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# **NUCLEAR LEGISLATION IN OECD COUNTRIES**

## **Regulatory and Institutional Framework for Nuclear Activities**

**Netherlands**

## ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

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## NUCLEAR ENERGY AGENCY

The OECD Nuclear Energy Agency (NEA) was established on 1<sup>st</sup> February 1958 under the name of the OEEC European Nuclear Energy Agency. It received its present designation on 20<sup>th</sup> April 1972, when Japan became its first non-European full member. NEA membership today consists of 28 OECD member countries: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, Norway, Portugal, the Republic of Korea, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities also takes part in the work of the Agency.

The mission of the NEA is:

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

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

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

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## **NETHERLANDS**

This chapter was last revised in 1999 and is correct as of that date.

The NEA Secretariat is currently revising this chapter in close consultation with the national authorities and plans to issue a new version in the near future.

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## **I. GENERAL REGULATORY REGIME**

### **1. Introduction**

In the Netherlands, the basic legislation governing nuclear activities is set out in the 1963 Nuclear Energy Act [Stb.\* 1963, No. 82], as amended (hereinafter referred to as “the Act”). This Act lays down the basic rules in the nuclear field, makes provisions for radiation protection, designates the different competent authorities and outlines their responsibilities. Responsibility for nuclear activities is not centralised, but is shared by several ministers who consult each other and issue regulations jointly, as required, in accordance with their area of competence. Detailed regulations to implement the Act are found in a series of decrees, the majority of which are listed below:

- Nuclear Energy Act (Definitions) Decree of 29 August 1969 [Stb. 1969, No. 358], as amended by a Decree of 20 October 1986 [Stb. 1986, No. 533];
- Nuclear Installations, Fissionable Materials and Ores Decree of 4 September 1969 [Stb. 1969, No. 403], amended by various decrees;
- Fissionable Materials, Ores and Radioactive Substances (Transport) Decree of 4 September 1969 [Stb. 1969, No. 405], as amended by various decrees;
- Fissionable Materials and Ores (Registration) Decree of 8 October 1969 [Stb. 1969, No. 471];
- Nuclear Energy Act (Registration of Radioactive Materials and Food and Drug Inspectorate Charges) Decree of 16 October 1969 [Stb. 1969, No. 472], amended by a Decree of 14 January 1993 [Stb. 1993, No. 42];
- Nuclear Energy Act, National Defence (Exemption) Decree of 20 October 1969 [Stb. 1969, No. 476], as amended by various decrees;
- Radioactive Materials Register (Plan) Decree of 5 December 1969 [Stb. 1969, No. 240];
- Nuclear Energy Act (Secrecy) Decree of 17 June 1971 [Stb. 1971, No. 420];
- Nuclear Energy Act (Contributions) Decree of 25 June 1981 [Stb. 1981, No. 455], as amended by a Decree of 20 December 1988 [Stb. 1988, No. 607];

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\* Stb. = Bulletin of Acts, Orders and Decrees

- Radiation Protection Decree of 10 September 1986 [Stb. 1986, No. 465], as amended by various decrees.

The 1986 Radiation Protection Decree replaces the 1969 Radioactive Materials Decree [Stb. 1969, No. 404] and the Nuclear Energy Act (Devices) Decree of 10 September 1969 [Stb. 1969, No. 406]. It regulates the protection of the public and workers against the hazards of ionising radiation from radioactive materials and apparatus in accordance with the relevant Euratom Directive, establishes a licensing system for the use of radioactive materials and ionising radiation-emitting devices, and prescribes general rules for their use.

Together with the Radiation Protection Decree, the Nuclear Installations, Fissionable Materials and Ores Decree governs, in general, activities involving radioactive materials, ionising radiation-generating equipment and fissionable materials, while other decrees cover specific aspects, such as definitions, registration procedures, military exemptions, etc. The Transport Decree sets forth the regulations applicable to all forms of transport of radioactive materials and equipment. Finally, third party liability in the nuclear field is regulated by the 1979 Nuclear Incidents (Third Party Liability) Act, as amended in 1991.

Since the Nuclear Energy Act draws a distinction between fissile materials and ores on the one hand, and radioactive substances on the other, this distinction has been maintained in legislation based on the Act.

## **2. Mining Regime**

Under the 1810 Mining Act, prospecting for ores is unrestricted, and the working of ores is authorised by government concession. The 1903 Mining Act provides that the government may reserve title and operate the mine itself.

Uranium and thorium ores are not mined at present in the Netherlands; however, the Nuclear Energy Act specifies that any person who establishes the presence of such ores in the ground must inform the Minister for Economic Affairs immediately. In addition, the Nuclear Installations, Fissionable Materials and Ores Decree lays down licensing requirements in connection with ores. Finally, the 1981 Decree amending the Nuclear Energy Act (Radioactive Materials) Decree [Stb. 1969, No. 404] sets up, in addition to other rules, a special procedure concerning the use of radioactive materials in mining operations (see under Section 6 “Radiation Protection” *infra*).

## **3. Fissionable Materials, Ores, Radioactive Materials and Equipment**

As already mentioned, the 1963 Nuclear Energy Act as amended, together with the 1986 Radiation Protection Decree and the 1969 Nuclear Installations, Fissionable Materials and Ores Decree as amended (the latter being referred to hereinafter as “the Decree”) regulate dealings with radioactive materials and equipment and fissionable materials, while other decrees cover certain specific aspects such as, for example, devices, definitions, registration procedures, etc.

**a) *Fissionable materials and ores***

Section 1 of the Nuclear Energy Act and the 1969 Definitions Decree define “fissionable materials” as materials, except ores containing 0.1% plutonium, 3% thorium or 0.1% uranium by weight. “Ores” are: (a) ores, except monazite, containing at least 0.1% uranium or 3% thorium by weight; and (b) monazite containing at least 0.1% uranium or 10% thorium by weight.

