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Nuclear Energy Agency

Organisation for Economic Co-operation and Development

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LEGISLATIVE AND REGULATORY ACTIVITIES

• *Argentina*

NUCLEAR LEGISLATION

1977 Decree on the objectives and nuclear policy of the Argentine Republic

Decree No. 3183 of 19th October 1977 of the President of the Republic declares that the objectives and nuclear policy of the Argentine Republic as well as the means to achieve it are in the national interest The aim of the Decree is to increase efforts in the scientific, technical and industrial fields in support of the policy on the use of nuclear energy for peaceful purposes in the context of the national development.

The Annex to the Decree describes the different objectives to be pursued and promoted. The National Atomic Energy Commission (CNEA) is charged with proposing to the "National Executive Authorities" the institutional and administrative reorganisation required to achieve these objectives.

1979 Decree approving the construction, commissioning and operation of four nuclear power plants

Decree No. 302 of the President of the Republic was published in the Official Gazette on 14th February 1979. In accordance with the above Decree No. 3183, its purpose is to include in the national nuclear programme the construction of four heavy water moderated natural uranium 600 MW nuclear power plants, on the basis of conclusions reached by an interministerial Commission set up to this effect.

The National Atomic Energy Commission (CNEA) is responsible for implementing this programme.

1978 Act declaring as being in the national interest the implementation of the contract concluded between Argentina and Peru on the creation of a Peruvian Nuclear Research Centre

Act No. 21989 of 17th October 1978 (published in the Official Gazette of 20th November 1978) declares as being in the national interest implementation of the tasks provided for in the contract signed on 5th November 1977 by the Peruvian Institute for Nuclear Energy and the National Atomic Energy Commission (CNEA); under the contract, CNEA must set up a Peruvian Nuclear Research Centre.

ORGANISATION AND STRUCTURE

1977 Resolution concerning the reorganisation of the duties of the National Atomic Energy Commission in radiation protection and safety

Resolution No. 481 was adopted on 20th April 1977 by the Chairman of the National Atomic Energy Commission (CNEA) and published in the Official Administrative Gazette of 4th May 1977.

The Resolution, which refers to the successive texts on the constitution of CNEA (see Nuclear Law Bulletin No. 15), recalls the duties of the different bodies within CNEA which are competent for radiation protection, safety, nuclear reactor and power plant licensing as well as for security control (safeguards) in respect of nuclear materials, facilities and equipment.

The Resolution lays down that all the bodies referred to are reassembled under an "Authority" which is itself placed under the supervision of the Chairman of CNEA. The Radiation Protection Management Committee is in charge of administration.

These bodies, which will advise the Chairman of CNEA in matters in their respective fields, are the following:

- the Consultative Council on the licensing of nuclear installations which includes a Working Group responsible for preparing technical standards in this field;
- the Consultative Council on the use of radioisotopes (and ionizing radiation);
- the Safeguards Committee (applicable to the protection of nuclear materials, facilities and equipment).

The duties of the Authority are, in particular, to ensure the protection of man and his environment against the hazards of ionizing radiation and to see that the technical criteria to be applied for the operation of nuclear installations are complied with, as well as to prevent accidents likely to be caused by such installations and to limit their consequences from the radiation viewpoint. Finally, the Authority must also control the use of nuclear materials so as to ensure that they will not be diverted to unauthorised purposes.

• *Australia*

NUCLEAR LEGISLATION

Amendments to the Atomic Energy Act 1953

The Australian Atomic Energy Act has been further amended by a series of Acts (for previous amendments see Nuclear Law Bulletin No. 13).

Slight modifications of an administrative nature are to be found in the Administrative Changes (Consequential Provisions) Acts of 1976 and 1978.

The Atomic Energy Amendment Act 1978 provides new definitions for "atomic energy" and "prescribed substance" as follows:

> "'atomic energy' means any form of energy released in the course of nuclear fission, nuclear fusion or other nuclear transmutation";
>
> 'prescribed substance' means -
>
> (a) uranium, thorium, an element having an atomic number greater than 92 or any other substance declared by the regulations to be capable of being used for the production of atomic energy or for research into matters connected with atomic energy; and
>
> (b) any derivative or compound of a substance to which paragraph (a) applies."

Another significant amendment effected by this Act relates to the control of materials and prescribed substances. The powers in this respect of the appropriate Minister have been made more flexible and the areas and activities over which these powers may be exercised have been extended.

Another Act of 1978 - the Atomic Energy Amendment Act (No. 2) - introduces detailed rules concerning the revocation, variation and assignment of an authorization, under the 1953 Act, to carry on operations concerned with the mining of prescribed substances.

ENVIRONMENTAL PROTECTION

Environment Protection (Nuclear Codes) Act, 1978 - Environment Protection (Alligator Rivers Region) Act 1978 - Environment Protection (Northern Territory Supreme Court) Act, 1978

These three Acts all came into force in Australia on 9th June, 1978.

The object of the Environment Protection (Nuclear Codes) Act is to make provision for protecting the health and safety of the people of Australia, and the environment from possible harmful effects associated with nuclear activities in Australia. The definition of "nuclear activities" includes the production of any prescribed substance and the mining, treatment, storage, handling, transportation, possession or disposal of any prescribed substance or any mineral, or other matter, that contains a prescribed substance. Also included in the definition are the construction, operation or decommissioning of a mine, plant, facility or equipment used in, or in association with any of the aforementioned activities, and any other associated operation or activity. "Prescribed substance" means uranium, thorium, an element having an atomic number greater than 92 or any other substance declared by the regulations to be capable of being used for the production of nuclear energy or to be a radioactive substance, together with any derivative or compounds of any of the foregoing substances. The Act extends to all Australian Territories.

Under Part II of the Act, the competent Federal Minister, after consultation with the appropriate Minister of each State, may from time to time arrange for the formulation of proposed codes of practice for regulating or controlling nuclear activities in Australia, or of proposed variations of such codes.

Part III of the Act provides that a code of practice may, amongst other things, specify standards to be observed, practices and procedures to be followed (including licensing requirements, but excluding safeguards) and measures (including measures for and in relation to the restoration of the environment from the effects of nuclear activities) to be taken with respect to nuclear activities. The Governor-General may, by order in writing, approve any such code of practice, and a copy of the order shall then be laid before each House of Parliament for approval.

Under Part IV of the Act, provision is made for the implementation of codes of practice and Part V contains miscellaneous provisions which include the giving of power to the Governor-General to authorize, by order, a Minister to take such action as is necessary to control and eliminate hazards to the health or safety of persons, or the environment, resulting from a nuclear activity in a State or Territory.

The object of the Environment Protection (Alligator Rivers Region) Act is to provide for the appointment of a Supervising Scientist for the purpose of protecting the environment in the Alligator Rivers Region of the Northern Territory from the effects of uranium mining operations, and for other purposes. The term "uranium mining operations" is defined as meaning any operations or activities for or in connection with, or incidental to, the mining (whether by underground or surface working) or recovery of uranium-bearing ore, or the production of material from that ore, and in particular includes the milling, refining, treatment and processing or uranium-bearing ore and the handling, transportation, storage and disposal of uranium-bearing ore and all material produced from such ore, but does not include the construction or use of towns or camps or structures connected therewith or facilities for, or connected with, the supply of water, electricity, or gas to such towns, camps or structures.

Part II of Act provides that there shall be a Supervising Scientist, appointed by the Governor-General, for the Alligator Rivers Region whose functions include advising the Minister with respect to the effects on the environment in the Region of local uranium mining operations, as well as to standards, practices and procedures for protection and restoration of that environment from the effects of uranium mining operations.

Under Part III of the Act, a Co-ordinating Committee for the Alligator Rivers Region is to be set up whose members shall consist of the Supervising Scientist, the Director of National Parks and Wildlife, two members appointed by the Minister on the nomination of the Administrator of the Northern Territory, one member appointed by the Minister on the nomination of the appropriate Aboriginal Land Council, and such other members as are from time to time appointed by the Minister. The functions of the Co-ordinating Committee include considering, keeping under review and carrying out programmes for research into the effects on the environment of uranium mining operations in the Region, considering and keeping under review standards, practices and procedures in relation to uranium mining operations in the Region, and measures for the protection and restoration of the local environment. The Committee may also make recommendations to the Supervising Scientist with respect to any of these matters.

Part IV of the Act provides for the establishment of an Alligator Rivers Region Research Institute, to be managed by the Supervising Scientist. The functions of the Institute include indicating, promoting and assisting in research, and the collection of relevant information, concerning the effects on the environment of uranium mining operations in the Region.

Under Part V, the Supervising Scientist is given power to obtain necessary information and documents, and given the duty of furnishing to the Minister an annual report concerning the effects on the environment of uranium mining operations in the Region, and measures taken during the year for the protection and restoration of the environment. A copy of any such report must thereupon be laid before each House of the Parliament.

The Environment Protection (Northern Territory Supreme Court) Act relates to the enforcement of certain provisions for the protection of the environment in the Alligator Rivers Region; it provides that the Supreme Court of the Northern Territory of Australia has jurisdiction at the suit of the Director of National Parks and Wildelife, the Territory Parks and Wildlife Commission or an Aboriginal Land Council, to make orders concerning the enforcement of provisions relating to the effect on the environment of uranium mining operations in the Alligator Rivers Region.

It should be noted that in this Act, "uranium mining operations", contrary to the definition in the Environment Protection (Alligator Rivers Region) Act, is defined as including the construction and use of towns, camps, dams, pipelines, power lines or other structures connected with mining operations.

• *Austria*

NUCLEAR LEGISLATION

Act of 1978 forbidding the use of nuclear fission for the purposes of providing energy in Austria

This Act, of 15th December 1978, (published in the Federal Law Gazette for the Republic of Austria on 29th December 1978 - FLG 676/1978 No. 232) was passed by the Federal Parliament following the negative result of the Austrian referendum on nuclear energy on 5th November 1978.

The Act, which comprises only two Sections, stipulates in Section 1 that installations in which, for the purposes of providing energy, electrical energy is produced by means of nuclear fission, shall not be built in Austria. Section 1 also provides that insofar as such installations already exist, they shall not be operated. In Section 2, it is stated that this Act is binding on the Federal Government.

• *Belgium*

NUCLEAR LEGISLATION

1978 Act on Economic and Budgetary Reforms

The purpose of this Act of 5th August 1978 is to introduce, inter alia, certain reforms in the energy field, including the nuclear fule cycle.

Under the Act, the King may by Orders debated in the Council of Ministers, take the necessary measures for the fissile materials management, up-stream and down-stream of nuclear power plants (with the exception of activities mentioned in the following paragraph), by a mixed economy company in which the public authorities will contribute up to at least 50% of the authorised capital and will play a leading role. The activities of the fissile materials cycle cover unrestrictively uranium supply and enrichment, manufacture of low-enriched uranium fissile materials, mixed oxides materials and plutonium fissile materials, irradiated fissile materials, reprocessing and conditioning of waste resulting from that operation; they cover work sub-contracted abroad, as well as work undertaken in Belgium.

In order to ensure as efficient and durable a protection as possible of the population, the King is also empowered to make the necessary regulatory provisions for the management of the storage of conditioned radioactive waste and enriched fissile materials and plutonium containing materials, as well as the storage of fissile plutonium with a concentration above 40%, by a totally public body. This body will also be responsible for the monitoring and permanent control of all operations covering radioactive waste and plutonium. It will also be in charge of conditioning radioactive waste from nuclear installations which are not equipped with the facilities required to undertake all or certain of these operations.

The King may also authorise the above-mentioned mixed economy company to take over the installations of Eurochemic according to arrangements to be determined subsequently (in this respect, see information on the Convention between the Belgian Government and the Eurochemic Company on takeover of the installations and execution of the legal obligations of the Company - Nuclear Law Bulletin No. 22).

Finally, and also by Royal Order, electricity-producing companies may have to bear the cost of all the above-mentioned operations as well as applied science research work directly linked to electricity production.

None of the Royal Orders provided for by this Act have yet been made.

RADIATION PROTECTION

1977 Order amending the General Regulations on Radiation Protection

This Royal Order was made on 24th May 1977 and came into force when it was published in the Official Gazette of 7th July 1977. It amends the Royal Order of 28th February 1963, as revised, embodying the General Regulations for the Protection of the Population and Workers against the Hazards of Ionizing Radiations.

This amendment refers in particular to the conditions for the direct supply by manufacturers or importers of unsealed radioactive substances, radioisotopes or preparations containing them, to duly authorised physicians, veterinary surgeons and chemists. It also refers to the conditions of use of devices and substances emitting ionizing radiations, as well as to the licensing conditions for holders of isotopes and the qualifications of users.

REGIME OF RADIOACTIVE MATERIALS

1978 Act on Execution of IAEA Safeguards on Belgian Territory

The Act of 20th July 1978 was published in the Belgian Official Gazette of 17th October 1978, and lays down provisions enabling the International Atomic Energy Agency (IAEA) to carry out safeguards inspections and verifications on Belgian territory in accordance with the Agreement concluded on 5th April 1973 between Euratom and IAEA (see Nuclear Law Bulletin Nos. 11 and 19), in implementation of Article III of the Treaty on the Non-Proliferation of Nuclear Weapons.

Under this Act, persons or undertakings producing, using or storing raw materials or special fissionable materials on Belgian territory must permit and facilitate the IAEA's inspections and verifications to control the results obtained by the Euratom security control system. In principle, the IAEA inspectors undertake the inspections provided by this Act at the same time as, and in liaison with, the Euratom inspectors.

The activities undertaken by the IAEA's inspectors include in particular:

- inspections to verify information on the basic technical characteristics of nuclear installations subject to the Euratom security control, in accordance with the 1976 Regulation of the Commission of the European Communities;
- ad hoc inspections to verify information communicated by the Commission (initial report) as well as to control the quantity and composition of raw materials and special fissionable materials which are imported or to be exported;
- regular inspections to verify information communicated by the Commission on the accounting of materials subject to control as well as the location, composition, quantity, etc. of such materials;

- special inspections if they are deemed necessary by the IAEA.

In order to enable the above-mentioned inspections to be carried out, persons and undertakings concerned must, in particular, allow the IAEA inspectors to have access to all the premises provided for by the Commission's above-mentioned Regulation and must authorise them to scrutinize the accounting of materials subject to control, take independent measurements, check the operation of measurement and control devices, etc.

However, the visits and activities of IAEA's inspectors must be organised in such a way as to reduce to a minimum any disturbance in the operations of the undertakings concerned as well as to ensure the protection of industrial secrets.

Officers of the Ministry of Justice's Nuclear Safety Service are authorised to accompany the IAEA's inspectors.

Panel sanctions are provided for in case of violation of the provisions of this Act.

Bill on the conditions of transfer of nuclear materials and equipment as well as technological nuclear data

This Bill, which is currently being considered by Parliament, is placed in the context of the Treaty on the Non-Proliferation of Nuclear Weapons to which Belgium is a Party and is intended to implement the London Club Guidelines for nuclear transfers (see Nuclear Law Bulletin No. 21).

This Bill lays down the measures whereby only nuclear materials, equipment and technology which Belgium can guarantee will only be used for peaceful purposes may be transferred to non-nuclear weapon states. The provisions of the Bill do not affect the principle of free circulation of materials and equipment in the European Community.

Each transfer will be subject to prior authorisation to enable the appropriate authorities to check that such transfer is effected for peaceful purposes and is subject to the required security control.

This provision does not affect the regime applicable to the import, export, transport, protection, etc. of nuclear materials.

Materials, equipment and technological data referred to in the Bill must be determined by the King, according to the international commitments entered into by Belgium. The conditions for granting the authorisation will also be determined by Royal Order.

The Ministry competent for energy and who is empowered to issue transfer authorisations will seek to this effect the opinion of an advisory committee including, in particular, representatives of the various Ministries concerned and, where necessary, qualified scientists.

Penal sanctions are provided for in case of violation of the provisions of this Act.

• *Brazil*

ORGANISATION AND STRUCTURE

1974 Act on the competence of the Nuclear Energy Commission and NUCLEBRAS

The purpose of Act No. 6.189 of 16th December 1974 is to amend Act No. 4.118 of 27th August 1962 setting up a National Nuclear Energy Commission (NNEC) as well as Act No. 5.740 of 1st December 1971 on the creation of a Brazilian Company for Nuclear Technology (BCNT), which is henceforth named Brazilian Nuclear Undertakings Ltd. (NUCLEBRAS) (see Nuclear Law Bulletin No. 9).

The Act lays down that the duties which are a national monopoly under the 1962 Act (prospecting and exploitation of nuclear ores, trade in nuclear ores, materials and fuels, production and use of nuclear materials) must be carried out respectively by the NNEC as the body responsible for planning, control, regulatory matters and scientific research, and by NUCLEBRAS as the body responsible for implementing those activities.

The new Act describes in detail the duties thus assigned to the NNEC, in particular concerning planning and formulation of nuclear policy (for the Ministry of Mining and Energy which is its supervisory authority), licensing of nuclear activities, surveillance and control of nuclear installations. The Act also lays down the duties within the competence of the NUCLEBRAS Company which is directly attached to the Ministry of Mining and Energy.

RADIATION PROTECTION

1973 Resolution of the Nuclear Energy Commission concerning basic radiation protection standards

Resolution No. 6 of 19th June 1973 was established by the National Nuclear Energy Commission (NNEC) in accordance with its powers under Act No. 4.118 of 1962. This Resolution came into force on the day it was published in the Official Gazette, namely on 19th September 1973 (Section I, Part II).

The purpose of the standards is to lay down the basic principles of protection against damage resulting from the use of radiation. They apply to the production, processing, handling, use, transport and disposal of natural and artificial radioactive materials as well as to the use of other radiation sources referred to in Act No. 4.118 of 1962. They concern workers and individual members of the public as well as the population as a whole. The radiation doses referred to do not include doses administered for medical purposes or those resulting from natural radiation.

The standards contain a set of definitions of the concepts used in radiation protection; they also cover dose limits from controlled irradiation and fix the maximum permissible doses for workers (for the different body organs) for individuals (also for body organs) and for the population as a whole (genetic dose); special standards apply to women and to persons under 18 years of age. Furthermore, the standards make a distinction between external radiation and internal contamination.

The standards also lay down provisions concerning basic operational principles (the responsibilities of NNEC, the requirement to keep records of doses received and notifications, administrative organisation of radiation protection, physical and medical control, etc.). A series of tables on dose levels and radioisotope classification supplement the standards.

1975 Resolution of the Nuclear Energy Commission on radiation protection standards for the uranium and thorium production cycle

Resolution No. 1 of 21st May 1975 was made by an Advisory Committee of the National Nuclear Energy Commission (NNEC) under Act No. 4.118 of 1962. This Resolution was published in the Official Gazette of 19th August 1975 (Section I, Part I).

The purpose of these standards is to supplement the 1973 basic radiation protection standards so that they should be applied to the uranium and thorium production cycle. They cover mining work and the physical and chemical treatment of uranium and thorium ores in view of the specific hazards of such activities.

The standards contain special provisions concerning the limitation of workers' exposure to radiation as well as radiation protection measures, administrative control and medical supervision.

1975 Resolution of the Nuclear Energy Commission on licensing of the use of radioisotopes in nuclear medicine

Resolution No. 2 of 21st May 1975 was made by the National Nuclear Energy Commission (NNEC) in accordance with its powers under Act No. 4.118 of 1962. It was published on 19th August 1975 (Section I, Part I) and lays down the licensing conditions for persons using unsealed radioisotopic sources in nuclear medicine for therapy or diagnostics. These standards supplement the 1973 basic radiation protection standards.

The NNEC is the body competent for issuing these licences which may be general or more restricted. Consideration of applications for licences includes the study of candidates' degrees and professional qualifications, as well as examinations.

REGIME OF RADIOACTIVE MATERIALS

1977 Resolution of the Nuclear Energy Commission on physical protection standards for nuclear installations and materials

Resolution No. 6 of 20th July 1977 was made by the National Nuclear Energy Commission in accordance with its powers under Act No. 6.189 of 16th December 1974. It was published in the Official Gazette of 4th November 1977 (Section I, Part I).

The purpose of these standards is to establish the general principles and basic conditions for the physical protection of nuclear installations and materials. They apply to all activities involving the use, transport and storage of nuclear materials and equipment.

The setting up and implementation of a plan for physical protection in accordance with the present standards are now an essential condition for the licensing of activities involving such equipment and materials.

The standards establish a classification of nuclear materials from the viewpoint of priorities in physical protection and lay down general protection measures as well as specific provisions for transport by rail, road, sea and air. Any transfer of nuclear materials referred to in these standards is subject to a permit issued by the NNEC.

TRANSPORT OF RADIOACTIVE MATERIALS

1977 Resolution of the Nuclear Energy Commission approving the IAEA Regulations for the transport of radioactive materials

Resolution No. 9 of 24th August 1977 was made by the National Nuclear Energy Commission (NNEC) in accordance with its powers under Act No. 4.118 of 1962. The Resolution was published in the Official Gazette of 29th September 1977 (Section I, Part II) and approves the IAEA recommendations in the 1973 Edition of the Regulations for the Safe Transport of Radioactive Materials.

• *Canada*

REGIME OF RADIOACTIVE MATERIALS

1977 Uranium Information Security Regulations

The Uranium Information Security Regulations (SOR/77-836) of 13th October 1977 were published in the Canada Gazette of 26th October 1977 (Part II, Vol. 111, No. 20). Under these Regulations, no person who has in his possession or under his control any document or printed

material related in any way to discussions or meetings, held between January 1972 and December 1975 inclusive, concerning the export from Canada or marketing for use outside Canada of uranium, its derivatives or compounds, may release such documents and material or disclose their contents to any foreign government or agency thereof or to any foreign tribunal unless he is required to do so by a Canadian law or with the consent of the Ministry of Energy, Mines and Resources. This person must furthermore take appropriate measures to prevent unauthorised release of such documents and material.

These Regulations revoke the Uranium Information Security Regulations (SOR/76-644) of 21st September 1976.

Amendment of the Regulations on Ionization Smoke Detectors (1978)

On 19th September 1978 the Atomic Energy Control Board announced that it would put an end to the control exercised over the disposal of ionization smoke detectors containing a very small quantity of radioactive material and will no longer require that such devices be approved by the Underwriters' Laboratories of Canada (ULC) before the Board itself grants the licence. This decision was based on the OECD Nuclear Energy Agency's Recommendations of 1977 for Ionization Chamber Smoke Detectors in Implementation of Radiation Protection Standards.

Manufacturers and distributors of ionization smoke detectors must obtain a licence from the Atomic Energy Control Board. The Board grants approval for such devices when it has been demonstrated, inter alia, that the quantity of radioactive material in the devices does not exceed the prescribed limits, that such material is effectively contained and that the device is designed in such a way as to make it impossible to have access to the radioactive material without wilfully damaging the detector. The low radiation level of an ionization smoke detector for houshold use is always below the maximum permissible limit for certain other radiation-emitting consumer products such as for example, colour television sets.

As regards industrial type ionization smoke detectors which contain a larger quantity of radioactive material to make up for different atmospheric conditions due to dust and dirt, the Atomic Energy Control Board will continue to control their disposal in accordance with established practice for low-level radioactive waste.

• *Finland*

REGIME OF NUCLEAR INSTALLATIONS

Electricity Act, 1979

This Act, which replaces the Act on Electric Plants of 1928, was promulgated on 16th March 1979 and will be operative as from the beginning of 1980. The Act provides a framework for nation-wide as well

as regional planning of electrical power supply in Finland. Under the Act, a licence must be obtained prior to the construction of any major power station.

As a rule, licences will be granted by the Ministry of Trade and Industry upon verification of the fact that the proposed building project is included in the electrical power supply plan approved by the Council of State. In the case of nuclear power plants, however, licences will be granted by the Council of State and not by the Ministry. This licence is required in addition to those prescribed by the Atomic Energy Act.

ENVIRONMENTAL PROTECTION

Act on the Prevention of Marine Pollution, 1979

This Act was promulgated on 16th March 1979 and came into operation on 1st April 1979. The Act enables implementation in Finland of the Convention on the Protection of Marine Environment of the Baltic Sea, 1974 (the so-called Helsinki Convention) and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (the so-called London Convention). The Act Prohibits the dumping of any high-level radioactive waste or matter. A prior permit is required for dumping of radioactive waste or matter below that category. The permits are granted, depending on the case, either by the Council of State or by the appropriate Water Board.

• *France*

ORGANISATION AND STRUCTURE

1979 Decree modifying the composition of the Interministerial Committee on Artifical Radioisotopes

Decree No. 79-175 of 26th February 1979 amends the provisions of the Code of Public Health (Sections R.5230 and R.5232) which relate to the composition of the Interministerial Committee on Artificial Radioisotopes (published in the Official Gazette of 6th March 1979).

The Committee is placed under the Chairmanship of a Counsellor of State appointed by Order of the Prime Minister and includes representatives of the Ministries concerned (Agriculture, Defense, Industry, Interior, Health, Labour, Universities and the Minister responsible for classified installations) as well as representatives of the Commissariat à l'Energie Atomique, the National Institute for Health and Medical Research and the Central Service for Protection against Ionizing Radiations. The Committee is divided into two sections with different representations.

It should be noted that the new composition of the Committee includes a representative of the Minister in charge of classified installations and the Head of the Central Service for Protection against Ionizing Radiations.

1979 Decree on the National Institute for Nuclear Science and Technology

Decree No. 79-276 of 2nd April 1979 (published in the Official Gazette of 6th April 1979) amends Decree No. 56-614 of 18th June 1956 on the creation of a National Institute for Nuclear Science and Technology based by the Commissariat à l'Energie Atomique at Saclay.

