

BELGIUM

1. NATIONAL AND REGULATORY FRAMEWORK

1.1 National framework

1.1.1 *National policy*

The construction and the operation of nuclear installations are regulated by the federal government. These regulations are laid down by the Royal Decree of 20 August 2001. They implement the Law of 15 April 1994 on the protection of the population and the environment against the hazards of ionising radiation and the establishment of the Federal Agency for Nuclear Control (FANC), and also to implement a number of European directives, the European Basic Safety standards (Council Directive 96/29/Euratom) being the most important one.

Belgium has ratified the London Convention on sea dumping of waste and has subscribed to the prohibition of the dumping of low-level radioactive waste into the ocean.

The transport of radioactive waste must be carried out in accordance with the relevant international modal regulations (ADR for road transport, RID for rail transport, IMO dangerous goods code for sea transport and the ICAO Technical Instructions for air transport). Furthermore, the follow-up of the transboundary movements of radioactive waste must comply with the relevant European regulations.

1.1.2 *Institutional framework*

The regulatory function for radiological protection and nuclear safety, including waste safety, is assumed by the Federal Agency for Nuclear Control, established by the law of 15 April 1994. It is a government agency with its own board of directors. The daily management is entrusted to the general manager.

The role of the Agency can be summarised as follows:

- To prepare laws and regulations related to radiation protection and nuclear safety.
- To follow-up the scientific and technical evolution and to propose new regulations or amendments to existing regulations to the Minister who is politically responsible for radiation protection and nuclear safety, in order to keep those regulations up to date.
- To implement and enforce those regulations.
- To ensure compliance with those regulations.

The Agency is also the scientific and technical support of the Ministry of Foreign Affairs in matters related to radiation protection and nuclear safety, and to the Ministry of the Interior for matters related to emergency preparedness. Furthermore, the Agency has been given the duty of informing the general public on radiation protection and nuclear safety.

1.2 Regulatory framework

1.2.1 Regulatory function

With respect to the implementation and enforcement of the regulations, the main functions of the Federal Agency for Regulatory Control are to handle the applications for different types of licenses (operation of nuclear facilities, decommissioning of nuclear facilities, transport and import of radioactive material, distribution of radio-pharmaceuticals, medical and industrial applications of ionising radiation, etc.), for recognition of qualified experts in radiological protection and medical radiation physics, as well as for recognition of medical doctors in charge of medical surveillance of workers.

Depending on the type of installation and the nature and level of the hazards involved, the license is issued as a royal decree, signed also by the Minister who is politically responsible for nuclear safety and radiation protection, or as a license signed by the general manager of the Agency or somebody who has been duly given mandate to sign.

After granting the licenses, the Agency is also in charge of ensuring compliance with the particular provisions of the licenses.

1.2.2 Organisation and resources

According to the law of 15 April 1994, which stipulates that regulatory and control functions of the Agency must be clearly separated, three departments have been set up: the licensing department, the control department and the financial and administrative department.

The licensing department is in charge of handling the license applications and to make proposals for decisions and additional particular conditions attached to the license. For so-called nuclear facilities of class I (nuclear power plants and other nuclear fuel cycle facilities, facilities for storage and disposal of radioactive waste), the department has to seek the advice of the local authorities and a scientific council. It also has to seek the advice of the European Commission, in case article 37 of the Euratom treaty applies.

The control department is in charge of ensuring compliance with the general provisions of the regulations and the particular provisions of the licenses. It has the assistance of recognised inspection bodies. It also acts as operator of the national monitoring network (Telerad) and is called upon in case of a nuclear/radiological emergency.

The financial and administrative department is, in particular, in charge of the collection of the annual charges from the licensees and the fees from the license applicants. Those charges have been fixed by Royal Decree, dated August 24, 2001.

2. LEGISLATION AND REGULATION

2.1 Legislation

Two laws form the basis for regulating the management of radioactive waste. The aforementioned law of 15 April 1994 (as amended), sets the framework for the safety and radiation protection regulations.

The legal framework for the management of radioactive waste is set by the law of 8 August 1980 (as amended). By this law, a national agency for the management of radioactive waste (NIRAS/ONDRAF) was established. The responsibilities of that Agency are further detailed in a royal decree of 30 March 1981 (as amended).

2.2 General regulations

General regulations for the protection of the general public, workers and the environment against the hazards of ionising radiation are laid down by royal decree. These regulations specify, amongst others, the general principles for radiation protection, the different licensing procedures and the organisation of the health physics control.

