

Czech Republic

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I. General regulatory regime

1. Introduction

On 1 January 1993, the former Czechoslovakia (hereinafter “Czechoslovakia”) was divided into the Czech Republic and the Slovak Republic. To ensure a smooth and continuous transition, it was agreed that all acts, regulations and decisions in the field of nuclear energy and ionising radiation would continue to apply until subsequent legislation was enacted. Since then, multiple acts and regulations have been adopted to establish a comprehensive legal system in this field.

In the Czech Republic, nuclear power generated electricity constitutes about 33% of the country’s supply (2014). There are two nuclear power plants, one at Dukovany in South Moravia and another at Temelin in South Bohemia. The Dukovany nuclear power plant has four operational units (VVER-440/213) each of which has a thermal power of 1 375 MWT representing a total installed capacity of 2040 MWe. The Temelin nuclear power plant has two operational units (VVER-1000), the first of which began trial operation in mid-2002. Temelin 2 began trial operation on full power (1 000 MWe) in April 2003. Full operation began in October 2004. The two units have each a thermal power of 3 000 MWT representing a total installed capacity of 2133 Mwe.

In addition, the Czech Republic has three research reactors, several radioactive waste storage facilities and interim spent fuel storage facilities (operated at Temelin and at Dukovany) and a low-level radioactive waste repository (operated at Dukovany). Finally, the Czech Republic also has uranium ore mining and production facilities. The state-owned company DIAMO, s.p. (formerly Československý Uranový Průmysl – ČSUP) acts as the operator of all the uranium production facilities.

In Czechoslovakia, the predominant regulatory body was the Czechoslovak Atomic Energy Commission. By Constitutional Act No. 4/1993 Coll. of 15 December 1992 and Act No. 21/1993 Coll. of 21 December 1992, the functions and responsibilities of the Commission were transferred to the State Office for Nuclear Safety (Státní úřad pro jadernou bezpečnost, hereinafter referred to as “SÚJB”), which is the state supervisory and regulatory body responsible for the safe use of nuclear energy and ionising radiation for peaceful purposes.

The general act governing all activities in the field of nuclear energy was adopted on 24 January 1997, and is entitled Act on Peaceful Utilisation of Nuclear Energy and Ionising Radiation (the Atomic Act) and on Amendments and Alterations to Related Acts¹ (collectively referred to as “the Atomic Act”). The Atomic Act fully entered into force on 1 July 1997 and has been amended several times since then. One of the most important amendments was made by Act No. 13/2002 Coll., which mainly aimed to ensure full compliance of the Czech legislation in the nuclear field with Euratom regulations and directives (especially Directive 96/29/Euratom²). It entered into force on 1 July 2002 with the exception of certain provisions that came into effect upon the date of accession of the Czech Republic to the European Union (EU) (and Euratom community) on 1 May 2004.

1. No. 18/1997 Coll.

2. Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation, *Official Journal of the European Union* (OJ) L 159 (29 June 1996).

The main purpose of the Atomic Act is to create the legal basis for the regulation of all activities involving the utilisation of nuclear energy and ionising radiation and to protect the public and the environment against their harmful effects. The Atomic Act aims to ensure that nuclear energy and ionising radiation are used exclusively for peaceful purposes and that the benefits of their use are balanced against their potentially harmful effects. The Atomic Act covers administrative issues, incorporates rules on civil law, labour law and environmental law, and it addresses other areas such as public health.

Part I of the Atomic Act lays down the general conditions governing activities related to the use of nuclear energy and ionising radiation, the rules related to radioactive waste management and third party liability for nuclear damage, state supervision and penalties. The remaining parts are entirely devoted to necessary amendments of the related legislation while Part V contains general transitional and final provisions. An annex lists the documentation required for particular licensed activities pursuant to Section 13 of the Atomic Act.

The following activities involving the use of nuclear energy and radiation practices are covered by the Atomic Act (Part I, Chapter 1, Section 2(a) and (b)):

- siting, design, construction, commissioning, operation, reconstruction and decommissioning of nuclear installations;
- design, manufacturing, repair and verification of nuclear installation systems or their components, including materials used for their production;
- design, production, repair and verification of packaging assemblies for transport, storage or disposal of nuclear materials;
- management of nuclear materials, selected items (hereinafter referred to as "trigger list items") and, where used in nuclear activities, nuclear-related dual-use items;
- research into and development of the activities mentioned above;
- professional training of personnel;
- transport of nuclear materials; and
- any practice resulting in exposure to ionising radiation.

Numerous decrees and regulations have been adopted to implement the Atomic Act and these are described hereinafter within the appropriate section according to subject matter.

2. Mining regime

Uranium mining in the Czech Republic started in 1946 and reached its peak in 1960 with an annual production of 3 000 tonnes. There is only one uranium mine in operation at the moment. The operator of all uranium production facilities is the exclusively state-owned company DIAMO, s.p.

In 1988, Czechoslovakia adopted Act No. 44/1988 Coll., on the Protection and Use of Mineral Resources (Mining Act), which laid down general rules concerning the use of resources and the protection of mineral wealth. That same year, the Czech National Council adopted Act No. 61/1988 Coll., on Mining Activities, Explosives and the State Mining Administration, which more specifically dealt with the safety and procedures of

mining operations. The licensing of mining activities is regulated by the Decree of the Czech Mining Office No. 15/1995 Coll., on authorisation of mining activities and activities carried out by mining methods as well as projects for buildings and facilities that constitute components of such activities.

According to Government Decree No. 1086/2014 of 22 December 2014, DIAMO, s.p. shall continue the mining and processing of uranium ore in the mine Dolní Rožínka until 2017. In the other areas, DIAMO, s.p. has been carrying out gradual remedial works after mining and processing of uranium ore.

3. Radioactive substances, nuclear items and spent fuel

The rules specifying procedures for the handling, use and safety of ionising radiation sources, nuclear items and spent fuel have now largely been incorporated into the Atomic Act and implementing decrees such as Decree No. 307/2002 Coll., on Radiation Protection and Decree No. 317/2002 Coll., on Type Approval of Packaging Assemblies for Transport, Storage and Disposal of Nuclear Materials and Radioactive Substances, on Type Approval of Ionising Radiation Sources and on Transport of Nuclear Materials and Specified Radioactive Substances ("on Type Approval and Transport").

a) Ionising radiation sources

According to Section 2(c) of the Atomic Act, an "ionising radiation source" means a substance, equipment or installation capable of emitting ionising radiation or releasing radioactive substances.

