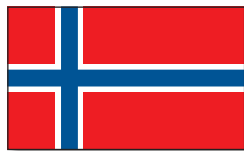


Nuclear Legislation in **OECD and NEA Countries**

Regulatory and Institutional
Framework for Nuclear Activities



Norway

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.

The OECD member countries are: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

* * *

This work is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

NUCLEAR ENERGY AGENCY

The OECD Nuclear Energy Agency (NEA) was established on 1st February 1958 under the name of the OEEC European Nuclear Energy Agency. It received its present designation on 20th April 1972, when Japan became its first non-European full member. NEA membership today consists of 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.

© OECD 2001

No reproduction, copy, transmission or translation of this publication may be made without written permission. Applications should be sent to OECD Publishing: rights@oecd.org or by fax (+33-1) 45 24 13 91. Permission to photocopy a portion of this work should be addressed to the Centre Français d'exploitation du droit de Copie, 20 rue des Grands Augustins, 75006 Paris, France (contact@cfcopies.com).

NORWAY

This chapter was last revised in 2001 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.

NORWAY

I. GENERAL REGULATORY REGIME	5
1. Introduction	5
2. Mining Regime.....	5
3. Radioactive Substances, Nuclear Fuel and Equipment	6
4. Nuclear Installations.....	6
a) <i>Licensing and inspection, including nuclear safety</i>	7
b) <i>Emergency response</i>	7
5. Trade in Nuclear Materials and Equipment.....	8
a) <i>Trade governed by nuclear energy legislation</i>	8
b) <i>Trade governed by radiation protection legislation</i>	8
c) <i>Trade governed by export/import control legislation</i>	9
6. Radiation Protection	9
7. Radioactive Waste Management	11
8. Non-Proliferation and Physical Protection	11
9. Transport	13
10. Nuclear Third Party Liability	14
II. INSTITUTIONAL FRAMEWORK	15
1. Regulatory and Supervisory Authorities	16
A. Ministerial Level.....	16
a) <i>Ministry of Health and Social Affairs</i>	16
b) <i>Ministry of Trade and Industry</i>	16
c) <i>Ministry of Foreign Affairs</i>	16
d) <i>Other Ministries</i>	17
B. Subsidiary Level	17
a) <i>The Norwegian Radiation Protection Authority (NRPA)</i>	17
b) <i>The Norwegian Nuclear Emergency Organisation</i>	18
2. Public and Semi-Public Agencies.....	19
<i>Institute for Energy Technology (IFE)</i>	19

I. GENERAL REGULATORY REGIME

1. Introduction

Although at present there are no plans for nuclear power projects in Norway, it was one of the first countries to embark upon a nuclear research programme and to enact legislation governing nuclear activities.

As far back as 1938, an Act on the Use of X-rays and Radium, etc. was passed to establish rules governing the use of radioactive substances [Act No. 1 of 18 June 1938]. This legislation remained in force until it was repealed and replaced by Act No. 36 of 12 May 2000 on Radiation Protection and Use of Radiation, which entered into force on 1 July 2000. Regulations adopted pursuant to the 1938 Act continue to remain in force pending the adoption of new regulations.

The nuclear sector is also regulated by Act No. 28 of 12 May 1972, as amended, on Nuclear Energy Activities (the Nuclear Energy Activities Act). This Act establishes a licensing regime for nuclear installations, nuclear fuels and radioactive substances and sets out a third party liability regime for compensation of nuclear damage. In addition, there are the Regulations of 1 March 1983 on the Production, Import and Sale of Radioisotopes.

With respect to the authorities responsible for the different fields of nuclear activities, the 1972 Act, as amended, provided that the Norwegian Nuclear Energy Safety Authority (*Statens Atomtilsyn*), established by Royal Decree of 9 February 1973 under the aegis of the Ministry of Industry and Energy, was the supervisory authority for the licensing of nuclear materials [Section 10], and that the State Institute of Radiation Hygiene (*Statens Institutt for Strålehygiene – SIS*) established by Royal Decree of 25 September 1953 under the aegis of the Ministry of Health and Social Affairs was also responsible for radioactive substances. On 1 January 1993, the Nuclear Energy Safety Authority and the State Institute of Radiation Hygiene were merged into one single body, the Norwegian Radiation Protection Authority (*Statens Strålevern*), and were placed under the authority of the Ministry of Health and Social Affairs [Nuclear Energy Activities Act, as amended by the Act of 18 December 1992].

2. Mining Regime

Under the General Concessions Act on the Acquisition of Waterfalls, Mines and Other Real Estate, general prospecting activities may be carried out by the state, local authorities and Norwegian nationals and companies [Act No. 16 of 14 December 1917, Chapter II]. A mine may not be operated without authorisation from the Ministry of Trade and Industry; the state and local authorities are exempted from this requirement. While existing legislation contains no express provisions giving the

state direct control over the ownership and distribution of products obtained from mining, the Ministry of Trade and Industry, when granting mining concessions, enjoys wide powers to impose conditions it deems necessary in the public interest. In practice, uranium prospecting in Norway is almost entirely carried out by the state. There is at present no activity in this field.