The Act prohibits the possession or the transfer of fissionable materials or ores without a licence granted jointly by the Minister for Economic Affairs, the Minister for Social Affairs and Employment, and the Minister for Housing, Spatial Planning and the Environment [Section 15 of the Act and Section 3 of the Decree].

The procedure for applying for a licence and the information required of the applicant are laid down in Section 3 of the Nuclear Installations, Fissionable Materials and Ores Decree. Applications must be made in writing to the three appropriate ministers, and must include in particular a factual description of the uses to which the fissionable materials or ores will be put, the information required under the Decree, and an indication of the period for which the licence is sought. The information required includes a statement of the quantities, their chemical and physical properties, the form, content and degree of enrichment of materials and, for irradiated fissionable materials, their activity. Detailed conditions may be attached to the licence concerning, in particular, the protection of persons and property, national security, storage and surveillance of fissile materials and ores and supplies [Sections 15 and 19 of the Act].

The particulars of all fissionable materials and ores must be entered in a register kept by the Ministry of Economic Affairs. Any person who possesses, transfers or transports any fissionable materials or ores is required to keep a record and to give notice thereof for entry in the register [Sections 13 and 14 of the Act].

By way of exception, Sections 41 and 42 of the Nuclear Installations, Fissionable Materials and Ores Decree provide that no licence is required to hold non-irradiated fissionable materials which contain only natural or depleted uranium or thorium in quantities not exceeding 100 grams of each of these elements, and no plutonium. The Decree also exempts ores if packed in watertight metal containers or, if not packed in such a manner, provided their specific activity does not exceed 0.37 kilobecquerels per gram. Pursuant to the National Defence (Exemption) Decree, a licence is not required for fissionable materials, ores, establishments and equipment being used by or intended for the use of the Netherlands Armed Forces or the forces of an ally.

Under Section 43 of the Decree, the transfer of exempted materials does not require a licence, nor does the transfer of fissionable materials or ores to a person authorised to receive them.

**b) *Radioactive materials and equipment***

Pursuant to Section 1 of the Nuclear Energy Act, “radioactive materials” are defined as any matter which emits ionising radiation as well as materials and objects containing such matter, with the exception of fissionable materials and ores.

In accordance with Section 29 of the Act and pursuant to the Radiation Protection Decree, the preparation, possession, use and disposal of radioactive materials are prohibited without a licence granted by the Minister for Social Affairs and Employment, the Minister for Health, Welfare and

Sports, and the Minister for Housing, Spatial Planning and the Environment in consultation with any other ministers concerned, for example, the Minister for Agriculture and Fisheries and the Minister for Transport.

Applications for licences must include, in particular, a list of the radioactive materials indicating their activity, their chemical and physical state and their form, together with the operations for which the licence is sought, the total activity and the maximum quantity of radioactive materials likely to be present, as well as the protective measures to be taken [Sections 10 and 11 of the Radiation Protection Decree].

Since the implementation of the risk management concept in the Radiation Protection Decree [Stb. 1966, No. 44], installations in which radioactive materials are treated or ionising radiation-emitting apparatus is used, play an essential role. The installation is considered as a radiation source and the operators must obtain a licence in advance.

The risks which the installation could incur must be clearly evaluated [Sections 10 and 74(a) of the Radiation Protection Decree], new limits are introduced [Section 37(a) and (b)] and the responsible minister is given wider discretion to accept or reject applications for licences [Section 16(a)].

Under Section 28 of the Act, the detailed particulars of all radioactive materials which have been notified in accordance with its provisions must be entered in a register. Any person who prepares, possesses, uses or transfers radioactive materials is required to keep a record thereof and to give notice for the purpose of registration in the aforementioned registers. The implementation of Section 28 of the Act is governed by Sections 68 to 74(a) of the Radiation Protection Decree.

Ionising radiation-emitting equipment is also regulated by the Radiation Protection Decree, which applies to X-ray equipment, particle accelerators, etc. [Section 9]. The use of this type of equipment requires a licence from the Minister for Social Services and Employment, the Minister for Housing, Spatial Planning and the Environment, and the Minister for Health, Welfare and Sports [Sections 10-12]. The application must include, in particular, a description of the equipment, its purpose and the protective measures which will be taken [Section 11]. The implementation of the risk management concept in the Decree also applies to such equipment.

The Radiation Protection Decree provides for exemptions from licensing and registration in exceptional cases, on condition that radiation protection measures are observed. In addition, the Decree contains a number of specific exemptions, including that for radioluminous timepieces in compliance with the radiation protection norms adopted by the OECD Council [Section 54].

#### **4. Nuclear Installations**

##### ***a) Licensing and inspection, including nuclear safety***

In the Netherlands, the construction and operation of nuclear installations are governed by the Nuclear Energy Act, whose basic provisions are further elaborated in the Nuclear Installations, Fissionable Materials and Ores Decree (the Installations Decree). In 1979 and 1993, these provisions were amended by the Environmental Protection (General Requirements) Act [Stb. 1979, No. 442 and Stb. 1992, No. 551].



In 1994, the General Administrative Law Act (hereinafter referred to as the “GALA”) came into force. In this Act all procedural aspects, including appeal, are laid down.

Under the Nuclear Energy Act, a licence is required to construct, commission, operate or alter any establishment where nuclear energy may be released. Such establishments include:

- land-based reactors;
- establishments where uranium or thorium are extracted from ores;
- establishments where natural uranium is enriched in the isotope-235 or where fissionable materials are separated in any manner;
- establishments where uranium or plutonium are processed into nuclear fuel elements or where uranium and thorium blankets for converter or breeder elements are manufactured;
- reprocessing plants;
- establishments where fissionable materials for non-nuclear purposes are treated or processed;
- establishments where research is carried out with fissionable materials;
- establishments where fissionable materials are stored, whether especially designed for the purpose of storage or whether used for temporary storage.