Ionising radiation sources are divided into five categories, the criteria for which are laid down in a regulation.³ These are:

- 1) insignificant sources, the handling of which neither poses a risk of a radiation incident nor generates any radioactive waste;
- 2) minor sources, the handling of which does not create a risk of a radiation accident, although it may generate radioactive waste;
- 3) simple sources, the management of which creates a risk of a radiation accident but no resulting acute health effects;
- 4) significant sources, the management of which might produce a radiation accident with acute health effects, but not a radiation emergency; and finally
- 5) very significant sources, which may cause a radiation emergency.

A licence is required for all ionising radiation sources, except insignificant sources or type-approved minor sources, used in accordance with the instructions approved by SUJB. Finally, an "ionising radiation source workplace" is defined as an area where such sources are used or handled in a conscious and intentional manner justifying special ionising radiation protection measures.

Decree No. 215/1997 Coll. sets out criteria for the siting of nuclear facilities and very significant ionising radiation sources.

3. Decree No. 307/2002 Coll.

b) Nuclear items

The Atomic Act (Section 2(j)) defines the term “nuclear items” as follows:

- nuclear materials, such as source materials, special fission materials and other materials so determined by regulation;⁴
- trigger list items, which are materials, equipment and technology especially designed and manufactured to be used in the nuclear industry as set out by regulation;⁵ and
- nuclear-related dual-use items, i.e. materials, equipment, software and related technology not designed and manufactured for use in the nuclear field, but which may be so used as set out by regulation.⁶

Pursuant to the Atomic Act, “source materials” are uranium containing a mixture of isotopes occurring in nature, uranium depleted in isotope 235U and thorium in whatever form they are found, as well as other substances or materials containing one or more of these items in a concentration or an amount exceeding the limits laid down by Decree No. 213/2010 Coll. “Special fission materials”, on the other hand, are 239Pu, 233U, uranium enriched in the isotope 235U and/or 233U and materials containing one or more of these radionuclides, except source materials, in concentration or amount exceeding the limits laid down by an implementing regulation. With respect to the international transfer of nuclear items, the Atomic Act prohibits such transfers where they would be in breach of the international commitments of the Czech Republic (Section 5).

c) Spent fuel

In Czechoslovakia, spent fuel from the Dukovany nuclear power plant was originally sent to Russia for disposal until such time as Russia decided to accept it only for reprocessing. Following this decision it was sent to an interim spent fuel storage facility at the Bohunice nuclear power plant in the Slovak Republic. However, in 1993 the Slovak utility SEP, which operated the Bohunice plant, decided to no longer accept the fuel. In November 1995, the Slovak utility began shipping the spent fuel from the Dukovany nuclear power plant back to the Czech Republic with the objective of returning all such spent fuel by 1997.

To address this problem, the operator of the Dukovany nuclear power plant (the utility, ČEZ a.s.) began re-racking the fuel assemblies in its spent fuel ponds and this increased capacity by about 90%. In addition, ČEZ a.s. built a 600 metric ton interim dry storage facility on site, which began trial operation in March 1997, and whose extension is already planned. A similar facility is operated for the Temelin nuclear power plant. In addition, the Czech Republic has launched a project, under the auspices of the Nuclear Research Institute, to study the disposal of waste in a deep geological repository. The chosen repository site is not due to become operational until 2065.

4. Decree No. 213/2010 Coll., on Accounting for and Control of Nuclear Materials and Notifying of Information Required by the Regulations of the European Communities.

5. Decree No. 165/2009 Coll., Laying Down a List of Selected Items in Nuclear Sector.

6. *Ibid.*

The management of spent or irradiated fuel will be subject to the same requirements as for radioactive waste until the generator and SÚJB declare it to be radioactive waste (Section 24(3)); see, *infra*, Section 7 “Radioactive Waste Management”.

According to the agreement between the governments of the United States and the Czech Republic, spent fuel from the research reactor NRI Řež was delivered back to the Russian Federation in 2007.

4. Nuclear installations

The definition of a “nuclear installation” under the Atomic Act (Section 2(h)) covers a variety of facilities:

- constructions and operating units containing a nuclear reactor utilising a fission chain reaction;
- facilities for the production, processing, storage and disposal of nuclear materials, except uranium ore treatment plants and storages of uranium concentrate;
- repositories of radioactive waste, with the exception of repositories containing only natural radionuclides; and
- facilities for the storage of radioactive waste with an activity exceeding the values set out in an implementing legal regulation.

a) Licensing and inspection, including nuclear safety

i) Licensing

In accordance with the Atomic Act (Section 9(1)), a licence granted by SÚJB is required for:

- siting and construction of a nuclear installation or workplace with a very significant ionising radiation source, as well as siting of a radioactive waste repository;
- particular commissioning stages, operation and decommissioning of a nuclear installation or a workplace with a significant or very significant ionising radiation source;
- restart of a nuclear reactor following a fuel reload;
- reconstruction or other changes affecting nuclear safety, radiation protection, physical protection and emergency preparedness of a nuclear installation or workplace with a significant or a very significant ionising radiation source;
- discharge of radionuclides into the environment;
- handling of ionising radiation sources as specified by Decree No. 307/2002 Coll.;
- radioactive waste management;
- import or export of nuclear items and transit of nuclear material and trigger list items;
- handling of nuclear materials;
- transport of nuclear material and radionuclide sources as specified by Decree No. 317/2002 Coll.;

- training of classified personnel at a nuclear installation or ionising radiation source workplace;
- re-importation of radioactive waste resulting from the processing or re-processing of material exported from the Czech Republic;
- international transport of radioactive wastes to the extent and in the manner established in an implementing regulation;
- performance of personal dosimetry and other services significant from the viewpoint of radiation protection; and
- adding of radioactive substances into consumer products during their manufacturing, preparation, import or export of such products.