3. Radioactive Substances, Nuclear Fuel and Equipment

The Nuclear Energy Activities Act establishes the general regime governing nuclear fuels, radioactive products and nuclear substances. Pursuant to this Act, “nuclear fuels” mean fissionable materials in the form of uranium or plutonium metal, alloy or chemical compound; “radioactive products” mean other radioactive materials (including waste) which are produced or have become radioactive through exposure to ionising radiation incidental to the production or use of nuclear fuels; “nuclear substances” mean nuclear fuels, other than natural or depleted uranium, as well as radioactive products, with the exception of radioisotopes used for industrial, commercial, agricultural, medical or scientific purposes [Section 1(a), (b) and (c)].

The Act provides that it is unlawful to manufacture, own, store, handle, transport, sell or otherwise dispose of nuclear substances without a permit from the Ministry of Health and Social Affairs [Section 5(1) and (2)].

Permits may be granted for a limited or indefinite period and may cover one or more of the above activities involving nuclear substances [Section 5(2)]. The conditions subject to which permits are granted may be amended where necessary for safety reasons or to ensure that compensation will be provided [Section 8(2)].

The Ministry may make exceptions to the obligation to obtain a permit, provided that certain conditions are complied with [Section 5(1)]. A permit may be revoked if its requirements are being substantially or repeatedly disregarded or for safety reasons [Section 9].

The King may decide that any activities involving nuclear fuels or radioactive products other than nuclear substances should be subject to notification or licensing [Section 5(3)]. He may issue rules regarding the manufacture, handling, packaging, storage, etc. of nuclear fuels or radioactive materials [Section 6].

The manufacture of radioisotopes is subject to a permit issued by the Norwegian Radiation Protection Authority [Regulations of 1 March 1983, Section 2].

The Regulations of 1 June 1979 exempt radioisotopes produced for medical use by the Institute for Energy Technology (*Institutt for Energiteknikk* – IFE) from the above-mentioned procedure [Section 3(1)(c)].

4. Nuclear Installations

Although no nuclear power plant has ever been established in Norway, there is a comprehensive legal framework for licensing the construction and operation of nuclear installations. This legal regime is laid down by the Nuclear Energy Activities Act and its relevant provisions are described below.

a) *Licensing and inspection, including nuclear safety*

It is prohibited to construct, own or operate a nuclear installation without a licence [Section 4].

The competent authority in matters of licensing is the Ministry of Health and Social Affairs; the Norwegian Radiation Protection Authority advises the Ministry in connection with the safety aspects of nuclear installations and makes recommendations on licensing applications [Section 10]. However, the Minister of Petroleum and Energy is responsible for the licensing of nuclear power plants.

The licence for a nuclear installation covers both construction and operation. However, before the installation is put into operation, the operator concerned must fulfil certain requirements which require the approval of the Norwegian Radiation Protection Authority [Section 11]. The Authority exercises continuous supervision over all operations and ensures that all the conditions prescribed by the licence are being met [Section 13].

Licences are granted for a specific site and are, as a rule, limited in duration. A separate licence is required for the transfer of a nuclear installation to a new owner or operator [Section 4].

A licence is granted when [Section 11(2)]:

- the technical standards of the installation, the operating regulations, safety measures and accident emergency plans are satisfactory;
- the management and personnel of the installation have the necessary qualifications and clearly defined spheres of responsibility; and
- all the necessary authorisations have been obtained in accordance with other legislative provisions.

Concerning the inspection of nuclear installations, the Norwegian Radiation Protection Authority may, at any time, demand access to any such installation and its surrounding area [Section 14].

Norway ratified the 1994 Convention on Nuclear Safety on 29 September 1994.

At present, only one licensee has been granted permission to own and operate nuclear installations in Norway, namely the Institute for Energy Technology, which operates research reactors at Kjeller and Halden.

b) *Emergency response*

The King may decide that municipal and county authorities in the area in which a nuclear installation is or will be situated must collaborate with the operator of that installation in respect of safety measures for protection of the public in that area. In accordance with rules to be issued by the King, a plan should be prepared for safety and relief measures in the event of an incident including, where necessary, compulsory evacuation [Section 49].

Where an incident has occurred within the national territory, the Ministry of Health and Social Affairs may order all persons who were in the danger area at the time of the incident to identify themselves to the Municipal Medical Officer or the police within a given time-limit and supply the information necessary to register the damage. They must also undergo a medical examination when considered necessary by the health authorities [Section 50].

On 26 September 1986, Norway gave its consent to be bound by the provisions of the 1986 Convention on Early Notification of a Nuclear Accident.

