resolved by a court. A judicial enquiry must be conducted to establish the facts of a nuclear incident, the causation of nuclear damage and the established link between them.

4. Claims for compensation for nuclear damage may be submitted to a court of Ukraine at the location (place of residence) of the claimant, of the defendant or at the place the damage was caused.

Article 6

Limits of civil liability for nuclear damage

1. Operator liability for nuclear damage is limited to the equivalent of 150 million Special Drawing Rights in the currency of Ukraine for each nuclear incident.

2. Liability for death is limited to the equivalent of 2 000 times the official untaxed minimum income[2] at the time the court ruling is made (the agreement on compensation for nuclear damage is concluded) for each death.

3. Operator liability to each victim for damage to health shall be limited by an amount equal to 5 000 times the official untaxed minimum income[2] at the time the court ruling is made (or when the agreement on compensation for nuclear damage is concluded) but shall not exceed the amount of the actual damage caused.

4. Operator liability to a person for damage to property shall be limited to an amount equal to 5 000 times the official untaxed minimum income[2] at the time the court ruling is made (or when the agreement on compensation for nuclear damage is concluded) but shall not exceed the amount of the actual damage caused.

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2. On 25 April 2002, the official untaxed minimum income was 17 Ukrainian Hryvnia (UAH) which corresponds to approximately 3.3 USD or 3.6 EUR.

5. Court costs are not included for the purposes of this article and shall be payable in full in addition to any compensation that may be established by the court.

Section III

FINANCIAL SECURITY OF CIVIL LIABILITY FOR NUCLEAR DAMAGE

Article 7

Financial security of civil liability for nuclear damage

1. The operator must have financial security to cover his liability for nuclear damage when applying to receive or extend an operating licence for a nuclear installation within limits equivalent to 150 million Special Drawing Rights for each nuclear incident. The procedure and terms of financial security to cover operator liability for nuclear damage shall be established by the Cabinet of Ministers of Ukraine.

2. The operator may provide financial security for civil liability for nuclear damage by:

   - insuring for civil liability for nuclear damage which may be caused as a result of a nuclear incident;

   - obtaining other types of financial security as envisaged in Ukrainian law.

   In the part not covered by other forms of financial security, civil liability insurance for nuclear damage that may be caused as a result of a nuclear incident is mandatory.

   The Cabinet of Ministers of Ukraine may grant the operator of a nuclear installation a state guarantee of financial security for civil liability for nuclear damage.

Article 8

Mandatory insurance for civil liability of an operator of a nuclear installation for nuclear damage which may be caused as a result of a nuclear incident

1. The object of mandatory insurance of civil liability of an operator of a nuclear installation for nuclear damage that may be caused as a result of a nuclear incident is the operator's property interests necessary for indemnification of such damage. The operator's obligation to pay any court expenses and interest set by the court may only be insured separately from the insurance of civil liability for nuclear damage. Insurance against such interest and expenses is not mandatory. The amount of insurance established to cover interest and expenses shall not be considered as financial security for civil liability for nuclear damage for the purposes of Article 7, paragraph 1, of this Law.

2. Insured events under mandatory insurance for civil liability for nuclear damage are considered to be valid judgements on compensation for nuclear damage or the conclusion of an agreement on compensation for nuclear damage, to which the relevant insurer is a party.

3. Payment of compensation through insurance shall be made within a time scale not exceeding one month from the date of the insured event.

4. The procedure for assessing tariffs under mandatory civil liability insurance for nuclear damage shall be established by the Cabinet of Ministers of Ukraine.

5. The insurer providing mandatory civil liability insurance for operators of nuclear installations in respect of damage that may be caused as a result of a nuclear incident must hold a licence to provide this type of insurance and be a member of a nuclear insurance pool. The procedure for setting up and operating the nuclear insurance pool is governed by regulations approved by the Cabinet of Ministers of Ukraine.