Under the Atomic Act, licence applications must be submitted to SÚJB with documents giving basic information about the licence applicant and the proposed activity for which a licence is sought. Further, specific documents required by SÚJB for each licensed activity are set out in the appendix to the Atomic Act. It also makes an environmental impact assessment a necessary condition for the issuance of a licence for siting, construction or decommissioning (Section 13(4)) of a nuclear facility or workplace with ionising radiation sources of the most severe type. The requirements for this assessment are set out in Act No. 100/2001 Coll. on Environmental Impact Assessment.

In 2011, the Atomic Act was amended by Act No. 249/2011 Coll., which set up the expertise fees. After that amendment, enumerated applicants (Section 3c(1)) for a licence⁷ are obliged to pay the application fee and enumerated licensees (Section 3c(2)) are similarly obliged to pay the maintenance fee. Under this amendment, the license application fee rates shall not be more than CZK 150 million (in fact, fee rates vary from CZK 4.2 million to CZK 126 million depending on the type of licence) and the maintenance fee rates shall not be more than CZK 4 million per each calendar month to which expertise fee liability applies. Specific fee rates are specified in Governmental Order No. 399/2011 Coll., adopted on 30 November 2011. SÚJB is the administrator of the expertise fees and fees are the revenue of the state budget.

SÚJB's decision must be issued within a specified time period after the applicant has submitted its documentation. This period varies depending upon the type of licence sought (Section 14). SÚJB has the exclusive power to change or revoke a licence under conditions specified in the Atomic Act. Termination of the licence will generally take place after its expiration or upon the licensee's death or cessation. The revocation of a licence, on the other hand, can be imposed in the case of non-compliance with requirements under the Atomic Act or it can be sought by the licensee upon written application, provided that nuclear safety and radiation protection concerns are satisfied (Section 16). All licensees are registered by SÚJB in its national register.

7. Such as those applying for a licence for the: siting of a nuclear installation; construction of a nuclear installation or category IV workplace having unsealed ionising radiation sources; first operation of a nuclear installation; category III workplace comprising mining and processing of uranium ore; individual stages of decommissioning of a nuclear installation; etc.

After the issuance of a licence, the commissioning and operation of a nuclear installation remains subject to the provisions of the Atomic Act and its implementing decrees. Some of the more relevant implementing decrees in this field are listed below:

- Decree No. 144/1997 Coll., on Physical Protection of Nuclear Materials and Nuclear Facilities and their Classification;
- Decree No. 132/2008 Coll., on Quality Systems in Activities Related to the Utilisation of Nuclear Energy and in Radiation Activities and on Quality Assurance in Classified Equipment with Respect to its Categorisation into Safety Classes;
- Decree No. 106/1998 Coll., on Nuclear Safety and Radiation Protection Assurance during Commissioning and Operation of Nuclear Facilities; and
- Decree No. 195/1999 Coll., on Basic Safety Criteria for Nuclear Installations with Respect to Nuclear Safety, Radiation Protection and Emergency Preparedness.

ii) Inspection

Inspection activities are performed by inspectors appointed by the chairperson of SÚJB. An inspector must be competent to perform legal acts, have a relevant degree and three years of professional experience, be competent and of moral integrity and fulfil other requirements (Section 39(2)).

Inspectors verify whether licensees (and other registered owners of radiation sources) under the Atomic Act are adhering to the Atomic Act's provisions, its implementing regulations and the relevant licence conditions. While on inspection, inspectors are, according to the Atomic Act and Act No. 255/2012 Coll., authorised, *inter alia*, to:

- enter, at any time, the licensee's premises, vehicles and other workplaces where activities involving nuclear energy utilisation or resulting in radiation exposure take place;
- check compliance with requirements and conditions of nuclear safety, radiation protection, physical protection, and emergency preparedness and other pertinent legal requirements;
- carry out measurements and collect samples;
- perform a physical inspection of nuclear items or ionising radiation sources, including checks on nuclear material accounting and control procedures;
- make video or audio recordings;
- demand the full provision of necessary information; and
- verify professional competence.

If SÚJB identifies discrepancies in the inspected person's behaviour, it is authorised under Section 40 of the Atomic Act to:

- require the inspected person to remedy the situation within a determined time period;
- order the inspected person to perform technical inspections, reviews or tests to verify nuclear safety status; and

- withdraw the special professional competence authorisation issued to an employee of the inspected person (in the event of a serious violation of his obligations or his failure to fulfil the requirements of professional competence and physical and mental capability).

SÚJB is also, according to Act No. 500/2004 Coll., on administrative proceedings, authorised to impose provisional corrective measures at the licensee's cost.

iii) Nuclear safety

Under the Atomic Act, nuclear safety falls entirely under the jurisdiction of SÚJB (Section 3(3)). Responsibility for nuclear safety lies with the licence holder (Section 17(1)). "Nuclear safety" is defined as the condition and ability of a nuclear installation and its servicing personnel to prevent the uncontrolled development of a fission chain reaction or an inadmissible release of radioactive substances or ionising radiation into the environment, and to reduce the consequences of accidents (Section 2(d)). Anyone engaged in activities associated with nuclear energy utilisation or radiation practices is required to ensure that nuclear safety and radiation protection are matters of priority (Section 4(3)).

The Czech Republic is a party to the 1994 Convention on Nuclear Safety since 18 September 1995.

b) Emergency response

The Czech Republic succeeded to both the 1986 Convention on Early Notification of a Nuclear Accident and the 1986 Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency on 24 March 1993. The Atomic Act sets out the general rules for emergency response in accordance with these conventions. A "radiation incident" is defined as an event resulting in an impermissible release of radioactive substances or ionising radiation, or an impermissible exposure to it by the public. A "radiation accident" is defined as a radiation incident requiring urgent measures to be taken to protect the public and the environment (Section 2(k) and (1)).

An "emergency plan" is defined as a set of planned measures to deal with a radiation incident or radiation accident and to limit their consequences. According to the Atomic Act (Section 2(n)) there are three types of emergency plans:

- an on-site emergency plan, designed for nuclear installations or ionising radiation source workplaces;
- an emergency rule for the transport of nuclear materials or ionising radiation sources; and
- an off-site emergency plan for the region in the vicinity of a nuclear installation or ionising radiation source workplace where an emergency planning zone has been established.

