



DANISH HEALTH  
AUTHORITY  
Radiation Protection

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# Implementation of the Nuclear Safety Directive

Second Report from Denmark

2020



**Implementation of the Nuclear Safety Directive**  
Second Report from Denmark

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# 1. Introduction

## 1.1. Basis and purpose of the report

This report serves to fulfil the obligations under Article 9.1 of Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations, as amended by the Council Directive 2014/87/Euratom of 8 July 2014 (the Nuclear Safety Directive), - requiring Member States to submit a report to the European Commission on the implementation of the Directive for the first time by 22 July 2014, and then by 22 July 2020.

The report provides an article-by-article overview of the implementation of the directive provisions for ensuring a high level of nuclear safety, protecting workers and the general public against the dangers arising from ionizing radiations from nuclear installations.

The Danish Health Authority under the Ministry of Health prepared the report – with contributions from the Danish Emergency Management Agency under the Ministry of Defence and the Danish Agency for Institutions and Educational Grants under the Ministry of Higher Education and Science.

## 1.2. Civil Nuclear Programme

The Danish Nuclear Programme led to the construction and operation of three research reactors, DR 1, DR 2 and DR 3, commissioned in 1957, 1958 and 1964 respectively, as well as an associated waste management plant, hot cells and a fuel fabrication facility – all situated at the Risø Peninsula (the Risø site). The programme was active until the turn of the millennium, albeit the Danish parliament in 1985 decided to adopt a resolution on energy planning without utilization of nuclear energy (Parliamentary Resolution B103, 1985 on Energy Planning without Nuclear Energy).

Following final termination of operations of the nuclear facilities at the Risø site, the Danish Parliament adopted Parliamentary Resolution B48, on the Decommissioning of the Nuclear Facilities at Research Centre, Risø (2003). Through this resolution, the Danish Parliament agreed to the costs and the general decommissioning approach for the Risø site, with the objective to decommission all nuclear installations and subsequently release the site for unrestricted use as soon as possible within a timeframe of 20 years.

The nuclear installations originally established at the Risø site, - along with their present status in terms of decommissioning and relevance to the Nuclear Safety Directive, cf. article 3 1. (a), are listed in table 1. The waste management plant is at present operating in direct relation to the decommissioning activities by providing decontamination, handling

and storage facilities and is therefore covered by the Nuclear Safety Directive, cf. article 3 1. (b).

Table 1. Nuclear installations as defined by the NSD article 3 1.(a).

Nuclear installation	Type	Taken out of use	Decommissioning status	Covered by the Directive
<b>Danish Reactor 1 (DR 1)</b>	Small homogeneous 2 kW reactor mainly used for educational purposes	2001	DR 1 is fully decommissioned and the building was released from regulatory control in 2006.	No
<b>Danish Reactor 2 (DR 2)</b>	5 MW research reactor of the open pool type	1975	Reactor Containment Hall is fully decommissioned, but the building is still being used for storage and handling of waste objects.	Yes
<b>Danish Reactor 3 (DR 3)</b>	10 MW heavy water research reactor of the PLUTO type	2000	Only removal of the structural component of the biological shield remains before decommissioning of the reactor hall can commence.	Yes
<b>Hot Cell Facility</b>	Facility for post irradiation investigations of nuclear fuel	1989	Initial remote cleaning of all 6 cell units is complete, in preparation for secondary robotic cleaning.	Yes
<b>Fuel Fabrication Plant</b>	Fuel Fabrication Plant for DR 2 and DR 3	2002	Decommissioning works were completed early 2014, but slight contamination in the basement discovered during final radiological survey now awaits removal.	Yes

In Denmark, no new nuclear installations have been established since adoption of Parliamentary Resolution B48 in 2003.

In accordance with Parliamentary Resolution B90, on a Long-Term Solution for Denmark's Radioactive Waste (2018), radioactive waste from decommissioning of the nuclear facilities at the Risø site as well as of institutional origin is to be stored at the Risø Peninsula for up to 50 years, or 2073 at the latest. For this purpose, an upgraded storage

facility will be established in an area at the Risø site released from regulatory control according to the provisions in Parliamentary Resolution B48. The planned storage facility at the Risø Peninsula will not be located on the same site or be directly related to a nuclear power plant, an enrichment plant, a nuclear fuel fabrication plant, a reprocessing plant, a research reactor facility or a spent fuel storage facility, and will therefore not be covered by the Nuclear Safety Directive.

Hence, following completion of decommissioning of the existing nuclear facilities at the Risø site and subsequent release of the site from regulatory control in accordance with Parliamentary Resolution B48, there will be no nuclear installations within the scope of the Nuclear Safety Directive in Denmark.

The present reporting on the implementation of the Nuclear Safety Directive reflects these circumstances.

## 2. Reporting article by article

### 2.1. Article 4 - Legislative, regulatory and organisational framework

#### **Article 4 1.**

*“Member States shall establish and maintain a national legislative, regulatory and organisational framework (“national framework”) for the nuclear safety of nuclear installations.”*

#### **National framework**

The national framework comprises three organisations: 1) The Danish Health Authority under the Ministry of Health, 2) the Danish Emergency Management Agency under the Ministry of Defence and 3) the Danish Agency for Institutions and Educational Grants under the Ministry of Higher Education and Science.

The Danish Health Authority and the Danish Emergency Management Agency jointly constitute the Nuclear Regulatory Authorities.

The Danish Agency for Institutions and Educational Grants has the formal responsibility for institutions under the Ministry of Higher Education and Science, including Danish Decommissioning, which is responsible for operation (care and maintenance) and decommissioning of the existing nuclear installations in Denmark.

All Danish nuclear facilities are thus owned, operated and decommissioned by government institutions.

The legal and regulatory framework principally rests on the legal provisions and resolutions listed below:

#### *Acts*

- 1) The Nuclear Installations Act (Act no. 170 of 16 May 1962 on Nuclear Installations)
- 2) The Nuclear Safety Act (Act no. 244 of 12 May 1976 on Safety and Environmental Conditions at Nuclear Facilities, etc.)<sup>1</sup>
- 3) The Radiation Protection Act (Act no. 23 of 15 January 2018 on Ionising Radiation and Radiation Protection)

#### *Executive Orders*

- 1) Executive Order no. 278 of 27 June 1963 on Protective Measures against Accidents at Nuclear Facilities, etc. – as changed according to Executive Order no. 502 of 10 January 1974.
- 2) Executive Order no. 669 of 1 July 2019 on Ionising Radiation and Radiation Protection.
- 3) Executive Order no. 670 of 1 July 2019 on Use of Radioactive Substances

<sup>1</sup> (Only § 11 and § 12 (1) are in force).

### *Circulars*

Circular no. 9450 on Nuclear Safety

### *Parliamentary Resolutions*

- 1) Parliamentary Resolution B103, 1985 on Energy Planning without Nuclear Energy
- 2) Parliamentary Resolution B48, 2003 on the Decommissioning of the Nuclear Facilities at Research Centre, Risø,
- 3) Parliamentary Resolution B90, 2018 on a Long-Term Solution for Denmark's Radioactive Waste.