The ministers responsible for licensing nuclear installations are the Minister for Economic Affairs, the Minister for Housing, Spatial Planning and the Environment and the Minister for Social Affairs and Employment. There is no one government department or other body responsible for nuclear energy. In 1964, an Interministerial Nuclear Energy Committee was established to prepare decisions involving more than one ministry.

In accordance with Chapter II of the Installations Decree, the licensing procedure involves four principal stages:

- filing of the application;
- consultation of the parties concerned;
- granting of the construction licence;
- granting of the operating licence.

The amendments introduced by the 1979 Environmental Protection Act cover the detailed aspects of licensing procedures, in particular, provisions for greater access of the public to the relevant documentation, as well as greater public participation in the granting of licences.

Since 1994, the licensing procedure has been largely regulated by the GALA. It prescribes the procedure for the admissibility of an application for a licence and the time limit for a reply by the authorities. Within twelve weeks of the receipt of the application a draft decision must be made public

[Section 3(1)(g) GALA]. Within the following four-week period anyone may raise objections [Section 3(22) GALA]. The minister concerned must, within six months of the receipt of the application, make a final decision [Section 3(28) GALA]. At the expiration of a six-week appeal period, the ruling will become final.

Several technical bodies are consulted during the various stages of the licensing procedure. After consultation with all interested parties, *i.e.* technical bodies and public and local authorities, the three responsible ministers issue a construction licence, subject to a number of conditions intended to ensure the protection of persons, animals and property, state security, the storage and supervision of fissionable materials and ores, energy supplies, the payment of compensation due to persons having suffered personal injury or property damage and compliance with international obligations. After construction has begun, an application for an operating licence is submitted to the responsible ministers. At this stage, the Reactor Safety Committee, on the basis of further detailed discussions with the applicant on design questions, issues a final statement on the safety of the installation and, if necessary, makes suggestions for conditions to be attached to the licence. Simultaneously, the licensing authorities consult with the various public bodies and ministries involved.

Pursuant to Section 58 of the Nuclear Energy Act, the ministers concerned are required to appoint officials responsible for the enforcement of the provisions of the Act and the decrees issued thereunder.

Accordingly, regular inspections, usually twenty times a year, are carried out by three different bodies: the Nuclear Safety Department and the Pressure Vessel Inspectorate (both under the aegis of the Minister for Social Affairs and Employment) and the Inspectorate for Environmental Control (under the aegis of the Minister for Housing, Spatial Planning and the Environment). Special inspections take place following any incident and in connection with proposed changes to the installation.

Concerning nuclear safety, it is relevant to note that the Netherlands accepted the 1994 Convention on Nuclear Safety on 16 October 1996.

**b) *Protection of the environment against radiation effects***

The Environmental Protection (General Requirements) Act of 1979 is applicable to the licensing of any establishment where nuclear energy may be produced. Licences for the possession, use, transport and disposal of fissionable materials and ores, and radioactive material and equipment, as well as for the construction and operation of nuclear installations are granted by the Minister for Housing, Spatial Planning and the Environment, among others. Furthermore, inspections of nuclear installations are conducted by the Inspectorate for Environmental Control, under the Minister for Housing, Spatial Planning and the Environment. Dutch legislation requires notification of all radioactive releases into the environment and such releases are subject to regulatory limits. Under the co-ordinated monitoring programme involving several government ministries and services, radioactivity levels are monitored in relation to air, deposition, surface water, milk, grass and fish.

**c) *Emergency response***

The Ministers for Health, Welfare and Sports, for Housing, Spatial Planning and the Environment and for Social Affairs and Employment are empowered to take emergency measures

where persons or animals have been exposed to ionising radiation or contamination to such an extent that appreciable danger is feared. Furthermore, if the Minister for Agriculture and Fisheries considers that the soil, water or air is contaminated, he may take any measures he deems necessary. The same applies, if, in the opinion of the Minister for Transport, Water Control and Public Works, surface water is contaminated [Sections 40, 41 and 42 of the Nuclear Energy Act].

At the international level, the Netherlands is party to the 1986 Convention on Early Notification of a Nuclear Accident and the 1986 Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, both of which it accepted on 23 September 1991.

## **5. Trade in Nuclear Materials and Equipment**

Dutch legislation on nuclear trade is comprised partly of specifically nuclear-related texts and partly of general regulations concerning foreign trade: the Nuclear Energy Act, as amended, with its implementing decrees and the Act of 5 July 1962 on Imports and Exports [Stb. 1962, No. 295], amended on 24 March 1976 [Stb. 1976, No. 215], as implemented by the Export of Industrial Products Decree of 26 April 1963 [Stb. 1963, No. 128].

Pursuant to Section 15(a) of the Nuclear Energy Act, it is prohibited to transport, possess, import or export into or out of the Netherlands, or cause to be so imported or exported fissile materials or ores without a licence. However, under the 1969 Transport Decree as amended by the Decree of 4 June 1987, there are exemptions for the imports or exports carried out in performance of a transport contract, as well as in the case of non-irradiated fissile materials, if they consist entirely of natural or depleted uranium or natural thorium and contain no plutonium, and if the quantity brought into the Netherlands on any particular occasion contains not more than 100 grams of thorium or 100 grams of uranium; fissile materials that are held, or have been or may be imported, under a licence required by the national legislation of Belgium or Luxembourg, or in relation to which permission has been given to transit those countries, provided that the conditions attached to the licence are observed [Section 23 of the Transport Decree]; and special fissile materials not intended for Belgium or Luxembourg, which transit Netherlands territory, provided that the materials are not unloaded on such territory from the means of transport.

With a view to the protection of persons, animals, plants and property, the Transport Decree provides that a licence to import or to cause to be imported fissile materials into Netherlands territory may only be granted subject to certain conditions [Section 25]. Under Section 26, the responsible ministers (see under Section 4 “Nuclear Installations” *supra*) may grant exemptions, again subject to certain conditions or restrictions.