The Institute is placed under the authority of the Industry Minister and the Universities Minister. The purpose of the new Decree is to modify the composition of the Institute's Council for Education.

REGIME OF RADIOACTIVE MATERIALS

Bill on radioactive materials

This Bill was submitted to Parliament this year by the French Government which considers that, in view of the fast development of the uses of nuclear energy, the increasing quantity of nuclear materials in circulation and the increasing number of permanent or temporary holders of such materials require a strengthening of the control exercised over their custody.

Present regulations which cover mainly radiation protection cannot be considered sufficient given the risk of malicious actions. Also, the security control established by the Euratom Treaty does not seem suitable for preventing theft of materials and, furthermore, does not apply to materials intended for the national defense.

Therefore, the purpose of this text is to empower the Government to regulate and control the custody, trade, import, export, fabrication, use and transport of materials likely to be used directly or otherwise for nuclear fission or fusion. These activities will be subject to authorisation and control under conditions fixed by decree.

The materials referred to include plutonium 239, uranium 233, 235 and 238, thorium and any product - ores excepted - containing the above materials.

Control will cover technical and accounting operations and measures intended to avoid loss, theft and diversion of materials. It will not apply to nuclear materials prepared for defense purposes or held in military nuclear installations, such materials will be subject to special measures.

The Bill provides for penal provisions to sanction persons who take unauthorised possession of such nuclear materials, prevent the exercise of control or do not notify the police in good time if these materials disappear.

TRANSPORT OF RADIOACTIVE MATERIALS

1979 Order on transport and handling of dangerous goods

This Order of 27th February 1979 by the Minister of Transport supplements the Regulations of 15th April 1945 on the transport of dangerous goods by rail, land and inland waterways (published in the Official Gazette of 15th March 1979).

The Order deals with the training of persons in charge of vehicles or boats carrying dangerous goods by road or by inland waterways. It refers in particular to transport of radioactive materials (Class IVb).

• *Federal Republic of Germany*

ORGANISATION AND STRUCTURE

1979 Bill to amend the provisions of the Atomic Energy Act concerning costs and fees

The purpose of this Bill is to amend the provisions on costs and fees in the Atomic Energy Act (Section 21) to enable the authorities to obtain reimbursement of expenses incurred in licensing procedures and control activities. To this end, the Federal Government will be authorised to issue a special Cost Ordinance, the draft of which has already been prepared by the Federal Ministry of the Interior.

REGIME OF RADIOACTIVE MATERIALS

1979 Bill on implementation of the Euratom-IAEA agreement

This Bill concerns implementation of the agreement between Belgium, Denmark, the Federal Republic of Germany, Ireland, Italy, Luxembourg, the Netherlands, the European Atomic Energy Community and the International Atomic Energy Agency in implementation of Article III, of the Treaty on the Non-Proliferation of Nuclear Weapons.

The purpose of the Bill is to provide for the legal basis for the activities of IAEA inspectors within the Federal Republic of Germany It lays down that persons subjected to safeguards must accept and give their support to such inspections. The Bill furthermore grants rights of access to the inspectors to the facilities concerned and prescribes the extent of the safeguards measures corresponding to the provisions of Ordinance No. 3227/76 on Euratom of 19th October 1976. Finally, the Bill contains provisions on costs and on the liability of the inspectors

TRANSPORT OF RADIOACTIVE MATERIALS

Transport of dangerous goods by sea (1978)

On 5th July 1978, an Ordinance was issued concerning the transport of dangerous goods by sea-going vessels (Bundesgesetzblatt 1978 I S. 1017). Its scope of application includes radioactive substances. The Ordinance entered into force on 6th August 1978 and repeals the Ordinance of 4th January 1960 on the transport of dangerous goods by sea.

Transport of dangerous goods by air

The revised text of the Air Traffic Ordinance (Luftverkehrs-Zulassungs-Ordnung) was published on 13th March 1979 in the Bundesgesetzblatt (BGBl. 1979 I S. 308). Sections 76 to 78 contain provisions concerning the carriage of dangerous goods, including radioactive substances, by air.

ENVIRONMENTAL PROTECTION

Bill concerning criminal acts against the environment

A Bill entitled "Sixteenth Act for the Modification of the Penal Code - Act concerning criminal acts against the environment" has been put before Parliament (Deutscher Bundestag). The Bill, by a comprehensive system of penal sanctions, will help to counteract more effectively than in the past acts implying serious damage or danger to the environment, and will make public opinion more conscious of the negative social implications of such acts. The Bill also contains a number of provisions for modifying existing penal norms concerning atomic energy, for example, waste disposal in such a way as to endanger the environment, operation of nuclear installations without a special licence and handling of nuclear materials without a licence.

• *Greece*

ORGANISATION AND STRUCTURE

1978 Presidential Decree on the reorganisation of the Greek Atomic Energy Commission

The organisation and structure of the Greek Atomic Energy Commission (GAEC) was fixed until now by "Mandatory Act" No. 451 of 18th June 1968, supplemented by Decree-Law No. 691 of 1970. The Mandatory Act has been reproduced in the Supplement to Nuclear Law Bulletin No. 2.

A new Decree-Law No. 940 dealing with the reorganisation of the administrative structure of the GAEC was made on 18th December 1978 and published on 22nd December 1978 in the Greek Official Gazette.

The GAEC which is now placed under the Minister for Co-ordination includes the following bodies under the authority of the GAEC Chairman:

- the Secretariat of the Steering Committee;
- the Democritos Nuclear Research Centre ("D"NRC),
- the Service for the Regulation and Control of Nuclear Installations (SRCNI);
- the Administrative and Technical Supervisory Service (ATSS).

The Secretariat of the Steering Committee is in charge of secretariat duties for the Committee and its Chairman and facilitates their contacts with the Administration and the public.

The "D"NRC is competent for the implementation and achievement of scientific research work in general, namely, basic research, applied research, development and experimental application and the specialisation and training of scientists on subjects of interest to GAEC. All scientific, administrative and technical personnel responsible for the GAEC's work and related equipment are under the authority of the "D"NRC.

The SRCNI is responsible for carrying out the GAEC's obligations under the Act reorganising the GAEC which concern the conditions for the setting up and operation of nuclear installations, as well as control of safety measures. These are in particular:

- Establishment of regulations and scrutiny of applications for all types of licences for setting up and operating nulcear installations in the country;
- formulation of safety measures to be taken when constructing and operating nuclear installations in the country, and control of the application of such measures;
- study of international progress on the safety and operation of nuclear installations;
- collection and keeping of data as well as research on and study of the results of the application of safety and protection rules during the operation of nuclear installations;
- preparation and supervision of research programmes on the safety of nuclear installations whose setting up has been taken in charge by the "D"NRC or has been entrusted to persons outside GAEC;
- information of the public on nuclear matters in accordance with a programme approved by the Steering Committee.

The SRCNI is also responsible for supervising the application of safety measures fixed on a case-by-case basis by the Minister of Industry when nuclear installations are constructed and operated, as the SRCNI is the competent public service under Section 4 of Decree-Law No. 854 of 1971.

The ATSS is responsible for the supply of administrative, economic and technical services to all the departments under GAEC and to third parties. These services include:

- making the computer available to all GAEC departments;
- supplying the country with radioactive substances;
- co-operating with other services competent for national protection against ionizing radiation.

• *Italy*

ORGANISATION AND STRUCTURE

1978 Act setting up a consolidated National Health Service

Act No. 833 of 23rd December 1978 was published in Official Gazette No. 360 of 28th December 1978. It sets up a consolidated National Health Service and furthermore determines and distributes between the State, the Regions and the local bodies, the various duties, structures, services and activities to promote, maintain and restore the physical and mental health of the population.

Certain provisions of Act No. 833 concern radiation protection in the field of the peaceful uses of nuclear energy. Section 6(k) of the Act lays down that the State will carry out the health control of the production and use of nuclear energy and radioactive materials. Section 7(d) authorises delegation to the Regions of certain administrative functions regarding control of trade in and storage of radioactive materials and radiation-emitting equipment as well as monitoring of environmental radioactivity. Section 23 provides for the creation and fixes the tasks of the High Institute for Prevention and Safety at Work, which will co-ordinate its work on nuclear matters with the National Nuclear Energy Committee (CNEN). The Decree setting up the Institute will specify the activities, undertaken by the National Institute for Accident Prevention and the National Association for Combustion Control until their suppression, and which will henceforth be assigned to the new Institute and the CNEN.

It may be noted that the provisions of this new Act introduce no change in the CNEN's tasks concerning the radiation protection of workers and the population under Act No. 933 of 1960 (amended by Act No. 1240 of 1971) and Act No. 1860 of 1962 as well as Decree No. 185 of 1964 on the safety of installations and radiation protection of workers and the population.

RADIATION PROTECTION

1978 Decree on the Safety and Health Protection of Workers in the Mining Industry against Ionizing Radiation

This Ministerial Decree of 13th May 1978 was published in the Official Gazette of 14th November 1978, in implementation of Decree No. 185 of 13th February 1964 of the President of the Republic on the safety of installations and the health protection of workers and the population against the hazards of ionizing radiation. It determines the methods for evaluating environmental contamination doses in mines which contain radioactive substances, and more generally, as regards mining research or exploitation implying a risk of exposure to ionizing radiation. The radioactivity measurements and controls prescribed by this Decree are intended to comply with the provisions of Decree No. 185 which make it binding on the director of a mine to ensure that physical control of radiation protection is undertaken by qualified experts and that appropriate controls from the viewpoint of medical supervision are carried out by approved physicians.

THIRD PARTY LIABILITY

1979 Decree on exclusion of certain categories of nuclear substances

This Decree made on 20th March 1979 by the Ministry of Industry, Commerce and Crafts was published in the Official Gazette of 5th April 1979. Its purpose is to exclude certain categories of nuclear substances from the scope of the Paris Convention on Third Party Liability in the Field of Nuclear Energy.

Publication of this Decree enables implementation at the internal level of the corresponding Decision taken by the NEA Steering Committee for Nuclear Energy of 27th October 1977 (see Nuclear Law Bulletin No. 21).

• *Japan*

THIRD PARTY LIABILITY

Amendment of the Law on Compensation for Nuclear Damage

Law No. 147 on Compensation for Nuclear Damage of 17th June 1961 as amended by Law No. 73, Law No. 53 and Law No. 94 (of 1967, 1971 and 1975 respectively) (see Nuclear Law Bulletin Nos. 6, 7 and 9) will presently be amended again.

The following modifications are planned:

- the definition of "nuclear damage" will include the damage suffered by the operators' employees during their work;
- the financial security will be raised from six thousand million yen to ten thousand million yen;
- the period of validity of the provisions of the Act which concern respectively the conclusion of Indemnity Agreements between the nuclear operator and the Government (Section 10) and the measures to be taken by the Government in case of a nuclear incident (Section 16), will be extended from 31st December 1981 until 31st December 1989 (Section 20);
- nuclear damage to the employees of the operator liable will primarily be covered by the existing workmen's compensation system.

These amendments came into force on 6th June 1979.

The Safety and Fishery Compensation Agreements for the Onawaga Nuclear Power Plant (1978)

On 18th October 1978 the Tohoku Electric Power Company signed a safety agreement and a fishery compensation agreement with representatives of local residents in relation to the construction of the Onawaga nuclear power plant.

The safety agreement provides for a radiation monitoring system and a system for liaising in case of accidents as well as provisions relating to compensation. A novel feature of this agreement is that it provides for measures against reduction of the price of fish if prices are reduced because of rumours. This clause was added at the request of the residents as Onawaga is one of the major coastal fishing areas of Japan.

The fishery compensation agreement provides for payment of 5,550 million yen to compensate for the loss of Onawaga town's fishing rights, for reduction in the price of fish on the basis of rumours, and also for joint research work by the Power Company and the Fishery Association on the dispersal of thermal waste water discharged from the plant.

• *Mexico*

ORGANISATION AND STRUCTURE

1978 Act reorganising the administration and control of nuclear energy

This Organic Act was promulgated on 14th December 1978 under Section 27 of the Constitution relating to nuclear energy. The Act was published in Official Gazette No. 19 of 26th January 1979.

The Act establishes a National Atomic Energy Commission responsible for planning, co-ordinating and supervising nuclear programmes and activities at governmental level, it transforms the previous National Institute of Nuclear Energy (INEN) (see Nuclear Law Bulletin No. 11), which until now had been the only public body in the nuclear field, into the new National Institute of Nuclear Research (ININ); it creates a public body called Uranio Mexicano (URAMEX) which will have the State monopoly of exploration and exploitation of radioactive ores, import and export of such ores and nuclear fuel; finally the Act establishes a National Nuclear Safety and Safeguards Commission. This Commission will be the regulatory authority in all matters concerning safeguards, radiation protection, nuclear safety, physical protection of nuclear installations and materials and licensing of nuclear installations (see Nuclear Law Bulletin No. 22).

The Act is reproduced in the Supplement to this issue of the Nuclear Law Bulletin.

• *Philippines*

ORGANISATION AND STRUCTURE

Presidential Decree of 1978 concerning the Radiation Health Office

Presidential Decree No. 1372 of 8th May 1978 amends Presidential Decree No. 480 of 6th June 1974 creating a Radiation Health Office in the Department of Health. Under the 1978 Decree, the Radiation Health Office is required to fix basic standards for apparatus and equipment emitting ionizing and non-ionizing radiation to ensure their compliance with the standards laid down by the Code of Practice for Radiation Protection. It is also empowered to formulate policies to improve the quality of radiological practice in the Philippines and to establish a national radiation standards section as well as a biomedical engineering division.

RADIATION PROTECTION

Memorandum of 4th March 1976 on basic radiation protection standards

The Memorandum lays down standards governing X-ray diagnostic and associated equipment. No person whose presence is not essential may remain in a room while radiological procedures are being carried out. Pregnant women or persons under 18 years of age may not accompany patients during their examination. Special precautions must be taken for the protection of patients awaiting examination and any exposure which is not part of the diagnostic procedure is subject to the limitations that apply to non-medical exposure.

The basic protective requirement is that the radiation dose to the patient, especially the integral dose and the dose to the gonads and the active bone marrow, must not be greater than necessary to obtain the relevant diagnostic information.

REGIME OF NUCLEAR INSTALLATIONS

Rules of procedure for the licensing of atomic energy facilities (1977)

These Rules of Procedure, issued by the Philippine Atomic Energy Commission pursuant to the Atomic Energy Regulatory and Liability Act No. 5207 of 1968 (see Nuclear Law Bulletin Nos. 6, 9 and 22) were published in the Official Gazette, Volume 13, No. 37 of 2nd September 1977 and came into force on that date.

They lay down the step-by-step procedure to be followed for filing an application for a construction permit or an operating licence for an atomic energy facility. The application must be filed with the Commission's Department of Nuclear Regulations and Safeguards, in accordance with the provisions of the applicable regulations. On receipt of the application, the Department conducts the appropriate review and assessment based on the technical information submitted; the applicant may be required to provide additional information or data.

On completion of the review, if the Department is satisfied with its findings, it recommends to the Commission issuance of an order admitting the application; if on the other hand it considers the application wanting in form and substance, it recommends to the Commission issuance of denial of the admission in the form of an order stating the reasons therefor. The applicant then has fifteen days, or longer, as may be specified in the order, to correct the deficiencies or to request a hearing.

The order admitting the application must be published in a newspaper of general circulation for two consecutive days and posted at a public place (Municipal Hall) where the facility is to be constructed. Any person whose interest may be adversely affected by the proposed facility may file a petition for admission as a party to the proceeding within thirty days of publication of the order or within the period specified therein; the petition must be reasoned and must state the specific interests to be affected.

Upon acceptance of the petition, the Commission issues a Notice of Hearing to the Parties, stating the authorities (Hearing Board) under which the hearing is to be held, the time, place and nature of the hearing, as well as the matters of facts or law to be considered and the time in which the answers or memoranda are to be filed.

Upon completion of the hearing, the Board submits to the Commission a report containing its findings together with all the relevant documents and a transcription of the proceedings. The Commission renders its decision taking into account the report of the Hearing Board and may recommit the application to the Hearing Board for further hearing with instructions. Upon recommendation by the Hearing Board, the Commission may, in the case of an application for a construction permit and where the hearing is protracted, issue a provisional construction permit subject to the Regulations for the Licensing of Atomic Energy Facilities (see Nuclear Law Bulletin Nos. 19 and 22).

All orders and decisions of the Commission must state the facts and issues involved and the reasons on which the order is based. Any final order or decision of the Commission may be submitted to the Court of Appeals for review in accordance with the Rules of Court within fifteen days of notice of the order or decision. On questions of law only the Supreme Court may review such orders or decisions.

• *Portugal*

ERRATUM

Under the heading "Reorganisation of nuclear activities in Portugal" in Nuclear Law Bulletin No. 22, p.20 (December 1978), the fourth title should read: "Bureau for Nuclear Protection and Safety".

• *Switzerland*

REGIME OF NUCLEAR INSTALLATIONS

1978 Federal Order concerning the Atomic Energy Act

A revision of legislation in the nuclear field was approved by popular vote on 20th May 1979; this followed a national referendum organised on 18th February 1979 where the nation voted in favour of the Federal authorities' nuclear policy. (For fuller details about the revision and the reasons underlying it, see Nuclear Law Bulletin Nos. 19 and 20).

Following approval by referendum of the above Federal Order, adopted on 6th October 1978 by the Council of Safety (published in the Federal Gazette 1978, II, 895), it will be brought into force on a date to be fixed by the Federal Council. It is recalled that the new Order lays down that a so-called general licence for constructing a nuclear installation must now be obtained from the Federal Council; granting of the licence is subject to approval by the Federal Assembly. Also, a special procedure is provided for whereby the Federal Council must grant permission to make preparations for constructing repositories for radioactive waste. The Order further makes provision for the setting up of a common fund, managed under the Council's supervision, to cover the expenses incurred for decommissioning nuclear installations. Expenditure for radioactive waste management and decommissioning is to be borne by waste producers (the Federal Order is reproduced in the "Texts" Chapter of this issue of the Bulletin).

THIRD PARTY LIABILITY

Bill on third party liability and cover for nuclear incidents (1979)

With the approval of the Federal Order amending the licensing system for nuclear installations, study of the overall revision of the 1959 Atomic Energy Act is being pursued actively by the Commission set up for this purpose by the Federal Department for Transport, Communications and Energy (see Nuclear Law Bulletin Nos. 19 and 20).

The Commission was instructed to prepare for the Federal Assembly (Parliament) proposals on the matter of Switzerland ratifying the Paris Convention and the Brussels Supplementary Convention as well as on the special Act required for implementing both Conventions.

Following the Commission's work, a Bill on third party liability and cover for nuclear incidents was circulated early this year for comment by interested circles. Unlike the provisions of the 1959 Act which followed fairly closely the principles of the Paris Convention, the new text is divergent on an essential point; if it were adopted, this would result in the Swiss authorities not ratifying the Paris and Brussels Conventions. In the Commission's view, the limitation of a nuclear operator's liability is no longer warranted today (as opposed to when the Conventions were adopted) and there are no reasons for dealing with the nuclear industry in a way which is different from other energy sectors.

The general features of the Bill are the following:

- Alignment of the nuclear liability system with the traditional principles of law governing third party liability;
- sole liability ("channelling"), even unlimited, of the operator of a nuclear installation;
- requirement for the operator to take out private third party liability insurance for a minimum of 200 million Swiss francs;
- above and beyond this amount, the Swiss Confederation will cover nuclear damage up to 1,000 million Swiss francs (one billion). This will also apply when claims are statute-barred or private financial security fails. A fund for deferred nuclear damage will be set up for this purpose;
- claims will be statute-barred three years after the victim has had knowledge of the damage, or thirty years after the incident.

• *Turkey*

REGIME OF NUCLEAR INSTALLATIONS

1979 Nuclear Safety Codes for the Licensing of Nuclear Installations

On 24th January 1979, the Turkish Atomic Energy Commission (TAEC) accepted the International Atomic Energy Agency Nuclear Safety Codes for use in the Turkish licensing regulations (see Nuclear Law Bulletin Nos. 15 and 16). This series of safety codes will be adopted by the TAEC Nuclear Safety Committee (see Nuclear Law Bulletin No. 22) and included in the national licensing standards; and TAEC already signed an agreement with the Turkish Electricity Authority on 20th October 1978 to the effect that these Safety Codes would be used in licensing procedures. The following codes have been published:

- Code of Pratice on Safety in Nuclear Power Plant Operation;
- Code of Practice on Safety in Nuclear Power Plant Siting;
- Code of Practice on Design for the Safety of Nuclear Power Plants;
- Code of Practice on Quality Assurance for Safety in Nuclear Power Plants;
- Safety Guide on Information to be submitted in Support of Licensing Applications.

• *United Kingdom*

TRANSPORT OF RADIOACTIVE MATERIALS

The Merchant Shipping (Dangerous Goods) Rules 1978

The Merchant Shipping (Dangerous Goods) Rules of 25th October 1978 (SI No. 1543) came into operation on 29th December 1978. They supersede the Merchant Shipping (Dangerous Goods) Rules of 1965 as amended by the Merchant Shipping (Dangerous Goods) (Amendment) Rules of 1968 and 1972.

The Rules now define "dangerous goods" by reference to goods classified as dangerous for carriage by sea as well as any other goods whose properties might be dangerous if they were carried by sea. This classification is based on that of the 1978 Report of the Standing Advisory Committee on the Carriage of Dangerous Goods of the Department of Trade, and the 1977 Edition of the International Maritime Dangerous Goods Code published by the Intergovernmental Maritime Consultative Organisation (IMCO).

Dangerous Goods include radioactive substances and empty receptacles which have been used previously for the carriage of such substances unless the receptacles have been both cleaned and adequately closed.

THIRD PARTY LIABILITY

The Nuclear Installations (Excepted Matter) Regulations 1978

These Regulations (SI No. 1779) of 4th December 1978 came into operation on 1st January 1979. They prescribe, for the purposes of paragraph (d) of the definition of "excepted matter" in Section 26(1) of the Nuclear Installations Act 1965, certain specified quantities and forms of nuclear matter, and supersede the Nuclear Installations (Excepted Matter) Regulations 1965. They bring the definition of excepted matter in those Regulations into line with the decisions of 27th October 1977 of the OECD Nuclear Energy Agency's (NEA) Steering Committee excluding certain kinds and quantities of nuclear substances from the scope of the Convention on Third Party Liability in the Field of Nuclear Energy (Paris Convention).

If nuclear matter falls within the quantities and forms prescribed it is excluded from the provisions of the Act and so does not attract the strict liability for nuclear damage which is imposed on United Kingdom operators or on responsible parties. These quantities and forms correspond with those determined by the NEA Steering Committee's decisions; the Steering Committee is empowered to exclude nuclear substances from the provisions of the Convention if in its view the small extent of the risks involved so warrants.

The first material excepted by the Regulations is uranium in which the mass of the fissile isotope 235 does not exceed one per cent of the total uranium mass. This exception includes uranium recovered from spent nuclear fuel which, unlike natural uranium, contains small amounts of radioactive contaminants. In addition, a consignment of nuclear matter leaving a nuclear installation is excepted by the Regulations if it does not exceed specified limits of activity (and in the case of fissile materials, of mass) and is also packed and labelled in accordance with the appropriate provisions of the International Atomic Energy Agency's (IAEA) 1973 Revised Edition of the Regulations for the Safe Transport for Radioactive Materials (or in some cases relating to fissile materials, the 1967 Edition of those Regulations).

Compared with the 1965 Regulations, the principal changes in relation to consignments are that activity limits and packing requirements now take account of the most recent IAEA Regulations.

• *United States*

REGIME OF RADIOACTIVE MATERIALS

Uranium Mill Tailings Radiation Control Act of 1978

The Uranium Mill Tailings Radiation Control Act of 1978 was enacted on 8th November 1978 (Public Law 95-604). Its purpose is to authorise the Federal Secretary of Energy, who is the competent authority in respect of the Act, to enter into co-operative agreements with certain States of the Union concerning radioactive materials at existing sites and, in particular, to provide for the regulation of uranium mill tailings under the 1954 Atomic Energy Act.

Although the process of uranium milling produces waste with a low radioactive content as compared to waste generated at other stages of the nuclear fuel cycle, its volume is very large and is rapidly growing. In the absence of proper management, the radionuclides contained in this waste may become a source of low level radiation exposure to local and more distant populations over very long periods of time. The management and stabilization of uranium mill tailings in the United States has been a controversial question for over two decades, bearing two issues in mind. the nature of the risk to the public and the measures to be taken to mitigate the risk. National radiation protection legislation is based on the recommendations of the International Commission on Radiological Protection (ICRP) on applicable radiation protection standards. These recommendations are now based on the concept of "as low as reasonably achievable" (ALARA) limits. Application of this principle means that any exposure to radiation from mill tailings, however small, must be justified.

In this context, and in view of the fact that uranium mill tailings at active and inactive mill operations may pose a potential and significant health hazard to the public, the 1978 Act lays down that efforts should be made to remedy the situation. Stabilization, disposal and control of such tailings should be ensured in a safe and environmentally sound manner so as to prevent or minimize the diffusion of radon gas (from the decay of radium present in the tailings), and also to prevent or minimize other environmental hazards from the tailings.

To this effect, the Secretary of Energy, no later than one year of the entry into force of this Act, will designate which sites are to be considered as processing sites and which require remedial action, namely, sites containing residual radioactive materials in the form of tailings resulting from ore processing for the extraction of uranium and other valuable constituents, as well as other waste relating to such processing, including residual stocks of unprocessed ores or low-grade materials. The Secretary of Energy will consult with the Nuclear Regulatory Commission (NRC) when determining those sites which are contaminated with residual radioactive materials. When he designates the sites he will also consult with the Administrator of the Environmental Protection Agency (EPA), the NRC, the States concerned, the Secretary of the Interior and, in the case of Indian lands, the appropriate Indian tribe.