The national legislative framework for nuclear safety is based on the provisions given in The Nuclear Installations Act and The Radiation Protection Act.

### *The Nuclear Installations Act*

The Nuclear Installations Act defines the concept of nuclear installations and (by later amendments) authorizes the Minister of Health to license construction and operation of nuclear installations. The act establishes the fundamental principles for authorization – safety during commissioning, operation and decommissioning of the facilities – and stipulates that the Danish Health Authority under the Ministry of Health and (by later amendments) the Danish Emergency Management Agency under the Ministry of Defence, constitute the Nuclear Regulatory Authorities. The Nuclear Regulatory Authorities maintain the regulatory core functions with respect to nuclear safety.

### *The Nuclear Safety Act*

The Nuclear Safety Act is only partially implemented. It was originally anticipated to replace The Nuclear Installations Act, if and when a nuclear power plant was to be constructed in Denmark, but by adoption of Parliamentary Resolution B103, this never became relevant. Only §§ 11 and 12 of The Nuclear Safety Act have entered into force, stipulating that the Danish Environmental Protection Agency (later transferred to the Danish Emergency Management Agency) must follow and assess matters of importance for nuclear safety, establish contact and cooperation with other nuclear safety authorities and participate in international cooperation on nuclear safety.

### *The Radiation Protection Act*

The Radiation Protection Act is the main instrument for implementation of Council Directive 2013/59/EURATOM (The European Basic Safety Standards). In addition, the act implements the framework and principles of The 2007 Recommendations of the International Commission on Radiological Protection, ICRP Publication 103. In covering the ICRP “exposure situations” and “exposure categories”, the act is all-inclusive in terms of facilities and activities, applying also to nuclear facilities and activities. The Radiation Protection Act empowers the Danish Health Authority with all regulatory core functions in terms of radiation protection and safety. The Radiation Protection Act includes provisions consistent with The Nuclear Installations Act, and underpins measures to ensure safety as well as radiation protection for workers, the environment and members of the public in relation to nuclear installations.

The legal framework for nuclear safety is based on legislation specific to nuclear installations, which today would be insufficient for the construction and operation of nuclear installations covered by the Directive. However, the framework is considered to be sufficient for the presently conducted care, maintenance and decommissioning activities of the former research reactors and related facilities.

### **Implementation by the regulatory authority**

Pursuant of the Nuclear Installations Act § 7, The Nuclear Regulatory Authorities are responsible for the regulatory oversight of the construction and operation of nuclear installations. The same § 7 grants the authorities the right to gain unlimited access to the nuclear facilities, as well as authority to issue orders and prohibitions as relevant for the compliance with licence terms or any other circumstance deemed relevant for safety.

In consequence, The Nuclear Regulatory Authorities must oversee that any specific term for approval of construction or operation of nuclear facilities is complied with, and may specify such conditions which are deemed appropriate for ensuring compliance with said terms or which are otherwise deemed necessary for reasons of safety. Pursuant of these provisions, the Nuclear Regulatory Authorities have issued Operational Limits and Conditions for maintaining nuclear safety at the nuclear installations at the Risø site.

#### *Operational Limits and Conditions*

The Operational Limits and Conditions for Danish Decommissioning are issued with reference to The Nuclear Installations Act, and states that Danish Decommissioning must at all times comply with conditions laid down in the Operational Limits and Conditions as well as all relevant legislation regarding radiation protection (and safety) and nuclear security.

The Operational Limits and Conditions establish that the management of Danish Decommissioning must comply with all corrective actions or measures imposed by the Nuclear Regulatory Authorities to ensure safety. It is further specified that the Nuclear Regulatory Authorities must be granted full access at any time to the Risø Site in order to ensure that inspections may be conducted in relation to the daily operations, ongoing decommissioning operations, personnel, facilities and documentation under the control of Danish Decommissioning.

In consequence, inspection activities concerning nuclear safety and radiation protection are conducted to ensure compliance with the specifically stated Operational Limits and Conditions as well as The Radiation Protection Act and pursuant orders.

For further elaboration on the inspection activities carried out by the Nuclear Regulatory Authorities as part of the regulatory control with nuclear facilities, kindly refer to the text related to Article 4 1. (a) and (d) below.

### **Ratification of relevant conventions and legal instruments**

Denmark has been an IAEA Member State since July 1957, and has signed, respectively ratified the international conventions and agreements listed below for ensuring and enhancing radiation protection and nuclear safety:

- Convention on Nuclear Safety.
- Convention on Early Notification of a nuclear Accident.
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.
- Convention on the Physical Protection of Nuclear Material.
- Amendment to the Convention on the Physical Protection of Nuclear Material.
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

**Article 4 1. (a)**

*"The national framework shall provide in particular for allocation of responsibilities and co-ordination between relevant state bodies"*

**Allocation of responsibilities and coordination**

The national framework provides for allocation of responsibilities between relevant state bodies as expressed in the Nuclear Installations Act.

*Licensing*

According to the Nuclear Installations Act § 4, the Prime Minister (later changed to the Minister of Health) has the basic responsibility for approving licensing of the construction and operation of nuclear facilities. The legal notes associated with the original bill states that: "...application for licensing must be evaluated by the Atomic Energy Commission (later the Danish Emergency Management Agency) and the Danish Health Authority. These authorities must be regarded as the central expert bodies whose participation is generally required in the handling of the cases referred to in the Act...". Hence, the responsible minister must involve the Nuclear Regulatory Authorities in matters of licensing and e.g. setting of conditions to the licence.

*Regulatory oversight*

The legal provision for the Nuclear Regulatory Authorities to perform inspections of nuclear facilities and activities is ensured through § 7 in The Nuclear Installations Act. In addition, the Danish Health Authority exercises regulatory oversight in accordance to The Radiation Protection Act, § 18 in relation to the use of radiation sources and exposure in any exposure situation, including such at nuclear installations.

As such, the Danish Emergency Management Agency carries out regulatory functions with reference to the Nuclear Installations Act, while the Danish Health Authority holds dual responsibilities for regulatory oversight in accordance with both the Nuclear Installations Act and the Radiation Protection Act.

The two authorities jointly coordinate and carry out regulatory activities in accordance with the provisions of the Nuclear Installations Act within their respective areas of authority, i.e. provision of nuclear scientific advice in relation to processing of applications for permits for the construction and operation of nuclear facilities, and radiation protection and safety.

In parallel, and on a coordinated basis, the Danish Health Authority exercises regulatory oversight of all facilities and activities at the Risø site according to the provisions in the Radiation Protection Act.

Executive Order 278 on Protective Measures against Accidents at Nuclear Facilities, etc. further details the role and tasks of the Nuclear Regulatory Authorities in relation to safety assessment and nuclear emergency plans for nuclear installations.

Pursuant of the Nuclear Installations Act, the Minister of Health and the Minister of Defense has issued Circular 9450 on Nuclear Safety. The circular specifies details concerning the Nuclear Regulatory Authorities application of regulatory oversight of the nuclear safety of nuclear installations to ensure that oversight activities are in compliance with the Nuclear Installations Act. The circular sets provisions for the Nuclear Regulatory Authorities' conduct of regulatory oversight (setting of conditions, supervision and inspection), maintenance of competence, information and reporting etc.