As noted above, nuclear trade in the Netherlands is also governed by the 1962 Act on Imports and Exports and the 1963 Decree on the Export of Industrial Products. The Decree determines the materials, articles and equipment subject to licensing and inspection, and specifies that the competent authority in this respect is the Minister for Economic Affairs.

Section 2 of the 1962 Act provides for the adoption, in the interests of the national economy and national security and in implementation of the international agreements concluded by the Netherlands, of regulations governing the import and export of specific articles or materials. The Act also provides for the adoption of regulations concerning the import and export of articles from or to certain countries.

Decrees relating to exports and imports, as well as any amendment or repeal thereof, are promulgated by the Minister for Economic Affairs in consultation with the ministers concerned (in particular, the Minister for Foreign Affairs), depending on the nature of the products in question. The ministers in turn consult other interested bodies [1962 Act, Sections 2(3) and (4)]. However, the consultation process is not required in cases involving national security or an international convention, if the ministers believe that consultation would be against the public interest [Section 2(5)]. Under Section 8, decrees involving imports and exports must be published in the Official Gazette.

The Decree on the Export of Industrial Products has been amended on numerous occasions due, in particular, to technological developments in the field of strategic materials. Section 2 of the Decree prohibits the export of articles and materials listed in Appendix A of the Decree without a licence from the Minister for Economic Affairs. Pursuant to Section 7, licences are subject to certain conditions, including the presentation of the licence to the responsible customs official at the time of export. Similarly, Sections 3 and 6 prohibit the export of items listed in Appendix B without a form signed on or on behalf of the exporter concerned, established in compliance with the conditions laid down by the minister, provided that the form is presented at the time of export to the customs official responsible for collecting customs duty.

International commitments made by the Netherlands concerning nuclear trade include participation in the work of the Zangger Committee and membership of the Nuclear Suppliers' Group (London Club). The Netherlands is party to the Treaty on Non-Proliferation of Nuclear Weapons. In relation to exports to non-nuclear weapons states, the Netherlands has undertaken to act in compliance with the principles adopted by the London Club applicable to the export of nuclear materials, equipment and technology [See communications to the Parliament of 30 March 1976, *Kamerstukken II*, 1975/76, 13865, No. 1; and 11 January 1978, *Kamerstukken II*, 1977/78, 13865, No. 2].

Finally, the Appendix to the Eighth Decree amending the Export Decree [Decree of 12 June 1981 relating to the export of strategic materials [Stb. 1981, No. 351] contains the Dutch version of the Trigger List of International Atomic Energy Agency (IAEA) Documents INFCIRC/209 and INFCIRC/254, completed by certain sections on ultracentrifugation technology. This list is revised regularly. Attached to the Decree is a note explaining the reasons for the amendment and also stipulating that it is prohibited to export the listed materials without permission from the Minister for Economic Affairs.

## **6. Radiation Protection**

The Nuclear Energy Act makes provision for protection against the hazards of ionising radiation. These general principles are elaborated in the 1986 Radiation Protection Decree, as amended in 1988, 1991, 1993 and 1996, which implements at national level Council Directive 80/836/Euratom, as amended by Council Directive 84/466/Euratom, setting forth the Community's basic standards for radiation protection. The 1986 Decree replaces the 1969 Radioactive Materials Decree and the 1969 Apparatus Decree, thus regulating the protection of workers and the public against the hazards of ionising radiation from radioactive materials and equipment, while also establishing a licensing system and general rules for the use of radioactive materials and ionising radiation-emitting apparatus.

**a) Protection of workers**

The legislation provides that the number of persons exposed to radiation must be kept as low as possible and that appropriate measures must be taken to prevent external contamination. Furthermore, measures must be taken to prevent in so far as possible any internal contamination of persons by radioactive substances. Similarly, no harmful concentration of radioactive substances in the air is allowed in workplaces. The level of radiation, and the concentration of radioactive substances in the air, must be measured periodically [Section 31].

Persons may not carry out work involving ionising radiation unless they have passed a medical examination and they must be given a similar examination every time the physician deems it necessary [Section 23(a)]. In addition, there exists a system of personal (dosimetric) monitoring [Section 25]. The total individual dose limit for workers is 50 mSv for whole-body exposure.

Finally, foreign workers are protected by the implementation of Council Directive 90/641/Euratom; those who work abroad shall have a radiological passport [Decree of 16 July 1994].

**b) Protection of the public**

The Nuclear Installations, Fissionable Materials and Ores Decree provides for a number of conditions attached to any licence granted under the Nuclear Energy Act with a view to the protection of persons, animals, plants and goods and, in particular, the following:

- irradiation or contamination of persons, animals, plants and goods shall be prevented to the maximum extent possible;
- in cases where irradiation or contamination are unavoidable, they shall be restricted to the minimum possible;
- in cases where irradiation or contamination are unavoidable, the number of persons exposed to ionising radiation shall be restricted to the minimum possible, taking into account the need to avoid an amount of radiation or contamination per person exceeding the maximum permissible level.

The total individual dose limit for members of the public is fixed at 1 mSv per year (a source limit of 0.1 mSv and a generic dose constraint for optimisation of protection of 0.04 mSv should be applied to each source category).

The Minister for Housing, Spatial Planning and the Environment has general responsibility for protection of the public against ionising radiation. If, in his opinion, the soil, water or air has been or is likely to be contaminated by radioactive materials to such a degree that appreciable danger is to be feared for public health, he and the Minister for Social Affairs and Employment may order the person who operates the establishment involved to close it down.

In addition, the mayor of a municipality where this establishment is situated may request the minister to take such action. Any order by the Minister to this effect is issued with the agreement of any other ministers involved.

The ministers concerned appoint officials charged with enforcing the Nuclear Energy Act in general and with measuring radiation doses. Similar duties are given to officials of the inspection services appointed by the mayors and municipal councils.

Pursuant to the Radioactive Materials Decree, the District Public Health Inspector may impose certain additional conditions on the use or disposal of radioactive substances.