5. Trade in Nuclear Materials and Equipment

Nuclear trade in Norway is governed by several basic principles, namely nuclear non-proliferation (*i.e.* safeguards), nuclear safety, physical protection and radiation protection. These considerations are reflected in the legislation in force and such trade is subject to a licensing regime, pursuant to the legislation governing nuclear energy, radiation protection and export and import control. These three complimentary approaches mean that several authorities are involved in the licensing procedures for trade in nuclear materials and equipment.

a) Trade governed by nuclear energy legislation

The Nuclear Energy Activities Act covers trade in nuclear fuel products and radioactive substances (for an explanation of these terms, see *supra*, Section 3 “Radioactive Substances, Nuclear Fuel and Equipment”). The Act provides that it is unlawful to manufacture, own, store, sell, or otherwise hold or dispose of nuclear substances without a permit from the Ministry of Health and Social Affairs [Section 5(1)]. The permit may be granted for a limited or indefinite period, or on an individual basis, and may be restricted to a special authorisation for one of the above activities [Section 5(2)]. The granting of a permit to handle, own or sell radioactive substances is subject to such safety conditions as are deemed necessary [Section 8(1)]. Regulations on how to obtain a permit for possession, disposal and transportation of nuclear materials, are laid down in a Royal Decree of 12 May 2000, supplementing the Act of 1972. In addition, the Regulations for the Physical Protection of Nuclear Material, laid down by the Royal Decree of 2 November 1984, provide that persons responsible for nuclear materials must establish a system for physical protection of such materials during their storage and transport [Section 12]. The sender, in co-operation with the Norwegian Radiation Protection Authority and the recipient, must ensure in advance that during shipment the nuclear material will be subject at least to the minimum level of physical protection set out in Appendix 3 to the Regulations [Section 17].

b) Trade governed by radiation protection legislation

The Regulations of 1 March 1983 issued by the Ministry of Health and Social Affairs regulate the manufacture, import and sale of radioisotopes used for industrial, commercial, agricultural, medical or scientific purposes, in order to ensure radiation protection [Section 1].

The import and sale of radioisotopes require a permit from the Norwegian Radiation Protection Authority [Sections 3 and 4]. Generally, applications for such permits are made by those involved in such trade, but end-users may also apply. Permits are issued on a case-by-case basis, but may also be

granted as a general permit covering several years. The main criteria applied in respect of the issue of a general permit aim to prove the necessity of such activity and the observance of the relevant radiation protection regulations. The Institute for Energy Technology has a general permit for the import and sale of all types of radioisotopes.

The Norwegian Radiation Protection Authority is empowered to issue detailed rules concerning registration and reporting of imports and sales of radioisotopes and such conditions are set out in a document of 20 June 1984 entitled “Conditions for Production, Import and Sale of Radioactive Material in Norway”. These conditions are general and concern, in particular, safety procedures, quality control and the requirements concerning reporting to the Authority.

c) *Trade governed by export and import control legislation*

Act No. 32 of 6 June 1997 on Import and Export Control authorises the King to regulate the import or export of any article, and to establish such licensing regimes as may be appropriate for the article or product in question [Section 1]. The Act is general in its scope, and thus it applies equally to nuclear or radioactive materials of any kind.

Regulations issued to implement the two previous Acts of 13 December 1946 on import and export control are still in force. They authorise the Ministry of Foreign Affairs to establish a list of goods that require an import licence [Regulation No. 1596 of 1 November 1983] and a list of goods that can be exported without restriction [Regulation No. 52 of 10 January 1989]. At present these regulations do not specify licensing requirements for nuclear or radioactive materials.

In addition, Act No. 93 of 18 December 1987 on Control of Strategic Goods, Services and Technology sets out stringent measures governing export control for nuclear materials and equipment, and strategic or sensitive goods, services and technology. The Ministry of Foreign Affairs has established an export control regime to implement this Act. Through its Regulation No. 51 of 10 January 1989, it set out a list of goods requiring an export licence. Any nuclear material, technology or equipment that is strategic or may have a military use (dual-use or which may be converted to military use) is covered by this export control regime.

Finally, Regulation No. 157 of 10 March 1989, adopted pursuant to Act No. 93 of 18 December 1987, prohibits generally the export of heavy water from Norway [Section 1]. The Ministry of Foreign Affairs may, however, grant an export licence when the heavy water concerned is of insignificant quantity and will be used exclusively for medical, research or industrial purposes [Section 2]. Since 1980, Norway exports nuclear materials and equipment only to those countries where all nuclear activities are covered by the International Atomic Energy Agency safeguards.

6. Radiation Protection

Legislation on radiation protection in Norway is made up of a series of laws and regulations, the most important of which is Act No. 36 of 12 May 2000 on Radiation Protection and Use of Radiation. The purpose of the Act is to protect human health from the harmful effects of radiation and to promote the protection of the environment. The Act applies to the manufacture, import, export, transport, transfer, possession, installation, and use of radiation sources as well as the handling and disposal of

their waste. It also covers emergency planning and preparedness. More detailed administrative regulations will be adopted pursuant to this Act.