**Article 4 1. (b)**

*“National nuclear safety requirements, covering all stages of the lifecycle of nuclear installations;*

**National nuclear safety requirements**

The essential nuclear safety requirements covering all stages of the lifecycle of licensed nuclear installations are listed in the above section “Article 4 1.” – and are further detailed below. In addition to these, the Planning Act (Consolidation Act no. 287 of 16 April 2018 on Planning) and the Environmental Impact Assessment Act (Consolidation Act no. 1225 of 25 October 2018 on Environmental Impact Assessment of Plans and Programs and of Specific Projects (EIA) include provisions for assessment of greater human and natural disaster risks – and thereby nuclear safety - in the planning and siting of facilities such as nuclear installations.

*Safety during construction, operation and decommissioning*

Pursuant to the Nuclear Installations Act § 4, construction or operation of a nuclear installation requires a licence. In accordance with § 5 (3), granting of the licence is conditional to the premise that when the operation of the installation is terminated, arrangements are made to ensure that the installation, after closure, does not present a public safety hazard. Following § 7, the nuclear installations are subject to inspections by the Nuclear Regulatory Authorities both during construction and operation.

Additionally, § 5 in Circular 9450 on Nuclear Safety provides detailed provisions for the Nuclear Regulatory Authorities to oversee that the licensee for a nuclear installation ensures that nuclear safety can be maintained at all times during planning, construction, operation and decommissioning of the installation.

Furthermore, the lifecycle perspective is incorporated into the Operational Limits and Conditions for Danish Decommissioning, stating that the management has the responsibility for ensuring that operation and decommissioning of the nuclear facilities at the Risø site are in accordance with all relevant legislation and Operational Limits and Conditions.

Following § 1 of the Radiation Protection Act, the provisions of the act applies to “the use of radiation sources and exposure in any exposure situation” and thus also pertains to all stages of the life cycle of nuclear installations, including decommissioning. Pursuant to Executive Order 669 on Ionising Radiation and Radiation Protection, § 10 no. 7, and Executive Order 670 on Use of Radioactive Substances, §§ 5 – 6, different licence types are required for the different stages in the lifetime of a facility – from cradle to grave. Executive Order 669 on Ionising Radiation and Radiation Protection, §20 further states that safety assessment must be made prior to the application for a licence. It is the responsibility of the licence holder to update the safety assessment and to ensure that the licence is changed /updated and is in accordance with the current circumstances and activities taking place.

**Article 4 1. (c)**

*“A system of licensing and prohibition of operation of nuclear installations without a licence;”*

**Licensing system**

The Nuclear Installations Act explicitly states (§ 4) that nuclear installations may only be constructed and operated upon approval of licence from the minister responsible for nuclear safety. A licence granted is conditional and revocable.

A licence following the act bestows responsibility for the safety of the nuclear installation to the licence holder. The owner of a nuclear installation is by definition the (legal or natural) person licensed by the responsible minister as the owner of the installation or, in the absence of such a licensee, the operator of the installation.

A licence cannot be granted if the safety of the installation or other vital interests is questioned. Before a licence for operation may issued, the applicant must present a safety report to the Nuclear Regulatory Authorities. The safety report must comprehensively address all safety relevant issues related to the installation. It must e.g. include information on operational procedures as well as protective measures.

Although the formal approving authority lies with the Minister of Health, applications for approval/licence must be submitted to The Nuclear Regulatory Authorities as expert bodies, whose participation is required in matters relating to applications for approval.

The Nuclear Installations Act, § 5 outlines the details of the licensing system in a number of subsections according to which:

- (1) The licence shall indicate the installation owner who has liability under Chapter 3 (later the Nuclear Damages Compensation Act, 1974). The validity of the licence may be limited to a specific period and is conditional to the owner furnishing and maintaining insurance
- (2) The approval of licence shall be subject to such conditions as are deemed necessary with regard to safety and the public interest
- (3) Approval of the licence is conditional to the premise that when the operation of the installation is terminated, arrangements are made such as deemed necessary to ensure that the installation, after closure, does not present a public safety hazard and that insurance or other security furnished to ensure that the owner meets his liabilities are maintained for as long as is deemed necessary
- (4) Conditions in the licence may be amended and new conditions may be imposed as deemed necessary with regard to safety requirements and the public interest.

As stated in the text related to Article 4 1. (b) above, § 1 of the Radiation Protection Act applies to “the use of radiation sources and exposure in any exposure situation” and thus also pertains to nuclear installations. The provisions in Executive Order 669 on Ionising Radiation and Radiation Protection and Executive Order 670 on Use of Radioactive Substances regarding licensing and prohibition thus also applies for nuclear installations.

#### **Article 4 1. (d)**

*“A system of regulatory control of nuclear safety performed by the competent regulatory authority;“*

#### **System of regulatory control**

The system of regulatory control (oversight, i.e. assessment, inspection and control processes) of nuclear installations is the responsibility of – and maintained by – the Nuclear Regulatory Authorities.

The Danish Emergency Management Agency and the Danish Health Authority jointly carry out regulatory activities in accordance the provisions in the Nuclear Installations Act, within their respective areas of authority, i.e. technical nuclear safety and radiation protection (and safety).

In parallel, the Danish Health Authority exercises regulatory oversight of all facilities and activities at the Risø site according to the provisions in the Radiation Protection Act.

#### *Operational Limits and Conditions*

For decommissioning activities at the Risø site, the Nuclear Regulatory Authorities have issued Operational Limits and Conditions, which provide detailed terms and operational limits and conditions for the decommissioning of the nuclear research facilities at the Risø site. Section 2.1 of the Operational Limits and Conditions stipulates that Danish Decommissioning, as licensee, is required to act in accordance with the Danish legislation on nuclear safety and radiation protection, and hence obliged to follow all requirements put forward by the Nuclear Regulatory Authorities. In addition, section 5 of the Operational

Limits and Conditions provides a framework for a radiation protection program to be followed during decommissioning.

#### *Safety Assessment*

For the decommissioning of the nuclear facilities, section 2.3-2.4 of the Operational Limits and Conditions states that the development of the safety assessment is part of the documentation required by the regulatory authority. It is further stated, that the decommissioning planning and conduct as well as safety assessment shall be aligned with relevant IAEA's Safety standards e.g. GSR part 4, SSG-47 and further guidance and reports.

Developing and updating the safety assessment is part of the documentation, which Danish Decommissioning is required to prepare in support of maintaining nuclear safety. Danish Decommissioning shall develop and update the safety assessment taking into account the outcomes of the overall decommissioning plan, project descriptions (decommissioning plan for a particular facility) and detailed subproject descriptions (decommissioning plan for part of facility). Danish Decommissioning is also required to include scenarios covering planned decommissioning actions as well as incidents and accidents that may arise during decommissioning.

#### *Inspection*

The legal provision to perform and carry out inspections of nuclear facilities and activities by the Nuclear Regulatory Authorities is ensured by § 7 in The Nuclear Installations Act. In addition, the Danish Health Authority exercises inspections in accordance to The Radiation Protection Act, § 18 in relation to the use of radiation sources and exposure in any exposure situation.