Within the same period, the Secretary will assess the potential health hazard from the residual radioactive materials at designated sites and, following the advice of the EPA Administrator, he will establish priorities for carrying out remedial action at each site. Within thirty days of such designation and establishment of priorities, the Secretary of Energy will notify the Governor of the State concerned or the Indian tribe as appropriate, and the Secretary of the Interior.

Following notification of a designation, the Secretary of Energy is authorised, with the concurrence of the NRC, to enter into State or Indian tribe co-operative agreements, as the case may be, to perform remedial action at the designated site.

The provisions of the co-operative agreements include inter alia

- for the purposes of the Act, acquisition of land by the State concerned and acquisition of land by the Secretary of Energy with the consent of the Governor of the State concerned (this does not apply to sites on Indian tribe lands);

- to the extent provided in advance in annual authorisations, the Secretary of Energy will meet up to 90% of the cost incurred for remedial action on State-owned land (the balance to be paid by the State concerned) and the entire cost of remedial action on Indian tribe lands;

- where the designated processing site is not acquired, the State will obtain the written consent of any person holding an interest in the site which releases the United States of any liability or claims concerning the remedial action performed and holds the United State harmless against any such claims; authorised representatives of the Secretary, the NRC and the EPA will have a permanent right of access to the site;

- if the Secretary determines that removal of radioactive material from a processing site is appropriate, the State will acquire land to be used as a site for the permanent safe disposition of the residual radioactive materials; when the designated processing site has been safely cleared of the materials, the State, with the concurrence of the Secretary of Energy and the NRC, may put the land up for sale, first offering it to its original owner, or retain it for other uses. The prospective purchaser must be notified in advance of the nature and extent of residual radioactive materials removed from the site, including the date of removal and the condition of the site after the action;

- the residual radioactive materials and the land acquired for their disposition must be transferred by the State to the Secretary of Energy when he determines (with the concurrence of the NRC) that the remedial action is completed in accordance with the Act; custody of the transferred property will be assumed by the Secretary or any Federal agency designated by the President of the United States. This property, including minerals, will be maintained under a licence issued by the NRC in such a manner as to ensure health protection of the public; the NRC may require monitoring, maintenance and emergency measures to be undertaken to this effect; the sub-surface mineral rights to this property may be disposed of by lease or sale in accordance with applicable regulations provided that the residual radioactive materials will not be disturbed by any operation resulting from such disposition;

- selection and performance of the remedial action will be undertaken with the concurrence of the NRC and, as the case may be, the full participation of the State concerned or in consultation with the Indian tribe and the Secretary of the Interior. Any remedial action must be effected in compliance with the general technical standards to be prescribed by the EPA Administrator in compliance with the 1954 Atomic Energy Act to ensure the safe and environmentally sound stabilization of the residual radioactive materials, consistent with existing regulations. No remedial action may be undertaken before the promulgation of such standards;

- public participation will be encouraged at all stages of the implementation of the provisions of the Act, and where appropriate, relevant public hearings will be held in the State concerned;

- any person violating the provisions of the Act or of co-operative agreements made thereunder will be subject to a civil penalty, determined by the Secretary of Energy, of not more than $1,000 per day per violation; no civil penalty may be assessed against the United States or any State;

- as of 1st January 1980 until 1st January 1986, the Secretary of Energy will submit a yearly report to Congress on the status of the actions which should be undertaken under the Act, and on any amendments to other laws made by the Act; the report to be prepared in consultation with the EPA Administrator, the NRC and the Secretary of the Interior, will include data on estimated costs of the programme and on the extent of participation by the States and Indian tribes as well as an evaluation of the effectiveness of the remedial actions and a description of the related problems;

- the authority of the Secretary of Energy to perform remedial actions under the Act will be terminated seven years after the date of promulgation by the EPA Administrator of general standards applicable to such actions, unless such date is extended by an Act of Congress.

Finally, the 1954 Atomic Energy Act has been amended by this Act to take into account the uranium mill tailings licensing and regulation definition. These amendments cover, in particular, the definition of by-product material, custody of the disposal site, the establishment by the NRC of licences, standards and definitions, co-operation with States, and the authority of the EPA concerning certain by-product material, namely standards for uranium mill tailings. For more detailed information on these amendments, which came into force on the same date as this Act, see the Article by Mr. Shapar on "Licensing and Regulation of Nuclear Waste" in this issue of the Bulletin.

• *Yugoslavia*

RADIATION PROTECTION

1976 Decree promulgating the Act on Protection against Ionizing Radiations and Regulations made thereunder in 1977*

The Decree of 25th November 1976 promulgates the Act on Protection against Ionizing Radiations (published in the Yugoslav Official Gazette of 10th December 1976 - Sluzbeni list Socijalisticke Federativne Republike Jugoslavije) and repeals the former Act on Protection against Ionizing Radiation promulgated by Decree of 15th March 1965, as well as a series of regulations made under that Act.

The purpose of the Act is to protect human life and health and the human environment against ionizing radiations. To this effect, the Act lays down a series of measures for the protection of the population, air, water, soil, foodstuffs, medicaments, consumer products, as well as for the protection of the environment where work involving ionizing radiation is carried out.

The authorities responsible for ensuring that the provisions of the Act are properly complied with are the competent agencies in the Republics and autonomous regions (separate provisions apply in the case of the Yugoslav Peoples' Army and for international trade in sources of ionizing radiation). When the conditions prescribed under the Act are not met and authorisations have not been issued, these authorities are empowered to suspend work involving sources of ionizing radiation, as well as construction of establishments and facilities until such conditions are met and the authorisations granted. They may also prohibit the transport of such sources into, out of, or within Yugoslavia for those same reasons.

In addition, the Federal Committee for Health and Social Policy is empowered, inter alia, to lay down further requirements concerning monitoring, dose limits of exposure for the population and workers, technical instructions concerning the siting, testing and commissioning of nuclear installations, use of radioactive substances whose activity exceeds the prescribed limits and finally, release, storage, processing and final disposal of radioactive waste.

Under the Act, nuclear installations, power plants, reactors and laboratories involved in work with highly radioactive substances, as well as facilities for processing radioactive ores, source materials, irradiated fuels and fission products may only be constructed subject to compliance with radiation protection requirements. These stipulations also apply to installations for the storage, processing and final disposal of radioactive waste. No such installations may be put into operation before it has been demonstrated during a trial period that the protective measures taken are satisfactory.

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* This Note was prepared on the basis of a review of these texts published in the WHO Digest of Health Legislation, Volume 29, No. 4.

The Act lays down the following measures which must be taken with a view to protecting the human environment against ionizing radiation:

- investigation of the presence, type as well as regular monitoring of the level of ionizing radiation and the degree of contamination of the environment;

- stipulation of conditons governing the site, construction and use of installations generating ionizing radiations or in which work involving ionizing radiation sources is conducted and conditions involving the use of such sources;

- keeping of records on ionizing radiation sources and exposure of the population and workers to such radiation;

- emergency measures to evacuate the population from threatened areas;

- storage, processing and final disposal of radioactive waste; and

- other protective measures provided for under federal legislation or ratified international agreements.

Furthermore, persons under eighteen years of age and pregnant women may not engage in work involving ionizing radiation sources and persons engaged in such work as well as the population must not be exposed to radiation exceeding the limits laid down pursuant to this Act.

Persons engaged in nuclear activities must first undergo appropriate technical training and meet the prescribed health requirements for the work they will be carrying out. Whenever necessary they will undergo medical examinations and must at all times wear protective devices whose accuracy will be checked regularly.

A series of Regulations dated 11th April 1977 were made under the Act and were published in the Official Yugoslav Gazette of 27th May 1977. These technical Regulations respectively cover:

- the dose limits which must not be exceeded for the population and workers (Regulations No. 3361/2);

- the marketing and use of radioactive substances and radiation emitting equipment exceeding the prescribed limits (Regulations No. 3361/3);

- the period measurements of the degree of exposure to radiation in work-places and monitoring of contamination of the working environment (Regulations No. 3361/4);

- the technical training, health requirements and medical examinations for persons working with ionizing radiation sources (Regulations No. 3361/5); and finally

- the type and conditions of discharge, storage, processing and final disposal of radioactive waste (Regulations No. 3361/6).

THIRD PARTY LIABILITY

Act of 18th April 1978 on Liability for Nuclear Damage

The Yugoslav Act whose text is reproduced in this issue of the Bulletin, was published in the Yugoslav Official Gazette of 28th April 1978 No.22. It came into force eight days after its publication. This Act is based to a great extent on the provisions of the Vienna Convention of 21st May 1963 on Civil Liability for Nuclear Damage, which the Yugoslav Government ratified on 12th August 1977.

The definitions of "nuclear damage, incident, installation, reactor, fuel and material" and "radioactive products or waste" are similar to those of the Vienna Convention. However, the "operator of a nuclear installation" designates an organisation of associated labour which has obtained site approval, the licences for test runs and entry into operation of the installation or persons recognized as an operator by the State.

Under the Act the operator is held absolutely liable for any nuclear damage caused by a nuclear incident which has occurred in his installation. This liability is limited to dinars 450,000,000 (i.e. approximately US$22,000,000). If there is a change in parity of the dinar the Federal Executive Council is empowered to determine a new amount for the operator's liability. It should be pointed out that when several operators are jointly and severally liable, the total liability cannot exceed the highest amount applicable for any one of them.

The operator is not liable for damage resulting from hostilities or natural disasters or for damage to the installation itself, to property on the site or to the means of transport on which the nuclear material was at the time of the incident. A carrier of nuclear materials may, in agreement with the State or regional competent authority and with the written consent of the operator, assume the nuclear third party liability of the latter.

To cover his liability, the operator must take out and maintain insurance or other financial security whose amount will be determined by the competent authority according to the characteristics of the installation involved but in no event should it be below dinars 150,000,000. If the financial means available to the insurer are not sufficient to compensate the nuclear damage in full, the financial resources and the procedure for making up the difference for compensation of the damage up to the limit set will be specified under State or regional regulations.

The insurer may not suspend or cancel the insurance without giving six months notice in writing to the operator and the State or regional competent authority. If the security covers transport it may not be cancelled or suspended throughout the duration of such transport.

Any action for compensation must be brought within ten years from the date of the incident. If it concerned a nuclear incident involving nuclear material which had been stolen or lost at the time of the incident, the period is set at ten years from the date of the theft or loss.

Any right of compensation is extinguished three years from the date on which the victim of the nuclear damage had knowledge of the damage and the identity of the operator liable. Any action for compensation may be brought directly against the insurer or the financial guarantor.

Jurisdictional competence lies with the Court of the Installation State. Where nuclear damage occurs during transport the jurisdiction lies with the local Court of the territory of residence of the operator.

CASE LAW

• *Federal Republic of Germany*

CONSTITUTIONALITY OF SECTION 7(1) and (2) OF THE ATOMIC ENERGY ACT IN RELATION TO FAST BREEDER REACTORS*

I. On 8th December 1978, the Federal Constitutional Court published the following decision taken on 8th August 1978:

"Section 7, sub-sections 1 and 2 of the Act on the Peaceful Uses of Atomic Energy and Protection against its Hazards of 23rd December 1959 (Federal Gazette I p. 814) in the version published on 31st October 1976 (Federal Gazette I p. 3053) is compatible with the Basic Law insofar as it permits the licensing of nuclear power plants of the so-called fast breeder type."

II. Section 7(1) and (2) of the Atomic Energy Act reads as follows:

"Section 7 - Licences for installations

(1) Any person who constructs, operates or otherwise holds a stationary installation for the production, treatment, processing or fission of nuclear fuel, or for the reprocessing of irradiated nuclear fuel, or who materially alters such installation, or its operation, shall require a licence.

(2) A licence may be granted only if

1. there are no known facts giving rise to any doubts as to the reliability of the applicant and of the persons responsible for the construction and management of the installation and the control of its operation and such latter persons possess the requisite competence;

2. it is ensured that the persons who are otherwise engaged in the operation of the installation possess the necessary knowledge concerning the safe operation of the installation, the possible hazards and the safety measures to be applied;

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* This Note was kindly prepared by Mr. Otto von Busekist, Legal Adviser to the Eurochemic Company.

3. every necessary precaution has been taken in the light of existing scientific knowledge and technology to prevent damage resulting from construction and operation of the installation;

4. the necessary financial security has been provided to cover all legal liability to pay compensation for damage;

5. all necessary protection is provided against disturbance or other interference by third persons;

6. the choice of the site of the installation, in particular with respect to non-contamination of water, air and soil, is not contrary to overriding public interests."

III. It is recalled that, on 18th August 1977, the Administrative Court of Appeals for the Land North-Rhine - Westphalia at Münster submitted the matter to the Federal Constitutional Court, in the context of a complaint against a first partial construction permit for the SNR-300 fast breeder nuclear power station at Kalkar. The Administrative Court of Appeals was of the opinion that Section 7(1) and (2) of the Atomic Energy Act violates the Basic Law (constitution) of the Federal Republic of Germany for a number of reasons (see Nuclear Law Bulletin No. 20).

By decision of 31st January 1978, the Federal Constitutional Court declared the submission as admissible, the question to be decided being "of general and fundamental importance for the common welfare and therefore requiring an urgent decision" (see Nuclear Law Bulletin No. 21). In view of this importance, the Court dispensed with the normal requirement of the lower Court taking evidence before accepting the case to examine the question of constitutionality (see Nuclear Law Bulletin No. 20).

IV. The Federal Constitutional Court rendered its decision on the merits of the submission after having heard the Federal Minister of the Interior the Government of the Land North-Rhine - Westphalia jointly with the defendants (the competent Ministers having granted the first partial construction permit), the co-defendants (the "Schnell-Brüter-Kernkraftwerksgesellschaft" which had applied for the permit), and the plaintiff. The Federal Constitutional Court rejects the different arguments put forward by the Münster Court and the plaintiff to justify the unconstitutionality of Section 7(1) and (2) of the Atomic Energy Act, as follows.*

1. The Basic Law has established a system of "checks and balances" between the legislative, executive and judicial powers whose institutional and functional legitimation is based directly on the Basic Law. The principle of parliamentarian democracy does not lead to a prerogative of the Parliament and its decisions in relation to the other powers in the sense of establishing a principle of interpretation which supersedes all other concrete distribution of competence.

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* The parts of the opinion constituting the summary established by the Court itself are underlined.

2. In the case at hand, the legislative power is involved for which the Basic Law establishes a certain competence. It follows from the principle of legality that acts of the executive which considerably affect the citizens' rights of freedom and equality must be based on a law. Section 7(1) and (2) of the Atomic Energy Act does not violate this principle.

   (a) The question in which areas acts of the executive must be based on a formal law, has to be determined in the light of the subject matter and the "intensity" of the regulation planned or applied, taking into account in particular the fundamental rights granted by the Basic Law. According to the same rules it has to be judged whether the legislator has established the essential normative bases of the matter to be regulated and not left this to the administration.

   (b) The normative decision of principle for or against the legal permissibility of the peaceful uses of nuclear energy in the Federal Republic of Germany is a fundamental and essential decision within the meaning of the principle of legality; this follows from its far-reaching effects on the citizens, in particular their sphere of freedom and equality, their general living conditions, and from the kind and intensity of regulation necessarily connected therewith. Only the legislator is competent to take such a decision. The same applies to regulations fixing the licensing of nuclear installations within the meaning of Section 7(1) of the Atomic Energy Act.

   The legislator has opted for the peaceful use of nuclear energy by means of a formal law - the Atomic Energy Act. This decision includes fast breeder reactors which follows from Section 2(1) No. 1a of the Act defining plutonium 239 as nuclear fuel as well as from the official exposé des motifs. Contrary to the opinion of the submitting Court, the legislator was not bound to include in the Act a provision declaring that he was ready to accept the risks possibly resulting from this reactor type. The legislator bears the political responsibility for all the consequences of his decision without having to declare it expressly.

   The question remains whether this formal law, in particular Section 7, contains the essentials so as to be precise enough to permit the licensing of the fast breeder. This question is to be answered in the affirmative. All essential and fundamental questions of the licensing procedure are regulated in Section 7(1) and (2) which fixes precisely enough the requirements for the construction, operation and modification of nuclear installations, including fast breeder reactors.

   (c) The legislator who has taken a decision the bases of which are called in question by new developments not foreseeable at the time of enactment, may be obliged under the constitution to re-examine the question of whether the original decision is to be upheld in the light of changed circumstances.

From the constitutional point of view, the legislator cannot be blamed for so far not having undertaken such an examination of the fast breeder technology and its possible consequences. The reactor planned to be built at Kalkar is only a prototype which does not prejudice - as always pointed out by the federal Government - the decision in favour of its utilisation on large industrial scale. It is rather destined to assist in the preparation of this decision. Whether the submitting Court is correct in assuming that the industrial use of the fast breeder may lead to dangerous constraints and consequences, cannot be foreseen today. There may be suitable means to counter the dangers for the individual freedoms feared by the lower Court. To take evidence on these questions would not help as they are mainly related to possible political developments of the most general nature. Only the future will show whether this decision for the application of the breeder technology will be useful or harmful. In this necessarily uncertain situation, it is, first of all, the political responsibility of the legislator and the government to take within their respective competences, the decisions they consider useful. In these circumstances, it is not the task of the courts to replace the competent political organs in assessing the situation, as legal criteria are lacking in this respect.

In a situation where reasonable doubts are possible whether or not the dangers feared by the submitting Court will exist, all organs of the State, and thus the legislator as well, have the constitutional duty to make all efforts to recognize early possible dangers and to counter them by constitutional means. If, in future, there is some probability for such dangers - to be assessed, in the first place, by the political organs - the legislator would be obliged to act anew. That he is aware of this task, is shown by the network of national and international regulations aimed at a comprehensive control of nuclear activities.

3. Section 7(1) and (2) of the Atomic Energy Act does not violate the constitutional requirement of sufficient precision The provisions in question make extensive use of undefined legal terms, which is constitutionally permissible. The degree of precision depends on the matter to be regulated and the intensity of regulation.

   (a) As regards sub-section 1 of Section 7, the legislator was not obliged to enumerate the reactor types subject to licensing.

   (b) Sub-section 2 of Section 7 meets the above requirement.

   Terms such as "reliability" and "necessary knowledge" used in nos. 1 and 2 of sub-section 2 have been used for a long time in laws regulating economic and industrial activities, and there is a long tradition of their interpretation by the legislator, executive and judiciary. The same applies to the terms used in Section 7(2) Nos. 4 to 6.

Section 7(2) No. 3 is sufficiently precise as well. This provision belongs to the field of technical safety law. The legislator intending to regulate in this field in order to avoid hazards to the individual or the general public, is faced with particular difficulties which reside in the nature of the matter to be regulated. The legislator has several possibilities to make scientific and technological developments legally binding by way of fixing norms which keep abreast of such developments. These norms have one common feature: by the use of undefined legal terms, the difficulties of their binding concretisation and their current adjustment to the scientific and technological development are shifted to the administrative and - in case of proceedings - the judicial level. Thus, authorities and courts have to compensate the "regulatory deficit" of the legislative level.

The law may, for example, refer to the "generally recognised technical rules". In this case, the administration and the courts may limit themselves to ascertain the majority opinion. This criterion has the disadvantage of lagging behind the further developing technology. This drawback is avoided by referring to the "state of the art" which does not require general recognition and practical confirmation but makes it more difficult to establish and assess the relevant facts. Section 7(2) No. 3 of the Atomic Energy Act goes even a step further by referring to "existing scientific knowledge and technology". By referring to the state of scientific knowledge, the legislator exerts an even stronger coercion to keep regulations abreast of scientific and technological developments. However, this formula presents even greater difficulties to the authorities than that relating to the state of the art. As a rule, they will not escape having to take a position on scientific disputes.

It is within the discretion of the legislator whether he wants to use undefined legal terms or a precise terminology. In the case of Section 7(2) No. 3, there are good reasons for employing undefined legal terms. The wording of Section 7(2) No. 3 of the Atomic Energy Act which is open to future developments, serves as dynamic protection of fundamental rights. It helps to realise the protective purpose of Section 1 No. 2 of the Atomic Energy Act, in the best possible way currently available. To fix a safety standard by establishing rigid rules, if at all possible, would rather impede than foster the technical development and the adequate safeguarding of fundamental rights, and would be a step back at the price of safety. Some uncertainty of the law must be put up with, at least in the case where the legislator would otherwise be forced to adopt unpractical regulations or to refrain from any regulations at all, both solutions eventually impairing the protection of fundamental rights.

These considerations are equally applicable to the residual risk of which one has to take account in connection with Section 7(2) No. 3. While this provision does not allow for a residual damage resulting from the construction or operation of a nuclear installation, it permits the licensing even if the probability of a future damage cannot be excluded with absolute certainty. The law leaves it to the

executive to determine, by way of ordinance or individual decision, the kind and extent of the risk which may or may not be accepted. In view of the special nature of the matter to be regulated, this does not violate the constitutional separation of legislative and executive powers. It follows from the purpose of Sections 1(2) and 3 and 7(2) and other provisions of the Atomic Energy Act, that account must be taken of all damage, dangers and risks specific to the installation and its operation, and that the probability of an incident which may be accepted when licensing an installation must be as low as possible and has to be the lower, the higher the damage and consequences in question. By referring to existing scientific knowledge and technology, the law commits the executive to observe the principle of best possible protection against dangers and risks. The legislator was not bound, however, to fix possible kinds and factors of risk. The assessment of risks resulting from a nuclear installation depends on many circumstances and factors many of which are subject to constant evolution. A dynamic protection of life and property requires such assessment and the constant adjustment of safety measures to be made by the executive which is better equipped for this task than the legislator. The degree of uncertainty which cannot be avoided in making such risk assessment resides in the nature of human knowledge.

4. Section 7(1) and (2) of the Atomic Energy Act does not violate fundamental rights or protective duties to be derived from the general system of those rights.

   (a) The requirements for the licensing of nuclear installations to be met according to Section 7(2) as well as other provisions of the Act in connection with the protective purpose of the Act (Section 1 Nos. 2 and 3) show clearly that violations of fundamental rights may result not from the licensing provision as such but from the individual decision of the authority. These requirements are worded in such a way as to exclude violations of fundamental rights by the licensing decisions and their consequences. In particular the provision of Section 7(2) No. 3 requiring all necessary precaution to be taken in the light of existing scientific knowledge and technology, proves that the Act does not allow for any kind of residual or minimal damage specific to a particular installation which would have to be considered as a violation of fundamental rights. Otherwise the Act would have had to specifically restrict the fundamental right concerned, as provided for by the Basic Law.

   The same applies accordingly to developments towards totalitarian control and safety measures which are incompatible with the present understanding of the liberal constitutional order of the Basic Law and which cannot be excluded in the submitting Court's opinion. The provisions of the Atomic Energy Act do not authorise such measures.

(b) As already pointed out, Section 7(1) and (2) permits the licensing of nuclear installations even if it cannot entirely be excluded that their construction or operation may lead to damage; it allows for a residual risk. Regulations entailing, in the course of their implementation, a not unimportant danger to fundamental rights, may also get into conflict with the Basic Law. Fundamental rights do not only protect individual citizens against the public power but constitute also objective criteria of the constitution applicable to the entire legal order and serving as guidelines to legislature, administration and judiciary. Protective duties may result from these constitutional principles demanding regulations to be shaped in such a way as to minimize the endangering of fundamental rights. That the lawmaker was conscious of possible grave dangers resulting from the peaceful uses of nuclear energy is shown by the fact that he fixed the protective purpose of the Act in Section 1 Nos. 2 and 3. In view of the kind and gravity of these dangers, already a remote possibility of their taking place must suffice to trigger concrete protective duties of the legislator. But even assuming that such a remote possibility in relation to the breeder technology cannot be excluded at present with absolute certainty, Section 7(1) and (2) does not violate protective duties in the present circumstances.

The lawmaker wishing to assess the possibility of future damage resulting from the construction or operation of an installation or a technical process, must rely on deductions based on past experience; in the absence of such bases he must limit himself to deductions from simulated processes. Knowledge of this kind, even if condensed to a scientific law, is only approximate; it does not convey absolute certainty but may be corrected by every new experience, and is therefore always in the latest state of unrefuted possible error. To request the legislator to adopt, in view of his protective duty, a regulation which excludes, with absolute certainty, the endangering of fundamental rights which possibly results from the licensing of technical installations and their operation, would mean to misjudge the limits of the human faculty of perception and to largely ban the State from licensing the uses of technology. In this respect, for purposes of forming the social order, one has to acquiesce in assessments based on practical reason.

Concerning damage to life, health and property, the legislator, by fixing the principles of best possible protection against hazards and risks in Sections 1 No. 2 and 7(2), has established a standard which allows licences only if it appears practically excluded, in the light of existing scientific knowledge and technology, that such damage will occur. Uncertainties beyond this threshold of practical reason have their origin in the limits of the human faculty of perception; they are inescapable and have to be borne by all citizens as a social burden.

(c) Articles 12(1) /fundamental right to freely choose one's profession/ and 14 /guarantee of property/ of the Basic Law do not forbid the negative exercise of discretion established by Section 7(2).

This Section does not establish a legal claim to be granted a licence, but only a claim to a correct exercise of discretion. It constitutes a preventive prohibition combined with an exception. This is justified by the special position held by nuclear law in many respects, (as exemplified by Article 86 of the Euratom Treaty according to which special fissionable material is the Community's property) which regulates activities potentially involving great dangers. From the consitutional point of view, the legislator had the power to grant the executive additional negative discretion permitting the refusal of a licence if special and unforeseen circumstances make it necessary; the limits of such discretion are determined by the purposes stated in Section 1 of the Act.