The Ministry of Health and Social Affairs is the competent authority in matters of radiation protection. Under its aegis, the Norwegian Radiation Protection Authority is responsible, *inter alia*, for ensuring that work involving ionising radiation is properly carried out. In this respect it co-ordinates its activities with the Labour Inspectorate [Royal Decree of 25 September 1953 and Royal Decree of 23 January 1976].

Regulations No. 1157 on Work Involving Exposure to Ionising Radiation, were issued on 14 June 1985 by the Ministry of Local Government and Labour in implementation of Act No. 4 of 4 February 1977 on the Protection of Workers and their Working Environment. They prescribe protective measures during work with ionising radiation and provide that employees may not be assigned to work involving radiation where the effective dose equivalent exceeds 50 millisieverts (mSv) over a period of 12 months; it is planned to lower the limit to 20 mSv. For adolescents between 16 and 18 years of age, the dose limit is set at 5 mSv for that same period [Section 4]. Pregnant women and children below the age of 16 may not be assigned to work which involves exposure to ionising radiation [Sections 4 and 6]. Other provisions of the Regulations provide for medical examinations, duties of employers, etc. The Regulations also apply to offshore petroleum activities in accordance with the Regulation on the Protection of Workers and their Working Environment in relation to Petroleum Activities.

Several regulations provide for radiation protection in a number of activities, in particular for industrial radiography, industrial gauges and well logging. Furthermore, the Regulations of 24 June 1977, adopted pursuant to Act No. 47 of 14 June 1974 on Approval of Health Personnel, deal with the use of ionising radiation in educational establishments and the approval procedure for radiographs.

The Royal Decree of 23 January 1976, issued pursuant to the 1938 Act, lays down detailed provisions on the supervision and use of installations, apparatus, materials and substances which release ionising and other radiation representing a hazard to health. The text specifies the authority competent in supervisory matters, namely the State Institute of Radiation Hygiene (now the Norwegian Radiation Protection Authority) [Section 1], as well as the type of devices concerned [Section 3] and the duties of the persons using them [Section 5].

The following are subject to supervision by the Norwegian Radiation Protection Authority:

- all installations, apparatus, materials and substances which produce ionising radiation and are used for medical, veterinary, scientific, industrial or other purposes;
- waste and discharges of substances which produce ionising radiation; and
- use of lasers, radar, microwaves and other electromagnetic radiation representing a danger to health.

Such equipment and materials cannot be sold or used without prior notification to the Authority, which may prohibit transactions or use before it has granted a licence to this effect. Furthermore, the Authority must be notified of new installations or extensions or major alterations to existing facilities; it must grant permission before they are used [Section 4].

Certain installations, facilities and other devices may be exempted from these obligations by the Minister of Defence [Section 3].

A Royal Decree of 2 November 1979 prescribes the qualifications required for using X-ray devices for medical purposes.

In November 1988, the State Institute of Radiation Hygiene (now the Norwegian Radiation Protection Authority) issued Guidelines on Radon Measurements in Dwellings, based on the results of large-scale surveys carried out in Norway and on conclusions reached by national experts and competent international organisations (International Commission on Radiological Protection, World Health Organisation). The Authority concluded that radon was the main source of collective exposure to ionising radiation in the country and made recommendations on the permissible average yearly radon concentration, in existing and future dwellings. In the first case if the concentration is higher than 200 Bq/m³ (becquerel), consideration should be given to lowering that level, and if higher than 800 Bq/m³, remedial action should be taken. A maximum level of 200 Bq/m³ is recommended for future dwellings. Similar Guidelines on Radon Measurements for Building Grounds were also issued in November 1988.

7. Radioactive Waste Management

The 1972 Act on Nuclear Energy Activities specifies that the Norwegian Radiation Protection Authority (NRPA) must exercise continuous supervision over the operation of nuclear installations, including the disposal of radioactive waste [Sections 11 and 13], while the 1983 Regulations on Production, Import and Sales of Radioisotopes provide that the NRPA prescribes the conditions governing radioactive waste disposal operations and issues the required permits [Sections 2 and 4].

At the international level, Norway ratified the 1972 London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter on 4 April 1974, and its 1996 Protocol on 16 December 1999, and the 1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management on 12 January 1998.

8. Non-Proliferation and Physical Protection

The 1972 Act provides that the King may take the necessary measures to ensure that nuclear installations, equipment, fuel, radioactive products and other materials used for nuclear energy purposes, which are subject to international safeguards pursuant to agreements to which Norway is a party, are used only for non-explosive, peaceful purposes [Section 51]. The Act also specifies that persons engaged in activities in accordance with the Act have an obligation to preserve secrecy concerning confidential technical information acquired in the course of their work [Section 53].

As regards non-proliferation, Norway has been a Party to the 1968 Treaty on the Non-Proliferation of Nuclear Weapons since 5 March 1970 but has not adopted domestic legislation in this respect. It also ratified the 1996 Comprehensive Nuclear Test Ban Treaty on 15 July 1999.