In addition, the Radioactive Materials Decree (now the Radiation Protection Decree) was amended in 1973 to insert special provisions concerning the use of radioactive luminous paint on timepieces. This amendment, which became Part 4(a) and an Annex to the Decree, incorporates in the Netherlands legislation the OECD Radiation Protection Standards for Radioluminous Timepieces of 19 July 1966.

Following the adoption of the new European Union basic safety standards the Radiation Protection Decree will be modified accordingly.

**c) *Protection of individuals undergoing medical exposure***

All uses of ionising radiation must ensure a wide safety margin. The protection of the individual undergoing medical exposure mainly aims at optimum diagnostic efficacy at reasonable dose to the patient and to reduce the number of inadequate exposures. The revised Directive 97/43/Euratom on Medical Exposures reaffirms those objectives, which are pursued by 4 types of requirements relating to: duties, responsibilities and qualifications of the medical staff; used equipment; procedural requirements; and special practices.

The Medical Exposures Directive is to be implemented in domestic legislation not later than 13 May 2000.

## **7. Radioactive Waste Management**

In the Netherlands, the management of radioactive waste is governed in general by the Nuclear Energy Act as well as by the Radiation Protection Decree and the Nuclear Installations, Fissionable Materials and Ores Decree. Under the Act, a licence is required for the disposal of radioactive waste, with conditions imposed as to the method and location of disposal. In addition, the Act establishes a registration system to record the disposal of radioactive and fissile materials.

In 1984, the Netherlands Parliament accepted the government's waste management strategy as set forth in the Radioactive Waste Policy Paper. This Paper provided that:

- for the next 50-100 years all radioactive waste would have to be stored in a single above-ground storage facility;
- a special waste management organisation would be given complete and exclusive responsibility for all aspects of radioactive waste management in the Netherlands;
- research would be focused on deep geological disposal either within the Netherlands or in an internationally operated facility.

In 1982, the Netherlands Government created the Central Organisation for Radioactive Waste (*Centrale Organisatie Voor Radioactief Afval* – COVRA). At present, COVRA operates the transportation system for all low and intermediate-level waste; controls a number of waste treatment systems; and operates a storage facility for conditioned and packaged low and intermediate-level radioactive waste.

The Nuclear Energy Act establishes a system of registration to record the disposal of radioactive and fissionable materials [Sections 13 and 14]. A licence is also required for such disposal and its requirements may relate to the location and method of disposal [Section 32(2)].

No licence under the Nuclear Energy Act is required for the disposal of fissionable materials which are exempted from licensing because of their small quantities if, on discharge into the air or water, the concentrations do not exceed certain prescribed maximum limits [Section 41]. Similarly, no licence under the Nuclear Energy Act is required for the disposal of radioactive materials if their activity is below certain prescribed maximum levels.

If radioactive materials are disposed of by being discharged into air or water, certain limits of radiation are imposed.

The disposal of radioactive waste by handing it to an approved waste collection service does not require a licence.

The Netherlands is party to the 1972 London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, which it ratified on 2 December 1977.

## **8. Non-Proliferation and Physical Protection**

The Nuclear Energy Act provides for national control and security measures, in the interests of the state, for any activity requiring licensing of the use of fissionable materials and ores. In particular, detailed regulations control the disclosure of information on nuclear activities. Conditions may be attached to licences with a view to ensuring state security or compliance with the Netherlands' international obligations [Section 19]. However, the implementing decrees contain no such requirement relating to fissile materials and ores, nor any provisions about conditions in licences relating to Section 19.

Pursuant to Section 68 of the Act, implementing decrees may also require that information, equipment or materials used to produce nuclear energy or relating to the storage, manufacture or processing of fissionable materials be treated as an official secret, if such information, equipment and materials have been obtained subject to an obligation of secrecy either directly from the government or with the approval of the competent authorities, or if the ministers concerned should so decide.

Anyone entrusted with the duty of applying the Nuclear Energy Act or with giving effect to international agreements and resolutions in the field of nuclear energy or ionising radiation adopted by international organisations is required to keep secret any information thus acquired.

Pursuant to Section 68 of the Act, the Secrecy Decree of 1971 lists the activities for which an obligation to maintain secrecy may be imposed. The scope of application of the Decree, designed to protect industrial secrets and to prohibit the export of sensitive information, was defined and broadened by a Ministerial Directive of 24 September 1971 [Stb. 1971, No. 107].

At the international level, the Netherlands ratified the 1968 Treaty on the Non-Proliferation of Nuclear Weapons on 2 May 1975 and the 1996 Comprehensive Nuclear Test Ban Treaty on 23 March 1999. They also accepted the 1979 Convention on the Physical Protection of Nuclear Material on 6 September 1991. Requirements concerning physical protection are laid down during the licensing procedure for nuclear installations and are included in the 1987 amendments to the Transport Decree (see below).

## **9. Transport**

The rules governing the transport of radioactive and fissionable materials in the Netherlands are contained in the Fissionable Materials, Ores and Radioactive Substances (Transport) Decree of 1969, as amended in 1983, 1987, 1988, 1993, 1997 and 1999. In addition to regulating the carriage of radioactive materials by all modes of transport the Transport Decree also regulates activities closely associated with such carriage, for example the import and export of radioactive materials, and their storage during transport.

Under the Transport Decree, there are certain exemptions for fissile materials and ores if no licence is required pursuant to the regulations governing transport by road, rail and inland waterway, in which case it is sufficient that the packaging and approval procedures in the regulations be observed.

Given that in the Netherlands, the transport of radioactive materials implies the crossing of borders on a regular basis, particular care has been taken to ensure that the national transport regulations are in harmony with the regulations governing international transport. In fact, for all modes of transport, the international regulations have been incorporated into the national ones.

Thus, with regard to rail transport, the substance of the Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) has been adopted in the national Regulations governing the Transport of Dangerous Goods by Rail (VSG). The Transport Decree provides that these Regulations are applicable to the carriage by rail of radioactive materials either directly or indirectly [Sections 7-10].