Internal planning and coordination of conduct of inspections as well as drafting of inspection reports etc., between the Nuclear Regulatory Authorities is initiated and carried out with Danish Health Authority as lead.

The inspection programme for activities and facilities specifies annual inspection activities for the Risø site. The frequency and type of inspection for each facility is determined by the state of each facility, such that facilities with large inventories and/or large potential for exposure during care and maintenance or decommissioning and high rates of decommissioning activities take priority. In addition to this prioritization, the overall planning includes a minimum of one visit to each facility or activity per year.

The basis for planning of inspections is all relevant documentation (project descriptions, safety assessments, specific workplans) on the inspected activity or facility, operational history of the facility, dose records, Operational Limits and Conditions and further relevant regulatory requirements.

Inspections at the Risø site are generally announced, but may be initiated unannounced, prompted by particular circumstances during on-site visits or as a matter of interest from

the Nuclear Regulatory Authorities. Inspection formats include plenaries where the Nuclear Regulatory Authorities present the scope and plan for inspection and inspection visits to verify compliance with Operational Limits and Conditions as well as requirements imposed as results of previous inspections.

In parallel to these inspection activities, compliance with relevant requirements in Executive Orders 669 on Ionising Radiation and Radiation Protection and 670 on Use of Radioactive Substances is inspected by the Danish Health Authority.

At the end of each inspection at the Risø site, the immediate findings are reported on-site, and included in the inspection report are further observations, remarks and requirements. Inspection reports are made available to the undertaking upon completion.

**Article 4 1. (e)**

*“Effective and proportionate enforcement actions, including, where appropriate, corrective action or suspension of operation and modification or revocation of a licence.”*

*Enforcement actions*

The Nuclear Installation Act, § 7 grants The Nuclear Regulatory Authorities the right to gain unlimited access to the nuclear facilities, as well as authority to issue orders and prohibitions as relevant for the compliance with licence terms or any other circumstance deemed relevant for safety. Following § 5, conditions for approval of a licence may be altered if deemed necessary from a safety point of view.

The Radiation Protection Act, §§ 18, 20 and 21 sets provisions for the Danish Health Authority to perform inspections, impose corrective actions and modify terms in a licence. Pursuant of these provisions, the Danish Health Authority may - *inter alia* - at any time demand access to radiation sources, facilities, equipment, registers, etc., and may require any urgent actions deemed necessary to ensure radiation protection carried out.

*Revocation and prohibition*

Pursuant of The Nuclear Installations Act § 6, a licence may be revoked if:

- 1) significant prerequisites for granting the licence were not met,
- 2) the conditions imposed have been substantially or repeatedly disregarded, or
- 3) safety considerations or other compelling reasons require that the installation ceases operation or be closed down.

Furthermore, §7 provides for means to suspend operations for a period of time, should considerations of safety warrant it.

The legislation does not entail provisions on relicensing/licensing renewal.

Under the Radiation Protection Act, a valid licence for use of radioactive substances is an implicit requirement before operating any installation with radioactive substances, including nuclear installations. Following The Radiation Protection Act, §§ 19, 20 The Danish Health Authority may revoke a licence and may prohibit the use of radiation sources or exposure if the use of radiation sources or the exposure are deemed not to be justified or optimised from the point of view of radiation protection.

#### *Penalties*

The Nuclear Installations Act includes penalty clauses in order to prevent the operation of a nuclear installation without a valid licence as well as preventing other violations of the requirements.

§ 38 (1) applies to offences in relation to licensing. According to this subsection any person who constructs or operates a nuclear installation without a licence or who violates the criteria or conditions for obtaining such licence shall be liable to a fine or imprisonment for a period of up to 2 years. The same sanctions shall be applicable to any person who provides false or misleading information in connection with issues concerning licences or in order to meet the criteria and conditions for obtaining a licence or who, when applying for a licence, conceals information that has an important bearing on the application. If these violations are ascribable to negligence, the offender shall be liable to a fine.

Executive Order 670 on Use of Radioactive Substances, § 87 states that, except where other legislation carries a higher penalty, any undertaking is liable for a fine or imprisonment for up to one year for commencing use of radioactive material without a licence from the Danish Health Authority or failing to observe any terms and conditions laid down by the Danish Health Authority in a licence.

Consolidation Act no. 976 of 17 September 2019 (The Criminal Code) (§ 114 and 192b) includes further and more severe penalty clauses related to malicious as well as unintended acts leading to damage to a nuclear facility or to release or risk of release of radioactive substances therefrom.

#### **Article 4 2.**

*“Member States shall ensure that the national framework is maintained and improved when appropriate, taking into account operating experience, insights gained from safety analyses for operating nuclear installations, development of technology and results of safety research, when available and relevant.”*

#### **Maintaining and improving the national framework**

The national nuclear safety requirements are defined through The Nuclear Installations Act, and the associated Circular 9450 on Nuclear Safety, supplemented by The Radiation Protection Act.

Pursuant of Circular 9450 on Nuclear Safety, the nuclear regulatory authorities must prepare reports on the state of nuclear safety pertaining the nuclear facilities at Risø, which are being decommissioned in accordance with the Parliamentary Resolution B48. Status reports must be prepared for the first time in 2020 and then again when the decommissioning of the aforementioned nuclear facilities is completed and the associated land areas are released for unrestricted use. The reports must include the following:

- a) An account of the nuclear regulatory authorities' oversight of nuclear safety, including the authorities' resources and competencies.
- b) The status and development of nuclear safety in the country, including whether nuclear safety during the establishment, operation and decommissioning of nuclear facilities is maintained at all times.
- c) Conditions that give rise to the need for changes to the Danish regulatory system and, where appropriate, an indication of the required change.

The status reports must be forwarded to the Ministry of Health, who shall forward the status reports to the Danish Parliament for information. The Danish Health Authority is responsible for publishing the reports immediately after the information of the Danish Parliament.

Revision of the Operational Limits and Conditions for Danish Decommissioning is performed by the Nuclear Regulatory Authorities, based on:

- a) provisions in relevant legislation
- b) continued assessment of the proportionality between the scope of operational and decommissioning tasks and the range and nature of conditions set to ensure safety during operation and decommissioning.
- c) operational experience
- d) technological development facilitating approaches which enhance the level of safety.

The Operational Limits and Conditions for Danish Decommissioning stipulates that the decommissioning of a nuclear facility must be documented in a final decommissioning report. The final decommissioning report provides the final documentation showing that the decommissioning of a nuclear facility has been completed in accordance with the objectives of the decommissioning plan and Operational Limits and Conditions for Danish Decommissioning. The report must include an account of unexpected events and lessons learned, which may be used to improve and optimize radiation protection – e.g. by the amendment of conditions, regulations or circulars – eventually improving radiation protection and nuclear safety during future projects.