The constitutional permissibility of such limited discretion follows finally from the fact that special forms of international co-operation may be appropriate in view of possible transfrontier risks involving nuclear installations within the meaning of Section 7. Without such discretion, the establishment and implementation of such co-operation could be impeded in a manner inadmissible in view of the dangers to be prevented and the knowledge required for their control.

INTERNATIONAL ORGANISATIONS AND AGREEMENTS

INTERNATIONAL ORGANISATIONS

• *The OECD Nuclear Energy Agency*

NEA/IAEA WORKSHOP ON NUCLEAR LAW DATA PROCESSING FOR THE INTERNATIONAL NUCLEAR INFORMATION SYSTEM (INIS)

A Workshop on Nuclear Law Data Processing for the International Nuclear Information System (INIS) was organised jointly by the OECD Nuclear Energy Agency (NEA) and the International Atomic Energy Agency (IAEA) on 2nd and 3rd April 1979 in Paris.

The International Nuclear Information System developed by the IAEA is the world's largest computerized system for the collection and dissemination of nuclear information. Although its primary aim is the processing of scientific and technical information, it also covers nuclear law and, in this context, NEA, on the basis of its wide experience in the collection and dissemination of information on nuclear law, contributes to INIS by processing for its own interested Member countries (at present fifteen) their national nuclear law data for transmission to INIS.

This arrangement became operational in 1976, and both Agencies considered it timely this year to organise an interdisciplinary workshop to assess the results achieved so far and to discuss the working methods used. Some fifty participants attended the meeting, which brought together for the first time lawyers and technical information specialists from NEA and IAEA Member countries. While representatives of both disciplines presented papers on their respective achievements and experience in computerization of laws, most of the Workshop was devoted to exchanges of views and on discussion of methods for improving the System from the viewpoint of the legal users.

REVISED GUIDELINES FOR SEA DUMPING PACKAGES OF RADIOACTIVE WASTE AND RECOMMENDED OPERATIONAL PROCEDURES FOR SUCH DUMPING

In implementation of the Multilateral Consultation and Surveillance Mechanism for Sea Dumping of Radioactive Waste established by the OECD Council on 22nd July 1977 (see Nuclear Law Bulletin No. 20), the NEA undertook a programme of action shortly after the International Atomic Energy Agency's revised Definition and Recommendations for the purposes of the London Dumping Convention (see Nuclear Law Bulletin Nos.16, 17, 18, 20 and 21) were adopted by the IAEA Board of Governors in June 1978.

The programme, which was undertaken in the light of the Definition and Recommendations covered, inter alia, a revision of the 1974 Guidelines for sea dumping packages of radioactive waste (see Nuclear Law Bulletin No. 16), and the preparation of recommended operational procedures on the basis of practical experience gained from sea dumping operations carried out over the past twelve years.

The purpose of revising the 1974 Guidelines was to take account of improvements in waste conditioning and packaging technology as well as of lessons drawn from past operational experience. The revised Guidelines provide that the form of waste, the design and manufacture of the packages should be such as to ensure waste containment throughout handling, transport and descent to a depth of not less than 4,000 m. The packages should furthermore remain intact upon impact on the ocean floor and for a period of time thereafter to minimize to the extent reasonably achievable the radioactivity which might ultimately be released to the marine environment.

The proposed recommended operational procedures for sea dumping of radioactive waste cover all the steps needed for the preparation, organisation, execution and control of operations carried out under the responsibility of the national authorities and aim to achieve the required standards of operational safety. They also include criteria for the suitability of ships selected for dumping operations, and clarify the extent of international surveillance exercised by NEA Representatives, the purpose of which is to verify that operations are carried out in conformity with established rules.

The revised Guidelines for sea dumping packages of radioactive waste and the recommended operational procedures were approved by the Steering Committee for Nuclear Energy on 26th April 1979.

• *International Atomic Energy Agency*

SAFEGUARDS AGREEMENTS

As of 1st January 1979 the International Atomic Energy Agency (IAEA) had negotiated safeguards agreements with 75 non-nuclear weapon States party to the Treaty on the Non-Proliferation of Nuclear Weapons. There were safeguards agreements in force with 60 of these States. Safeguards agreements with a further 15 non-nuclear weapon States which had been approved by the IAEA Board of Governors were awaiting entry into force.

105 nations are now Party to the NPT (see Nuclear Law Bulletin No. 20) - three of them are nuclear-weapon States. The Parties to NPT now include all but one of the major industrial countries of western and eastern Europe, and of the Far East and of North America. The 105 Parties also include 67 developing countries in Asia, Africa, the Middle East and Latin America.

VIENNA CONVENTION ON CIVIL LIABILITY FOR NUCLEAR DAMAGE

The Vienna Convention on Civil Liability for Nuclear Damage entered into force on 12th November 1977 with respect to the following States: Argentina, Bolivia (accession), Cuba, Egypt, the Philippines, Trinidad and Tobago (accession), the United Republic of Cameroon (accession) and Yugoslavia. The other Signatories to the Convention are Colombia, Spain and the United Kingdom.

Following the entry into force of the Convention, the Standing Committee on Civil Liability for Nuclear Damage, established by the IAEA Board of Governors in 1963, held its fourth series of meetings in Vienna from 24th to 26th January 1978 with the participation of representatives of the 15 governments members of the Committee, observers from 10 other Member States and representatives of the OECD Nuclear Energy Agency (NEA) and the European Insurance Committee.

The Standing Committee, whose primary task is to keep under review problems relating to the Vienna Convention and to advise the Director General of the IAEA on any such problems, is composed of representatives of the following States: Argentina, Brazil, Canada, Czechoslovakia, Egypt, the Federal Republic of Germany, Finland, France, India, Japan, the Philippines, Poland, the USSR, the United Kingdom and the United States.

The Standing Committee agreed to recommend to the Board of Governors a draft resolution to replace the Board's resolution of September 1964 establishing maximum limits for the exclusion of small quantities of nuclear material from the application of the Convention in view of the small extent of the risks involved, pursuant to Article I.2 of the Convention. The resolution was adopted by the Board of Governors on 14th September 1978, and the limits thus established are identical to those adopted by the NEA Steering Committee on 27th October 1977 for the purposes of the Convention on Third Party Liability in the Field of Nuclear Energy (Paris Convention).

The Standing Committee also agreed to recommend that, in view of the world-wide framework provided by the Vienna Convention for regulating nuclear liability matters, the IAEA should continue to give advice and assistance to Member States upon request for framing relevant legislation. In this connection, it may be mentioned that as a result of the advisory services provided by the IAEA, legislation on civil liability for nuclear damage was enacted by Brazil and Yugoslavia on 17th October 1977 and 19th January 1978 respectively. Such assistance was also provided to Malaysia and Egypt in 1977 and 1978 respectively.

DRAFT CONVENTION ON PHYSICAL PROTECTION OF NUCLEAR MATERIAL

In April 1978 representatives of 40 governments met at the IAEA Headquarters in Vienna to continue negotiations to draw up a Convention on the Physical Protection of Nuclear Material. An informal meeting on the scope of the proposed convention was held in September 1978. A further formal session took place in Vienna from 5th to 16th February 1979 and was attended by 50 States, the Commission of the European Communities with a special status, and observers from the NEA and the International Air Transport Association.

The meeting did not reach agreement on all the provisions of the Convention but very significant progress was made. Provided that the question of the participation of the Commission of the European Communities in the Convention is solved, the Conference might be expected to complete its work at its next session in June 1979 and the Convention to be open for signature soon thereafter.

JOINT SEMINAR ON THE PRACTICAL IMPLICATIONS OF THE ICRP RECOMMENDATIONS AND THE IAEA REVISED BASIC SAFETY STANDARDS FOR RADIATION PROTECTION

Under the co-sponsorship of the World Health Organisation (WHO), the International Labour Organisation (ILO), the IAEA, the NEA and the International Commission on Radiological Protection (ICRP), the Topical Seminar on the Practical Implications of the ICRP Recommendations (1977) and the IAEA Revised Basic Safety Standards for Radiation Protection was held in Vienna from 5th to 9th March 1979 with the participation of 35 countries and ten international organisations.

The recommendations of the International Commission on Radiological Protection (ICRP) in its Publication 26 established a rational framework within which practices that result in the exposure of individuals and the population to radiation can be both judged and justified. Furthermore, protective measures should be pursued as far as is reasonably achievable and under no circumstances should the dose limits be exceeded. An additional requirement from ICRP is that each individual be guaranteed an adequate level of protection.

The Seminar placed emphasis on the concept of "justification" of a practice or source causing exposure to ionizing radiation and the optimization of protection, i.e. how to keep radiation as low as is reasonably achievable. It also stressed that the dose limits are now considered as a boundary zone, exposure above the zone is to be avoided but exposure below is not automatically allowed. For man to be protected as much as possible the dose to be received has to be subject both to optimization and proper justification.

So far, experience in the application of the new dose limitation system is limited. Much research is still needed, in particular on the quantification of the optimization process and on establishing numerical values for certain parameters. Representatives from employers and workers organisations from several countries participated in the Seminar. The discussions showed some diversity in the practical application of the dose limitation system in the United States, the USSR and other countries. This indicated the need for continuing the development of ICRP recommendations and their application.

The ICRP Committee Four will provide guidance on the practical applications of the recommendations, and an extensive plan of work is envisaged. Similarly, the IAEA, WHO, ILO and NEA have already embarked on an extensive revision of the Basic Safety Standards for Radiation Protection in order to provide a regulatory framework for the application of the dose limitation system as well as guidance on the operational requirements. This work will assist in putting the concepts of ICRP Publication 26 into practical application.

REVISED GUIDING PRINCIPLES FOR TECHNICAL ASSISTANCE

The Guiding Principles and General Operating Rules to Govern the Provision of Technical Assistance by the IAEA were first adopted by the Board of Governors in 1960. On 21st February 1979, the Board approved the Revised Guiding Principles and General Operating Rules which are set forth in document INFCIRC/267. The provisions established by the Board on 24th September 1977 for the application of safeguards in relation to the granting of technical assistance by the IAEA are also reproduced in that document.

The Revised Guiding Principles will henceforth apply to any technical assistance provided by the Agency, irrespective of the source of the funds or gifts involved, including projects for which the IAEA serves as an executing agency or intermediary for a State or for another organisation. For the implementation of any assistance provided by or through the IAEA, an agreement is to be concluded between the Agency and the recipient Government under which the latter undertakes to apply, where relevant, the IAEA safety standards and measures and the IAEA recommendations concerning physical protection of nuclear facilities, equipment and materials. In accordance with the Revised Principles, the recipient Government has also to undertake that the assistance provided to it shall be used only for peaceful applications of atomic energy and, in particular, that such assistance shall not be used for the manufacture of nuclear weapons, for the furtherance of any military purpose and for uses which could contribute to the proliferation of nuclear weapons, such as research on, development, testing or manufacture of a nuclear explosive device. To the extent required by the Board of Governors, safeguards will be applied to technical assistance projects by the IAEA as appropriate.

• *Euratom*

COUNCIL RESOLUTION CONCERNING THE MUTUAL EXCHANGE OF INFORMATION AT COMMUNITY LEVEL ON THE SITING OF POWER PLANTS

On 20th November 1978, the Council of the European Communities adopted a Resolution on mutual exchange of information at Community level on the siting of power plants. This Resolution was made on the basis that the selection of sites for nuclear or conventional power stations is one of the important problems raised by electrical power development. While recognising that decisions on siting lie with the Member State concerned, the Council agreed that exchanges of information on matters related to such siting were likely to facilitate the finding of solutions to the problems involved.

This exchange of information will be organised by the Commission of the European Communities in a group of representatives nominated by the Member States, under the aegis of the Energy Committee. The Commission will submit a report to the Council on the results obtained from this information exchange.

AGREEMENTS

• *Belgium-United States*

ARRANGEMENT ON EXCHANGE OF TECHNICAL INFORMATION AND CO-OPERATION IN REACTOR SAFETY RESEARCH

An Arrangement was concluded on 6th June 1978 between the United States Nuclear Regulatory Commission and the Belgian Government for exchange of technical information in regulatory matters and co-operation in safety research and in standards development. Under this Arrangement, both Parties agree to exchange, as available, technical information related to the regulation of safety and the environmental impact of designated nuclear energy facilities and to safety research of designated types of nuclear facilities.

As regards co-operation in safety research, the execution of joint programmes and projects under which activities are divided between the two Parties will be agreed on a case-by-case basis. The Parties further agree to co-operate in the development of regulatory standards applicable to the designated nuclear facilities.

The Agreement is valid for a term of five years and may be further extended by mutual written agreement It may be terminated at any time by either Party on a thirty day notice.

The United States has concluded similar Arrangements with fourteen countries since a programme in this field was approved in 1974 (Brazil, Denmark, France, the Federal Republic of Germany, Iran, Israel, Italy, Japan, Korea, the Netherlands, Spain, Sweden, Switzerland and the United Kingdom).

• *Brazil-F.R. of Germany*

EXCHANGE OF TECHNICAL INFORMATION AND CO-OPERATION ON NUCLEAR SAFETY

The Minister of the Interior of the Federal Republic of Germany and the Minister of Mines and Energy of the Federative Republic of Brazil concluded an Agreement on exchange of technical information and co-operation in the safety of nuclear installations on 10th March 1978; the Agreement came into force on the same day (Bundesgesetzblatt 1978, II, p.950).

This Agreement was concluded within the framework of the Agreements between both countries respectively dated 9th June 1969 on scientific research and technological development and 27th June 1975 on co-operation in the field of the peaceful uses of nuclear energy (see Nuclear Law Bulletin No. 16).

• *Canada-Japan*

PROTOCOL AMENDING THE AGREEMENT BETWEEN JAPAN AND CANADA FOR CO-OPERATION IN THE PEACEFUL USES OF NUCLEAR ENERGY

On 22nd August 1978, Japan and Canada signed a Protocol amending an Agreement between both countries on co-operation in the peaceful uses of nuclear energy concluded on 2nd July 1959.

The Protocol amends several provisions in the Agreement, in particular those referring to transfer of equipment, enrichment of certain identified material and sensitive information. The Parties must apply measures of physical protection according to guidelines set out in Annex A to the Agreement, and must undertake that identified material will not be used for any purpose other than a peaceful one. That undertaking will be verified in each country by the International Atomic Energy Agency (IAEA) pursuant to agreements respectively concluded by both countries with the IAEA.

The Protocol has not yet come into force.

• *France-F.R. of Germany*

CO-OPERATION IN THE FIELD OF SAFETY RESEARCH ON LIGHT WATER REACTORS

The Minister of Research and Technology of the Federal Republic of Germany and the Commissariat à l'Energie Atomique of France concluded an Agreement on exchange of information and co-operation in the field of safety research on light water reactors on 28th September 1978; this Agreement came into force on the same day (Bundesgesetzblatt 1978, II, p.1300).

According to a list of given topics concerning, in particular, certain types of possible accidents or control modes, both parties will exchange information, harmonize their testing programmes and co-operate on calculations and also exchange staff. Electricité de France which already co-operates with the CEA under a collaboration agreement in the same field is associated in the implementation of the Agreement.

• *France-F.R. of Germany-Japan*

TECHNICAL CO-OPERATION ON FAST BREEDER REACTORS

On 26th May 1978, the Commissariat à l'Energie Atomique (France), the Power Reactor and Nuclear Fuel Development Corporation (Japan) and the Kernforschungszentrum Karlsruhe (Federal Republic of Germany) signed an Agreement on technical co-operation in the field of liquid metal cooled fast breeder reactors.

The purpose of the Agreement is exchange of information and co-operation in basic R and D on fast breeder reactors. The parties will exchange information reciprocally on a case-by-case basis on reactor physics, sodium technology, safety and materials. The Agreement also contains provisions intended to restrict dissemination of the information exchanged.

• *F.R. of Germany-Spain*

AGREEMENT FOR CO-OPERATION IN THE FIELD OF THE PEACEFUL USES OF NUCLEAR ENERGY

The Governments of the Federal Republic of Germany and of the Kingdom of Spain concluded the above Agreement on 5th December 1978; it came into force on 13th December 1978 (Bundesgesetzblatt 1979, II, p.133).

This Agreement covers research and development work in the scientific and technical field, the safety of nuclear installations and radiation protection, as well as planning, construction and operation of nuclear power plants and research facilities.

Both Contracting Parties undertake to co-operate by an exchange of information and of scientific and technical personnel, by organising expert meetings, by carrying out joint R and D projects and finally, by an exchange of material, installations and equipment.

Article 3 of the Agreement refers to the principle of the non-proliferation of nuclear weapons. Accordingly, no equipment, material, installation or information supplied under the Agreement will be used in a way likely to produce a nuclear explosive. Each Contracting Party must take measures to ensure physical protection of nuclear materials or installations so as to prevent their unauthorized use or handling.

All equipment, nuclear material, installations and information supplied under this Agreement will be subject to the IAEA Safeguards. To this end, the Contracting Parties will conclude a tripartite agreement with the IAEA unless an agreement covering all nuclear material already exists.

Reprocessing of nuclear material contained in nuclear fuel supplied by either Contracting Party can only be undertaken in an installation proposed by the recipient Party and acceptable by the other Party, and this only after the IAEA has stated that effective safeguards are applicable in that installation. The same provision applies to any material which can be used for the production of nuclear weapons and which may be obtained from material supplied by either Contracting Party.

The re-exportation of equipment, nuclear material, installations and information supplied under this Agreement or of products obtained therefrom will be authorized only if the recipient State has furnished the assurances mentioned above.

• *F.R. of Germany-Switzerland*

AGREEMENT ON RADIATION PROTECTION IN CASE OF EMERGENCY

This Agreement between the Federal Republic of Germany and Switzerland (see Nuclear Law Bulletin No. 22) entered into force after an exchange of notes on 10th January 1979. The Agreement was published in the Swiss Official Gazette (Sammlung der eidgenossischen Gesetze) No. 9 of 13th March 1979.

MULTILATERAL AGREEMENTS

• *Federal Republic of Germany*

ACCESSION TO THE ANTARCTIC TREATY

By an Act of 22nd December 1978, the Federal Republic of Germany acceded to the Antarctic Treaty of 1st December 1959 (Bundesgesetzblatt 1978 II.p. 1517). The accession became effective on 5th February 1979. It is recalled that the Treaty provides for the prohibition of all nuclear explosions in the Antarctic and of radioactive waste disposal in that area.

• *IMCO*

1971 BRUSSELS CONVENTION

On 6th March 1979 the Yemen Arab Republic (Sanaa) acceded to the 1971 Brussels Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material. This accession came into effect on 4th June 1979. The Yemen Arab Republic (Sanaa) is the seventh country to become a Contracting Party to the Convention.

The seven countries Party to the 1971 Brussels Convention are the following:

		Date of deposit of instrument of ratification
France	(ratification)	2nd February 1973
Spain	(accession)	25th May 1974
Denmark	(ratification)*	4th September 1974
Sweden	(ratification)	22nd November 1974
Norway	(ratification)	16th April 1975
Federal Republic of Germany	(ratification)**	1st October 1975
Yemen Arab Republic (Sanaa)	(accession)	6th March 1979

It is recalled that the purpose of this Convention is to eliminate the practical difficulties which until now have impeded the maritime carriage of nuclear substances. Under maritime law, shipowners carrying nuclear substances may be held liable for damage caused by such substances if they can be shown to have been at fault. This Convention lays down that maritime carriers of nuclear substances are exonerated from any liability for damage caused by a nuclear incident, if the operator of a nuclear installation is liable for such damage under the Paris or Vienna Conventions or under national law, provided that such law is in all respects as favourable to persons who may suffer damage as the Paris or Vienna Conventions. In addition, shipowners are excluded from liability for damage to the nuclear installation or the means of transport. At the same time, however, the Convention provides that the liability of the operator of a nuclear ship is not affected and this liability remains, consequently, as established by the 1962 Brussels Convention on the Liability of Operators of Nuclear Ships.

E R R A T U M

In Nuclear Law Bulletin No. 22 p.44 (December 1978), the list of countries under the heading: "Convention on the Prevention of Marine Pollution by the Dumping of Waste and Other Matter" should read:

....
Germany, Federal Republic of
....

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* The instrument of ratification of Denmark contains the reservation that the Convention shall not apply to the Faroe Islands.

** The instrument of ratification of the Federal Republic of Germany is accompanied by a declaration relating to the application of the Convention in (West) Berlin.

• *United Nations*

UNITED NATIONS CONVENTION ON THE CARRIAGE OF GOODS BY SEA 1978

This Convention was adopted on 30th March 1978 by a United Nations Conference convened in Hamburg from 6th to 31st March 1978 following a Resolution of the United Nations General Assembly. The Convention was opened for signature from 31st March 1978 to 30th April 1979 and is now open for accession.

From the viewpoint of nuclear activities it should be noted that the relationship with the Nuclear Third Party Liability Conventions has not been overlooked by the authors of this new Convention. Its Article 25(3) is based on Article 1 of the 1971 Brussels Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, whose purpose is to preserve the application of the nuclear third party liability regime in case of an incident causing damage for which a nuclear operator is liable in accordance with that regime.

The provisions of Article 25(3) are the following:

"No liability shall arise under the provisions of this Convention for damage caused by a nuclear incident if the operator of a nuclear installation is liable for such damage:

- under either the Paris Convention of 29th July 1960 on Third Party Liability in the Field of Nuclear Energy as amended by the Additional Protocol of 28th January 1964 or the Vienna Convention of 21st May 1963 on Civil Liability for Nuclear Damage, or

- by virtue of national law governing the liability for such damage, provided that such law is in all respects as favourable to persons who may suffer damage as either the Paris or Vienna Conventions."

• *Switzerland*

FEDERAL ORDER CONCERNING THE ATOMIC ENERGY ACT*

of 6th October, 1978

The Federal Assembly of the Swiss Confederation, having regard to Articles 22 quater, 24 quinquies, 24 sexies and 24 septies of the Constitution, having regard to the message from the Federal Council of 24th August, 1977,

ORDERS as follows

Part 1: General Licence

Section 1 - Objects, competence, purport and scope

(1) Any person intending to construct an atomic installation within the meaning of Section 1, paragraph 2 of the Federal Act of 23rd December, 1959 on the Peaceful Uses of Atomic Energy and Protection against Radiation (Atomic Energy Act) must have obtained a general licence from the Federal Council, the grant of which is subject to the approval of the Federal Assembly. The construction of installations intended to be federal establishments and institutes for purposes of research and teaching is governed by the rules applicable to such establishments and institutes.

(2) The granting of licences for construction and operation in accordance with Section 4, paragraph 1(a) of the Atomic Energy Act is subject to the prior issue of a general licence.

(3) The general licence determines:

(a) the site;

(b) the general lines of the project, in particular:

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* Unofficial translation by the Secretariat.

1. where nuclear reactors are concerned, the reactor system, the power category, the primary cooling system, the method of disposing of wastes during and after operation, as well as the approximate size and structure of the main buildings;

2. where radioactive waste repositories are concerned, their storage capacity, the categories of waste, as well as the approximate structure of underground and surface constructions.

Section 2 - Period of validity

(1) The period of validity of the general licence is limited.

(2) If the setting up of the project is delayed without the holder of the general licence being responsible for such delay, the Federal Council may extend the validity of the licence.

Section 3 - Conditions

(1) The general licence shall be refused or be subject to compliance with adequate conditions and duties where:

(a) this is required for safeguarding Switzerland's external security, fulfilling its international commitments or protecting persons, other persons' property and important rights, including the interests vested in the protection of the environment, of nature and landscapes, as well as land planning;

(b) the installation or the power to be generated therein is not likely to meet a real need in the country; when determining such need, account should be taken of possible economy measures, the replacement of oil and the development of other forms of energy.

(2) The general licence for nuclear reactors shall only be granted if the safe long-term disposal and permanent storage of radioactive waste from the installation are guaranteed and if there are arrangements for decommissioning and possibly dismantling disused installations.

(3) The general licence shall only be granted to Swiss nationals domiciled in Switzerland and to body corporates governed by Swiss law, whose headquarters are located in Switzerland and which are under Swiss control.

(4) The granting of a general licence may be made subject to the condition that its holder allows a judicious use to be made of the heat generated.

Section 4 - Submission and contents of the application

(1) The application must be submitted in writing to the Federal Chancellery.

(2) It must contain the particulars required for the granting of the general licence and be accompanied by supporting documents.

Section 5 - Publication of application, deposit of documents and objections

(1) The Federal Council publishes the application in the Federal Gazette and takes the appropriate measures to make the document available for public inspection.

(2) Any person may, within ninety days of publication, send objections in writing to the Federal Chancellery concerning the granting of the general licence. No person shall, simply by making use of such option, be entitled to acquire the status of a party in the licensing procedure.

(3) Objections must include a reasoned request; they shall be accompanied by available means of proof; those without must be specified. All objections must be signed by their author or his/her representative.

(4) Otherwise any person affected by the construction or operation of an atomic installation shall have the status of a party within the meaning of the Federal Act on administrative procedure. This Order is without prejudice to the rights conferred on such person by the Act on administrative procedure.

(5) When cantons and local authorities depending on them are affected by the general licence and have a sound reason for asking for it to be refused, they also shall have the status of a party within the meaning of the Act on administrative procedure.

Section 6 - Consultations and expert opinions

(1) The Federal Council asks the cantons and the competent specialised services of the Confederation for their opinion and gives them sufficient time for such purpose. The cantons must consult the communes concerned and include their opinions in their replies.