In respect of road transport, the Regulations governing the Transport of Dangerous Substances by Land (VLG), are based entirely on the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) and are applied pursuant to the Transport Decree to the transport by road in the Netherlands of radioactive materials [Sections 11 and 12].

Similarly, the national Regulations governing the Transport of Dangerous Substances by Inland Waterway (VBG) are taken from the Regulations for the Carriage of Dangerous Goods on the Rhine (ADNR). These same Regulations are applicable also to the transport of radioactive materials in the Netherlands' territorial waters [Sections 13-16].

With respect to international sea transport of dangerous goods the International Maritime Dangerous Goods Code (IMDG) is applied directly or indirectly for the Netherlands. Reference to the IMDG has been made in the Transport Decree.

With regard to air transport, the Technical Instructions for the Safe Transport of Dangerous Goods by Air of the International Civil Aviation Organisation (ICAO) are applied to the carriage of radioactive materials by air in the Netherlands.



In 1987, the Transport Decree was amended to take account of the extensive revisions of all the other international regulations since 1969, as well as the recommendations on maritime transport of radioactive materials issued by the IMO (the IMDG Code) and the rules on air transport promulgated by the ICAO. All these revisions, (except the ADNR) were based upon the 1973 Edition of the IAEA Regulations on the Safe Transport of Radioactive Materials. Further amendments concerned the implementation of physical protection requirements in compliance with the Convention on the Physical Protection of Nuclear Material. In essence, the modifications relate to licensing requirements, in particular to packaging and transport for the different levels of activity of the materials carried, certificates of approval, etc. and surveillance during transport.

In 1997, the Transport Decree was amended in order to incorporate the requirements of the European Union directives (for transport by rail: Council Directive 94/55/EC; for transport by road: Council Directive 96/49/EC). The 1999 edition of the ADR will also be applicable.

## **10. Nuclear Third Party Liability**

The Netherlands ratified the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy on 28 December 1979, and the 1963 Brussels Convention Supplementary to the Paris Convention on 28 September 1979 [Act of 17 March 1979, Stb. 1979, No. 160]. The Act came into effect on 28 December 1979, bringing both Conventions into force on that date in the Netherlands. At the same time, the Nuclear Incidents (Third Party Liability) Act of 1979 [Stb. 1979, No. 225] laying down the regulations governing nuclear third party liability in the Netherlands also came into force on 28 December 1979, thereby repealing the Act of 27 October 1965 which contained regulations on third party liability in the field of nuclear energy.

On 1 August 1991, the Netherlands ratified the 1982 Protocols to the Paris Convention and Brussels Supplementary Convention [Stb. 1991, No. 368] and the 1988 Joint Protocol relating to the application of the Vienna Convention and the Paris Convention [Stb. 1991, No. 372]. On the same day, an Act amending the 1979 Nuclear Incidents (Third Party Liability) Act came into effect [Stb. 1991, No. 369], implementing the Paris and Brussels Protocols. Simultaneously, another Act amending the 1979 Act on Third Party Liability in implementation of the Joint Protocol was passed by Parliament [Stb. 1991, No. 373]. This Act came into effect on 27 April 1992 [Stb. 1992, No. 183].

On 1 August 1991, the Netherlands also ratified the 1971 Convention relating to Liability in the Field of Maritime Carriage of Nuclear Material [Stb. 1991, No. 371].

The 1991 version of the Third Party Liability Act incorporates the basic provisions of the Paris and Brussels Conventions and sets out additional provisions, differences or options applicable in national legislation.

Under the Netherlands legislation, the operator is not exonerated from paying compensation for damage caused by an incident due directly to a grave natural disaster [Section 3].

In relation to an incident on Netherlands territory, the consignor and carrier of the nuclear substances involved in the incident, as well as the person who was in possession of the substances at the time of the incident, shall be deemed to be the operator of a nuclear installation on Netherlands territory and shall be held jointly and severally liable for the damage, unless it be proved by them that some other person is liable under either the Paris Convention or the Joint Protocol [Section 17].

The limitations on the scope of the Paris Convention do not apply to the liability of an operator of a nuclear installation on Netherlands territory, for damage: (a) suffered on the territory of a state party to the Convention wherever the incident occurred; (b) suffered on the territory of a state not party to the Paris Convention, but party to the Joint Protocol, as the result of an incident in the territory of a state party to the Joint Protocol; or (c) wherever suffered, as the result of an accident on Netherlands territory [Section 15(1)].

In accordance with the Nuclear Incidents (Third party Liability) Act [Section 5(1) and (2)], the maximum liability of the operator under the Paris Convention has been raised to Dutch guilders (NLG) 750 million as from 1 January 1998 [Royal Decree of 14 November 1997, Stb. 1997, No. 577]. Under Section 5(3) a lower amount may be set for low-risk installations by ministerial order. For five installations, lower amounts between NLG 50 million and 100 million have been established. In so far as the funds available from the operator's financial security are insufficient to compensate for the damage, the state shall make available funds up to his maximum liability. In such cases, the minister is entitled to exercise the operator's rights of recourse [Section 10].

If, in the opinion of the Minister for Finance, an operator of a nuclear installation cannot obtain the financial security required by the Paris Convention or if such financial security is only available at an unreasonable cost, the Minister may enter into contracts on behalf of the state as insurer or provide other state guarantees up to the operator's liability limit [Section 9].

If the amount of damage caused by a nuclear incident in Netherlands territory exceeds the limit of the Brussels Convention, the government will make available supplementary funds to a maximum combined total of NLG 5 billion [Section 18(1)]. Under Section 18(4), these public funds will also be made available for damage suffered in the territory of Parties to the Brussels Convention, on condition of reciprocity.