## **2.2. Article 5 – Competent regulatory authority**

### **Article 5 1.**

*"Member States shall establish and maintain a competent regulatory authority in the field of nuclear safety of nuclear installations"*

The Nuclear Regulatory Authorities consists of the Danish Health Authority and Danish Emergency Management Agency. The two authorities jointly coordinate and carry out regulatory activities in accordance with the provisions of the Nuclear Installations Act and the Radiation Protection Act within their respective areas of authority, i.e. radiation protection and technical aspects of nuclear safety, respectively. See also text related to Article 4 1. and 4 1. (a).

#### **Article 5 2.**

*" Member States shall ensure the effective independence from undue influence of the competent regulatory authority in its regulatory decision-making. For this purpose, Member States shall ensure that the national framework requires that the competent regulatory authority:*

- a) is functionally separate from any other body or organisation concerned with the promotion or utilisation of nuclear energy, and does not seek or take instructions from any such body or organisation when carrying out its regulatory tasks;*
- b) takes regulatory decisions founded on robust and transparent nuclear safety-related requirements;*
- c) is given dedicated and appropriate budget allocations to allow for the delivery of its regulatory tasks as defined in the national framework and is responsible for the implementation of the allocated budget;*
- d) employs an appropriate number of staff with qualifications, experience and expertise necessary to fulfil its obligations. It may use external scientific and technical resources and expertise in support of its regulatory functions;*
- e) establishes procedures for the prevention and resolution of any conflicts of interest;*
- f) provides nuclear safety-related information without clearance from any other body or organisation, provided that this does not jeopardise other overriding interests, such as security, recognised in relevant legislation or international instruments."*

#### **Independence of the Nuclear Regulatory Authorities**

In matters of domestic nuclear safety, the Nuclear Regulatory Authorities refer to the Minister of Health but exercise regulatory functions and responsibilities under the Act of Nuclear Installations without undue influence. As Danish Decommissioning is responsible for operation and decommissioning of the nuclear facilities and refers to the Ministry of Higher Education and Science, the nuclear regulatory authorities are functionally separate from any agency responsible for promotion or utilisation of nuclear energy in Denmark.

The Danish Health Authority and the Danish Emergency Management Agency jointly carry out tasks as nuclear regulators under the Nuclear Installations Act. The respective tasks are to supervise safety and radiation protection conditions at nuclear facilities, and to provide nuclear scientific advice in connection with the processing of applications for permits for the construction of nuclear facilities and their operation. Emergency preparedness and contingency plans are also matters under the purview of the Nuclear Regulatory Authorities. The activities of the Nuclear Regulatory Authorities are determined by law and executive orders and are consequently also limited hereby. As it is not part of the nuclear regulatory authorities' tasks to contribute to the promotion of dissemination or use of nuclear energy or other forms of energy such criteria or considerations are irrelevant and thus illegal to include.

The impartiality of the Nuclear Regulatory Authorities as nuclear regulators is thus protected against the inclusion of conflicting criteria or considerations in the supervisory authorities' activities

Full professional independence in the field of radiation protection and safety in relation to other public authorities, private organizations, etc. is ensured through The Radiation Protection Act, § 23, stating that "The Danish Health Authority exercises its functions under this Act with full professional independence".

### **Regulatory decisions**

The Nuclear Regulatory Authorities takes regulatory decisions with general reference to the Nuclear Installations Act, Circular 9450 on Nuclear Safety, and with specific reference to the Operational Limits and Conditions for operation and decommissioning of the nuclear facilities, where requirements for safety and documentation thereof form the detailed basis for regulatory activities and decisions related to the operation and decommissioning of the nuclear facilities in Denmark.

The Danish Health Authority makes regulatory decisions regarding safety and radiation protection based on the Radiation Protection Act and underlying Executive Orders, and bases decisions on the outcome of safety assessments required for any activity subject to licensing under the Radiation Protection Act. The general requirements for safety and radiation protection, including the requirement to undertake, revise and update a safety assessment, are detailed in Executive Orders 669 on Ionising Radiation and Radiation Protection and 670 on Use of Radioactive Substances.

### **Budget allocations**

There are legislative provisions for the funding of the regulatory authorities. The Finance Act and revenue funding provide funding as detailed below.

The Finance Act is the state budget setting the framework for the financial dispositions of ministries, underlying authorities and agencies as well as other public authorities. It is a central and decisive element in the practical execution of fiscal policy in Denmark. The state budget forms the basis for the state's activities in a financial year. The items

of the Finance Act are appropriated in a process where state institutions provide budgetary information for review and assessment in relevant ministries before submission to Parliament. The authorities' budget assessments include the mandatory tasks of the authorities according to laws and regulations - for example, the mandatory tasks of the Danish Health Authority and the Danish Emergency Management Agency as the nuclear regulators. The Parliament is ultimately responsible for passing the Finance Act and for exercising control over the use of the appropriations

The Constitution provides for two additional types of appropriation acts, besides The Finance Act: 1) Temporary appropriation acts (which are proposed if, exceptionally, the draft budget bill is not expected to be finalized before the beginning of the financial year) and 2) Supplementary appropriation acts, which contains changes to appropriations after the adoption of the Finance Act. This ensures that unforeseen deviations in the nature and scope of tasks can be covered in the current financial year.

The Finance Act e.g. declares the appropriation for:

- a) the activities of the Danish Health Authority (§ 16)
- b) the activities of the Danish Emergency Management Agency (§ 12)
- c) the Agency for Institutions and Educational grants (§ 19).

Finally, part of the radiation protection and safety area is revenue covered. Revenue covered areas are only extended to those areas where the Danish Health Authority's professional independence will certainly not be affected. The revenue-covered business includes, in part, the technical support service providing dose monitoring of exposed workers who, through their work, are exposed to ionising radiation, and partly radiation protection and safety courses targeted at health professionals and other radiation exposed workers.

### **Staffing and qualifications**

Provisions are in place to ensure staffing of the nuclear regulatory authorities.

#### *Danish Health Authority*

The Danish Health Authority maintains an appropriate number of staff with qualifications, experience and expertise necessary to fulfil their obligations in the area of nuclear safety in the national context.

The quality management system of the Danish Health Authority defines policies on the responsibility of the management to ensure the necessary skills, knowledge and staff to perform the regulatory functions. It states that within the overall framework of the Danish Health Authority the Division Director must work to ensure an adequate financial and personnel framework for the Danish Health Authority, including the Division for Radiation Protection, which manages the obligations of the Danish Health Authority in the area of radiation protection and safety.

The Danish Health Authority's strategy of competences addresses the need for ensuring adequate competences, but does not specify the necessary number of staff – nor does it specify the necessary knowledge, skills and abilities in radiation protection and safety – with a view to the nature and number of regulated facilities and activities.

The competence strategy states that all employees must possess a number of basic competencies. This can be ensured through either recruitment or systematic education and training, in particular in the area of radiation protection and safety.

The quality management system of the Danish Health Authority further provides for knowledge management based on the following areas:

1. Maintenance of adequate and up-to-date policies, procedures and instructions in all relevant areas of the quality management system in order to ensure consistency and enable efficient introduction of the replacing/new staff to the relevant roles and functions of the regulatory body.
2. Duplication of staff coverage of all essential roles and functions – essentially to retain knowledge in the event of resignations or staff cuts, but also for gaining profits from the exchange of knowledge between colleagues.
3. Mandatory participation of new staff in courses such as a) basic radiation protection and safety, b) use of measuring instruments and c) health physics.
4. Mandatory participation of relevant staff in standard courses for civil servants introducing them to The Public Administration Act and The Public Information Act (Act no. 606 of 12 June 2013 on Access to Public Administration).