As regards physical protection, Norway ratified the 1979 Convention on the Physical Protection of Nuclear Material on 15 August 1985, although it had already enacted legislation on this subject. A Royal Decree of 2 November 1984, issued pursuant to the 1972 Act, lays down Regulations for the

Physical Protection of Nuclear Material. These Regulations aim to establish conditions which will minimise the possibilities of theft of nuclear materials and sabotage of nuclear installations. They lay down detailed provisions concerning the obligations of nuclear operators and specify the powers of the competent authorities regarding physical protection [Section 1].

The Norwegian Radiation Protection Authority (NRPA) is the competent body for the physical protection of nuclear materials and is empowered to make rules in this respect.

If theft or sabotage is reported, the Ministry of Health and Social Affairs acts as the co-ordinating body for the steps to be taken by the Ministry of Justice and the Ministry of Foreign Affairs; the former Ministry is responsible for initiating the operations to counteract such theft or sabotage while the latter Ministry is in charge of notifying other countries in accordance with the Convention on the Physical Protection of Nuclear Materials [Annex II].

Persons responsible for nuclear materials and equipment (operators pursuant to the 1972 Act) must establish and maintain a system for physical protection of the equipment and materials during storage, processing and transport. They must prepare a safety report on physical protection for the approval of the Ministry of Health and Social Services. This report must take into account radiation protection aspects and criticality hazards and be kept up to date regarding any changes or any acquisition of nuclear materials requiring stricter safety measures [Section 12].

Operators must also appoint one or more persons to be responsible for the physical protection aspects of stored material or material being processed or shipped. They are responsible for ensuring that the physical protection system operates in accordance with the rules issued by the NRPA [Section 12].

The Regulations lay down specific requirements for protecting nuclear material in storage and for nuclear equipment, and it divides the materials into three Categories (I, II and III) according to their radioactivity and weight [Section 14 and Annex I]. The premises where they may be housed are also divided into three areas for surveillance purposes: restricted, protected and vital; access to these areas differs according to their classification and detailed instructions are provided for the setting up of protection and alarm systems for each type of area, aside from the general alarm system, directly connected to the police through a continuously manned guard centre [Section 15].

The Regulations also provide for the preparation of a contingency or emergency plan, which will also apply to transport, in consultation with the police. The plan must take into account the division of responsibility between the different bodies involved and must include the necessary protective equipment to be made available to the police. The safety report prepared by the operator must also include arrangements for effective action by personnel and the police in the event of theft or sabotage of nuclear material [Section 13].

Adoption of the Regulations gave rise to an amendment of the Penal Code [Section 152(a)] to include a provision dealing with unlawful possession, utilisation, transfer or distribution of plutonium or uranium, thereby endangering human life, health or property or the environment. Such acts are liable to a fine or a term of imprisonment of up to four years. Acts which may result in loss of human life or extensive damage to property are punishable by the penalty prescribed in Section 148 of the Penal Code, namely imprisonment ranging from two to twenty-one years, but not less than five years where death or serious injury has occurred.

The provisions on the physical protection of nuclear material during transport are discussed *infra* under Section 9 “Transport”.

9. Transport

The basic framework for the rules governing the transport of nuclear fuels and certain radioactive materials is established in the 1972 Act on Nuclear Energy Activities; the transport of radioactive materials not covered by that Act falls within the scope of the 2000 Act on Radiation Protection and Use of Radiation.

The Norwegian Radiation Protection Authority (NRPA) is the competent authority for the transport of radioactive materials by road and rail. The Maritime Directorate of the Ministry of Foreign Affairs is the authority responsible for issuing regulations on the maritime transport of dangerous goods; regulation of the transport by air of radioactive materials is the responsibility of the Civil Aviation Administration [Act of 11 June 1993 on Civil Aviation, Section 9(1) and (4); this assignment of authority was confirmed by the Ministry of Transport and Communication’s decision of 25 March 1994].

The different modes of transport are regulated by provisions specific to each mode as summarised below. It should be noted that the international regulations applying to the different modes of transport of radioactive materials are based on the IAEA’s Regulations for the Safe Transport of Radioactive Materials.

The Directorate for Fire and Explosion Prevention, as the competent authority for the transport of dangerous goods by road and rail in Norway, works in co-operation with the NRPA as regards Class 7 (radioactive) materials. The Regulations of 20 December 1996 on the Transport of Dangerous Goods by Road and Rail state that the International Regulations for Carriage of Dangerous Goods by Road (ADR) and Rail (RID) shall apply to both international and domestic transport of dangerous goods.

As regards maritime transport, the relevant provisions of the International Maritime Dangerous Goods Code issued by the International Maritime Organization (IMO) and the provisions of the International Convention for the Safety of Life at Sea (SOLAS) are applied in Norway pursuant to Regulations issued by the Maritime Directorate on 30 November 1979.

Pursuant to the Regulations of 15 May 1979 issued by the Civil Aviation Administration, air transport of radioactive materials is carried out in accordance with technical instructions governing safety for the air transport of dangerous goods of the International Civil Aviation Organisation (ICAO).