The Atomic Act lays down the licensees' obligations in the event of a radiation incident (Section 19). The licensee must have an on-site emergency plan approved by SÚJB and, in the event of an existing or potential radiation accident, the licensee must immediately notify the relevant local authority, SÚJB and other relevant bodies, and ensure that a warning is issued to the public within the emergency planning zone. In addition, the licensee must stop or limit the consequences of a radiation accident while taking

protective measures for employees and other persons. In the event of a radiation accident, the licensee must, in addition, participate in the operation of the National Radiation Monitoring Network ("NRMN")⁸ (see *infra*, Section 6 "Radiation Protection"). Similar obligations apply for radiation incidents or accidents during transport. Emergency rules should be included in the documentation for a licence to transport nuclear materials and radionuclide sources.

The licensee must also submit information to the relevant regional authority to help it prepare an off-site emergency plan and co-operate to ensure emergency preparedness in the emergency planning zone. In addition, the licensee is also obliged to contribute financially to the NRMN. Finally, the licensee must participate in running a press and information campaign to ensure that the public is prepared for radiation emergencies.

In the event of a radiation accident, SÚJB is obliged to ensure mobilisation of its Emergency Crises Staff (ECS) and the changeover of the NRMN into emergency mode. Based on its assessment of the radiation situation (Section 3(2)(p)) and current information from the operator (Section 19(1)(a) and (e)), the ECS prepares the background information necessary to take decisions aimed at reducing or averting radiation exposure. Expert and technical support is provided to the ECS by the Emergency Response Centre (ERC).

Decree No. 318/2002 Coll. outlines in detail the emergency preparedness of nuclear facilities and workplaces with ionising radiation sources and on requirements on the content of on-site emergency plans and rules. This decree, which specifies the scope and requirements of compulsory documentation relating to emergency preparedness (e.g. on-site emergency plans, emergency rules, etc.) entered into force on 18 July 2002. It transposes certain provisions of Council Directive 89/618/Euratom⁹ and specifies conditions for the application of Council Decision 87/600/Euratom.¹⁰

c) Decommissioning

"Decommissioning" means activities aimed at releasing nuclear installations or ionising radiation source workplaces following the termination of their operation so that they can be used for other purposes (Section 2(o)). The decommissioning of a nuclear installation or a Type III or IV workplace requires a licence from SÚJB, which in turn requires an environmental impact assessment, a quality assurance programme, an on-site emergency plan and methods of ensuring physical protection approval (Section 13). Decree No. 185/2003 Coll. sets out further details on the decommissioning of nuclear installations or Type III or IV workplaces.

Finally, the operator of a nuclear installation or ionising radiation source workplace is required to keep a financial reserve for the decommissioning of the facility. Control over these reserves is exercised by the Radioactive Waste Repository Authority (see, *infra*, Section 7 "Radioactive Waste Management" and Part II). Further details in this respect

8. Governmental Regulation No. 11/1999 Coll.

9. Council Directive 89/618/Euratom of 27 November 1989 on informing the general public about health protection measures to be applied and steps to be taken in the event of a radiological emergency, OJ L 357 (7 December 1989).

10. Council Decision 87/600/Euratom of 14 December 1987 on Community arrangements for the early exchange of information in the event of a radiological emergency, OJ L 371 (30 December 1987).

are set out in Decree No. 360/2002 Coll., laying down the method on formation of the reserves ensuring a decommissioning of nuclear installations or Type III or IV workplaces.

5. Trade in nuclear materials and equipment

Nuclear trade is now regulated by the Atomic Act and Decrees No. 213/2010 Coll., No. 165/2009 Coll. and No. 166/2009 Coll.

A licence is required from SÚJB for the import or export of nuclear items or transit of nuclear materials and trigger list items (Section 9 of the Atomic Act). The export or transit licence from SÚJB in the nuclear field is the necessary condition for an authorisation to be issued by the Ministry of Industry and Trade under Act No. 594/2004 Coll., whereby the European Community regime for the control of exports of dual-use items and technology is implemented. In principle, the Atomic Act prohibits the international transfer of nuclear items into states that would contravene its international commitments under international agreements, such as the Non-proliferation Treaty¹¹ and the Sea-Bed Treaty.¹² Import of radioactive waste into the Czech Republic is prohibited. However, the Atomic Act does allow the re-import of ionising radiation sources and radioactive waste from materials exported from the Czech Republic for processing or reprocessing, if approved by SÚJB.

Decrees No. 165/2009 Coll. and No. 166/2009 Coll. establish lists of trigger list items and nuclear-related dual-use items in the nuclear sector that take into account the applicable international legislation, especially International Atomic Energy Agency (IAEA) recommendations in this field and Council Regulation (EC) No. 1334/2000.¹³ These decrees are regularly revised according to the amendments approved by the international control regimes.

6. Radiation protection

The Atomic Act defines "radiation protection" as a system of technological and organisational measures to reduce exposure of persons and the environment (Section 2(e)). State supervision over radiation protection is entrusted to SÚJB pursuant to the Atomic Act (Section 3). Dose limits, constraints and guidance levels are set out in Decree No. 307/2002 Coll., on Radiation Protection.

Dose limits must take into account exposures from other practices. Medical exposures, natural exposures and exposures received during a radiation accident are regulated by guidance levels corresponding to reasonably achievable levels of radiation protection. In general, the extent to which natural radiation exposures must be reduced is dependent upon the detriment caused, balanced against the benefits to be gained.

11. Treaty on the Non-Proliferation of Nuclear Weapons (1968), IAEA Doc. INFCIRC/140, 729 UNTS 169, entered into force 5 March 1970 (NPT or Non-Proliferation Treaty).

12. Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof (1971), 955 UNTS 116, entered into force 18 May 1972 (Sea-Bed Treaty).

13. Council Regulation (EC) No 1334/2000 of 22 June 2000 setting up a Community regime for the control of exports of dual-use items and technology, OJ L 159 (30 June 2000).

Radiation protection must also be respected during transportation of nuclear materials and in radioactive waste management activities. Compliance with applicable limits will be verified by SÚJB's inspectors and violations can result in the imposition of penalties.