To be in accordance with the provisions set out in the competency management strategy, the Danish Health Authority management must evaluate the need for compensation and/or new competences following resignation of qualified staff.

#### *Danish Emergency Management Agency*

As for the Danish Emergency Management Agency (Nuclear Division), the number and composition of personnel is determined by the Executive Board of the Emergency Management Agency.

Through continuous assessments and evaluations the number and composition of the personnel is determined by the board taking into account the nature and the extent of the mandatory tasks laid upon the Danish Emergency Management Agency by law and regulations.

While the specific nature and extent of the tasks determines the number and composition of the staff in the Danish Emergency Management Agency, Nuclear Division, a continuous ongoing evaluation between management and employees determines the training and strengthening of competences necessary to secure and maintain adequate human resources to carry out the tasks of government as a nuclear regulator – in numbers as well as in competences.

As the nuclear regulatory tasks are of both technical and administrative/legal nature, including supervision and control, it is ensured by duplication of competences between

employees that the necessary competences are present in the various areas irrespective of regular ongoing staff replacements and the like.

In general the level of education and competences reflects the scope and nature of the regulatory tasks laid upon the Danish Emergency Management Agency, Nuclear Division, by law and regulations. It should be noted hereby that Denmark is a non-nuclear Member State.

### **Conflicts of interest**

As of impartiality of staff, the Danish Health Authority performs its functions in accordance with an Impartiality Policy, which implements the Public Administration Act's rules of impartiality, and is publicly available via the Danish Health Authority website. The policy is implemented in the quality management system. To ensure transparency about any impartiality issues, all staff at a managerial level at Danish Health Authority must complete declarations of impartiality, and these are publicly available on the website of the Danish Health Authority. Moreover, all staff must notify their immediate superior of any impartiality, and external consultants/advisors must notify their relevant contact person at Danish Health Authority.

Conflicts of interest across the areas of responsibility of the Ministry, or across the divisions of Danish Health Authority, are managed, inter alia, by the use of the so-called "good request"-code, which stipulates a very explicit presentation of the purpose, history and context in which a requested service is included.

Likewise, all staff of the Danish Emergency Management Agency is subject to the rules of impartiality in the Public Administration Act and thus all staff must observe to declare any personal interest that may be considered as a conflicting interest.

While the provisions in the Public Administration Act apply to individuals, authorities must in general according to a legal principle, correspondingly ensure its impartiality and shall refer any case or matter in which the authority's impartiality may be questioned to another authority, which shall thereafter decide in the case or matter.

Any decision from the nuclear regulatory authorities can be appealed to the Minister of Health.

In addition, all governmental civil servants must work according to the instructions for the conduct of civil servants given in the publication "Seven Central Duties for Civil Servants of the Central Administration" by the Agency for Modernisation (Ministry of Finance), provides broad criteria. Accordingly, staff of the Danish Health Authority and the Danish Emergency Management Agency are subject to these instructions.

In accordance with these instructions (cit): "Civil servants professional advice and assistance must stay within the professional standards generally recognized in the field in question. In some areas, there will be clear professional standards among scientists and other experts as to what is right and wrong and what professional advice must also live up to. In other areas, the framework for general professionalism will be broader and

some areas may be characterized by obscure or conflicting professional standards". The duty of professionalism applies to all kinds of assessments based on professional insight into actual matters and contexts. Officials' professional advice and assistance must stay within the professional standards generally recognized in the field in question.

The Danish Health Authority exercises its functions as radiation protection authority under The Radiation Protection Act in full professional independence (cf. § 23) and as such, appeals which are not of legal technical character, can only be subject of a lawsuit before the Danish courts or submitted for an assessment by the Danish Parliamentary Ombudsman (<http://en.ombudsmanden.dk/>). Appeals of legal technical character in relation to decisions made by the Danish Health Authority as radiation protection authority may be lodged with the Minister of Health, following The Radiation Protection Act, § 25.

### **Provision of nuclear safety-related information**

In accordance with Circular 9450 on Nuclear Safety, the Nuclear Regulatory Authorities, in cooperation with the licence holder, must make all information relevant to the safety, including Operational Limits and Conditions, of the nuclear facilities available to the public, taking into account security issues.

On the web sites of the Nuclear Regulatory Authorities (Danish Health Authority: [www.sis.dk](http://www.sis.dk), Danish Emergency Management Agency: [www.brs.dk](http://www.brs.dk)) information is provided regarding the Danish legislation on nuclear safety and radiation protection as well as the Operational Limits and Conditions issued to the licence holder, Danish Decommissioning. Further to these provisions, Circular 9450 on Nuclear Safety specifies that the nuclear regulatory authorities must report to the Ministry of Health on the status of nuclear safety. The report must account for:

- The regulatory oversight performed by the nuclear regulatory authorities including statements on the status of expertise and skills within the nuclear regulatory authorities in the field nuclear safety as well as human resources of the nuclear regulatory authorities.
- The status and development of nuclear safety in the country
- Any situation prompting needs for adjustments of the regulatory provisions regarding nuclear safety, including proposals for such changes.

The Ministry of Health conveys the report to the Danish Parliament and the Danish Health Authority is responsible for publication of the report afterwards.

### **Article 5 3.**

*"Member States shall ensure that the competent regulatory authority is given the legal powers necessary to fulfil its obligations in connection with the national framework described in Article 4(1). For this purpose, Member States shall ensure that the national framework entrusts the competent regulatory authorities with the following main regulatory tasks, to:*

- (a) *propose, define or participate in the definition of national nuclear safety requirements;*
- (b) *require that the licence holder complies and demonstrates compliance with national nuclear safety requirements ;*
- (c) *verify such compliance through regulatory assessments and inspections;*

### **National nuclear safety requirements**

The national nuclear safety requirements are defined through The Nuclear Installations Act, and the associated Circular 9450 on Nuclear Safety, supplemented by The Radiation Protection Act. Further details regarding this are provided in the text related to Article 4 1. (b).

Pursuant of Circular 9450 on Nuclear Safety, the Nuclear Regulatory Authorities must prepare reports on the state of nuclear safety pertaining the nuclear facilities at Risø, which are being decommissioned in accordance with the Parliamentary Resolution B48. In addition to reporting on Nuclear Regulatory Authorities' oversight of nuclear safety and the status and development of nuclear safety, the report must include an assessment of whether there are conditions that give rise to the need for changes to the Danish regulatory system and, where appropriate, an indication of the required change.

### **Compliance with national nuclear safety requirements**

Circular 9450 on Nuclear Safety specifies that the Nuclear Regulatory Authorities must oversee that the licensee at any time ensures nuclear safety through continuous assessment and systematic improvement of safety, including such measures as to prevent accidents and to mitigate the consequences thereof, through application of defence-in-depth provisions, where relevant.