The Regulations on the Physical Protection of Nuclear Material of 12 November 1984 contain provisions establishing basic rules for physical protection of nuclear material during transport by road, rail, sea and air. These provisions apply in addition to the different regulations referred to above.

The physical protection of all shipments must be approved and authorised in advance by the NRPA. The licences specify the conditions applying to each particular shipment. The Authority may only grant a general permit for shipments of Categories II and III material, in which case no further notification is required for individual shipments [Section 17(c)].

Only authorised persons may carry out shipments and the operator and the authorities concerned must be cautious in dealing with information which could jeopardise physical protection [Section 17(a)].

Shipments of nuclear materials are subject to agreements being concluded prior to the shipment between the sender and the recipient, and the sender and the transport firm, respectively [Section 17(f)]. The operator must also ensure that the shipment remains as short a time as possible in transit, that as few reloadings as possible occur and that shipments do not take place at regular, known times [Section 17(a)].

The operator must establish an external transport executive body for the transport operation and inform the parties concerned accordingly; that body must maintain telephone or radio contact with the transport vehicle and/or the escort vehicle and based on the information received, give appropriate instructions relating to irregularities during the transport to the transport personnel, the police or the road authorities as the case may be [Section 17(e)].

The Regulations set out special provisions in connection with the transport of Category I material (with the highest fissile content) for different modes of transport. These are summarised below [Section 18].

As regards road transport, the transport vehicle must be constructed and equipped to resist attack, be equipped with a two-way communication system and be manned by at least two persons. The transport must also have a police escort and the position of the vehicle must be reported to the transport executive body several times an hour [Section 18(a)].

Transport by rail must be carried out in a freight train or a separate carriage in a passenger train [Section 18(b)]. The transport must have a police escort and the accompanying guard must be equipped with a two-way communication system.

The sea transport of Category I material must be carried out with a police escort and the consignment placed in a locked and sealed room or container.

Transport by air must take place in an especially selected aeroplane, with a police escort [Section 18(b)].

10. Nuclear Third Party Liability

The regulations governing nuclear third party liability are set out in the Act of 12 May 1972 on Nuclear Energy Activities, as amended. This Act, which enabled Norway to ratify the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy (on 2 July 1973) and the 1963 Brussels Supplementary Convention (on 7 July 1973), applies the principles of the Paris Convention, including the strict liability of the operator, which is limited in amount and in time. The Act applies to nuclear damage caused by an incident occurring in Norway or in another country Party to the Paris Convention.

The Ministry of Health and Social Affairs may exempt from the provisions of the Act certain types of nuclear installation, nuclear fuel, radioactive products or substances which, in its opinion, constitute no significant hazard [Section 2(1)].

Liability under the Act is vested exclusively and strictly in the operator of a nuclear installation [Sections 20–28]. Therefore, claims for compensation for nuclear damage for which the operator is liable may not be brought against any person other than the operator himself, or his insurer or guarantor [Section 27].

The liability of an operator for one and the same nuclear incident is limited to 60 million Special Drawing Rights (SDR) [approximately 500 million Norwegian kroner (NOK)] [Section 30(1)]. However, the King may, if the size and nature of the installation or operation so warrant, lower that amount to SDR 5 million (approximately NOK 42 million).

To cover his liability, the operator of a nuclear installation must take out and maintain insurance or such other security as the Ministry of Health and Social Affairs authorises [Section 35(1) and (2)]. The Ministry may approve separate insurance or other security to cover liability for incidents occurring during transport [Section 35(3)].

Whenever a nuclear substance is transported to or from a foreign country, the operator liable under the Act must supply the carrier with a certificate of financial security for the carriage issued by or on behalf of the guarantor [Section 38(1)].

If claims for compensation against a nuclear operator cannot be satisfied by the maximum amount of that operator's liability, but are valid under the Act, the Act provides for the claims to be paid out of government funds up to a total amount of SDR 300 million [Section 40(1)].

A claim is extinguished if it is not acknowledged or if legal action is not instituted within ten years of the date of the nuclear incident [Section 34(1)]. If the incident is attributable to nuclear substances which have been stolen, lost or abandoned, the time limit for bringing claims is twenty years from the date of the theft, loss or abandonment [Section 34(2)].

Norwegian courts have jurisdiction to hear cases on the liability of an operator in respect of nuclear damage if the nuclear incident occurred wholly or partly on Norwegian territory, if it occurred on the high seas at a time when the substances in question were being carried between countries not party to the Paris Convention, or if the place of the incident cannot be determined with certainty and the installation of the operator liable is situated in Norway [Section 45(1)].

Lastly, Norway ratified the 1988 Joint Protocol relating to the Application of the Vienna Convention and the Paris Convention on 11 March 1991, and it ratified the 1971 Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material on 16 April 1975.