(2) The Federal Council asks for expert reports. These will cover, in particular:

(a) the safeguarding of Switzerland's external security, the fulfilment of its international commitments, the protection of persons, other persons' property and important rights, including the interests vested in the protection of the environment, of nature and landscapes as well as land planning;

(b) the need within the meaning of Section 3, paragraph 1(b);

(c) the possibilities of storing radioactive waste;

(d) the objections submitted and the opinions obtained.

(3) As a general rule, the applicant bears the cost of the expert opinions.

Section 7 - Publication of the opinions obtained and of the expert reports, second time limit for submitting objections

(1) The Federal Council publishes the conclusions formulated in the opinions and the expert reports in the Federal Gazette. It takes the appropriate measures to make the opinions and expert reports available for public inspection and consultation, with the exception of those parts which should be kept secret within the meaning of Section 27, paragraph 1 of the Act on administrative procedure.

(2) Any person may, within ninety days of publication, send objections in writing to the Federal Chancellery concerning the conclusions formulated in the opinions and the expert reports. This same right is granted to the cantons as well as to the communes concerned. No person shall, simply by making use of such option, be entitled to acquire the status of a party in the licensing procedure.

(3) Objections must specify the conclusions to which they relate and the reasons therefor; they must be accompanied by available means of proof; those without must be specified. All objections must be signed by their author or his/her representative.

(4) The Federal Council invites the cantons, the federal services or the experts to give their opinion on the objections to which their conclusions have given rise and gives them sufficient time for such purpose.

(5) Otherwise, any person affected by the construction or operation of an atomic installation shall have the status of a party within the meaning of the Federal Act on administrative procedure. This Order is without prejudice to the rights conferred on such person by the Act on administrative procedure.

(6) When cantons and local authorities depending on them are affected by the general licence and have a sound reason for asking for it to be refused, they also shall have the status of a party within the meaning of the Act on administrative procedure.

Section 8 - Decision of Federal Council and approval of Federal Assembly

(1) The Federal Council takes a decision after having considered the application as well as the opinions, the expert reports and the objections submitted.

(2) The decision to grant the licence is published in the Federal Gazette with particulars of the conditions and duties and an explanatory report and is submitted to the Federal Assembly for approval.

Section 9 - Additional rules of procedure

The Federal Council lays down the other rules of procedure.

Part 2: Radioactive Waste and Funds for Financing the Decommissioning of Installations

Section 10 - Radioactive waste

(1) Any person producing radioactive waste must ensure its safe disposal and bear the cost thereof; the Confederation reserves the right to have the radioactive waste disposed of at the producer's expense.

(2) The Federal Council grants permission under a special procedure to take preparatory steps to prepare a repository for radioactive waste. It submits the application to the canton on whose territory the preparatory steps are to be taken and gives it reasonable time in which to reply.

(3) The Federal Council settles the arrangements. It may require producers of radioactive waste to belong to a body set up under public law and to pay equitable contributions to meet the expenses of disposing of the waste.

(4) The Federal Council may, where necessary, transfer the expropriation rights to third parties.

Section 11 - Funds for financing the decommissioning of installations

(1) In order to meet the expenses of decommissioning and possibly dismantling disused installations, the owners shall pay contributions into a common fund. The contributions must be fixed so that they cover the expenses.

(2) The fund has a legal personality. It is managed under the supervision of the Federal Council by a committee of not more than eleven members appointed by the Council. The committee fixes the contributions to the fund and the benefits from it in each particular case.

(3) The Federal Council settles the arrangements; if necessary it may make advances to the fund.

Part 3: Final Provisions

Section 12 - Transitory provisions

(1) A general licence is no longer required for atomic installations in operation or whose construction has been licensed in accordance with the Atomic Energy Act.

(2) In the case of atomic installations whose operators have obtained a siting licence but not yet a construction licence, the authority simply considers, under a simplified procedure for granting a general licence, whether the power generated by the installation is likely to meet a real need in the country; when determining such need account should be taken of possible economy measures, the replacement of oil and the development of other forms of energy. The licence to operate such installations will only be granted when there is a project guaranteeing the safe long-term disposal and permanent storage of the radioactive waste produced and when arrangements have been made for the decommissioning and possible dismantling of disused installations.

(3) Revocation of the siting licence is only permissible under Section 9 of the Atomic Energy Act; such revocation may only be decided by the Federal Department of Transport, Communications and Energy. Damages for purposes of Section 9, paragraph 5 of the Act shall include any expenditure incurred in good faith on the basis of the siting licence with a view to obtaining the construction licence. Measures within the meaning of Section 8 of the Act are reserved.

(4) A holder of a siting licence who is refused a general licence for reasons independent of him shall be entitled to fair compensation. Postponement of the grant of a general licence for a limited period shall not be considered as a refusal to grant it.

Section 13 - Referendum, entry into force and period of validity

(1) This Order, whose scope is general, shall be submitted to an optional referendum.

(2) The Federal Council shall fix the date of its entry into force

(3) This Order shall remain valid until the entry into force of a new Atomic Energy Act, but no later than 31st December, 1983.

STUDIES AND ARTICLES

ARTICLES

LEGAL ASPECTS OF THE DECOMMISSIONING OF NUCLEAR FACILITIES *

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INTRODUCTION

1. The technical aspects of decommissioning nuclear facilities have been given increased attention over the past years, and there exists a considerable body of literature on the subject (1). While it is true that a number of articles and papers underline the need to establish a suitable legal, administrative and financial framework for these activities, the literature dealing specifically with the legal aspects of

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* The present Article was presented as a paper to the International Symposium on the Decommissioning of Nuclear Facilities jointly organised by IAEA and OECD/NEA in Vienna from 13th to 17th November 1978. A few additions were made to bring the Article up to date. The proceedings of the Symposium will be published by IAEA in the course of 1979; for a brief report on the Symposium see IAEA Bulletin, vol. 21, no. 1 (February 1979).

** Responsibility for the views and facts in this paper rests solely with the author.

decommissioning is scarce. The analytical studies on nuclear legislation published by the OECD Nuclear Energy Agency (NEA) (2) are silent on the subject - in most cases for lack of legislation. The present paper therefore attempts to review the legal situation with respect to the decommissioning of nuclear facilities in NEA Member countries, and to sketch some features of a regulatory system in this field.

PRESENT STATUS OF REGULATORY FRAMEWORK IN NEA MEMBER COUNTRIES

2. A survey of the legislative and regulatory framework governing the peaceful uses of nuclear energy presently in force in NEA Member countries reveals that there exists relatively little guidance concerning the decommissioning of nuclear installations, with a few exceptions to be discussed later. The reluctance of many legislators and administrators to fix legal (and technical) criteria in this field may be explained by the fact that decommissioning experience to date has been related mainly to small research reactors, prototypes and pilot plants. The problem is also of lesser urgency for countries having established a nuclear power programme fairly recently, which may wish to profit from the decommissioning experience gained in countries more advanced in this field before enacting new or implementing existing legislation.

3. In Belgium, the regulations contain no specific provisions regarding the decommissioning of nuclear facilities. If work in large installations holding radioactive substances or radioactive equipment were to cease, the Minister for Public Health and the radiation protection authorities must be informed. The operator has to provide the radioactive substances (or the devices containing them) with a destination which ensures their disposal or re-use under satisfactory conditions; in case of default, the substances or devices may be seized without compensation (3). Apart from these general provisions, there are no rules, guides or criteria determining the conditions to be respected in case of decommissioning a nuclear installation. Thus, when the competent organs of the European Company for the Chemical Processing of Irradiated Fuels (Eurochemic) in Mol, Belgium, decided to terminate the operation of the reprocessing plant, the Belgian authorities were faced with the problem of implementing the above provisions. A working group composed of representatives of the competent authorities and of Eurochemic was charged with establishing the objectives and criteria of a decommissioning programme. The initial programme adopted could be classified as leading to the stage of "restricted site release" or "protective storage" (or "mothballing") with the possibility of later achieving the stage of "unrestricted site release" after removal of all radioactive materials, equipment and parts of the plant. This programme was later modified with respect to decontamination and dismantling when the Belgian Government indicated its willingness to take over Eurochemic's installations with a view to recommission the reprocessing plant (4). The "Convention between the Government of Belgium and the Eurochemic Company on Takeover of the Installations and Execution of the Legal Obligations of the Company", which entered into force on 30th October 1978, determines the respective responsibilities for the decontamination and dismantling of the plant, the treatment, conditioning and storage of the waste, as well as the financial obligations incumbent on each party. The Eurochemic case therefore presents, from the legal point of view, a good example of a satisfactory ad hoc approach to the decommissioning of nuclear facilities based on a minimum of regulatory guidance.

4. In Canada, the Atomic Energy Control Regulations of 1974 issued pursuant to the Atomic Energy Control Act of 1946, as amended, do not contain express provisions on the decommissioning of nuclear facilities. It may be assumed that the provisions dealing with amendments to a licence or its surrender are applicable. Where the holder of a licence intends to surrender his licence, the Atomic Energy Control Board or an officer designated by it may require the holder "to take such measures as are considered necessary for the protection of persons and property until such time as ... the activities being carried out under the authority of the licence have been properly terminated" (5). However, the Atomic Energy Control Act will be repealed when the "Nuclear Control and Administration Act" will come into force which is presently considered as Bill C-14 by Parliament* (6). According to Section 56(1)(q), the new Nuclear Control Board will be empowered to make regulations governing the abandonment or disposal of prescribed substances and nuclear facilities.

5. The situation in France does not differ significantly from those discussed above : there is no explicit reference to decommissioning in the Decree concerning nuclear installations (7). It can be implied from this Decree that new licences are required for the decommissioning of nuclear installations, as they "undergo alterations of a nature such as to lead to non-compliance with the requirements previously imposed" (8). Depending on the total activity of the substance contained in the installation after completion of the decommissioning stages, the installation would be grouped in another class ("déclassée") established by the French regulations or even struck from the list of "installations nucléaires de base" (9).

6. Somewhat more specific legislation exists in the Federal Republic of Germany. Until 1976, however, the Atomic Energy Act did not expressly stipulate the requirement of a decommissioning licence. The question was therefore discussed whether decommissioning constituted a "material alteration of the installation or its operation" (10). This problem of interpretation was settled by the insertion of a new subsection 3 in Section 7 of the Act which provides that a licence is required for the decommissioning of an installation for the production, treatment, processing or fission of nuclear fuel, or for the reprocessing of irradiated nuclear fuel, as well as for the safe enclosure of a finally decommissioned installation, the dismantling of such installation or parts thereof. The licencing conditions for an operating licence are to be applied accordingly. Presently proposals are being discussed to amend Section 7(3) of the Atomic Energy Act by clarifying that decommissioning is a generic term and may be effected by safe enclosure of the installation, by partial dismantling and safe enclosure of the remaining installation, or by its total removal. Criterion 2.10 of the "Safety Criteria for Nuclear Power Plants" (11) provides that nuclear power plants must be designed so as to allow their decommissioning in accordance with the radiation protection regulations; the operator must establish a concept which is in line with the regulations for the removal of the installation after it has been finally decommissioned. The Guidelines of the Commission on Reactor Safety for Pressurised Water Reactors require the following (12):

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* Note by the Secretariat: Consideration of the Bill has been postponed.

- the design and arrangement of buildings, component parts and systems must take account of appropriate decommissioning measures;

- component parts are to be designed and arranged in such a way as to allow, in case of removal, their decontamination, dismantling and transport with the lowest possible radiation exposure;

- the characteristics and measures planned for the decommissioning and removal of the plant have to be shown;

- a documentation has to be established and kept up to date showing the construction, composition and measurements of all buildings and component parts which will be made active or contaminated during operation.

In addition, Section 9(a) of the Act provides, inter alia, that any person who decommissions or disposes of installations in which nuclear fuel is handled, has to ensure that residual radioactive substances as well as radioactive parts of the plant and equipment which are removed or dismantled, are utilised safely or orderly disposed of as radioactive waste.

7. The country having most exclusively regulated the decommissioning of nuclear facilities is the United States of America. Section 50.33 (f) of Title 10, Code of Federal Regulations (CFR) requires the Nuclear Regulatory Commission (NRC) to determine, prior to the issuance of a licence, that an applicant for an operating licence is financially qualified to permanently shut down his facility and maintain it in a safe condition. It is to be noted that this Section does not speak directly of decommissioning and covers only production and utilization facilities (13). 10 CFR Part 50, Section 50.82 deals with applications for termination of licences. The NRC may issue an order authorizing the dismantling of the facility and disposal of the component parts and providing for the termination of the licence on condition that such disposal and dismantling is not inimical to the common defense and security or to the health and safety of the public. A detailed decommissioning plan need not be drawn up and reviewed by NRC until the licensee seeks to surrender his licence. Appendix F, paragraphs 4 and 5 of 10 CFR Part 50, deals with the decommissioning of fuel reprocessing plants and makes facilitation of decommissioning a design objective. The financial qualification required under 10 CFR 50.33 (f) is extended to the removal and disposal of radioactive waste generated during operation and upon decommissioning of the facility. Furthermore, the NRC has developed "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licences for Byproduct, Source or Special Nuclear Material" (November 1976 version). These Guidelines led to the development of Regulatory Guide 1.86 entitled "Termination of Operating Licences for Nuclear Reactors". Four possibilities for retirement of nuclear reactor facilities are considered acceptable by NRC which are (a) Mothballing (protective stage), (b) in-place entombment, (c) removal of radioactive components and dismantling and (d) conversion to a new nuclear system or a fossil fuel system. Alternatives (a) and (b) would require a "possession-only" licence, while alternative (c) would lead to unrestricted use of the site with no requirement for a licence.

8. The regulations and guides presently in force in the U.S., although much more comprehensive than in almost all countries, cover requirements and criteria for decommissioning only in a limited way. The U.S. Comptroller General's report to the Congress criticises the NRC for having "done relatively little to plan for and to provide guidance for decommissioning of commercial nuclear facilities" (14). It should be said, however, that the NRC has, in 1975, initiated a series of decommissioning studies with the Batelle Pacific Northwest Laboratory (15) which also discuss the status of regulatory guidance and identify areas where more specific guidance is needed and where strict application of existing regulations to decommissioning may be inappropriate (16). The NRC is developing a "Plan for Reevaluation of NRC Policy on Decommissioning of Nuclear Facilities" (17) which envisages the modification of existing regulations and preparation of specific new ones dealing exclusively with the control of decommissioning. An Advance Notice of Proposed Rulemaking entitled "Decommissioning Criteria for Nuclear Facilities" was published (18) which would lead to an amendment to 10 CFR Part 30, 40, 50 and 70 to include more specific guidance on decommissioning criteria not only for production and utilization facility licences but also for holders of licences for by-product, source and special nuclear material.

9. In other NEA Member countries there are, to the author's knowledge, no specific decommissioning regulations. Unless the existing laws or regulations are amended, it would appear that the decommissioning of nuclear facilities would have to be carried out by applying, on an ad hoc basis, the provisions on the surrender of revocation of, or amendment to, operating licences, or those requiring an authorisation for any modification of the installation or its operating conditions. In some countries it may also be possible to apply regulations dealing with radioactive waste treatment and disposal in general. All these provisions leave a fairly wide discretion to the licensing authorities to fix the conditions of plant decommissioning. However, any corresponding application of rules designed for the operation of nuclear facilities may give rise to problems of interpretation and, in some countries, be in conflict with general legal rules or principles. The absence of special decommissioning regulations creates an element of uncertainty which is contrary to the rationale underlying nuclear licensing systems to furnish in advance reliable criteria to the licensing authority as well as to the operator not only with respect to the siting, construction and operation of his plant but also as regards its retirement. Ad hoc decisions may also create considerable difficulties for the operator when imposing conditions which would have required long-term planning, especially as regards financial arrangements. The following part of this paper therefore tries to discuss some features of a particular regulating framework governing the decommissioning of nuclear facilities.

FEATURES OF A REGULATORY FRAMEWORK GOVERNING DECOMMISSIONING OF NUCLEAR FACILITIES

Definitions

10. Any regulatory framework should, of course, be based on a well defined overall concept or policy. If the decommissioning of a nuclear facility is defined "as the measures taken at the end of the facility's operating lifetime to assure the continued protection of the public from the residual radioactivity and other potential hazards in the retired facility" (19), such a definition takes up one of the principal objectives or policy declarations of all national acts on the peaceful uses of atomic energy: the protection of the public against the hazards of nuclear energy. This broad definition uses the term "decommissioning" in a generic sense covering decontamination and waste management operations as well. However, national regulations have not always established precise and consistent terminology. For example, the juxtaposition of the terms "decommissioning" ("Stillegung"), "safe enclosure of a finally decommissioned installation and "dismantling of an installation or component parts thereof" in Section 7(3) of the Atomic Energy Act of the Federal Republic of Germany may lead to difficulties of interpretation (20). The question of terminology was also discussed in the 1977 IAEA technical committee meeting on the decommissioning of nuclear facilities (21). A uniform use of terminology could also facilitate international co-operation and the development of international standards, guidelines and criteria and their transformation into national rules. This is true not only for the term "decommissioning" itself but also for the designation of the various decommissioning options and stages which is not consistent, sometimes not even on the national level (22).

Interaction with waste management

11. A legal and regulatory decommissioning regime should take account of the interaction with the regulatory framework governing other fuel cycle activities, in particular waste management. As pointed out in the so-called Polvani Report (23), consideration will have to be given to decommissioning wastes (including decontamination and consequential wastes).

Responsibilities

12. Decommissioning responsibilities should be clearly established. The short-term (and possibly medium-term) technical and financial responsibilities will normally be the responsibility of the operator. However, depending on the option or stage chosen by the operator or required by the competent authority, a decommissioned facility may involve long-term control responsibilities which may go beyond the operator's lifetime (24) Such responsibilities should therefore be entrusted to public or semi-public bodies. These bodies could be the same as those responsible for the long-term management of radioactive waste. In fact, the Polvani Report recommends that "the only acceptable arrangement is that long-term management of waste should be the direct responsibility of governments. This will provide the best guarantee for adopting the most appropriate solutions and maintaining the administrative control and possible

surveillance as required over storage and disposal sites" (25), and considers with respect to decommissioning that the "implementation of legal, administrative and financial frameworks, probably similar to those for the disposal of long-lived wastes, would be desirable" (26). Such transfer of responsibility may not be necessary in countries where the State or public bodies have the monopoly of nuclear activities, such as in France (27).

Generic applicability

13. As pointed out above, special decommissioning regulations and criteria as distinct from those applying to licensing of nuclear installations should be established. This does not necessarily mean that national authorities should make specific rules now which would govern activities to be carried out some thirty years hence. Depending on the actual state of the nuclear power programme, it may be sufficient or even advisable to formulate general criteria which could be specified and supplemented in the light of the progressing state of technology.

14. The question of generic applicability of decommissioning regulations and criteria (28) will have to be answered in the light of different factors. There are a variety of facilities that will eventually have to be decommissioned (reactors, fuel fabrication plants, reprocessing plants), and within each type of facility further distinctions can be made according to their technical characteristics (PWR,* BWR,* etc.) or their purpose (power reactor, research reactor, etc.). It will be difficult to cover the entire range of decommissioning circumstances and activities by uniform rules. A reasonable balance has to be struck between the need for flexibility allowing to cope with changed circumstances and the current state of technology, and the desirability to lay down in advance provisions which may be relied upon for long-term planning purposes. As in the case of regulations on the siting, construction and operation of nuclear facilities, it will be possible to fix a certain number of requirements which are of generic applicability and do not impede the adaptation to the technical evolution. In the field of decommissioning such generic rules could deal with formal aspects (e.g., special decommissioning licence, surrender of the operating licence), the requirement of certain general design features, the establishment of a (provisional) decommissioning plan, and arrangements concerning decommissioning costs. Whether it is advisable to fix decommissioning stages or options in a general law or regulation - which is presently discussed in the Federal Republic of Germany - remains doubtful as long as the technical discussion on those matters is still under way and international acceptance of definitions is pending. It would be preferable for those options/stages to be regulated in technical guides or standards which can be more easily kept abreast of current technological developments. The legal form of generic rules, i.e. whether in the form of a law adopted by Parliament or of a regulation by the competent authority to which the necessary powers have been delegated, will depend on the legal tradition and framework of the country concerned.

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* PWR: Pressurized Water Reactor; BWR: Boiling Water Reactor

Post-accident decommissioning

15. Some thought should be given to the distinction between "planned" and "unplanned" decommissioning. As to the latter case, post-accident decommissioning of a damaged plant may pose problems significantly different from those related to a plant having normally reached the end of its useful life. The originally available options may be reduced and the financial long-term planning seriously disturbed. Most NEA member countries merely provide that an operating licence may be revoked if the further operation of the facility could endanger life, health or property, but rarely specify any decommissioning requirements, let alone any financial arrangements.

Non-stationary installations

16. At present, decommissioning rules established at national level as well as the concepts and criteria discussed at international level relate only to land-based nuclear installations. For some countries, it may be useful to establish conditions for the retirement of non-stationary nuclear installations (nuclear-powered ships); practically all of these will presently fall outside the scope of the acts and regulations on the civil uses of atomc energy, but the cases of the commercial ships "Savannah" and "Otto Hahn" (the decommissioning of the latter is under discussion) present examples (29).

Form and content of authorisation

17. As already pointed out above, the legal form of a decommissioning framework and the extent to which legislation and regulatory powers may be delegated, depend very much on the legal system of each country. It is, however, evident that the decommissioning of nuclear facilities needs some form of authorisation. Various solutions can be envisaged which are based on the different licensing systems in force in NEA Member countries.

(a) The authorisation to decommission a nuclear facility can be granted together with the operating licence (30): this would imply the establishment of rather detailed decommissioning requirements (and even a specific decommissioning alternative) which may foreclose other more desirable methods which may be developed in the future, unless one wished to resort to backfitting.

(b) The other extreme would consist of fixing those requirements under the terms of a special decommissioning licence issued at the end of the facility's life. This approach has the advantage of allowing application of the most recent technology and consideration of all circumstances prevailing at that time. On the other hand, it would probably involve difficulties for the operator who is confronted with decisions which he could not prepare in advance; this is particularly the case for long-term financial planning.

(c) Probably the best solution lies in the middle between these extremes. As pointed out in paragraph 14 above in the context of generic applicability of decommissioning norms, a certain number of conditions can be fixed at the time of issuing the operating licence, the details of which can be laid down later when decommissioning is applied for by the operator or imposed by the authorities. The form in which the authorisation for decommissioning is granted is of lesser importance and will depend on the general system regulating nuclear activities: the decision may take the form of a special licence or consist of conditions imposed before a licence may be surrendered, after a licence limited in time has expired or after a licence is withdrawn or revoked.

Financial aspects

18. It goes without saying that decommissioning does not only have technical, safety and environmental aspects but also economic and financial implications. The example of the Eurochemic Company, mentioned in paragraph 3 above, illustrates the importance of regulating well in advance the financing of decommissioning (and of radioactive waste management). The financial provisions of the Convention between the Belgian Government and Eurochemic were the most difficult ones to negotiate, because the Convention of 1957 establishing the Company contained but a general reference to an agreement to be concluded (31).

19. The problem of ensuring the availability of adequate funds to cover decommissioning costs is mainly related to facilities owned and operated by private industry. Where the facility is owned by a public body, the necessary funds can be raised by using the public taxing authority. With respect to countries having a private nuclear industry, the discussion on this question is most advanced in the United States of America (32). At present, as mentioned in paragraph 7 above, the NRC does not require that licensees make specific financial provisions to cover the cost of future decommissioning. Instead, it makes a general judgement, before issuing an operating licence, whether the applicant is financially qualified to bear these future costs. Several groups have requested the NRC to promulgate rules requiring facility operators, before granting an operating licence, to post bonds to be held in escrow in order to ensure that the cost of decommissioning (including the case of premature shutdown) is paid for by current beneficiaries and not by future generations. Apart from this pre-payment option ("prepaid sinking fund") other solutions are discussed. One would require the operator to pay the costs when they are incurred, i.e. when the decommissioning works actually take place. This solution has the advantage of being the least complicated to administer, but it may be difficult to ensure that the operator will actually perform the work required and has accumulated the necessary funds. The private utility owner should therefore be allowed to make tax-free reserves in order to accumulate the required capital (33). It would also be possible to make financial arrangements similar to those established by the nuclear third party liability insurance pools. In the case of post-accident ("unplanned") decommissioning, the "retrospective rating plan" of the amended Price-Anderson Act might furnish a model (34). The pay-when-incurred solution has been criticised for imposing financial burdens on future tax or electricity rate payers who have not enjoyed the benefits of the facility's operation, a criticism which may not necessarily be shared in other countries. A further solution may consist of establishing an annual payment sinking fund, which would have to be reviewed regularly (perhaps even annually)

in the light of cost escalations due to changes in the technological developments and in the regulatory requirements as well as of inflation rates. This solution would require tight management and control, possibly by a government body. Some measures should also be foreseen to cover "unplanned" decommissioning, as the annual payments collected so far may not be sufficient to cover those costs.

20. Other countries, in particular those where nuclear facilities are owned and operated by private industry, are also considering the problem of ensuring the financing of decommissioning (35). The adequacy of various financial schemes will have to be considered in the light of the scope of the regulatory policy and the division of responsibilities between industry and government. At any rate, account should be taken of long-term financial aspects. Decommissioning operations can take place long after closure of an installation, and it could be worthwhile to consider the possibility of adequate funding in the framework of a waste disposal fund as suggested by the Polvani Report (36).