The Atomic Act, together with the implementing legislation in the field of radiation protection, is based on the 2003 Recommendations of the International Commission for Radiological Protection (ICRP) and the International Basic Safety Standards for Protection against Ionising Radiation and for the Safety of Radiation Sources. It corresponds to Council Directives 96/29/Euratom, 2003/122/Euratom¹⁴ and 97/43/Euratom.¹⁵ The general principles of radiation protection, such as justification of radiation practices and the optimisation of radiation protection and dose limitation, are covered. Dose limits for the public are decreased from 5 mSv to 1 mSv per year or, as an exception, 5 mSv per five consecutive years starting from the year 1998, and for radiation workers from 50 mSv per year to 100 mSv per five consecutive years starting from the year 2000.

Several decrees were adopted between the years 1997 and 2002 in order to bring domestic radiation protection legislation in line with EU requirements and to further implement the provisions of the Atomic Act:

- Decree No. 307/2002 Coll., on Radiation Protection, which entered into force on 12 July 2002, lays down basic safety standards for protection of the health of workers and the general public against the dangers arising from ionising radiation. It aims to implement Council Directives 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom (a major amendment of the decree transposing the 2003/122/Euratom Directive was adopted in December 2005).
- Decree No. 146/1997 Coll., Specifying Activities Having a Direct Impact on Nuclear Safety and Activities Particularly Important From the Viewpoint of Radiation Protection, Laying Down Requirements For Qualification and Professional Training, a Method of Verification of the Special Professional Competence and of Granting Authorisations to Selected Workers, and Setting a Format of Documents to be Approved for a Licence to Perform Training of Selected Personnel, as amended by the Decree 315/2002 Coll., which entered into force on 16 July 2002. This decree also aims to implement Council Directives 96/29/Euratom and 97/43/Euratom.
- Decree No. 319/2002 Coll., on Performance and Management of the National Radiation Monitoring Network, which entered into force on 18 July 2002, establishes the details of the functioning and the organisation of the NRMN established under the supervision of the SÚJB. It implements certain provisions of Council Directive 89/618/Euratom and also provides for the application of Council Decision 87/600/Euratom.
- Decree No. 419/2002 Coll., on Personal Radiation Passports, established details on the issue, registration, verification and use of personal radiation passports. This radiological monitoring document is to be used until a uniform community system is established governing the operational protection of outside workers performing

14. Council Directive 2003/122/Euratom of 22 December 2003 on the control of high-activity sealed radioactive sources and orphan sources, OJ L 346 (31 December 2003).

15. Council Directive 97/43/Euratom of 30 June 1997 on health protection of individuals against the dangers of ionizing radiation in relation to medical exposure, and repealing Directive 84/466/Euratom, OJ L 180 (9 July 1997).

activities in controlled areas. The decree aims to implement Council Directive 90/641/Euratom.¹⁶

The NRMN is co-ordinated by SÚJB. Under normal circumstances, it monitors radiation levels for the early detection of accidents; under emergency conditions, it evaluates the consequences of a radiation accident. Normal monitoring involves the following:

- an early warning network, which comprises 71 measuring points;
- a territorial network of 185 measuring points equipped with thermoluminescent dosimeters (TLD);
- local TLD networks with 92 measuring points in the surroundings of the Dukovany and Temelin nuclear power plants;
- a territorial network of 10 air contamination measuring points; and
- a network of 12 laboratories with gamma spectrometric and radiochemical analytical instrumentation and ad hoc mobile groups.

The monitoring results are published in the Annual Reports on the Radiation Conditions in the Czech Republic.

7. Radioactive waste management

The handling, disposal and management of radioactive waste is governed by the Atomic Act and corresponding regulations such as Decree No. 307/2002 Coll., on Radiation Protection. According to the Atomic Act, "radioactive waste" means substances, objects or equipment containing or contaminated by radionuclides for which no further use is foreseen. Such waste will have to be disposed of in radioactive waste repositories, i.e. an area, structure or facility at the surface or underground, for the purpose of radioactive waste disposal. "Radioactive waste and spent fuel storage" refers to the temporary (for a period restricted in advance) emplacement of radioactive waste or spent or irradiated nuclear fuel into areas, facilities or installations designed for this purpose, whereas "disposal" refers to the permanent emplacement of radioactive waste into areas, facilities or installations without the intention of its retrieval (Section 2(r), (s), (t) and (u)). Both storage and disposal of radioactive waste and spent fuel require a licence issued by SÚJB (Section 9(1)(j)).

The Atomic Act further provides that the owner or generator of radioactive waste is financially responsible for its management, from its generation to its disposal, including monitoring after closure of the radioactive waste repository and any necessary research and development activities (Section 24). A "generator" is an owner of radioactive waste or any other person or entity managing the owner's assets in such a manner that radioactive waste is generated. The state, on the other hand, is responsible for guaranteeing the safe disposal of all radioactive waste, including monitoring and supervision of repositories after their closure. For this purpose, the Atomic Act required the Ministry of Industry and Trade to establish the Radioactive Waste Repository Authority as a state organisation (RWRA).

16. Council Directive 90/641/Euratom of 4 December 1990 on the operational protection of outside workers exposed to the risk of ionizing radiation during their activities in controlled areas, OJ L 349 (13 December 1990).

The RWRA, established on 1 June 1997, is funded through levies imposed on generators of radioactive waste, and is responsible for accepting all radioactive waste, including spent or irradiated fuel, and providing for its safe disposal, including monitoring and supervising repositories after their closure (see *infra* Part II). The RWRA's activities are, in part, determined by the term of its agreement with the waste generator. Waste will be accepted if it meets the acceptance criteria for disposal as determined by SÚJB. Upon acceptance of the waste, it becomes state property under the exclusive supervision of the RWRA (Section 31).

Governmental Order No. 416/2002 Coll., adopted on 28 August 2002, established details concerning the amounts and method of payment of contributions to the nuclear account by generators of radioactive waste and provides for the annual administration of these resources. The nuclear account is a special fund provided by the state to finance all activities regarding radioactive waste disposal including those of the RWRA. The order further provides for an annual contribution to be made to municipalities having a radioactive waste repository within their territorial boundaries.

At the international level, the Czech Republic approved the 1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management on 25 March 1999.