II. INSTITUTIONAL FRAMEWORK

In Norway, responsibility for nuclear matters is vested mainly in the Ministry of Health and Social Affairs. The Ministry is assisted in its work by bodies which have advisory and supervisory authority.

Several other ministries also have certain responsibilities in the nuclear field when related activities are within their competence.

1. Regulatory and Supervisory Authorities

A. Ministerial Level

a) *Ministry of Health and Social Affairs*

The Ministry of Health and Social Affairs is the competent authority pursuant to the 1972 Act on Nuclear Energy Activities and the 1984 Regulations for the Physical Protection of Nuclear Material. The Ministry issues licences for nuclear installations.

The Ministry is also responsible for the protection of public health and is therefore competent to deal with questions of radiation protection [Act No. 36 of 2000 on Radiation Protection and Use of Radiation]. In this capacity, it is not only in charge of drafting legislation in this field but also of ensuring that work involving ionising radiation is properly carried out.

The Ministry performs its licensing and control functions and, to some extent, drafts regulations through the NRPA for which it has administrative responsibility [1972 Act on Nuclear Energy Activities, as amended by the Act of 18 December 1992].

b) *Ministry of Trade and Industry*

The Ministry of Trade and Industry has general co-ordinating functions and deals with budgetary matters concerning research and development in the field of nuclear energy.

This Ministry also deals with matters concerning prospecting for deposits of uranium, thorium and other ores or minerals which may be of use for the exploitation of nuclear energy [1917 General Concessions Act on the Acquisition of Waterfalls, Mines and other Real Estate].

c) *Ministry of Foreign Affairs*

The Ministry of Foreign Affairs is the competent authority under Act No. 32 of 6 June 1997 on Export and Import Control, and thus has responsibility under that legislation for export and import of nuclear materials. It is also responsible for the export control regime established by Regulation No. 51 of 10 January 1989, made pursuant to Act No. 93 of 18 December 1987 on Export Control for Strategic Goods, Services and Technology, which also applies to sensitive nuclear material. The Ministry of Foreign Affairs is also empowered to grant exceptional export licences for heavy water [Regulation No. 157 of 10 March 1989, adopted pursuant to Act No. 93 of 18 December 1987].

The Ministry is responsible for international relations and agreements in the nuclear field. It also co-ordinates Norwegian participation in this field in international organisations.

d) Other Ministries

The Ministries of Justice, Agriculture, Transport and Communications, the Environment, Culture and Science, and Local Government and Labour may also be called upon to deal with legislative or administrative questions in the nuclear field.

B. Subsidiary Level

a) The Norwegian Radiation Protection Authority (NRPA)

The NRPA (*Statens Strålevern*), as explained earlier in this study, was established in 1993 through a merger of the Nuclear Energy Safety Authority and the State Institute of Radiation Hygiene. The NRPA is placed under the Ministry of Health and Social Affairs for administrative purposes and has taken over the responsibilities of both of these bodies.

The Authority advises the Ministry of Health and Social Affairs in its capacity as the highest specialised agency on questions of nuclear safety and is the supervisory authority in that field [1972 Act, Section 10].

The Authority may, on its own initiative, put into effect all the measures it deems necessary from a safety viewpoint and is responsible for ensuring that all rules and conditions connected with safety precautions are complied with. It is responsible for the licensing aspects of nuclear installations and must exercise continuous supervision over the construction and operation of such installations [1972 Act, Sections 11 and 13].

It is also empowered to license and control all equipment and apparatus emitting ionising radiation with regard to radiation protection and public health and may issue the necessary regulations for that purpose [Royal Decree of 23 January 1976]. In addition, it grants permits for the production, import and sale of radioisotopes, and issues conditions governing their production, storage, labelling and quality control, as well as conditions regarding disposal, radiation protection and facilities and equipment connected with such materials [Regulations of 1 March 1983 on the Production, Import and Sale of Radioisotopes, Sections 2-4].

Furthermore, the NRPA is responsible for research and educational activities in the fields of dosimetry, radiation hygiene and other related topics. The research work covers the following sectors: medical radiation physics, industrial radiation physics and medicine.

The NRPA has five departments: Nuclear Safety, Health Physics, Radiation Medicine, Environmental Protection and Administration and Information.

It is funded by the ordinary budget allocated to the Ministry of Health and Social Affairs and through project contracts with other ministries, *i.e.* the Ministry of Foreign Affairs and the Ministry of the Environment.

b) *The Norwegian Nuclear Emergency Organisation*

Based on the Royal Decree of 26 June 1998 the government decided to establish the above Organisation made up of representatives of the following entities:

- the ministries involved;
- the Ministerial Co-ordination Committee;
- the Crisis Committee for Nuclear Accidents;
- the Advisors to the Crisis Committee for Nuclear Accidents;
- the Secretariat for the Crisis Committee;
- the regional emergency organisations.

The ministries are entirely responsible for emergency preparedness in their respective areas of competence. In order to deal effectively with the early phase of a nuclear accident, the ministries have transferred responsibility for remedial actions to the Crisis Committee for Nuclear Accidents.