Installations for the management and disposal of radioactive waste are so-called class I installations. The license application is sent to the FANC, which seeks the advice of the local authorities and the scientific council. The local authorities inform the population and take the comments of the population into account in establishing their advice. The FANC also seeks the advice of the European Commission in cases where article 37 of the Euratom Treaty applies, and consults individual countries potentially affected on their territory by the planned operations in the framework of the examination of the environmental impact assessment report. After the examination of the safety analysis report and the environmental impact assessment report, as well as the comments received as a result of the consultation procedures by the FANC and its scientific committee, the final decision is taken under the form of a royal decree. When the decision is favourable this royal decree constitutes the license, which becomes the reference document for compliance assurance activities for the acceptance inspections before operations and during the operational lifetime of the facility.

2.3 Specific regulations

The license generally refers to the safety and environmental assessments, and comprises specific conditions.

In application of the royal decree of March 30, 1981, NIRAS/ONDRAF has prepared general rules for the establishment of acceptance criteria for conditioned and for unconditioned radioactive waste. They were approved by the competent authority and are now the legal basis for the establishment of specific acceptance criteria by NIRAS/ONDRAF for each class of waste.

2.4 Guidance

So far, only facilities for pre-disposal management of radioactive waste have been licensed. It is normal practice that relevant guidance from international organisations (European Commission,

International Atomic Energy Agency, International Standards Organisation, ...) and organisations in other countries are taken into account. That will not be different for disposal facilities.

3. CURRENT STATUS

3.1 National status and issues

3.1.1 Waste classification and sources

The waste classification is based on the IAEA guidance in this respect.

Three categories have to be distinguished:

- Type A: short-lived low- or intermediate-level waste; waste containing radionuclides with a half-life less of 30 years or less; it may contain traces of long-lived radionuclides.
- Type B: long-lived low- or intermediate-level waste.
- Type C: high-level and very high-level waste; waste containing large amounts of short-lived and long-lived radionuclides that emit alpha, beta and gamma radiation.

3.1.2 Waste management strategy

The waste management programme is defined by NIRAS/ONDRAF. It can be summarised as follows:

- Processing and conditioning are performed in the facilities operated by Belgoprocess, a subsidiary of NIRAS/ONDRAF, and located in Mol-Dessel.
- Intermediate storage, including the storage of waste resulting from reprocessing of nuclear fuel, takes place in the storage facilities operated by Belgoprocess in Dessel; the intermediate storage of spent fuel takes place on the sites of the nuclear power plants.
- The investigation programme for disposal of low-level and short-lived waste aims at conducting preliminary site characterisations during 1999-2002 and at obtaining a governmental decision on the technical disposal solution (near-surface or geological disposal) in 2004; the local authorities and population are involved in the current investigation programme.
- Research and development work is continuing for the geological disposal of high-level and long-lived waste, in particular in the underground laboratory in Mol.

3.2 Regulatory issues

3.2.1 Current issues/problems

The difficulties related to the development of internationally accepted clearance levels is a major problem. In addition to this, the application of the exemption and clearance principles to

materials containing naturally occurring radionuclides (NORM) is not easy. It may be worthwhile to consider the introduction of a new category of waste, in order to deal with the large amounts of waste containing NORM.

3.2.2 *Policy and regulations developments*

Belgium has signed the joint convention on the safety of spent fuel management and on the safety of radioactive waste management (8 December 1997). Work is underway to ratify this convention, such that Belgium becomes party to it.

3.3 Research and development programme

3.3.1 *Functions*

R&D in the field of radioactive waste management, and disposal in particular, is performed mainly under the responsibility of NIRAS/ONDRAF. The research activities are performed by the nuclear research centre in Mol (CEN•SCK), universities and other research institutes, as well as engineering companies.

3.3.2 *Contents of research and development plans*

Most of the R&D work is related to the disposal of radioactive waste:

- Development of technical solutions for the long-term management of low-level and short-lived waste.
- Geological disposal of long-lived and high-level waste in clay; in this respect, an underground laboratory in Mol, known as HADES (High Activity Disposal Experimental Site), has been constructed. Worth mentioning is the ongoing research programme, known as PRACLAY (Preliminary demonstration test for clay disposal), which investigates the response of a clay formation to heating, using a full-scale simulation, and also aims at demonstrating the techniques involved in excavation of the galleries and back-filling.