8. Non-proliferation and physical protection

The Atomic Act defines "physical protection" as a system of technological and organisational measures preventing unauthorised activities with nuclear installations, nuclear materials and trigger list items (Section 2(f)). It provides that SÚJB carries out state supervision of physical protection and non-proliferation issues and authorises it to maintain a national system of accounting for and control of nuclear materials. SÚJB approves the inclusion of a nuclear installation or its components and nuclear materials into a category for physical protection and approves methods of physical protection (Section 3(3) (e) and (r)). It also makes decisions concerning the management of nuclear items, if the owner or other person responsible fails to comply with requirements under the Atomic Act (Section 3(3)(u)). Emergency services to protect nuclear installations and to provide for the physical protection of nuclear material during its transportation are ensured in co-operation with the police. The licensee is responsible for ensuring physical protection of nuclear material (Section 17). The Atomic Act also enumerates (Section 2a) sensitive activities for which every person performing such activities needs security clearance from the National Security Authority.

The Czech Republic acceded to the Treaty on the Non-proliferation of Nuclear Weapons¹⁷ on 1 January 1993 and to the Convention on the Physical Protection of Nuclear Material¹⁸ on 24 March 1993. The Amendment to the CPPNM¹⁹ was ratified on 21 May 2009 and the instrument of ratification was deposited jointly with other EU member states with the depositary on 30 December 2010. The provisions of these conventions, including the CPPNM Amendment, as well as the provisions of The Physical Protection of Nuclear

17. Treaty on the Non-Proliferation of Nuclear Weapons (1968), IAEA Doc. INFCIRC/140, 729 UNTS 169, entered into force 5 March 1970 (NPT).

18. Convention on the Physical Protection of Nuclear Material, (1980), IAEA Doc. INFCIRC/274 Rev. 1, 1456 UNTS 125, entered into force 8 February 1987 (CPPNM).

19. Amendment to the Convention on the Physical Protection of Nuclear Material (2005), IAEA Doc. GOC/INF/2005/10-GC(49)/INF/6, pp. 3-11 (not yet in force).

Material and Nuclear Facilities INFCIRC/225/Rev.4 (Corrected), are implemented by the Atomic Act and by Decree No. 213/2010 Coll., On Accountancy and Control of Nuclear Materials and Reporting of Data Required by Laws of the European Communities; Decree No. 165/2009 Coll., Laying Down a List of Selected Items in Nuclear Sector; Decree No. 166/2009 Coll., Laying Down a List of Dual Use Items in Nuclear Sector; Decree No. 144/1997 Coll., on Physical Protection of Nuclear Materials and Nuclear Facilities and their Classification; and Section 282 of Act No. 40/2009 – the Criminal Code – provision on Illegal Production and Handling of Nuclear Material and Special Fissionable Material. The Czech Republic also ratified the 1996 Comprehensive Nuclear Test Ban Treaty on 11 September 1997.

The agreement between the government of the Czech Republic and the IAEA for the Application of Safeguards in connection with the Non-proliferation Treaty was signed on 18 September 1996 and the Additional Protocol to the aforementioned agreement was signed on 28 September 1999. Following this came the accession of the Czech Republic to the EU and the accession to the Agreement between Belgium, Denmark, Germany, Ireland, Italy, Luxembourg, the Netherlands, the European Atomic Energy Community and the IAEA in implementation of Articles III(1) and (4) of the Non-proliferation Treaty (78/164/Euratom).²⁰

Inspectors from the IAEA, accompanied by those from SÚJB, are authorised to verify the fulfilment of the obligations the Czech Republic assumed under the NPT (Section 39(4)).

Inspectors from the European Commission, together with those from SÚJB, are authorised to inspect the system of accounting for and control of nuclear materials by the operators, according to the Treaty establishing the European Atomic Energy Community (Article 81 and 82) and the Atomic Act (Section 39(4)).

9. Transport

The Atomic Act also addresses the transport of nuclear materials and radionuclide sources (Section 20). Such transport is subject to a licence to be issued by SÚJB in accordance with Decree No. 317/2002 Coll., on Type Approval and Transport. The licence does not have to be obtained by the carrier unless that person is also the shipper, consignor or consignee (Section 9(m)) but the licensee must ensure that the consignee is authorised to handle nuclear materials or ionising radiation sources according to the rules set out in the Atomic Act, and that the packaging assemblies are “type-approved” by SÚJB (Section 20(1)(a) and (c)).

The licensee must also comply with specific legislation on transport, including Act No. 111/1994 Coll., on Road Transport and its implementing Decree No. 478/2000 Coll.; Act No. 266/1994 Coll., on Railways; Appendix 1 to Decree of the Minister of Foreign Affairs No. 8/1985 Coll., on the Convention on International Rail Transport (COTIF); Act No. 114/1995 Coll., on Inland Navigation; and Decree No. 144/1997 Coll., on Physical Protection of Nuclear Materials and Nuclear Facilities and their Classification. In the case of import or export of radioactive substances or radioactive waste from or to an EU member state territory, whose consignor or a consignee has a registered office or place of residence in the Czech Republic, a declaration for release of goods under a pertinent customs procedure must be lodged at

20. Its Additional Protocol (1999/188/Euratom) replaces the aforementioned bilateral instruments and it was ratified on 19 November 2008.

a customs office in the Czech Republic (in accordance with a Council Regulation (EEC) No 2913/92²¹). Breach of this condition could result in the withholding of the goods to be transported. Decree No. 317/2002 Coll. entered into force on 18 July 2002. It establishes a list of nuclear materials and radioactive substances that must be transported, stored or disposed in type-approved packaging assemblies only, sets out prerequisites for such type approvals and lays down details on the transport of nuclear materials and specified radioactive substances.

10. Nuclear third party liability

The Czech Republic acceded to the 1963 Vienna Convention on Civil Liability for Nuclear Damage²² and the 1988 Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention²³ on 24 March 1994. The Atomic Act incorporates the basic principles of nuclear third party liability provided under the Vienna Convention, including the exclusive liability of the operator for any third party nuclear damage resulting from a nuclear incident occurring at his nuclear power plant and compulsory insurance or other financial security coverage for any such damage.