Further to the assessment of nuclear safety, the Nuclear Regulatory Authorities must oversee that improvements to safety is carried out considering aspects of ageing, operational experience and operational conditions which may affect nuclear safety, as well as development in research and international standards for nuclear safety.

The Operational Limits and Conditions for Danish Decommissioning stipulates that the decommissioning of a nuclear facility must be documented in a final decommissioning report. The final decommissioning report provides the final documentation showing that the decommissioning of a nuclear facility has been completed in accordance with the objectives of the decommissioning plan and Operational Limits and Conditions for Danish Decommissioning. The report must include an account of unexpected events and lessons learned, which may be used to improve and optimize radiation protection – e.g. by the amendment of conditions, regulations or circulars – eventually improving radiation protection and nuclear safety during future projects.

### **Verification of compliance**

The legal provision to perform and carry out inspections of nuclear facilities and activities by the Nuclear Regulatory Authorities is ensured by § 7 in The Nuclear Installations Act. In addition, the Danish Health Authority exercises inspections in accordance to

The Radiation Protection Act, § 18 in relation to the use of radiation sources and exposure in any exposure situation.

Circular 9450 on Nuclear Safety specifies that the Nuclear Regulatory Authorities must oversee – also through inspections - that the licensee at any time ensures nuclear safety through continuous assessment and systematic improvement of nuclear safety, including such measures as to prevent accidents and to mitigate the consequences thereof, through application of defence-in-depth provisions, where relevant. Further details on the inspection activities by the Nuclear Regulatory Authorities are presented in the text related to Article 4 1. (d).

### 2.3. Article 6 – Licence holders

In Denmark, no new nuclear installations have been established after 14. August 2014, cf. Article 10 1a.

The planned upgraded storage facility at the Risø site, established in accordance with Parliamentary Resolution B90, does not constitute a nuclear installation covered by the Nuclear Safety Directive. Hence, following completion of decommissioning of the existing nuclear facilities at Risø and subsequent release of the site from regulatory control in accordance with Parliamentary Resolution B48, there will be no nuclear installations within the scope of the directive in Denmark.

#### **Article 6 (a)**

*"The prime responsibility for the nuclear safety of a nuclear installation rests with the licence holder. That responsibility cannot be delegated and includes responsibility for the activities of contractors and sub-contractors whose activities might affect the nuclear safety of a nuclear installation;*

Under the Nuclear Installations Act, construction and operation of nuclear installations are subject to authorisation from the Minister of Health. The authorization must indicate the responsible licence holder. A licence following the act includes responsibility for the safety of the licensed nuclear installation.

The Radiation Protection Act applies to the use of radiation sources and exposure in any exposure situation, and hence also to any nuclear installation or associated use of radiation sources or exposure. §2 in the act designates responsibility for safety to the owner, lessee, leaser or borrower or whomsoever else holds right of use of a radioactive substance or is responsible for an area exposed to ionising radiation, the person responsible for use of a radiation source, as well as the undertaking that allows its workers to engage in the use of radiation sources or allows its workers to be exposed to ionizing radiation.

According to both acts, the responsibility for safety is clearly designated and non-delegable.

Circular 9450 on Nuclear Safety specifies that the Nuclear Regulatory Authorities must oversee that the licence holder, to comply with the Nuclear Installations Act, ensures nuclear safety and optimization thereof at all times by application of all necessary human, competence and financial resources with respect to contractors and subcontractors activities.

Danish Decommissioning is an institution under the Ministry of Higher Education and Science and is the licence holder pursuant to both the Nuclear Installations Act and the Radiation Protection Act responsible for operation (care and maintenance) and decommissioning of the Danish nuclear installations.

Following the provisions stipulated in chapter 4 of the Operational Limits and Conditions, Danish Decommissioning, as licence holder, must ensure that external consultants, contractors, etc. who are required to undertake work at the nuclear installations, are provided with a level of education prior to the commencement of works, that ensures a proper performance of all tasks in terms of nuclear safety and radiation protection.

**Article 6 (b)**

*“When applying for a licence, the applicant is required to submit a demonstration of nuclear safety. Its scope and level of detail shall be commensurate with the potential magnitude and nature of the hazard relevant for the nuclear installation and its site;*

Following the Nuclear Installations Act, §§ 3 and 4, construction and operation of a nuclear facility is subject to licensing.

Executive Order 278 on Protective Measures against Accidents at Nuclear Facilities, §§3,4 sets requirements for preparation and scope of preliminary safety reports as well as final safety reports as part of the licensing processes for construction and operation of a nuclear facility. The preliminary safety report must provide for a technical description of the facility and associated control- and safety features, as well a description of the facility location and the surrounding areas. The preliminary safety report must be submitted to the nuclear regulatory authorities prior to onset of construction of the facility. The final safety report must contain sufficient information on technical and anticipated operational parameters, which allows for a complete evaluation of safety, and must be submitted to the nuclear regulatory authorities prior to onset of operation of the facility.

According to the Radiation Protection Act operation of a nuclear facility is subject to licensing and hence, undertaking of safety assessments.

Executive Order 669 on Ionising Radiation and Radiation Protection, §20 requires the licensee to compile a safety assessment commensurate with the nature, scale and complexity of the undertaking's use of radiation sources or exposure. The safety assessment must be completed prior to the onset of activity, and forms the basis for establishing operational limits and conditions as well as for granting a licence.

**Article 6 (c)**

*“Licence holders are to regularly assess, verify, and continuously improve, as far as reasonably practicable, the nuclear safety of their nuclear installations in a systematic and verifiable manner. That shall include verification that measures are in place for the prevention of accidents and mitigation of the consequences of accidents, including the verification of the application of defence-in-depth provisions;*

Executive Order 278 on Protective Measures against Accidents at Nuclear Facilities, §§3,4 sets requirements for preparation and scope of preliminary safety reports as well as final safety reports during planning, construction and prior to operation of a nuclear facility. The final safety report must contain sufficient information on technical and anticipated operational parameters, which allows for a complete evaluation of safety.

Circular 9450 on Nuclear Safety specifies that the Nuclear Regulatory Authorities must oversee that the licensee at any time ensures nuclear safety through continuous assessment and systematic improvement of safety, including such measures as to prevent accidents and to mitigate the consequences thereof, through application of defence-in-depth provisions, where relevant.

Further to the assessment of nuclear safety, the Nuclear Regulatory Authorities must oversee that improvements to safety is carried out considering aspects of ageing, operational experience and operational conditions which may affect nuclear safety, as well as development in research and international standards for nuclear safety.

The Operational Limits and Conditions for operation and decommissioning of the nuclear facilities, chapter 2, sets conditions for systematic and regular, at least every 5 years, assessment of the safety of the nuclear installation.

Executive Order 669 on Ionising Radiation and Radiation Protection, §20 requires the licensee to compile a safety assessment commensurate with the nature, scale and complexity of the undertaking's use of radiation sources or exposure. The safety assessment must be completed prior to the onset of activity, and must at all times reflect the current use of radioactive substances and ionizing radiation.