21. Another long-term aspect of decommissioning is related to nuclear third party liability provisions. International Conventions and corresponding national laws provide for the absolute liability of nuclear facility operators and compulsory insurance coverage with respect to damage caused by a nuclear installation or by nuclear substances, including radioactive waste, originating from such installations (37). This system is suitable for decommissioning operations carried out within a reasonable period of time after the shutdown of the plant. The licensing authorities would require the operator to maintain his financial security for the duration of those works. However, the choice of certain decommissioning methods or operations (safe storage with deferred dismantlement or permanent entombment) would require the maintenance of liability and insurance arrangements for durations far exceeding what is usual in current industrial practice. These problems are similar to those arising in the field of radioactive waste disposal and may be better solved by the institution of a governmental indemnification system (38).

CONCLUSION

22. This preliminary review of existing legal frameworks and regulatory considerations related to the decommissioning of nuclear facilities has shown that in many countries nuclear law, which has often been said to be ahead of its time by regulating nuclear activities in advance, is behind its task of furnishing a body of governing and at the same time shaping rules. There is presently a lack of balance between the legal and the technical development in the field of decommissioning - another example of the growing general problem of the law-maker who is faced with an increasingly complex and fast developing technology. Although the regulation of decommissioning is essentially a matter for national authorities, there is room not only for technical but also for legal international co-operation. Decommissioning of nuclear facilities is the subject of growing concern of the public, and the examination at the international level of its legal aspects, in particular those having long-term implications, would contribute to the development of regulatory policies and systems which have better chances of gaining the public's confidence. Following a recommendation of the Polvani Report the NEA has set up an ad hoc working group with the mandate to study administrative, legal and financial aspects of the long-term management of radio-

active waste. Most of the subjects to be examined by this group will also be of relevance to long-term decommissioning aspects, but it would be desirable if an international working group would look more specifically into the administrative, legal and financial aspects of decommissioning.

REFERENCES

(1) The U.S. Nuclear Regulatory Commission has just published the report NUREG/CR-031, Decommissioning of Nuclear Facilities - An Annotated Bibliography (October 1978), which presents abstracts from 726 references from U.S. and world-wide literature.

(2) Regulations governing nuclear installations and radiation protection (1972) and Licensing systems and inspection of nuclear installations in NEA Member countries (1977).

(3) "Arrêté royal portant règlement général de la protection de la population et des travailleurs contre le danger des radiations ionisantes" of 28 February 1963, Articles 17 and 19.

(4) DETILLEUX, E., Mise à l'arrêt des installations d'Eurochemic: programme, évolution et enseignements, 3 Revue générale nucléaire (1978) p.177; Eurochemic decommissioning experience is described by HILD, W., et. al. in "Industrial experience gained in the decontamination of process cells, the dismantling of process equipment and the conditioning of special wastes in a shut down reprocessing plant" and "Experience gained in the decontamination of a shut down reprocessing plant", Proceedings of the International Symposium on the Decommissioning of Nuclear Facilities (to be published by IAEA).

(5) Section 28 of the Atomic Energy Control Regulations, reproduced in the Supplement to Nuclear Law Bulletin No. 14 published by the NEA (hereinafter referred to as "NLB").

(6) The Bill is reproduced in the Supplement to NLB No. 21.

(7) Décret No. 63-1228 du 11 décembre 1963 relatif aux installations nucléaires, modifié par le Décret No. 73-405 du 27 mars 1973; the modified version is reproduced in the Supplement to NLB 12.

(8) Section 6 of the Decree cited above.

(9) CREGUT, A., Le déclassement des installations nucléaires, 3 Revue générale nucléaire (1978) 166,167.

(10) SCHARNHOOP, H., "Genehmigungspflicht der Stillegung und des Besitzes stillgelegter Kerntechnischer Anlagen?", Drittes Deutsches Atomrechts Symposium, Referate und Diskussionsberichte, Carl Heymans Verlag, Köln (1975) p. 63.

(11) Sicherheitskriterium für Kernkraftwerke, Bekanntmachung vom 21. Oktober 1977, Bundesanzeiger No. 206 vom 3. November 1977. These Criteria, published by the Federal Minister of the Interior have no direct legal character binding on the operator but establish binding standards for the licensing authorities.

(12) These are recommendations of the Commission which advises the Federal Minister of the Interior.

(13) Under the terms of Section 11(v) and (z) (cc) of the Atomic Energy Act and 10 CFR 50.2 these facilities include reactors, reprocessing plants, fuel fabrication plants, and UF_6 conversion plants.

(14) Cleaning up the Remains of Nuclear Facilities - A Multibillion Dollar Problem, EMD-77-46, 16 June 1977.

(15) Technology, Safety and Costs of Decommissioning a Reference Nuclear Fuel Reprocessing Plant, NUREG-0278, October 1977;
Technology, Safety and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station, NUREG/CR-0130, June 1978.

(16) NUREG-0278, Vol. 1, Sections 2.1 and 4.0;
NUREG/CR-0130, Vol. 1, Sections 2.3 and 5.0.

(17) NUREG-0436, Office of Standards Development, USNRC, March 1978, and NUREG-0436 Revision 1, December 1978. See also BERNERO, R. M., and CONTI, E. F., "Development of U.S. policy and standards for decommissioning nuclear facilities", Proceedings of the International Symposium on the Decommissioning of Nuclear Facilities (to be published by IAEA).

(19) NUREG-0278, Vol. 1, Sections 1.0 and 12.2; NUREG/CR-0130, Vol. 1, Section 14.2 defines decommissioning as "preparation of nuclear facilities for retirement from active service accompanied by a programme to reduce or stabilize radioactive contamination to reduce the potential health and safety impacts on the public".

(2) SCHARNHOOP, H., "Rechtsfragen im Zusammenhang mit der Stillegung Kerntechnischer Anlagen", Fünftes Deutsches Atomrechts-Symposium, Referate und Diskussionsberichte, Carl Heymans Verlag, Köln (1977) p.141.

(21) Decommissioning of Nuclear Facilities, 1977 Edition, Technical Document IAEA-205.

(22) For example, NRC Regulatory Guide 1.86 uses the term "mothballing" while NUREG-0278, Vol. 1, Section 3.1 considers this to be a form of "protective storage" and discusses "layaway" as first decommissioning option/stage. See also NUREG/CR-0130, Vol. 1, Section 4.1. In French, the terms "déclassement; et "désaffectation" are often used synonymously and the same is true for the Spanish "clausura" and "cierre definitivo".

(23) Objectives, Concepts and Strategies for the Management of Radioactive Waste Arising from Nuclear Power Programmes, OECD Nuclear Energy, Paris (1977) Annex VI, p.127.

(24) NUREG/CR-0130, Vol. 1, Section 4.1.1. considers that the "safe storage" option involves a variable period of continuing care consisting of surveillance and maintenance of up to about 100 years.

(25) op.cit. note 23, paragraph 188 at p.67 and paragraph 168 (b), p.62.

(26) Ibid., paragraph 179, p.64.

(27) CREGUT, A., op.cit., footnote 9, p.168.

(28) This question is also discussed in NUREG-0436, Section 5.3.3. NUREG/CR-0130, Vol. 2, Appendix F considers a number of generic decommissioning activities common to all modes of decommissioning.

(29) The question of military naval reactor decommissioning is raised on p.22 of the Report cited in footnote 14 above.

(30) This possibility is in fact foreseen under Section 7(3) of the Atomic Energy Act of the Federal Republic of Germany.

(31) Article 32 of the Statute of the European Company for the Chemical Processing of Irradiated Nuclear Fuels provides: "Upon liquidation of the Company an agreement shall be concluded with the Government of the Headquarters State ... as regards the possible taking over of all or part of the installations as well as the storage and control of radioactive wastes".

(32) NUREG-0278, op.cit. footnote 15 above, Vol. 1, Section 10.0 and Vol. 2, Appendix G; NUREG/CR-0130, op.cit. footnote 15 above, Vol. 1, Section 6.0, and Vol. 2, Appendix D; Report by the U.S. Comptroller General, op.cit. footnote 14 above, p.16.

(33) DANGELMAIER, P., "Wirtschaftliche Probleme im Zusammenhang mit der Stillegung Kerntechnischer Anlagen", Fünftes Deutsches Atomrechts-Symposium, op.cit. footnote 20 above, p.133.

(34) Section 170(b) of the U.S. Atomic Energy Act. For an analysis of this plan, see Nuclear Third Party Liability, OECD-NEA, Paris 1977.

(35) In Switzerland, for example, the partial revision of the Atomic Energy Act passed by Parliament (but not yet effective) provides for a federally administrated decommissioning fund to be alimented by utilities. As to the solutions discussed in the Federal Republic of Germany, see LUKES, R., SALJE, P., and FELDMANN, F. J., "Finanzielle Vorsorge für die Stillegung und Beseitigung Kerntechnischer Anlagen", Energiewirtschaftliche Tagesfragen, November 1978, p.680.

(36) op.cit. footnote 23, paragraphs 172 et seq. and Annex XI.

(37) The Conventions in question are the Paris Convention on Third Party Liability in the Field of Nuclear Energy, in force in thirteen European countries and the Vienna Convention on Civil Liability for Nuclear Damage which is in force in eight mostly non-European countries. The national legislation of OECD Member countries is analysed in Nuclear Third Party Liability, OECD-NEA, Paris, 1977.

(38) Polvani Report op.cit. footnote 23, paragraph 161; STROHL, P., Legal administrative and financial aspects of long-term management of radioactive waste, Nuclear Law Bulletin 21 (June 1978) p.77.

LICENSING AND REGULATION OF NUCLEAR WASTE*

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Programs and policies for the safe management of radioactive wastes are dominant issues before responsible Government officials and are of considerable and understandable concern to the public and their elected representatives. The programs and policies being developed, particularly regarding the disposal of high-level waste, are of paramount importance. The need for action has been perceived in the highest levels of our Government. The President has established an Interagency Review Group (IRG) to assist in the formulation of the Administration's nuclear waste management policy. The principal objective of the IRG is to prepare a report for the President, which would set forth recommendations for establishment of an overall decisionmaking and implementation process for dealing comprehensively with the nation's nuclear wastes. The IRG released last fall a draft report to the President for the purpose of obtaining public comment.*** The Congress, in Public Law 95-601, the Nuclear Regulatory Commission's (NRC) authorization for fiscal year 1979, directed the NRC, in cooperation with the Department of Energy (DOE), to conduct studies and make reports to the Congress on several aspects of the national effort to develop a nuclear waste management policy and program. In signing the bill, the President said that these studies will give the NRC an additional opportunity to contribute an important and useful supplement to the IRG's fundamental role in developing Administration policy on nuclear waste management.

These directions evidence the national character and importance of the issues surrounding the management of high-level radioactive wastes and the need for Government decisions on nuclear waste questions. It seems reasonable to expect that there will be legislative initiatives in this area. Among the issues which could well be considered by the Congress are: the extent to which NRC licensing and regulatory authority should apply to Department of Energy waste disposal facilities; and coordination of the responsibilities of the NRC, DOE, the Environmental Protection Agency (EPA) and the States as regards waste management.

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** The views expressed are those of the author and not necessarily those of the U.S. Nuclear Regulatory Commission.

*** A revised version is now available: "Report to the President by the IRG on Nuclear Waste Management", March 1979, TID-29442, Washington

Although much remains to be done in other areas, the matter of regulatory control of uranium mill tailings now has, thanks to the Uranium Mill Tailings Radiation Control Act of 1978, a sound statutory basis.

This paper will be confined to the NRC's regulatory role regarding nuclear waste, including interactions with other Federal agencies and States. It will focus on existing statutory authority and on current regulatory proposals for licensing and regulation of radioactive waste. It will therefore be possible to have a better perspective of the regulatory regime which is likely to emerge particularly with respect to the safe management of high-level radioactive waste. The more significant features of the recently enacted mill tailings legislation will also be discussed.

NRC AUTHORITY TO REGULATE RADIOACTIVE WASTES

The licensing picture under current law is, for a variety of reasons, quite complicated. Whether a given activity is subject to NRC licensing depends on the type of radioactive material in the waste, (whether the wastes are high-level, low-level, or transuranics) the identity of the person or entity (private sector of DOE) storing or disposing of the waste, the origin of the waste (commercial or military), the duration of storage (long-term or short-term), the State (Agreement or non-Agreement")* where the waste is being stored or disposed of, and finally whether the waste storage is a part of DOE research and development activities.

Other problems are created by the fact that no fewer than three Federal agencies - DOE, EPA and NRC - have some responsibility for the storage and disposal of radioactive waste At least two other Federal agencies - the Department of Transportation and the U.S. Geological Survey - are to some extent also involved. States and localities also have a special interest in any waste disposal sites within their spheres of authority and responsibility.

To understand the current licensing situation one must begin with existing statutory authority. NRC authority to regulate radioactive waste is derived from three statutes: the Atomic Energy Act of 1954, as amended; the National Environmental Policy Act; and the Energy Reorganization Act of 1974.

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* Under Section 274 of the Atomic Energy Act, the NRC may discontinue some of its regulatory authority over byproduct, source and special nuclear materials pursuant to a formal agreement with individual States. Several States, under such agreements, currently license commercially operated burial sites for low-level wastes, uranium milling operations, and decommissioned facilities.

The Atomic Energy Act authorized the NRC's predecessor - the Atomic Energy Commission - to license and regulate the possession and use of source, byproduct and special nuclear material. The AEC itself and certain defense activities were exempted from these licensing and regulatory requirements. The Atomic Energy Act does not explicitly authorize the regulation of radioactive waste facilities. The NRC's authority under the Atomic Energy Act to regulate radioactive waste and the facilities in which it is stored is derived from its explicit regulatory authority over nuclear materials. These nuclear materials are defined in the Atomic Energy Act so as to exclude, generally speaking, naturally occurring radioactive materials such as radium and radioisotopes which are produced in accelerators.*

The Atomic Energy Act provides for NRC licensing authority over source material, such as natural uranium only "after removal from its place of deposit in nature." Consequently, the NRC does not exercise regulatory authority over traditional uranium mining operations

The National Environmental Policy Act (NEPA) gives the NRC additional authority over the nuclear waste materials which it licenses. Under NEPA the NRC may impose license conditions on waste management activities to minimize their environmental impacts.

Title II of the Energy Reoganization of 1974 transferred the AEC's licensing and related regulatory authority to the NRC. The Department of Energy, like its predecessor, the Energy Research and Development Administration (ERDA), is exempt from NRC licensing authority except as otherwise provided by law. Section 202 of the Energy Reorganization Act provides the explicit statutory authority for NRC licensing of DOE waste facilities.**

Section 202 provides for NRC licensing of DOE facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive waste generated by DOE activities. Present DOE facilities are exempt from NRC licensing since they have not been expressly authorized by the Congress for long-term storage. Also, the long-term storage or disposal of DOE-generated high-level waste in a research or development facility would not require an NRC license under Section 202.

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* The "Uranium Mill Tailings Radiation Control Act" expands the definition of byproduct material to include "the tailings or waste produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content".

** Uranium mill tailings which are the property of DOE may be licensed by NRC under the terms of the Uranium Mill Tailings Radiation Control Act of 1978.

Section 202 specifically requires an NRC license for any DOE facility used primarily for the receipt or storage of high-level radioactive waste resulting from activities licensed by the NRC. This licensing authority would cover domestic high-level waste from NRC licensed nuclear power plants. It would also cover foreign high-level waste which either: entered the U.S. under an NRC import license; or was generated from nuclear fuel exported from the U.S. under an NRC (or an AEC) export license; or was irradiated in a nuclear facility which was exported under an NRC (or AEC) export license. In addition, facilities constructed and operated by the private sector for spent fuel storage would require an NRC license because of NRC's licensing authority over the nuclear materials in the fuel elements.

In the fall of 1977 the DOE announced that the Government planned to construct an installation for the storage of commercial nuclear power reactor spent fuel. This is the so-called "Away-From-Reactor" storage site. In my opinion, such a DOE installation would be subject to NRC licensing. Construing spent fuel as high-level radioactive waste is consistent with the underlying purpose of Section 202 to require licensing of DOE waste management activities which are related to the commercial nuclear power industry.

DOE has informed NRC of its intention to seek a license for the proposed Waste Isolation Pilot Plant (the "WIPP" facility) being considered for location near Carlsbad, New Mexico. This may be the first time that the NRC considers the licensing of a DOE waste facility. Explicit legislative authority may be necessary to resolve uncertainties regarding whether the WIPP facility is required to be licensed.

To summarize, the following waste management activities are subject to licensing by NRC under existing statutory authority: the disposal and/or storage of high-level waste from licensed commercial activities; the long-term storage and/or disposal of high-level waste from DOE activities except for facilities used for research and development activities; the commercial storage and disposal of transuranic and low-level wastes, except in Agreement States; commercial storage of spent fuel; management and disposal of mill tailings generated at active mill sites; and DOE remedial actions at inactive mill sites under the recently-enacted Mill Tailings Radiation Control Act.

It is clear that there are significant waste storage and disposal operations not regulated by the NRC. From events which have already occurred, it is reasonable to believe that this matter will receive the attention of the 96th Congress. Under the terms of Public Law 95-601, which was referred to at the outset of this paper, the Commission must, on or before 1st March, 1979, submit a report to the Congress containing the results of its study of: the possible extension of NRC licensing authority over Federal radioactive waste storage and disposal activities not presently licensed; and the means by which States might participate more fully in the process of site selection, licensing, and developing radioactive waste storage and disposal facilities. Neither the bill as passed by the Congress nor the accompanying conference report* provides a detailed description of the specific items which NRC should be included in the study. It is apparent, however, that the

* Note by the Secretariat: Meeting of the members of the two Chambers of Congress charged with preparing a compromise version.

report is intended to provide the Congress with information to assist it in its consideration of legislation to revise the regulatory process for nuclear waste management activities. It is likely that the report will discuss the scope of the DOE and DOD (Department of Defense) waste management activities which are now subject to NRC regulatory authority

The Interagency Review Group's draft report contains some conclusions on the question of extending NRC licensing authority to DOE waste management activities. Specifically, the draft report recommends an extension of NRC licensing to cover new DOE facilities for the disposal of low-level waste and transuranics. Any extension of NRC licensing authority over DOE or DOD radioactive waste will require legislation.

Although the NRC has certain statutory authority with regard to the licensing and regulation of nuclear waste activities, the NRC's regulatory program for nuclear waste nevertheless must be viewed in the context of the statutory responsibilities of the other Federal agencies previously mentioned and the role of interested States. States will undoubtedly be involved in the selection of any waste site within their borders and in the NRC licensing process for waste management facilities at such sites.

On 15th November, 1978, EPA, pursuant to its authority to recommend radiation guidance for Federal agencies,* invited comments on its Criteria for Radioactive Wastes. These criteria consist of general policy statements which give the basic philosophy and issues that will be considered and reflected in the development of generally applicable environmental radiation standards. They would provide Federal radiation guidance for the storage and disposal of all forms of radioactive wastes Federal agencies would use these criteria as a basis for developing detailed standards for radioactive wastes which are consistent with their particular requirements.

Subsequently, it is my understanding that the EPA, under its basic charter (in Reorganization Plan 3 of April 1970) to set generally applicable environmental standards, will establish numerical standards that must be met for the protection of the environment. A third step is the development of standards and regulations in areas where EPA has specific regulatory authority, such as under the Ocean Dumping Act, the Resources Conservation and Recovery Act, and the Clean Air Act Amendments of 1977.

The DOE has broad programmatic responsibility for the design, development and implementation of nuclear waste management programs Unlike either NRC or EPA, the DOE is responsible for proposing options

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* EPA has the responsibility in this regard which was initially assigned to the Federal Radiation Council. 42 U.S.C. s 2021(h)

for waste disposal management. Once an option is identified, NRC evaluates it to determine whether the public health and safety will be protected. For this reason, the NRC program is designed to provide standards against which license applications will be judged.

The separate decisionmaking processes of DOE, NRC, EPA, other Federal agencies and interested States offer the potential for duplication of effort and uncertainties The Interagency Review Group's draft report recommends the creation of an Executive Planning Council to deal with these institutional issues. No details are given on how such a Council would go about this difficult task. It may be that the coordination problems will ultimately have to be resolved by the Congress. For reasons which will be covered in more detail later on, the Congress has considered and accommodated well the need for such coordination in the mill tailings legislation.

DEVELOPMENT OF A RADIOACTIVE WASTE DISPOSAL CLASSIFICATION SYSTEM

It is apparent that different regulatory challenges are presented by different types of radioactive waste The major broad classes of nuclear wastes are: high-level wastes, transuranic wastes, low-level wastes, and uranium mine and mill tailings. High-level wastes are being considered for disposal in geologic repositories or by other technical options to provide long-term isolation of the wastes from the biosphere. Transuranic wastes would be disposed of in a similar manner.

The NRC staff is developing a classification system for radioactive wastes. Such a system will provide licensees with guidelines regarding the ultimate disposition of waste containing specific concentrations of individual radionuclides. The classification of radioactive waste will determine what waste goes where and under what licensing and regulatory controls. A broad analytic base for a waste disposal classification system should provide a foundation for waste disposal regulations which are forthcoming. Among other things, an objective of a classification system is to classify radioactive wastes according to their requirements for safe disposal.

Programs and policies for licensing long-term storage and disposal facilities for high-level waste are still at a relatively early stage of development. On the other hand, low-level radioactive wastes resulting from the commercial nuclear fuel cycle and from other commercial activities using radioactive material are currently disposed of at shallow land burial grounds owned and operated by licensed commercial companies. Under a Commission regulation, the land itself must be owned by either the Federal government or a State government. NRC regulatory authority over the disposal of low-level waste can be relinquished to Agreement States. Five of the six commercial burial grounds are located in and regulated by such States.

NRC's low-level waste management efforts can be broadly divided into standards development and individual licensing actions. NRC has primary responsibility at the Federal level for development of regulations for the management and disposal of non-DOE low-level waste

An advance notice of proposed rulemaking published on 25th October, 1978, announced that the NRC has underway development of a specific regulatory program for the management of low-level wastes. Explicit criteria and regulations will be developed in a proposed new 10 CFR Part 61 of the Commission's regulations. Alternative disposal methods as well as the distribution of Federal, State, and private responsibilities for low-level waste disposal are some of the major issues which will probably be evaluated. The program provides for the development of proposed regulations for disposal of low-level wastes by shallow land burial by 1980. Proposed regulations for the disposal of such wastes by alternative disposal methods are scheduled to be completed in 1983.

LICENSING PROCEDURES FOR GEOLOGIC REPOSITORIES FOR HIGH-LEVEL RADIOACTIVE WASTES

Regulatory actions are being taken so that procedures and requirements for licensing high-level waste disposal facilities are established by the time DOE is ready to apply to NRC for a long-term repository license. The Commission has published a proposed policy statement on procedures to be used in the licensing of geologic repositories for high-level radioactive wastes. I might add that comments were due on or before 16th January, 1979. Generally, the proposed policy statement contemplates a two-step licensing process, similar to that for power reactors. Under this approach most issues would be identified reviewed and resolved prior to the commencement of construction of the facility. A second review would be conducted prior to the placing of radioactive waste in the facility.

A brief review of the relevant legal considerations involved in the choice of licensing procedures for a high-level waste repository would seem to be appropriate at this point. The Atomic Energy Act of 1954, as amended, distinguishes between two classes of licenses - materials licenses (licenses for possession and use of "source", "byproduct", and "special nuclear materials" under Sections 53, 62, and 81) and facilities licenses (licenses for construction and operation of "production" and "utilization" facilities under Sections 103 and 104). The Act makes specific provision for a two-step licensing process for production and utilization facilities - first a construction permit must be obtained under Section 185 to authorize construction of the facility, and then an operating license must be obtained under Sections 103 or 104 to authorize operation of the facility. In contrast, no two-step licensing process is specified for materials licenses. The Act itself does not require a license until nuclear materials are actually received and possessed.

The Commission, however, has discretion to tailor its materials licensing procedures to fit the realities of licensing high-level waste repositories. NRC has viewed its authority under the Atomic Energy Act as sufficiently broad to permit establishment of a system approaching a

two-step licensing process for some materials licenses. The clearest example of this is found in 10 CFR paragraphs 70.22(f) and 70.23(b) which (for safety reasons) require applicants for licenses to possess and use special nuclear material for plutonium processing and fuel fabrication to include with their application information regarding the proposed site and plant design, and state that failure to obtain Commission approval of the principal plant structures, systems, and components prior to beginning of construction "may be grounds for denial of a license." Similar procedures apply (for environemental reasons) to all other major fuel cycle licenses, including licenses for low-level waste burial. NRC's authority to establish this two-step licensing process for materials licenses has never been challenged in litigation and thus has received neither judicial approval nor disapproval. The NRC could, in a similar assertion of authority, establish a multi-step licensing procedure for licensing of DOE repositories including pre-construction review and approval requirements.

The environmental impact statement process merits special comment. Both NRC and DOE will be taking major Federal actions with regard to high-level radioactive waste repositories. DOE will be requesting appropriations from Congress, selecting consultants and construction contractors, preparing and filing license applications, selecting the site and design, constructing, and finally operating the repository. Some of these activities arguably are "major Federal actions significantly affecting the quality of the human environment" and thus require an environmental impact statement under Section 102(2)(C) of NEPA. The major activities of the NRC relate, of course, to the licensing approvals required for the construction and operation of a waste disposal facility. DOE, on the other hand, has the responsibility to develop programs for waste disposal.

The Council on Environmental Quality (CEQ) has recently published regulations implementing NEPA (43 F.R. 55978, 29th November, 1978). These regulations, which are effective on 30th July, 1979, specifically recognize (in section 1501.5) the function of lead agencies.

While the law is uncertain on the matter, my own view is that if DOE were to become the lead agency for preparing an environmental impact statement for a repository, NRC would still have an obligation to perform an independent substantive review of the statement and to take account of the statement in its licensing review process.