The time limit for submission of claims resulting from personal injury is thirty years from the date of the accident; for other types of damage, this limit for submission of claims is ten years [Section 7(2)]. In both cases, the right to compensation shall be extinguished if an action is not brought within three years from the date on which the person suffering damage or his legal representative has knowledge of, or ought reasonably to have known of both the damage and the operator liable [Section 7(1)]. Claims filed within ten years of the date of the incident have priority over claims filed thereafter [Section 7(4)]. However, in so far as the state provides supplementary funds beyond the Brussels Convention limit, at least 10% of these funds will be reserved for personal injury claims filed after ten years [Section 27(2)]. If there are both personal injury claims and other claims and the total amount of those claims exceeds the NLG 5 billion limit, two-thirds of the total amount available will be reserved for personal injury claims [Section 27(1)].

If the damage caused by the nuclear incident is likely to exceed the operator's liability limit, claims must be brought before the District Court at The Hague, which has exclusive jurisdiction as the court of first instance [Section 22(1) and (2)]. A prohibition will be placed on the payment of damages and a committee will be established to settle claims under the authority of an examining judge [Section 22(2)]. The committee is entitled to appoint and consult experts [Section 23(2)]. If a claim is contested and the judge cannot reconcile the parties, he shall refer them to one or more court sessions for decision of the point at issue [Section 24(4)].

In respect of damage caused by nuclear substances for which there exists no liability under the Vienna and Paris Convention (*e.g.* the risk is more of a toxic or corrosive nature or the material is solely used for scientific, medical, agricultural, commercial, industrial or educational purposes), the

person or entity which uses these materials on a professional basis, or which is the carrier of such materials, can be held liable under the national law of the Netherlands. This is set out in the Act of 30 January 1994 [Stb. 1994, No. 846] and the implementation Order of 15 December 1994 [Stb. 1994, No. 888]. This new legislation provides for strict liability for damage caused by dangerous substances (which include nuclear materials).

## **II. INSTITUTIONAL FRAMEWORK**

In the Netherlands, responsibility for nuclear activities is not centralised. It is shared by several ministers who consult each other and issue regulations jointly, as the case may be according to their particular competence. The ministers are advised by a number of councils set up under the Nuclear Energy Act. The private sector and the universities, in co-operation with public administration, take an active part in the development of nuclear activities.

### **1. Regulatory and Supervisory Authorities**

#### **a) *Minister for Housing, Spatial Planning and the Environment***

All questions concerning the health and safety aspects of nuclear activities, including radiation protection, are within the competence of the Minister for Housing, Planning and the Environment. Together with the Minister for Economic Affairs and the Minister for Social Affairs and Employment, he is responsible for the licensing of nuclear installations and fissionable materials [Nuclear Energy Act, Section 15]. Together with the Minister for Social Affairs and Employment and the Minister for Health, Welfare and Sports, he also grants licences for radioactive materials and ionising radiation-emitting apparatus etc. [Section 29].

#### **b) *Minister for Economic Affairs***

The Minister for Economic Affairs is competent for the licensing of nuclear installations and activities, together with the Minister for Housing, Spatial Planning and the Environment and the Minister for Social Affairs and Employment [Section 15].

#### **c) *Minister for Social Affairs and Employment***

As mentioned, the Minister for Social Affairs and Employment is responsible jointly with the above Ministers for licensing matters. In particular, he is competent for questions of safety at work [Sections 15 and 29].

**d) *Minister for Health, Welfare and Sports***

The Minister for Health, Welfare and Sports is responsible jointly with the Minister for Housing, Spatial Planning and the Environment and the Minister for Social Affairs and Employment for the licensing of radioactive materials and ionising radiation-emitting apparatus. [Section 29]. He is, in particular, responsible for the protection of individuals undergoing medical exposure.

**e) *Minister for Finance***

The Minister for Finance is the competent authority in regard to nuclear third party liability and compensation of nuclear damage in the Netherlands.

**f) *Minister for Foreign Affairs***

The Minister for Foreign Affairs is responsible for co-ordinating international co-operation in the nuclear field.

**g) *Other Ministers***

The Ministers for Agriculture, Nature Conservation and Fisheries; Education, Culture and Science; Justice; and Transport and Public Works are also consulted concerning nuclear activities which come within their particular sphere of competence.

**h) *Interministerial Commission for Nuclear Energy***

Established by Decree of the Ministers for Economic Affairs; Education, Culture and Science; Social Affairs and Employment; and Housing, Spatial Planning and the Environment, the Interministerial Commission is responsible for preparing and co-ordinating decisions in which many ministries are involved. It was set up for purposes of consultation and communication of information between ministries.

The Commission consists of representatives of the four Ministries referred to as well as all the other ministries concerned.

**2. *Advisory Bodies***

A number of consultative councils advise or make recommendations to the ministers responsible for implementing nuclear energy policy.

**a) *Reactor Safety Council***

The Reactor Safety Council was created pursuant to the Nuclear Energy Act as a body responsible for advising ministers on technical and or organisational matters relating to the safety of reactors [Nuclear Energy Act, Section 3].

The task of the Reactor Safety Council is to advise and make recommendations to the Minister for Social Affairs and Employment and the Minister for Housing, Spatial Planning and Environment, as well as to Parliament.

The Council consists of a maximum of twelve members appointed by the Minister for Social Affairs and Employment in agreement with the Minister for Housing, Spatial Planning and Environment.

The above Ministers may also appoint civil servants as advisors to the Council [Section 9].

**b) *Health Council of the Netherlands***

The Health Council of the Netherlands, which was set up in 1919, informs the ministers of current scientific developments in the field of public health, and is called upon to give its advice as and where necessary.

**3. Public and Semi-Public Agencies**

**a) Nuclear Research and Consultancy Group (NRG)**

The Nuclear Research and Consultancy Group (NRG) was established in 1998 following the merger of business activities in the nuclear field of the Energy Research Centre of the Netherlands (*Energieonderzoek Centrum Nederland – ECN*) and the Research and Testing in Electrotechnical Materials Company (*N.V.tot Keuring van Electrotechnische Materialen – KEMA*).