The Atomic Act defines an “operator” of a nuclear installation, by reference to the Vienna Convention, as the holder of a licence to (i) operate a nuclear installation, (ii) perform any other activity in relation thereto or (iii) transport nuclear material (Section 33(1)). The Atomic Act specifies that the extent and manner of compensation for nuclear damage is to be regulated by the Civil Code (Act No. 89/2012 Coll.) (Section 34(1)). Nuclear damage is defined to include the cost of preventive measures and measures of reinstatement of the impaired environment (Section 34(2)). The operator’s liability is limited to CZK 8 billion (approximately 228 million Special Drawing Rights (SDR)) for nuclear installations used for power generation purposes, storage facilities and repositories of spent nuclear fuel assigned to these installations, or nuclear materials generated by processing of this fuel, whereas for other nuclear installations and transport activities the liability is limited to CZK 2 billion, which equals approximately SDR 57 million (Section 35). The time limit for bringing claims for compensation is limited to ten years from the occurrence of the nuclear incident with a “discovery period” of three years (Section 38(1)).

To cover this liability, the operator is obliged to arrange and maintain insurance or other financial security of not less than CZK 2 billion for nuclear installations used for power generation purposes, storage facilities and repositories of spent nuclear fuel assigned to these installations, or nuclear materials generated by processing of this fuel, or CZK 300 million for other nuclear installations and transport activities (Section 36(3)). The financial security must be obtained from an authorised insurer and the policy conditions must be approved by the state insurance supervisory authority except if an alternative type of financial coverage is exceptionally authorised. To cover third party

21. Council Regulation (EEC) No 2913/92 of 12 October 1992 establishing the Community Customs Code, OJ L 302 (19 October 1992).

22. Vienna Convention on Civil Liability for Nuclear Damage (1963), IAEA Doc. INFCIRC/500, 1063 UNTS 266, entered into force 12 November 1977 (Vienna Convention).

23. Joint Protocol Relating to the Application of the Vienna Convention on Civil Liability for Nuclear Damage and the Paris Convention on Third Party Liability in the Field of Nuclear Damage (1988), IAEA Doc. INFCIRC/402, 1672 UNTS 293, entered into force 27 April 1992 (Joint Protocol).

liability claims of an operator, a nuclear insurance pool was established in the Czech Republic in July 1995.

The Atomic Act further provides for state guarantees to ensure payment of claims for compensation for nuclear damage up to the established liability limits to the extent that the full amount of the operator's mandatory insurance or financial security is inadequate to satisfy such claims (Section 37(1)).

The provisions contained in general regulations on liability for ordinary damage apply to the extent that the Atomic Act or the international agreements to which the Czech Republic is a party do not provide otherwise (Section 32(2)).

II. Institutional framework

1. Regulatory and supervisory authorities

a) State Office for Nuclear Safety (SÚJB)

In 1993, pursuant to its Constitutional Act No. 4/1993 Coll. and to Act No. 21/1993 Coll., the Czech Republic transferred supervisory functions and responsibilities in the nuclear safety area from the former Czechoslovak Atomic Energy Commission to the State Office for Nuclear Safety (Státní úřad pro jadernou bezpečnost – SÚJB). Its competence as the regulatory authority responsible for supervising the use of nuclear energy and ionising radiation sources is set out in the Atomic Act (Section 3(3)). In general, SÚJB supervises nuclear safety, physical protection, radiation protection, technical safety and emergency preparedness on the premises of a nuclear installation or in ionising radiation source workplaces. It also supervises the management of radioactive waste. SÚJB further co-operates with the IAEA and the European Commission in accordance with its obligations under international commitments in the field of safeguards. The chairperson of SÚJB is appointed by the government of the Czech Republic.

SÚJB is empowered to issue licences for activities regulated by the Atomic Act and to maintain a register of such licences. In addition, it approves types of packaging assemblies for transport and storage of nuclear materials and radionuclide sources. The SÚJB maintains the state system of accounting for and control of nuclear materials and determines the requirements for their registration and inspection. It maintains a register on radiation exposure of the general public and of persons who have contact with ionising radiation sources in the workplace. It also establishes commissions to verify the special qualifications of selected personnel.

Furthermore, SÚJB provides data to municipalities and District Councils on radioactive waste handling within their area of administration, co-ordinates the operation of the NRMN, ensures the operation of the ERC, provides international data on radiation levels and ensures international co-operation with the IAEA, European Commission and other bodies of the EU and Euratom community.

Within its sphere of competence, the SÚJB is responsible for developing domestic legislation and negotiating international agreements.

The SÚJB has three sections: nuclear safety, radiation protection and management and technical support.

The nuclear safety section comprises two departments: (1) assessment of nuclear installations and control of nuclear installations and (2) radioactive waste and spent fuel management division.

The radiation protection section comprises three departments: (1) radiation sources, (2) exposure regulation and (3) radiation protection of the fuel cycle. This section also co-ordinates seven regional centres, which report via the various departments to the head of the radiation protection section.

The management and technical support section consists of the department of non-proliferation, division of international co-operation, financial management and

administration (budget and finance) department, legal division, division for strategies and the office secretariat.

Within SÚJB, the Emergency Response Centre reports directly to the chairperson. Finally, SÚJB plays a role as a founder of the National Radiation Protection Institute and the National Institute for Nuclear, Chemical and Biological Protection, two non-governmental technical support organisations (TSOs).

b) Ministry of Industry and Trade

The Ministry of Industry and Trade is responsible for:

- developing domestic legislation and preparing intergovernmental treaties in the nuclear field (within the sphere of its competence);
- proposing strategic reserves of nuclear materials;
- co-ordinating activities in the nuclear field in relation to the government's economic policy;
- developing governmental policy in the nuclear area, including the management of radioactive waste and spent nuclear fuel;
- executing the powers of the Construction Office pursuant to Act No. 183/2006 Coll. where a general construction license is needed for the construction of structures built for the purpose of the extraction, processing, transport and deposition of radioactive raw materials in a territory reserved for such purposes and for structures of nuclear facilities; and
- issuing authorisations for the construction of nuclear power plants with total installed electrical capacity higher than 100 kW, according to Act No. 458/2000 Coll., Energetic Act.

c) Ministry of the Interior

The Ministry of the Interior is responsible for establishing details of crisis regional plans, regional emergency plans and off-site emergency plans (within integrated emergency system). The police are also responsible for providing emergency protection of nuclear installations and for participating in the physical protection of nuclear materials during their shipment.

d) Ministry of the Regional Development

The Ministry of the Regional Development exercises the state administration in the field of planning permission proceedings pursuant to Act No. 183/2006 Coll. in cases of structures built for the purpose of the extraction, processing, transport and deposition of radioactive raw materials in a territory reserved for such purposes and in case of structures of nuclear facilities.

e) Ministry of the Environment

The Ministry of the Environment is responsible for regulating nuclear activities to ensure that they comply with environmental laws. It also ensures that the procedures for environmental impact assessment are applied as a prerequisite to obtaining a licence, based on Act No. 100/2001 Coll., on Environmental Impact Assessment.