The proposed policy statement recognizes that the suitability of the site for a geologic high-level waste repository is crucial. It is essential that the NRC be afforded the opportunity to participate in DOE's site selection process. Also, the statement notes that the construction of a repository shaft would constitute the first major penetration of the geologic containment. Thus, it is not surprising that the proposed repository licensing procedures are divided into four parts; review of DOE site selection; review of repository development; repository licensing; and repository closure.

The proposed statement also reflects the need to provide early notification and opportunity for early input from States and interested members of the public.

According to the proposed statement, if a repository is subject to the NRC's licensing authority, the entire repository will be subjected to licensing review, including those activities which, by themselves, might not be within the scope of NRC responsibility This comprehensive review will be necessary because loss of integrity in any part of a repository could imperil the integrity of the entire repository.

With regard to environmental impact statements, the proposed policy statement takes the position that NRC should prepare a statement prior to authorizing construction of the main repository shaft. This statement could be updated prior to receipt and storage of radioactive materials at the repository should new information warrant.

The proposed statement on procedures is the beginning of the development of a program for the licensing and regulation of high-level wastes which will continue to occupy NRC attention and resources - certainly for the foreseeable future and most likely for years to come. Although the licensing of a repository will be a matter of first impression, we are fortunate in having available over two decades of experience in the licensing of power reactors. Many of the lessons learned from that experience should serve us well as we develop and establish a sound regulatory basis for licensing high-level waste repositories Along with the procedures, proposed regulations must be issued relating to such things as waste form performance criteria, site suitability criteria, and repository design criteria. These efforts should be well underway during the next year or so.

URANIUM MILL TAILINGS LEGISLATION

The Congress enacted and the President on 8th November 1978, signed the Uranium Mill Tailings Control Act of 1978. (Public Law 95-604). This Act addresses two basic uranium mill tailings problems· how to handle the tailings already present at inactive mill sites and the tailings being produced at active uranium mill sites as well as those to be produced at any future site. Title I provides for a remedial action program by the Department of Energy to clean up uranium mill tailings at inactive mill sites with explicit statutory requirements that DOE obtain NRC concurrence in important aspects of the program. Title II covers NRC licensing and regulation of uranium mill tailings at present and future active sites. To help fulfil its obligation in this regard, the NRC staff is now preparing a generic environmental impact statement to assess the environmental impact of uranium milling operations, including mill tailings. In close connection with the GEIS, the NRC is preparing regulations covering mill tailings management and disposal. In the interim, NRC is requiring a tailings stabilization and control program at uranium mills as part of its review of applications for new mill licenses or applications for license renewals. These licenses are conditioned to require tailings stabilization and financial security arrangements to ensure that stabilization. In addition, the NRC staff has been working with Agreement States in which uranium mills are located to help assure that their regulatory requirements are consonant with those of NRC.

The broad scheme of Title II is to have NRC and Agreement States control mill tailings under the Atomic Energy Act, or State law, respectively, in essentially the same manner, although the States are authorized to impose standards which are more stringent than the NRC's standards for the protection of the public health and safety. The primary provisions call for (1) government ownership of tailings and tailings disposal sites, (2) elimination, to the extent practicable, of long-term maintenance requirements, and (3) reclamation and management of tailings to national standards both before and after termination of a license. NRC is given the controlling regulatory role, with standards-setting assistance from the Environmental Protection Agency. DOE will be involved as site custodian and be subject to regulation by NRC. The Act also establishes requirements for State procedures for licensing and environmental review of uranium mills which should bring the State procedures closer to Federal licensing procedures.

The Uranium Mill Tailings Radiation Control Act of 1978 must be read carefully to understand the apportionment of responsibilities between the Nuclear Regulatory Commission, the Secretary of Energy, the Environmental Protection Agency and the States. This paper discusses certain of the amendments made to the Atomic Energy Act by Title II of the 1978 Act.

The definition of byproduct material in Section 11e. of the Atomic Energy Act is expanded to include mill tailings. This key provision, effective on enactment, calls into play the traditional licensing and regulatory provisions of the Atomic Energy Act of 1954, as amended. The legislative history makes clear that the expanded definition of byproduct material covers only uranium mill tailings and does not include mine wastes.

A new Section 83 is added to the Atomic Energy Act. This section primarily covers ownership and custody of tailings and tailings disposal areas. Before a license or renewal issued after October 1981 can be terminated, the licensee must clean up the site and transfer ownership of the tailings to the United States or the State if the State decides to own the disposal site. For new licenses issued after October 1981, three options are provided for ownership of the land used for tailings disposal: the U.S., a State, or by private persons if the NRC determines that government ownership of the land is not necessary. The NRC may require transfer of land ownership for uranium mill licenses in effect before October 1981. However, because transfer of tailings becomes mandatory on license renewal, this discretionary provision may result in a situation of U.S. ownership of tailings and private ownership of the underlying real estate.

A new Section 161x added to the Atomic Energy Act, effective upon enactment, provides NRC explicit authority to require licensees to have financial surety arrangements which are adequate to assure completion of site clean up and reclamation prior to termination of the license. Long-term financial arrangements may also be required. The keystone of the licensing program, however, is to minimize, and if practicable, eliminate, the need for long-term oversight of mill tailings disposal sites.

Section 274 of the Atomic Energy Act is amended to assure that Agreement States' programs for uranium mill licensing conform to the objectives of the Uranium Mill Tailings Control Act. A three-year transition period is provided during which Agreement States may continue to regulate mill tailings under the State law although there is a question whether during the three-year period NRC must also regulate mill tailings on a concurrent basis. During the three-year period it will be necessary for the existing State agreements to cover the new requirements of the Act if the Agreement State desires to remain active in mill licensing. An Agreement State would be required to impose license conditions regarding ownership of mill tailings and the disposal site which the NRC would impose if it licensed and regulated the mill. The State must also require compliance with health and safety, and environmental standards "which are equivalent, to the extent practical, or more stringent than, standards adopted and enforced by the Commission for the same purpose." These standards for which at least State equivalency is required include the standards issued by the Environmental Protection Agency.

As amended, Section 274 provides for procedures for Agreement States rulemaking paralleling basic Federal procedures. The preparation of a written environmental analysis for each mill license is required State licensing procedures will require notice, hearing, cross-examination and preparation of a record. Cross-examination is the only required "adjudicatory" feature and its scope will be determined by State law. Although the enumerated features seem to be "adjudicatory" when considered together, the legislative history is clear that a full-fledged State adjudicatory licensing procedure is not intended. There is question whether the provisions regarding Agreement State procedures apply immediately to State licensing of uranium mills, or are deferred for three years.

As indicated, amendments to existing State agreements will be required if the State desires to remain active in mill licensing after three years. If an Agreement State continues to exercise licensing and regulatory authority over uranium mills, the NRC is required to find that the State licensee has complied with all applicable standards and requirements prior to termination of the license.

A new Section 84 added to the Atomic Energy Act, effective upon enactment, requires the NRC to assure that the management of mill tailings is carried out in an appropriate manner and conforms to applicable general standards issued by the EPA. In addition, the NRC must assure that its standards for the licensing and regulation of mill tailings are comparable to EPA's hazardous waste standards issued under the Solid Waste Disposal Act. NRC standards must be concurred in by EPA.

The authority under the new Section 84 would also apply to NRC's concurrence responsibility regarding the Department of Energy's remedial program under Title I of the Act. Even if certain remedial actions by that Department are exempted from licensing, its remedial programs would nevertheless have to comply with NRC criteria for such things as long-term monitoring, remedial work, and emergency measures.

A new Section 275 added to the Atomic Energy Act deals with the authority of the Environmental Protection Agency. This Section directs EPA as soon as practicable, but no later than eighteen months after enactment, to issue general standards for the protection of the environment outside the boundaries of the tailings disposal sites. These standards are to cover both radiological and nonradiological hazards from mill tailings. The nonradiological standards are to be consistent with the standards EPA is required to issue under the Solid Waste Disposal Act.

This Section also establishes detailed procedures for the EPA to follow in its rulemaking leading up to the issuance of its general standards for mill tailings and provides for judicial review. No EPA permit, however, is required for mill tailings. Coordination between NRC and EPA is assured by the fact that EPA concurrence is required for NRC tailings management standards, and EPA must consult with NRC and DOE on the general EPA standards. The NRC standards may be issued in advance of the EPA standards. The standards to be issued by EPA and NRC are to be complementary, but the establishment of NRC standards for the licensing and regulation of mill tailings disposal sites is not dependent upon the establishment by EPA of its standards.

CONCLUSION

A legislative charter for the regulation of uranium mill tailings is now in place and programs are being implemented to assure the safe management of this type of radioactive waste. On the other hand, considerable work remains to be done with respect to the ultimate disposal of high-level wastes. The NRC is proceeding under its current authority to develop a regulatory framework for the licensing of high-level radioactive wastes in geologic repositories. The form of this framework will depend to some extent on the precise program which is adopted for the disposal of these wastes. The scope of the high-level waste activities covered by this framework will depend on whether legislation is enacted which expands or otherwise affects the NRC's existing authority.

It seems reasonable to expect that the Congress will consider legislation as needed to assure the appropriate NRC regulatory role regarding the safe management of these wastes.

Some uncertainties may exist regarding the licensing and regulation of commercially produced high-level waste until DOE's program is developed. Nevertheless, a reasonable prognosis can now be made of the shape of the nuclear waste licensing regime which is likely to evolve over a period of time. Certainly for commercially produced wastes, the NRC as an independent agency will have the final decisionmaking responsibility on radiological health and safety issues involved in specific applications. The process which is followed is likely to be quite similar to that which has been used for the licensing of nuclear power plants. In this regard, it is important to note that the NRC licensing process offers substantial opportunities for the States and for interested members of the public to participate in the process.

Considerable effort will be required to develop the technical standards and criteria which a high-level waste repository must meet. Public health and safety is the paramount consideration and it is NRC's responsibility as the licensing authority to see that it prevails.

Persons interested in the safe management of high-level radioactive waste will have opportunities to make their views known as the relevant policies and programs are being developed. Such participation in the process of public decisionmaking will contribute to sound and effective management of these wastes.

BIBLIOGRAPHY

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Atomrecht, Bruno Weisbauer, Prugg Verlag Eisenstadt, 1978, 208 pages

This book is divided into two parts, the first being a compilation of Austrian nuclear law and the second of international nuclear law.

Part I reproduces the national Nuclear Liability Act, the Radiation Protection Act and Ordinance as well as the Security Control Act and the Act on the Use of Nuclear Energy - Zwentendorf Nuclear Power Plant.

Part II covers the most important international agreements to which Austria is a Party (Non-Proliferation Treaty, Nuclear Test Ban Treaty...) and also contains a synposis and comparison of the two most important nuclear liability conventions to which Austria is not yet a Party (Paris Convention and Vienna Convention). The Paris Convention which is applicable in neighbouring countries and is therefore of relevance to Austria, served as a model for the national Nuclear Liability Act and may be used for its interpretation. Finally, the author has translated a number of international instruments into German, in particular, the Exposé des Motifs of the Paris Convention.

• *France*

Protection contre les rayonnements ionisants, Journal Officiel de la République française n° 1420, 1978, 361 pages

This publication by the Official Gazette of the French Republic is a compilation of national legislative and regulatory provisions on radiation protection in force on 15th November 1978. In addition to the in extenso texts on the subject, only the relevant provisions in laws and regulations with a more general scope have been reproduced.

This comprehensive compilation expands and updates a previous collection by the Official Gazette which covered only decrees and orders on the protection of workers against the hazards of ionizing radiation (see Nuclear Law Bulletin N° 18).

This publication is divided into three parts; Part 1 contains provisions on general radiation protection, such as, inter alia, extracts from the Code of Public Health and from the Decree of 20th June 1966 on general principles of protection against ionizing radiation.

Part 2 covers protection of the public and the environment and is divided into five sections covering in particular approval of devices, heavy equipment, provisions on waters and large nuclear installations (e.g. : the Decree of 11th December 1963 on nuclear installations as amended by the Decree of 27th March 1973).

Finally, Part 3 contains the provisions on the protection of workers in the nuclear industry and outside it, in particular the Decree of 15th March 1967 on protection of workers against the hazards of ionizing radiation and the Decree of 28th April 1975 on protection of workers against the hazards of ionizing radiation in large nuclear installations.

• *Federal Republic of Germany*

Deutsches Atomgesetz und Strahlenschutzrecht, Kommentar mit Berücksichtigung des internationalen Rechts-unter Mitwirkung des Instituts für Völkerrecht der Universität Göttingen-von Dr. jr. Hans Fischerhof, Zweite, neu bearbeitete Auflage, Band I, under Mitarbeit von Antonius Berard, Norbert Pelzer, Eberhard Ziegler, Nomos Verlagsgesellschaft Baden-Baden, 1978 /German Atomic Energy Act and Radiation Protection Law, a commentary taking account of international law, in collaboration with the Institute of Public International Law of the Gottingen University, by Hans Fischerhof, second edition, volume I, with contributions by Antonius Berard, Norbert Pelzer, Eberhard Ziegler/*

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* This bibliographic note was kindly prepared by Mr. Otto von Busekist, Legal Adviser to the Eurochemic Company.

More than ten years have passed since Professor Fischerhof published the first edition of his commentary which was quickly recognized as the standard treatise on the Atomic Energy Act of the Federal Republic of Germany and related legislation enacted under the authority of the Act. Since the publication of the first edition in 1962 (volume I) and 1966 (volume II), nuclear legislation in the Federal Republic has been modified substantially, in particular by the Third Act amending the Atomic Energy Act in 1975, following Germany's ratification of the Paris Convention and the Brussels Supplementary Convention (see Nuclear Law Bulletin nos. 14 to 18) which led to the publication of the revised Atomic Energy Act of 31st October 1976, translations of which were published in the Supplements to No. 15 and No. 18 of this Bulletin. Furthermore, the German nuclear law was shaped and interpreted by numerous administrative and judicial decisions related especially to the licensing of nuclear installations. A number of international agreements have also influenced the domestic German nuclear law.

The need to publish a revised second edition of Fischerhof's commentary became therefore more and more apparent. As in the case of the first edition, it was impossible to treat the large subject in one volume. The first volume is therefore devoted to commenting the Atomic Energy Act and, for the first time in German literature, the Paris Convention on Third Party Liability in the Field of Nuclear Energy. Volume II will comment on the statutory ordinances issued under the Atomic Energy Act, in particular the Radiation Protection Ordinance, the Nuclear Financial Security Ordinance (see the Supplement to Nuclear Law Bulletin No. 18) and the Ordinance concerning the Procedure for Licensing Nuclear Installations (see the Supplement to Nuclear Law Bulletin No. 19).

Apart from the Atomic Energy Act and the Paris Convention, the texts chapter of volume I contains excerpts from other domestic legislation referred to in the Atomic Energy Act (the Federal Act on Protection against Nuisances, the Waste Disposal Act, the Insurance Contracts Act, as well as the administrative decisions related to the creation of the Reactor Safety Commission and the Radiation Protection Commission). Two Annexes reproduce the German texts of the Brussels Supplementary Convention, the Convention on the Liability of Operators of Nuclear ships, the Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, the Non-Proliferation Treaty, and the so-called Verification Agreement between Euratom and its Member countries and the IAEA in connection with the NPT.

Professor Fischerhof who himself commented on the major part of the Act, has obtained the collaboration of leading experts on nuclear law as co-authors. Dr. E. Ziegler, Legal Adviser to the Karlsruhe Research Center, is responsible for the comments on government supervision and public authorities (Sections 19 to 24), while Mr. A. Berard, Federal Public Prosecutor, wrote the commentary on the present and former penal provisions of the Act. Dr. N. Pelzer from the Institute of Public International Law of Göttingen University is the author of the comments on international and comparative nuclear law as well as on the Paris Convention.

One of the great merits of the commentary lies in the fact that it stresses the worldwide international aspects of nuclear law. The general introduction (pp. 121 sqq) states the nuclear legislation in other states and lists the international treaties, agreements and organisations to which the Federal Republic of Germany is a Party. In fact, one of the purposes of the Atomic Energy Act is "to enable the Federal Republic of Germany to meet its international obligations in the field of nuclear energy and protection against radiation" (Section 1, no. 4) In this context the interesting question is raised (p. 181) whether there exists a special customary public international law on the peaceful uses of atomic energy. The author comes to the conclusion that such a law is developing (in statu nascendi) and that the same applies to the rules of good neighbourliness. The latter may oblige States constructing nuclear installations in frontier areas to consult the competent authorities of the neighbouring State.

Attention is drawn to the difficulties which might arise from diverging definitions used in national legislation and various international agreements for various but often interrelated purposes (licensing, control, third party liability, physical protection etc.), the classical example being the definition of nuclear substances in the Paris Convention, the Euratom Treaty, the IAEA Statute, and in safeguards agreements.

The commentary on the second chapter of the Atomic Energy Act (control provisions, Sections 3 to 21) is preceded by an analysis of international security control and safeguard measures (pp. 204 sqq) The description of the NEA Security Control Convention of 20th December 1957, however, makes no mention of the NEA Steering Committee's decision of 14th October 1976 to authorise the Director of Control to suspend the application of the Security Control Regulations until further notice, in order to avoid overlapping with Euratom and IAEA safeguards.

Further international aspects are commented upon in relation to import and export of nuclear substances (pp. 238 sqq) and their transport (p. 258) as well as to radiation protection (pp. 397 sqq). In the context of waste disposal (Section 9(a) of the Act, p. 359) a reference is missing to the Decision of the OECD Council of 22nd July 1977 Establishing a Multilateral Consultation and Surveillance Mechanism for Sea Dumping of Radioactive Waste in which the Federal Republic of Germany participates (see Nuclear Law Bulletin no. 20).

The field in which international nuclear law has had, and still has, its most integrating and harmonising effects is the field of nuclear third party liability. The provisions of the Atomic Energy Act dealing with this subject are either influenced by or refer directly to the Paris Convention, the Brussels Supplementary Convention, and the Convention on the Liability of Operators of Nuclear Ships. The introduction preceding the fourth chapter of the Act dealing with nuclear liability (Sections 25 to 40) provides an interesting analysis of problems connected with nuclear third party liability (pp. 537 to 582). It compares the common features of various national laws in this field and describes the international nuclear liability conventions. The author points out, inter alia, that national and international legislation in this field has maintained the requirement of the victim of a nuclear incident having to prove the causal connection between that incident and the damage he suffered. This in turn leads to the question of whether his burden of

proof is lightened by certain presumptions or prima-facie evidence. This problem is taken up in the commentary on the Paris Convention (p. 831), and the question is raised whether the competent court should apply the causa proxima developed in international law or rather a possible different solution offered by the applicable national legislation, doctrine or jurisprudence.

This Article-by-Article commentary on the Paris Convention is a useful source of information as it refers to a number of interpretations adopted by the NEA Group of Governmental Experts on Third Party Liability in the Field of Nuclear Energy, such interpretations not always being easily accessible. The English text of the Convention's Exposé des Motifs is also reproduced (a German translation is to be found in Mr. Wiesbauer's book reviewed in this Chapter of the Bulletin).

Article 3(a)(ii) of the Paris Convention establishes the nuclear operator's liability for "damage to or loss of any property". This leads the author to discuss the extent to which such damage ought to be compensated and the implementation of this provision in national legislation (p. 834). Does this term cover not only damage to property in the narrow sense, i.e. movable and immovable property, but also the aggregate of rights guaranteed and protected by law such as industrial property rights and easements? The author advocates the latter solution, but pleads also for adopting an interpretation which would not lead to an unreasonable extension of the financial protection afforded by the Paris Convention.

Section 25(5) of the Atomic Energy Act provides that "the operator of a nuclear installation shall be liable without the territorial restrictions provided for in Article 2 of the Paris Convention." The commentary states (p. 827) that no other party to the Convention has made use of the possibility to extend its scope. This sweeping statement is not correct. The Nordic countries have done so with respect to damage suffered outside Contracting States provided that the nuclear incident occurred in their territories (see Analytical Study on Nuclear Third Party Liability, OECD, Paris, 1976). In the same context, the author misinterprets Article 4(a)(iv) and (b)(iv) when stating (p. 848) that the sending or receiving operator is apparently liable for nuclear incidents occurring in non-Contracting States. However, the introductory sentence of Article 4 clearly states that its provisions are "without prejudice to Article 2". In other words, the actions of unloading from, and loading on, the means of transport in the non-Contracting State, which mark the beginning or end of the operator's liability, do not derogate from the territorial limits of application. This is also clearly stated in paragraph 27 of the Exposé des Motifs.

An interesting question is raised in relation to Article 13(c)(ii) of the Paris Convention: The European Nuclear Energy Tribunal may be requested to determine the competent court only by a Contracting Party to the Convention but not by a national court or a party to a proceeding. Does the victim have any means of forcing his Government to make the request under Article 13(c)(ii)?

Apart from a general description, the commentary does not contain an Article-by-Article analysis of the Brussels Supplementary Convention. The author criticizes its complexity which makes it difficult to understand and might lead to problems of interpretation if it were to be applied. It is true that the Supplementary Convention has been given fairly little attention in legal literature, except its Article 3 dealing with the compensation to be made available by combination of private and public funds. It is therefore to be hoped that this gap will be closed in a future edition of Fischerhof's commentary.

• *IAEA*

International Acceptance of Irradiated Food - Legal Aspects, IAEA Legal Series No. 11, 1979, 70 pages

This Report of a Joint FAO/IAEA/WHO Advisory Group on International Acceptance of Irradiated Food is a revision and an updating of the recommendations made by a similar group in 1972. It summarises the considerations of the Group in regulatory control over the irradiation plant and the irradiation of foods, and on assurance for comparability of control (labelling and documentation).

Annexes 3 to 6 respectively contain the Draft General Standard for Irradiated Food, the Draft Code of Practice for Operation of Radiation Facilities used for the Treatment of Food, the Recommendations of a Consultation Group on the Legal Aspects of Food Irradiation and Legislation on Food Irradiation adopted in Member States. Finally, Annex 7 contains model regulations for the control of and trade in irradiated food.

• *United States*

International Instruments for Nuclear Technology Transfer, edited by L. Manning Muntzig, American Nuclear Society, 1978, 639 pages

The development of international nuclear trade has required the fairly rapid elaboration of a series of agreements and treaties at the centre of which are the Statute of the International Atomic Energy Agency and the Non-Proliferation Treaty. This publication contains an introductory analysis of the characteristics of these various legal instruments as well as of the IAEA Statute, but in the main it consists of a collection of the most important texts covering nuclear trade in the following countries, Canada, France, Federal Republic of Germany, United Kingdom, United States, USSR. It also reproduces the principal agreements on the non-proliferation of nuclear weapons. Publication of those texts should facilitate comparison of national policies in the above countries on the export of nuclear technology and equipment.

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NUCLEAR LAW Bulletin

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June 1979

M E X I C O

STATUTORY LAW OF 14TH DECEMBER 1978 UNDER CONSTITUTIONAL ARTICLE 27 ON NUCLEAR ENERGY*

(Official Gazette No. 19 of 26th January 1979)

CHAPTER I

General Provisions

ARTICLE 1

Radioactive ores, the use of nuclear fuels and the overall applications of nuclear energy shall be governed by the provisions of this law.

The provisions of this Law are a matter of public interest and subject to general observance in the Republic.

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* Unofficial translation by the IAEA Secretariat.

ARTICLE 2

For the purpose of this Law the following definitions shall apply:

1. Radioactive ore

Ore containing uranium, thorium or a combination of both, and any other ores capable of being used for the fabrication of nuclear fuel as specifically determined by the Ministry of National Property and Industrial Development by means of an announcement published in the Official Gazette of the Federation.

2. Nuclear fuel

Natural uranium, uranium depleted to the extent fixed by the competent authority, and special fissile material.

3. Nuclear fuel cycle

The process which commences with extraction of the radioactive ore, continues with the fabrication of nuclear fuel and its use in the nuclear reactor, and terminates with the reprocessing of the spent fuel in order to separate the uranium and special fissile material from the radioactive waste, together with proper treatment and disposal of the latter, care being shown for the protection of the environment.

4. Nuclear material

Source materials and special fissile materials:

(a) Source materials are:

Uranium made up of the mixture of isotopes that it contains in its natural state;

Uranium in which the proportion of the isotope uranium 235 is below normal;

Thorium;

Any of the foregoing in the form of a metal, alloy, chemical compound or concentrate.

(b) Special fissile materials are:

Plutonium 239 and plutonium 241;

Uranium 235;

Uranium enriched in the isotopes uranium 235 or 233.

5. Radioactive material

Material which emits ionizing radiation.

6. Nuclear fuel burn-up

Burn-up is the operation by which the fuel elements are used in a nuclear reactor for the generation of nuclear energy and during which irradiated fuel is produced.

ARTICLE 3

The use of nuclear fuel for the generation of nuclear energy and the control of its application for other purposes, shall devolve solely upon the Nation.

It is the exclusive right of the Mexican State to carry out exploration, mining, beneficiation and marketing of radioactive ores and materials within the meaning of this Law. Radioactive ores shall not be the subject of concessions or contracts.

ARTICLE 4

Research and technology pertaining to nuclear fuels and reactors, as well as the nuclear fuel and reactor industry shall be regarded as being in the public interest.

ARTICLE 5

The Federal Executive, through the Ministry of National Property and Industrial Development, shall:

I. Establish a framework for the use and development of nuclear energy and technology in accordance with the national energy policy;

II. Authorize the programmes and projects on the use and application of nuclear energy to be submitted for its consideration by public or private organizations and private persons, where appropriate, under the provisions of Article 38 of this Law;

III. Issue decisions relating to nuclear safety and safeguards, together with any others falling under the national energy policy.