**i) *Legal status***

NRG is a joint venture whose capital is owned by ECN at 70% and by the KEMA at 30%.

**ii) *Responsibilities***

The NRG undertakes, sponsors and co-ordinates research and development in the energy supply field, and its activities cover the technical, economic and social aspects of various sources of energy. The NRG offers a wide range of services not only to energy utilities, government organisations and various branches of industry, but also to financial services and the medical sector, being Europe's largest producer of radioisotopes.

In addition, the NRG operates under contract with the European Community the High Flux Reactor (HFR) which has a thermal power of 45 MW. The HFR forms part of the Petten Establishment of the European Community Joint Research Centre.

**iii) *Structure***

NRG is administered by a board of partners (*Vennoten, directie ECN and the KEMA*), a board of management (*Directie*) and directors.

**b) *Research and Testing in Electrotechnical Materials Company (KEMA)***

*i) Legal status*

The KEMA (*N.V. tot Keuring van Electrotechnische Materialen*) is a shareholding company. Its shares are held by city and provincial administrations and electric utilities. It has legal personality and reports to its shareholders.

*ii) Responsibilities*

The KEMA is a service agency which carries out tests, research and development for electric utilities and provides advisory services to the government, also in the nuclear field. In particular, it makes investigations in the economic use of nuclear energy in electricity-generating plants.

*iii) Structure*

The KEMA is administered by a board of directors appointed by its shareholders. The board is made up of eleven members nominated for a maximum of four years. The chairperson is elected from among its members.

The Company is made up of the five following Divisions:

- the Research and Development Division which is responsible for R&D work aimed at improving the quality of all aspects concerned with the generation, transport, distribution and application of electrical energy;
- the activities of the Mechanical and Chemical Testing Division concern quality control and advisory services. They cover installations for electricity generation – conventional as well as nuclear – the transport and the distribution of electrical energy, from the building stage to the commissioning stage and actual operation;
- the Engineering and Consulting Division carries out assignments in the fields of electrical, mechanical, civil and constructional engineering and control and automation. The activities include preparatory studies, the design and execution of complete projects for electricity supply as well as specialised advice for new constructions, improvement of existing plants, application of new techniques and energy saving;
- in particular, the Reactor Physics Division provides advice and assistance in the commissioning and operation of nuclear power plants;
- finally, the General Affairs Division comprises the departments providing services as part of the general administration of the KEMA.

*iv) Financing*

The KEMA is financed by income from services supplied to ministries and utilities.

**c) *Foundation for Fundamental Research on Matter (FOM)***

*i) Legal status*

The FOM (*Stichting voor Fundamenteel Onderzoek der Materie*) is a foundation under the supervisory authority of the Minister for Education, Culture and Science and the Minister for Economic Affairs.

*ii) Responsibilities*

The FOM is active in the following areas:

- physics, including nuclear physics, plasma physics and high energy physics;
- fusion technology; isotope and ionising radiation applications.

The research sections of the FOM include five institutes and approximately fifty university groups.

*iii) Structure*

The FOM is administered by a board of governors and run by a director.

*iv) Financing*

The FOM is financed by government appropriations.

**d) *Central Organisation for Radioactive Waste (COVRA)***

The Central Organisation for Radioactive Waste (*Centrale Organisatie Voor Radioactief Afval – COVRA*) was created by the Netherlands Government in 1982 to assume responsibility for all aspects of the management of radioactive waste in the Netherlands. By Decree of 31 August 1987 [Stb. No. 176] COVRA was approved as collector of nuclear waste, whether spent fuel or ore residues.

*i) Legal Status*

COVRA is a non-profit-making company operating under Dutch private law. Its shareholders are the two nuclear power stations GKN and PZEM, the Netherlands Energy Research Foundation (ECN) and the state. The role and the influence of the state and the other shareholders have been expressly set out in a separate agreement between the shareholders. As a private company, COVRA must comply with all regulatory requirements, laws and licensing procedures to be allowed to operate.

*ii) Responsibilities*

In brief, COVRA's statutory task is to ensure the long-term management of all radioactive waste, including collection and transportation, treatment and conditioning, temporary and/or permanent storage and disposal, including the necessary research activities in line with government policy.

The main responsibilities of COVRA are:

- the development of an appropriate waste management system;
- transportation of waste;
- waste treatment, conditioning and storage;
- interim storage, design and construction of new installations and facilities for treatment and storage of all kinds of waste on a new site;
- maintaining adequate quality assurance for all waste management;
- the preparation, construction, operation and closure of a disposal site;
- the development of appropriate short-term and long-term financial management for the management of all radioactive waste;
- informing the public about the radioactive waste for which it is responsible.

At present, COVRA operates the transportation system for all low and intermediate level radioactive waste. COVRA further manages a number of waste treatment and conditioning installations for low and intermediate level radioactive waste; including a super compactor, a grouting installation and incinerators at the Sloe site in Borsele. In addition, COVRA operates an interim storage facility for conditioned or packaged low and intermediate-level radioactive waste at the same site.

The spent fuel elements from the nuclear power stations which have been sent to France or to the United Kingdom for reprocessing are due to be returned as vitrified high-level radioactive waste to the Netherlands within the next five years. Currently COVRA is in the process of modifying its operating licence with a view to accommodating the vitrified high level waste in a vault type of storage facility. Construction of this new facility commenced in early 1999.

*iii) Financing*

Since COVRA is required to be self-financing, a detailed waste-fee system has been developed to charge radioactive waste generators for the waste they transfer to COVRA. Provision is made for activities that will be undertaken in the distant future, and eventual profits will be used to adjust the fee system.

For the interim storage facility for high level waste, a different system of financing has been chosen. Since the number of producers of high level waste is limited to the nuclear power stations and



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research reactors, each potential user of the high level waste facility is to procure the resources for the construction and operation of this facility in proportion to its storage capacity requirements on the basis of advance payments to COVRA.