2. Public and semi-public agencies

a) ČEZ, a.s.

i) *Legal status*

Before the dissolution of Czechoslovakia, the utility ČEZ, a.s. was transformed into a joint stock company. As a part of its move to a market economy, the Czech Republic aimed to privatise the ČEZ, and now 30% of its stock is publicly listed while almost all of the remaining 70% is held by the Czech government. The Czech government representatives in ČEZ report to the Czech Ministry of Industry and Trade.

ii) *Responsibilities*

ČEZ is predominately responsible for electricity generation and very high-voltage transmission on 220-400 kV level in the Czech Republic. It is also responsible for implementing regulatory decisions and for the operational performance of nuclear undertakings. It sells electricity to regional distribution companies.

b) National Radiation Protection Institute (NRPI.)

i) *Legal status*

The National Radiation Protection Institute is a public research institution founded on 1 June 1995 by SÚJB, as its expert advisor in the field of radiation protection. It was later transformed into a non-governmental research organisation. The budget of the institute is partially covered by an income from the state technical and scientific research programmes through SÚJB. The chairperson of SÚJB appoints the director of NRPI.

ii) *Responsibilities*

The major task of NRPI is to perform all scientific activities necessary to support SÚJB as the main regulatory body in the field of radiation protection. NRPI participates in the monitoring of the radiological situation within the national territory and supports SÚJB in the co-ordination of the nation-wide NRMN.

c) Radioactive Waste Repository Authority (RWRA)

i) *Legal status*

The Radioactive Waste Repository Authority (RWRA) was established by the Ministry of Industry and Trade on 1 June 1997. It is a state organisation responsible for ensuring the safe disposal for radioactive waste and the monitoring and supervision of repositories after their closure.

ii) *Responsibilities*

The RWRA is responsible for the following waste management activities:

- preparation, construction, commissioning, operation and closure of radioactive waste repositories and the monitoring of their impact on the environment;

- conditioning of spent or irradiated nuclear fuel into a form suitable for its disposal or further utilisation;
- record keeping of accepted radioactive waste and its generators;
- administration of levies for the nuclear account;
- promotion and co-ordination of research and development in the field of radioactive waste management.

iii) Structure

The RWRA has a Board of Management and a director, both of whom are appointed by the Minister of Industry and Trade. The director, who is the statutory representative of the RWRA, may act on its behalf and may participate in board meetings.

The board consists of 11 members, three of whom are representatives of the state administration bodies, four of whom represent the waste generators and a further four represent the public. The board supervises the efficiency with which resources are spent on the RWRA's activities and recommends activity plans and budgets to the minister.

iv) Financing

The RWRA is funded through levies imposed on the producers of radioactive waste. The levies are put into a "nuclear account" managed by the Ministry of Finance and are used to finance the various operations by the RWRA.

d) DIAMO, s.p.

DIAMO, s.p. (formerly Československý Uranový Průmysl – ČSUP) is an exclusively state-owned company acting as an operator of all uranium production facilities. It is responsible for the extraction and processing of uranium ore and for the implementation of the state programmes on reducing the uranium industry and rehabilitation of former uranium production sites. According to Government Decree No. 565/2007 Coll. of 23 May 2007, DIAMO, s.p. shall continue mining and processing of uranium ore in the Dolní Rožínka mine as long as it is economically profitable. In the other areas, DIAMO, s.p. has been carrying out gradual remediation works after the mining and processing of uranium ore.

e) Nuclear Physics Institute (NPI)

The Nuclear Physics Institute (NPI) was founded in 1955 and has undergone various changes since having served as the Nuclear Research Institute of the former Czechoslovak Commission for Atomic Energy. In 1993, after the dissolution of Czechoslovakia, the Nuclear Physics Institute became part of the Czech Academy of Sciences and now includes the Institute of Radiation Dosimetry and the Neutron Activation Analysis Laboratory. The NPI is comprised of the Departments of Theoretical Nuclear Physics, Nuclear Spectroscopy, Neutron Physics, Nuclear Reactions and Radiation Dosimetry.

f) National Institute for Nuclear, Chemical and Biological Protection (SÚJCHBO, v. v. i.)

i) Legal status

SÚJCHBO, v. v. i. was founded by SÚJB on 1 January 2000 (and transformed into a public research institution on 1 January 2007) with an aim to execute research and development activities within the competence of SÚJB. Its budget is covered in compliance with the relevant acts of the Czech Republic (especially Act No. 341/2005 Coll.). The chairperson of SÚJB appoints the director of the institute and its supervisory board.

ii) Responsibilities

The principal activity of the institute is research and development focused on the identification and quantification of chemical, biological, radiological and nuclear substances, measurements of their impact on persons and the environment, monitoring persons under extreme conditions and technical support provided to the supervision and inspection activities carried out by the SÚJB. The institute has been engaged in training and educational activities for professionals from the Integrated Rescue System of the Czech Republic, state and other entities, university students as well as international organisations (IAEA, Organisation for the Prohibition of Chemical Weapons, etc.).

g) Nuclear Research Institute Řež, a. s. (NRI)

The NRI is the successor to the Nuclear Research Institute, which was founded in 1955. In 1971, it came under the authority of the Czechoslovak Atomic Energy Commission and in 1992 it was transformed into a joint stock company with ČEZ, a.s. as a major shareholder (2009). The NRI's objective is to carry out research and development in nuclear technologies and to implement the results achieved. Employing 600 staff members, NRI operates the divisions/departments of nuclear power and safety, integrity and materials, fuel cycle chemistry, reactor services and radiopharmaceuticals. It provides support services to SÚJB.