CHAPTER II

Exploration, mining and beneficiation of radioactive ores

ARTICLE 6

Radioactive ore deposits constitute national reserves that the State alone may exploit. Radioactive ores are in all cases the property of the Nation.

ARTICLE 7

Concessions or grants for the exploration or mining of minerals found in mineralogical association with radioactive ores shall be made only when, in the opinion of the Ministry of National Property and Industrial Development, after consultation with the National Atomic Energy Commission and URAMEX*, the radioactive ores are not technically or economically viable. In any event the Ministry shall fix the specifications for the mining operations and ensure that the conditions it imposes are met, as provided for in Articles 8 and 9.

ARTICLE 8

Any physical or juridical person having information on radioactive ore deposits shall notify the Ministry of National Property and Industrial Development to that effect in writing.

Whenever holders of mining grants or concessions discover the existence of radioactive ores on their respective lands, they shall advise the Ministry of National Property and Industrial Development in writing within thirty calendar days of the discovery. In case of default, they shall be penalized by a fine of up to one million pesos, without prejudice to the possibility of proceedings for withdrawal of the grant or concession. Should the parties to whom this obligation refers have mined the radioactive material in violation of the relevant regulations, the said fine may be increased to up to three times the value of the mined ore.

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* URANIO MEXICANO.

ARTICLE 9

When the concessionnaire or grantee referred to in Articles 7 and 8 reports the existence of radioactive ores, or when this fact is ascertained in another way, the State shall, as appropriate:

I. Take charge of the exploration, mining and beneficiation work under the terms of Article 3 of this Law, and place the non-radioactive ores at the disposal of the relevant concessionnaire or grantee, with repayment by him of the cost of mining and beneficiating the ores handed over;

II. Appoint an inspector to ensure that the concessionnaire or grantee does not mine or beneficiate the radioactive ores, or, should he do so, to ensure that he hands them over to the State.

ARTICLE 10

The exploration and mining of radioactive ores and materials carried out by URAMEX under Articles 3 and 17 of this Law shall require the authorization of the Ministry of National Property and Industrial Development.

CHAPTER III

National Atomic Energy Commission

ARTICLE 11

There shall be set up a National Atomic Energy Commission composed of a Chairman, who shall be the Minister of National Property and Industrial Development, an Executive Member and a Secretary, who shall both be appointed by the President of the Republic.

ARTICLE 12

The National Atomic Energy Commission shall have the following functions:

I. To co-ordinate the working plans and activities of the decentralized public organizations referred to in Chapters IV and VI of this Law;

II. To make studies and draw up projects and programmes to serve as a basis for the Federal Executive in the exercise of the powers referred to in sub-paragraphs I and II of Article 5;

III. To compile reports serving as a basis for the Ministry of National Property and Industrial Development in the exercise of the powers referred to in Articles 7 and 10 of this Law;

IV. Any further functions as conferred on it under this Law.

ARTICLE 13

Every three months, and at any other time deemed necessary by its Chairman, the National Atomic Energy Commission shall hold a joint meeting with the authorities of the organizations referred to in sub-paragraph I of the preceding Article, in order to study and evaluate the results obtained and progress made by the organizations in their activities, and take the decisions necessary for optimizing co-ordination between them.

ARTICLE 14

In addition to the functions stated in the previous Article, the Commission shall at any time hear the reports that URAMEX and ININ* may wish to make to it on the matter of co-ordinating their respective activities, and shall immediately take the action necessary for the proper functioning of these organizations.

ARTICLE 15

The National Atomic Energy Commission shall have the technical and administrative staff strictly necessary for discharging the functions assigned to it under this Law.

CHAPTER IV

URAMEX

ARTICLE 16

URANIO MEXICANO (URAMEX) shall be set up as a decentralized public organization of the Federal Government with the status of a juridical person and the right to own property.

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* ININ: National Nuclear Research Institute.

ARTICLE 17

The purpose of URAMEX shall be to act as the sole agent of the Mexican State for the exploration, mining, beneficiation and marketing of radioactive minerals; for implementation of the various stages of the nuclear fuel cycle, with the exception of burn-up and such operations as it is not in a position to perform, though in such cases it shall stipulate and supervise the operations requiring to be carried out; and for importing and exporting radioactive ores and nuclear fuels, exports to take place only after the requirements of national energy have been met. Theoretical research and technological research and development of the nuclear fuel cycle shall be carried out by ININ, with the collaboration and approval of the National Atomic Energy Commission.

The burn-up of nuclear fuel for the generation of electricity shall be reserved exclusively for the Federal Electricity Commission, which shall meet the requirements to be stipulated by the Nuclear Safety and Safeguards Commission.

ARTICLE 18

The export of radioactive ores or materials shall not be authorized until the Ministry approves a nuclear energy development plan quantifying the country's annually updated needs for a period of not less than fifteen years.

Nor shall export be authorized if it involves proven reserves of these materials required by the country. When applicable, the authorization shall not exceed an annual five per cent of the proven reserves that the country will require under the plan referred to in this Article.

ARTICLE 19

The assets of URAMEX shall include property received under the present Law, grants assigned to it by the Federal Government, payments made to it for the provision of services connected with its functions and any receipts and contributions obtained under the terms of other applicable legal provisions.

ARTICLE 20

The governing bodies of URAMEX shall be the Administrative Council and the Directorate-General.

ARTICLE 21

The Administrative Council shall be presided over by the Executive Member of the National Nuclear Energy Commission and be composed of the Director General of the National Nuclear Research Institute (ININ) and four other members to be appointed by the Federal Executive through the Ministry of National Property and Industrial Development. An alternate shall be appointed for every regular Council Member.

ARTICLE 22

The Administrative Council shall study and approve the programme and budget of URAMEX, and determine the best way in which it can fulfil the functions assigned to it under this Law. Similarly, the Council shall administer the property of URAMEX and may delegate to the Director General such powers as it deems appropriate, under the corresponding Regulations, for the implementation of its decisions and the proper operation of the organization.

ARTICLE 23

The Director General, who shall be appointed by the Federal Executive through the Ministry of National Property and Industrial Development, shall be responsible for the implementation of resolutions adopted by the Administrative Council, for whose examination and approval, as appropriate, he shall submit the programme and budget of URAMEX, together with reports giving information on the activities carried out by it; he shall likewise represent it legally on the terms laid down by the Administrative Council.

CHAPTER V

Use of nuclear fuels and the application of nuclear energy

ARTICLE 24

Nuclear energy shall be used exclusively for peaceful purposes pursuant to the stipulations of Paragraph 7 of Constitutional Article 27.

ARTICLE 25

The supply of nuclear fuels obtained from radioactive ores originating in deposits located on the national territory shall be contracted for by URAMEX.

Contracting for the purchase of nuclear fuel of any processing grade originating from abroad shall be carried out by URAMEX.

ARTICLE 26

Users shall place the nuclear fuels they have used, whatever their origin, at the disposal of URAMEX. The National Nuclear Safety and Safeguards Commission referred to in Article 38 of this Law shall supervise the reprocessing, storage and disposal of these materials by URAMEX.

ARTICLE 27

The National Nuclear Safety and Safeguards Commission referred to in Chapter VII of this Law shall examine, assess and authorize the design basis, construction, operation and modification of nuclear facilities, as well as all aspects relating to the handling and transport of nuclear fuels, radioactive products and by-products, and the storage and disposal of waste.

CHAPTER VI

National Nuclear Research Institute

ARTICLE 28

The National Nuclear Research Institute (ININ) shall be set up as a centralized public organization with the status of a juridical person and the right to own property.

ARTICLE 29

The purpose of the National Nuclear Research Institute shall be to plan and put into effect research and development in the field of nuclear science and technology, to promote the peaceful uses of nuclear energy and to publicize the progress made in applying them to the country's economic, social, scientific and technological development.

ARTICLE 30

In order to achieve its purpose the National Nuclear Research Institute shall have the following functions:

I. To carry out and promote activities conducive to scientific and technological development in the field of nuclear energy, and to foster the transfer of technical knowledge in this area;

II. To perform pure and applied research in the various fields of nuclear science and technology; to render technical assistance to the organizations created under this Law, to the Federal Electricity Commission and to public and private bodies which may require it, in the design and construction of nuclear plants and, as appropriate, in contracting for such services;

III. To support and advise URAMEX in the formulation of plans and programmes for the development of its activities, subject at all times to co-ordination by the National Atomic Energy Commission, pursuant to Article 5 of this Law. It shall also be responsible for activities relating to theoretical research and technological research and development of the nuclear fuel cycle;

IV. To design and promote national construction of nuclear reactors. With regard to the requirements for electricity generation, the Institute shall advise the Federal Electricity Commission on the design, engineering and contracting for the construction of nuclear reactors, such reactors being the property of the Commission, which shall be responsible for their operation;

V. To be sole agent of the Federal Government for the programming, co-ordination, promotion, production, sale and import, as well as the overall use of radioactive materials for non-energy production purposes required for national development; to promote and develop the uses of radiation and radioisotopes in various fields, as well as to perform research work and experiments relating to such applications;

VI. To encourage the specific nuclear research and development projects underway at the universities, institutes and higher educational establishments of the country, in co-ordination with the Institute's own programmes;

VII. To plan and put into effect training programmes and specialized courses in the areas within its competence, including the training of research workers to meet its own needs;

VIII. To prepare and offer, when specifically requested, training courses and instruction for different grades of employees of the Federal Executive and of organizations and firms concerned with the use of nuclear energy for various purposes;

IX. To encourage national and international exchange aimed at promoting research and development in the nuclear field; to sponsor meetings and other events for the same purpose;

X. To request, receive and distribute nationally the technical assistance and the advisory and other services provided by the International Atomic Energy Agency and other international organizations;

XI. To advise the Federal Government on all matters within its terms of reference;

XII. To promote the establishment of a nuclear documentation centre, the aim of which shall be to acquire, analyse and disseminate data and information on new developments in the field through the intermediary of reports, publications, programmes and other material sent to interested groups and the general public. To establish agreements on the exchange of information with other centres of the same kind at international level, and to set up specialized libraries of books and periodicals;

XIII. To participate in international events concerned with nuclear energy which are of interest to Mexico; and

XIV. To perform any other activities concerned with the above, as determined by the laws or provisions applicable and by its internal regulations, and as decided by its Governing Council in accordance with its terms of reference.

ARTICLE 31

The governing bodies of the National Nuclear Research Institute shall be the Governing Council and the Directorate-General.

ARTICLE 32

The Governing Council shall be presided over by the Executive Member of the National Atomic Energy Commission and shall be composed in addition of the Directors General of the Federal Electricity Commission, the National Council of Science and Technology, the National Polytechnical Institute and URAMEX, as well as the Rectors of the National Autonomous University of Mexico and the Metropolitan Autonomous University. An alternate shall be appointed for each regular Council Member.

ARTICLE 33

The Governing Council shall examine and approve the programme and budget of the Institute and determine what is required for the Institute to fulfil the purpose assigned to it under the present Law. Furthermore, the Council shall administer the Institute's property and may delegate to the Director General the powers which it considers necessary, under the Regulations, for the implementation of its decisions and the proper functioning of the organization.

ARTICLE 34

The Director General shall be appointed by the Federal Executive through the Ministry of National Property and Industrial Development, and shall be responsible for the implementation of the resolutions adopted by the Governing Council, for whose consideration and approval, as appropriate, he shall submit the Institute's programmes and budget, together with reports furnishing information on its activities, and shall represent the Institute legally on the terms laid down by the Governing Council.

ARTICLE 35

The assets of ININ shall include property received under the present Law, grants assigned to it by the Federal Government, payments made to it for provision of services connected with its functions and any receipts and contributions obtained under the terms of other applicable legal provisions.

ARTICLE 36

The Institute may reach agreement with the technical and professional educational establishments of the country to enable the teachers of subjects considered useful for ININ's purpose to collaborate with it to the extent possible.

CHAPTER VII

National Nuclear Safety and Safeguards Commission

ARTICLE 37

A decentralized organization of the Ministry of National Property and Industrial Development shall be set up with the title of National Nuclear Safety and Safeguards Commission.

ARTICLE 38

The National Nuclear Safety and Safeguards Commission shall report directly to the Minister of National Property and Industrial Development, and, excepting prerogatives that are conferred by law on other departments or bodies, shall discharge the following functions:

I. To establish standards ensuring the safety of the inhabitants of the country in the development of the nuclear industry;

II. To see that legal provisions and international treaties to which Mexico is party in the field of nuclear safety, health physics and safeguards are complied with on the territory of the United Mexican States;

III. To examine, assess and authorize the design basis, construction, operation, modification and documentation of nuclear plants and facilities;

IV. To establish and operate a national system for the accounting and control of nuclear materials;

V. To establish standards for nuclear safety, health physics and safeguards for the efficient operation of the country's nuclear plants and facilities;

VI. To establish radiological protection standards governing the import and transport of radioactive materials, to attest observance thereof for purposes of authorizing imports under Articles 17 and 30 of this Law, and to supervise due compliance with the standards established;

VII. Any further functions as laid down by the Regulations under this Law.

ARTICLE 39

The National Nuclear Safety and Safeguards Commission shall have an Advisory Board and a Technical Secretary. The Advisory Board shall be composed as follows: one representative each appointed by the Ministers of External Relations, National Defence, Navy, Agriculture and Hydraulic Resources, Communications and Transport, Social Settlement and Public Works, Health and Public Welfare, and Labour and Social Security, and the Minister of National Property and Industrial Development, who shall preside over the Advisory Board.

Upon invitation, and without the right to vote, representatives of other departments in the centralized sector or organizations in the State-aided sector, federal organizations, municipal authorities or private persons directly involved may also form part of the Advisory Board.

TRANSITORY PROVISIONS

ARTICLE 1

This Law shall enter into force on the day following its publication in the "Official Gazette" of the Federation.

ARTICLE 2

The Constitutional Law of the National Nuclear Energy Institute (INEN) of 30 December 1971, published in the "Official Gazette" of the Federation of 12 January 1972, and all provisions that are contrary to this Law shall be repealed.

ARTICLE 3

The National Atomic Energy Commission shall divide the assets, rights and obligations of INEN between URAMEX and ININ; it shall similarly divide the present staff of INEN among these organizations, while respecting their rights pursuant to the applicable laws and in accordance with the aims, powers and functions assigned to these organizations by this Law.

ARTICLE 4

The grants and concessions already made for the exploration or mining of ores found in mineralogical association with radioactive ores shall remain in force, provided they conform to the specifications and obligations determined by the Ministry of National Property and Industrial Development, which shall ensure that these are met.

ARTICLE 5

References to the National Nuclear Energy Institute contained in the Statutory Law under Constitutional Article 27 on Mining shall be regarded as applying to URAMEX.

The grants that have been assigned for radioactive ore mining shall be transferred to URAMEX.

Y U G O S L A V I A

Act on Liability for Nuclear Damage*

19th April 1978

Section 1

Liability for nuclear damage resulting from the peaceful uses of nuclear energy shall be governed by this Act.

Section 2

For the purposes of this Act

1) "Nuclear damage" means:

- damage caused by death, personal injury or any other damage to a person's health, any loss of, or damage to, property or any contamination of the environment, which arises out of or results from the radioactive properties or a combination of radioactive properties with toxic, explosive or other hazardous properties of nuclear fuel or radioactive products or waste in, or of nuclear material coming from, processed in or sent to a nuclear installation;

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* Based on a translation by the Yugoslav authorities.

- damage caused by death, personal injury or any other damage to a person's health, any loss of, or damage to, property or contamination of the environment which arises out of or results from other ionizing radiation emitted by any other source of radiation inside a nuclear installation;

2) "Nuclear incident" means any occurrence or series of occurrences of the same origin which causes nuclear damage;

3) "Operator of a nuclear installation" means an Organization of Associated Labour (Organizacija udruzenog rada) which has received approval for the site, test run and entry into operation of a nuclear installation from the authority of the Federative Republic or the autonomous Province concerned, or a person recognized as the operator pursuant to provisions of the Installation State;

4) "Nuclear installation" means

- any nuclear reactor other than one which is used in sea and air transport as a source of power, whether for propulsion or for any other purpose;

- any installation using nuclear fuel for the production of nuclear material, or any installation for the processing of nuclear material or for the reprocessing of irradiated nuclear fuel;

- any facility where nuclear material is stored, other than storage incidental to the carriage of such material.

Within the meaning of this Act, several nuclear installations of one operator which are located at the same site, are considered as one nuclear installation.

5) "Nuclear reactor" means a structure containing nuclear fuel in such an arrangement that a self-sustaining chain process of nuclear fission can occur therein without any additional source of neutrons;

6) "Nuclear fuel" means any material capable of producing energy by a self-sustaining chain process of nuclear fission;

7) "Radioactive products or waste" means radioactive material produced in, or any material made radioactive by exposure to the radiation incidental to the production or utilization of nuclear fuel, but does not include radioisotopes which have reached the final stage of fabrication so as to be usable for scientific, medical or commercial purposes;

8) "Nuclear material" means

- nuclear fuel other than natural and depleted uranium, which is capable of producing energy by a self-sustaining chain process of nuclear fission outside a nuclear reactor, either alone or in combination with some other material;

- radioactive products or waste.

Section 3

The operator of a nuclear installation shall be liable for nuclear damage regardless of fault.

Section 4

The operator of a nuclear installation shall be liable for nuclear damage if such damage has been caused by a nuclear incident in his nuclear installation.

Section 5

The operator of a nuclear installation shall also be liable for nuclear damage if such damage has been caused by a nuclear incident:

1) in connection with nuclear material sent from his nuclear installation; or in the case of storage incidental to carriage, if the nuclear incident caused by the nuclear material occurs before the operator of another nuclear installation has assumed liability for damage pursuant to the express terms of a contract in writing; or, in the absence of such express terms, before the operator of another nuclear installation has taken charge of this nuclear material;

2) in connection with nuclear material sent to his nuclear installation; or in the case of storage incidental to carriage if he had assumed liability for nuclear incidents caused by the operator of another nuclear installation, pursuant to the express terms of a contract in writing or, in the absence of such express terms, from the moment he has taken charge of this nuclear material.

Section 6

The operator of a nuclear installation shall not be liable for nuclear damage if such damage is caused by:

1) a nuclear incident directly due to an aggression, war or an act of armed conflict;

2) a nuclear incident directly due to an earthquake, floods, fire or any other grave natural disaster upon proof that such damage could not have been anticipated or avoided.

The operator of a nuclear installation shall not be liable for nuclear damage suffered by a person upon proof that such person has caused the damage intentionally.

The operator of a nuclear installation shall not be liable for nuclear damage caused:

1) to the nuclear installation or to property on the site of that installation which is used or to be used in connection with that installation;

2) to the means of transport upon which the nuclear material was at the time of the nuclear incident.

Section 7

The operator of a nuclear installation shall have a right of recourse with regard to:

1) an individual who has caused nuclear damage intentionally or by gross negligence;

2) a person bound by contract, if this is expressly provided for in writing.

Section 8

A carrier of nuclear material may, in agreement with an authority designated under regulations by a Republic or an autonomous Province and with the written consent of the operator liable for a nuclear installation, act in the latter's place.

Section 9

The operator of a nuclear installation shall provide the carrier, before transfer of nuclear material for transport purposes, with a certificate related to the insurance contract or the financial security, issued by the insurer or the person furnishing financial security pursuant to this Act.

The above-mentioned certificate shall respectively state the name, firm and address of the operator; and the amount, type and duration of the insurance or financial security; it shall also indicate the nuclear material in respect of which the insurance or financial security, applies, and shall include a statement by the body designated under State or regional regulations, that the person named in the certificate is an operator of a nuclear installation.

Section 10

Nuclear material may be imported into the Socialist Federative Republic of Yugoslavia, or transit through its territory, only if the carrier who transports such material has obtained the certificate referred to in Section 9 of this Act and if the statement referred to in Section 9, paragraph 2 of this Act was supplied by the competent body of the importing State, pursuant to the provisions of international agreements on liability for nuclear damage, which have been ratified by the Socialist Federative Republic of Yugoslavia.

Section 11

Whenever both nuclear damage and damage other than nuclear damage have been caused by a nuclear incident or jointly by a nuclear incident and one or more other occurrences, such other damage shall, to the extent that it is not separable from the nuclear damage, be deemed, for the purposes of this Act, to be nuclear damage caused by that nuclear incident.

Section 12

Where nuclear damage occurs on the territory of a Federative Republic or an autonomous Province and the nuclear installation at the origin of the damage is not situated thereon and, in accordance with the Federal Act on protection against emission of ionizing radiation, the special authorization related to the site, test run and entry into operation has been issued to the nuclear installation concerned by the competent authority of the Republic or autonomous Province where it is situated without the approval of the Republic or autonomous Province where the nuclear damage has occurred, the Republic or autonomous Province whose competent authority has issued the authorization shall be liable for the portion of compensation for the damage suffered on that other territory which exceeds the limit provided for by this Act.

Section 13

The operator of a nuclear installation shall be liable for nuclear damage up to the amount of dinars 450,000,000 for each and every nuclear incident.

The amount mentioned in paragraph 1 of this Section shall not include any interest or costs awarded in the course of actions for compensation for nuclear damage.

Section 14

Where nuclear damage engages the liability of more than one operator of nuclear installations, the operators involved shall, insofar as the damage attributable to each operator is not separable, be jointly and severally liable.

Where a nuclear incident occurs in the course of carriage of nuclear material in the same means of transport, on which there is nuclear material belonging to two or more operators of nuclear installations, or in the case of storage incidental to the carriage, all the operators shall be jointly and severally liable for such nuclear damage, up to the limit of liability of that operator whose limit of liability is the highest.

Within the meaning of paragraph 1 and 2 of this Section, the liability of each operator whose nuclear installation is located on the territory of the Socialist Federative Republic of Yugoslavia, shall not exceed the amount applicable pursuant to Section 13 of this Act.

Section 15

The operator of a nuclear installation shall be required to take out and maintain insurance or other financial security covering his liability for nuclear damage in such amount which shall be specified by regulations made by the Republic or autonomous Province concerned and shall not be less than dinars 150,000,000.

A lower amount of insurance or financial security to cover liability for nuclear damage may be specified pursuant to the provisions mentioned in paragraph 1 of this Section, if nuclear damage is caused by nuclear reactors with less power which are used for scientific purposes.

Section 16

The insurer or financial guarantor shall not suspend or cancel the insurance or financial security without giving notice in writing six months prior to such suspension or cancellation to the operators of nuclear installations and the authority designated under regulations made by the Republic or the autonomous Province concerned.

If such insurance or financial security relates to the carriage of nuclear material, the insurer or financial guarantor shall not suspend or cancel the insurance or financial security during the period of the carriage in question.

Section 17

Whenever the financial means provided for by the insurer or financial guarantor are not sufficient for compensation for nuclear damage the financial resources and the procedure for settling the difference between such means and the compensation for nuclear damage up to the amount as provided for in Section 13 of this Act, shall be specified under regulations made by the Republic or the autonomous Province concerned.

Section 18

Whenever serious contamination of environment occurs due to a nuclear incident and the nuclear damage caused by such an incident exceeds the amount laid down by Section 13, paragraph 1 of this Act, the Federal Executive Assemblies and the Executive Councils of the autonomous Provinces, shall propose to the Assembly of the Socialist Federative Republic of Yugoslavia the measures to provide the means required for decontamination.

Section 19

If an organization of associated labour, a self-managed organization or community pays part of the compensation for the damage caused by a nuclear incident, and the operator of a nuclear installation is liable therefor, pursuant to the provisions of this Act, such a community or organization shall have a right of recourse against the operator of the nuclear installation up to the amount paid.

Section 20

Rights of compensation for nuclear damage under this Act shall be extinguished if an action for compensation of the nuclear damage is not brought within ten years from the date of nuclear incident.

Where nuclear damage is caused by a nuclear incident involving nuclear material which at the time of nuclear incident was stolen, lost, jettisoned or abandoned, the period established pursuant to paragraph 1 of this Section shall be 20 years from the date of theft, loss, jettison or abandonment.

A claim for compensation shall be extinguished within a period of three years from the date on which the person suffering nuclear damage had knowledge of the damage and of the operator liable for the damage, provided that the period established pursuant to paragraphs 1 and 2 of this Section shall not be exceeded.

Any person who has brought an action for compensation for nuclear damage within the period applicable pursuant to paragraphs 1 to 3 of this Section, may amend his claim to take into account any aggravation of the damage, even after the expiry of that period, provided that final judgment has not been entered.

Section 21

Any action for compensation for nuclear damage caused by a nuclear incident may be brought directly against the insurer or financial guarantor, in accordance with Section 15 of this Act.

Section 22

Jurisdiction over compensation for nuclear damage shall expressly lie with the local court of the Installation State.

Where the nuclear damage occurred during the transport of nuclear material, products or waste, jurisdiction over such actions shall lie with the local court of the territory in which the operator has his residence.

Section 23

If it is established or justifibaly assumed that the nuclear damage exceeds the amount specified in Section 13 of this Act, the procedure for establishing the nuclear damage and its compensation shall be implemented in accordance with the provisions of Sections 397 to 423 of the Act on Maritime and Inland Navigation (Official Gazette of the Socialist Federative Republic of Yugoslavia, No. 22/77).

Section 24

In the case of a change of parity of the Dinar the Federal Executive Council shall determine a new amount for the liability limit of the operator of a nuclear installation, as specified by Section 13, paragraph 1 of this Act.

Section 25

This Act shall come into force eight days after its publication in the Official Gazette of the Socialist Federative of Yugoslavia .