Article 9

Participation of foreign insurers in relations in respect of mandatory civil liability insurance for nuclear damage

Under civil liability insurance contracts for nuclear damage, insurers may enter into re-insurance contracts with non-resident insurers on condition that these non-resident insurers are members of the relevant foreign nuclear insurance pools.

Section IV

STATE PARTICIPATION IN COMPENSATION FOR NUCLEAR DAMAGE

Article 10

State participation in compensation for nuclear damage

1. The state will grant funds to compensate for nuclear damage if the execution order for compensation for nuclear damage has been returned to the person claiming compensation because the debtor has no assets from which the compensation claimed might be paid as stipulated in the Law of Ukraine on Executive Proceedings.

2. In order to obtain funds to compensate for nuclear damage from the state, the applicant shall submit to the body authorised by the Cabinet of Ministers of Ukraine to make payments in compensation for nuclear damage:

   - an application in any form for compensation for nuclear damage;
   - the execution order for compensation for nuclear damage;
   - a ruling by the state executive office to return the executive order to the applicant.

3. If the documents listed in paragraph 2 of this Article are available, the body authorised by the Cabinet of Ministers of Ukraine must, within a month, take a decision to pay out the funds due to the applicant under the execution order. Payment will be to the account of sources stipulated by law.

4. After effecting compensation for nuclear damage pursuant to this article, the state shall acquire the right of regressive claim which will be effected by presenting the relevant execution order for performance in the state's favour within five years of compensation being made.

Article 11

Details of the financial security for civil liability of the operator of the nuclear installation at the Chernobyl Nuclear Power Station

The state shall provide financial cover for civil liability for nuclear damage to the operator of the nuclear installation at the Chernobyl Nuclear Power Station under the procedure established by the Cabinet of Ministers of Ukraine.

Section V

FINAL PROVISIONS

1. This Law comes into force at the time of publication.

2. Within one year of this Law coming into force, operators of nuclear installations already in possession of operating licences for nuclear installations must obtain licences to operate nuclear installations which meet the requirements of this Law. Payment for the acquisition of a licence in this respect shall not be levied.

3. Until operators of nuclear installations receive the licences pursuant to paragraph 2 of Section V "Final Provisions", their actions under the terms of licences issued previously will not be considered to be violations of the provisions of this Law.

4. Amendments are to be made to the following Laws of Ukraine:

    1. Law of Ukraine on Insurance (*Bulletin of the Supreme Council of Ukraine* 1996, No. 18, p. 78; with amendments introduced by the Law of Ukraine No. 2745-III of 4 October 2001), Article 7, part 1, point 12 to be amended to read:

        "12. civil liability insurance for the operator of a nuclear installation for nuclear damage which may be caused as a result of a nuclear incident";

    2. in the Law of Ukraine on Executive Proceedings (*Bulletin of the Supreme Council of Ukraine* 1999, No. 24, item 207). Article 34 is to be supplemented by a point 9 with the following wording:

        "9. pay to the debtor or other guarantor, under the procedure envisaged by law (including under the terms of agreements on compensation for nuclear damage), the costs of compensation for nuclear damage that are equal to or greater than the legally established limit of liability for an operator of a nuclear installation. For calculation purposes, such costs paid out shall be converted into Special Drawing Rights as established by the International Monetary Fund at the official rate of the National Bank of Ukraine on the day of payment.";

In Article 36, part 2 paragraph 3, the words and figures “point 3 of Article 34” are to be replaced by the words and figures “points 3 and 9 of Article 34”.

5. The Cabinet of Ministers of Ukraine is tasked, within six months of this Law coming into force:

1. to draw up and ratify, in accordance with the requirements of this Law:

- specific licensing terms for activities with civil liability insurance for nuclear damage;
- a Statute on a nuclear insurance pool for Ukraine;
- a standard form of agreement for compulsory civil liability insurance for nuclear damage;
- a procedure for calculating tariffs for compulsory civil liability insurance for nuclear damage;

2. to bring its normative legal enactments into line with this Law;

3. to ensure that ministries and other central executive offices bring their normative legal enactments into line with this Law.