The Ministerial Co-ordination Committee is responsible for ensuring co-operation and co-ordination between the different ministries and ensuring that the necessary resources are made available for this purpose. Its members are the Ministries of Health and Social Affairs, Justice, Defence, Foreign Affairs, Environment, Agriculture, Trade and Industry, Education, Research and Church Affairs, Transport and Communications and Fisheries. The Committee is headed by the Ministry of Health and Social Affairs.

The Crisis Committee for Nuclear Accidents is made up of representatives of the following institutions:

- Norwegian Radiation Protection Authority (NRPA);
- Directorate of Civil Defence and Emergency Planning;
- Norway Military Headquarters;
- Police Department of the Ministry of Justice;
- Norwegian Board of Health;
- Norwegian Food Control Authority.

It is headed by the NRPA representative.

The Committee is responsible for establishing and implementing remedial actions in the event of a nuclear accident or an impending nuclear accident representing a potential threat to Norway. It must organise the evacuation of the population if the situation represents a direct threat to health and life; provide shelter, administer stable iodine, block and secure contaminated areas; impose short-term

restrictions on production and distribution of foodstuffs; and advise on the consumption of dairy products.

Wherever possible, the Committee must discuss its decisions with the Ministries before acting on them.

The Advisors to the Crisis Committee for Nuclear Accidents are representatives of 12 organisations and institutions with the expertise and competence required to organise emergency measures, regarding both the management of nuclear accident situations and the further development and maintenance of emergency preparedness. They are representatives from the Norwegian Defence Research Establishment, the Institute for Energy Technology, the Norwegian Meteorological Institute, the Geological Survey of Norway and the Norwegian Agricultural Inspection Service, etc. During accident situations, their tasks are:

- to submit and make available all information, data and measurements relevant to emergency situations, and to make forecasts for radioactive dispersion, fallout and radiation doses to the public;
- to advise on preventing or reducing the radiological and economic consequences of a nuclear accident in Norway.

The Secretariat for the Crisis Committee (the Nuclear Safety Department in the NRPA) is responsible, *inter alia*, for alerting the Nuclear Emergency Organisation and for warnings in an emergency situation; it also organises a telephone watch so that the Organisation can be alerted at all times.

The regional emergency organisations are established under the direction of the Chief Administrative Officers in the Norwegian counties.

2. Public and Semi-Public Agencies

Institute for Energy Technology (IFE)

i) Legal Status

The Institute for Energy Technology (*Institutt for Energiteknikk* – IFE) was set up by Royal Decree of 30 May 1947 as the Institute for Atomic Energy (*Institutt for Atomenergi* – IFA) and became an independent foundation in 1953. It reports to the Ministry of Petroleum and Energy. In 1980, its name was changed to its present one, in line with recent developments in its work and adapted to national goals, as specified by the authorities.

ii) *Responsibilities*

The Institute's mandate, as defined in 1980, is to conduct research and development, analyses, etc. within the field of energy, including nuclear research and other fields particularly suited to the Institute's competence.

The IFE is the national centre for nuclear research and development, and as such, it carries out work in nuclear safety, environmental protection, waste management and materials technology.

The IFE owns and operates the JEEP II reactor, a 2 MW, heavy water-cooled and moderated research reactor, as well as the 20 MW Halden Boiling Water Reactor which is used in an International Project, set up in 1958 under the auspices of the OECD Nuclear Energy Agency (OECD/NEA) for the purpose of carrying out a joint programme of research and experiments between national centres and nuclear power manufacturing industries from OECD Member countries in connection with the operation of a boiling water reactor.

IFE also produces and distributes radioisotopes; it has a gamma radiation plant in operation and arranges courses in data processing and isotope applications.

The activities of IFE are geographically divided between two sites, Kjeller, which is the main research centre, and Halden, where the OECD/NEA Halden Reactor Project is located.

The research and development activities are performed in the following sectors:

- energy and systems technology;
- petroleum technology;
- OECD/NEA Halden Reactor Project;
- materials technology;
- isotopes and chemistry;
- industrial chemistry;
- physics.

The Institute operates a waste treatment plant which processes radioactive waste from its own activities and from outside sources, as well as the Combined Storage and Disposal Facility for low and intermediate level waste in Hindalen.

iii) *Structure*

The Institute is managed by a board consisting of six members, one appointed by the government, one by the firm Norsk Hydro A/S and two by the Royal Council of Scientific and Industrial Research. The remaining two members are chosen by and from among the staff and are appointed by the government.

A managing director, appointed by the board, is entrusted with the day to day management of the Institute.

iv) Financing

The Institute's yearly expenditure is covered by grants from the Ministry of Trade and Industry and by income from research and development work undertaken on a contractual basis with other national and foreign firms and institutions.

In connection with the OECD/NEA Halden Reactor Project, the majority of the programmes are financed by contributions from the Parties and Associated Parties to the Halden Agreement.