**Article 6 (d)**

*“Licence holders establish and implement management systems which give due priority to nuclear safety;*

Circular 9450 on Nuclear Safety specifies that the nuclear regulatory authorities must oversee that nuclear facilities and associated equipment must be established and maintained in appropriate quality and records hereof must be maintained. Further, it is specified that the nuclear regulatory authorities must ensure that the licensee undertakes and continuously updates and documents assessments of safety related matters, in particular in relation to prevention of accidents and mitigation of the consequences thereof.

The Operational Limits and Conditions for Danish Decommissioning, chapter 2 detail further requirements for the management system and quality assurance related to operation and decommissioning of the nuclear facilities at Risø. Chapter 4 in Operational Limits and Conditions for Danish Decommissioning addresses further organizational aspects required to ensure safety.

Executive Order 669 on Ionising Radiation and Radiation Protection, § 93 requires licensees to establish and maintain an effective quality management system commensurate with the nature and scale of the undertaking's use of radiation sources or exposure. § 94 of same order specifies that all radiation protection measures, including safety and emergency procedures, must be tested at suitable intervals, and that written instructions must be available for the performance of all such tests, which must be documented in a systematic manner.

**Article 6 (e)**

*“Licence holders provide for appropriate on-site emergency procedures and arrangements, including severe accident management guidelines or equivalent arrangements, for responding effectively to accidents in order to prevent or mitigate their consequences. Those shall in particular:*

- (i) be consistent with other operational procedures and periodically exercised to verify their practicability;*
- (ii) address accidents and severe accidents that could occur in all operational modes and those that simultaneously involve or affect several units;*
- (iii) provide arrangements to receive external assistance;*
- (iv) be periodically reviewed and regularly updated, taking account of experience from exercises and lessons learned from accidents;*

Executive Order 278 on Protective Measures against Accidents at Nuclear Facilities, part 3 sets requirements for emergency response planning.

Circular 9450 on Nuclear Safety specifies that the nuclear regulatory authorities must oversee that the licensee continuously assesses nuclear safety with the aim of ensuring that unintended incidents, accidents are prevented and the consequences mitigated.

In particular, the nuclear regulatory authorities are to ensure that assessments of nuclear safety include:

- Improvements of safety taking into account the effects of ageing, operational experience, most recent research results and international standards,
- Prevention of operational conditions deviating from normal operation but which do not cause any significant damage to items important to safety,
- conditions that may lead to loss of all trains of a safety system

Chapter 10 in the Operational Limits and Conditions for operation and decommissioning of the nuclear facilities specify the requirements for emergency preparedness in order to ensure prevention of accidents and mitigation of the consequences thereof. This includes arrangements to ensure that:

- Annual emergency exercises must be conducted.
- The on-site emergency response must be able to make a coordinated response adapted to the nature and complexity of the accident.
- The on-site emergency response must be coordinated with external emergency agencies including fire brigades, hospitals and the national nuclear emergency management.

Feedback from exercises and coordinative efforts with external emergency agencies as well as updates of the safety documentation is included in the on-site emergency procedures and arrangements.

Executive Order 669 on Ionising Radiation and Radiation Protection, Chapter 12 and Executive Order 670 on Use of Radioactive Substances, §83-85, set requirements for establishment of emergency procedures and for management of emergencies.

**Article 6 (f)**

*“Licence holders provide for and maintain financial and human resources with appropriate qualifications and competences, necessary to fulfil their obligations with respect to the nuclear safety of a nuclear installation. Licence holders shall also ensure that contractors and subcontractors under their responsibility and whose activities might affect the nuclear safety of a nuclear installation have the necessary human resources with appropriate qualifications and competences to fulfil their obligations.*”

Parliamentary Resolutions B48 and B90 assign specific tasks to the operator, Danish Decommissioning, regarding operation and decommissioning of the nuclear facilities.

Pursuant to both resolutions, provision for assurance of financing is facilitated through The Finance Act. In particular, a financial resource of 2.3 billion DKK has been reserved on The Finance Act, § 19.11.79.71, for completion of decommissioning of the nuclear facilities at the Risø site, long-term storage of radioactive waste and disposal of this waste.

Circular 9450 on Nuclear Safety specifies that the nuclear regulatory authorities must oversee that the licensee upholds nuclear safety during operation as well as decommissioning through application of necessary and sufficient human as well as financial resources, also with respect to subcontractors.

Consequently, chapter 4 in the Operational Limits and Conditions for operation and decommissioning of the nuclear facilities specifies further details regarding the requirements for education, training and skills of staff essential for the upkeep of safety during operation and decommissioning of the nuclear facilities. This includes provisions for external contractors, advisers etc.

## 2.4. Article 7 – Expertise and skills in nuclear safety

### Article 7

*” Member States shall ensure that the national framework requires all parties to make arrangements for the education and training for their staff having responsibilities related to the nuclear safety of nuclear installations so as to obtain, maintain and to further develop expertise and skills in nuclear safety and on-site emergency preparedness.*

#### *Licence holders*

The Nuclear Installations Act, § 5 specifies that approval for construction as well as operation of nuclear facilities may be granted subject to conditions defined as deemed necessary for the upkeep of safety. Such conditions may include specification of qualifications required for the licensee to possess.

The Nuclear Regulatory Authorities have, pursuant of § 7 in the Nuclear Installations Act, specified detailed requirements in the Operational Limits and Conditions (chapter 4) concerning education, training and skills of staff essential for the upkeep of safety during operation and decommissioning of the nuclear facilities.

Further to these provisions, Executive Order 669 on Ionising Radiation and Radiation Protection, chapter 7 sets requirements for licensees to have at its disposal one or more Radiation Protection Experts and Radiation Protection Officers. The Radiation Protection Experts and Officers must, within their field of expertise, monitor and assist in maintaining the radiation protection of workers and members of the public entailed by the undertaking's use of radiation sources or exposures. Further requirements for education and training of staff are specified in chapter 8.

Executive Order 670 on Use of Radioactive Substances chapter 7, sets further requirements for the knowledge, skills and competences of designated expert individuals.

### *Regulatory authority*

Circular 9450 on Nuclear Safety specifies that the Nuclear Regulatory Authorities must maintain and develop expertise and qualifications relevant for nuclear safety and emergency preparedness through arrangements for training and education of staff.

## **2.5. Article 8 – Transparency**

### **Article 8 1.**

*“Member States shall ensure that necessary information in relation to the nuclear safety of nuclear installations and its regulation is made available to workers and the general public, with specific consideration to local authorities, population and stakeholders in the vicinity of a nuclear installation. That obligation includes ensuring that the competent regulatory authority and the licence holders, within their fields of responsibility, provide in the framework of their communication policy:*

- a) information on normal operating conditions of nuclear installations to workers and the general public;”*
- b) prompt information in case of incidents and accidents to workers and the general public and to the competent regulatory authorities of other Member States in the vicinity of a nuclear installation.*

### **Normal operating conditions**

In accordance Circular 9450 on Nuclear Safety, the Nuclear Regulatory Authorities, in cooperation with the licence holder, must make all information relevant to the safety, including Operational Limits and Conditions, of the nuclear facilities available to the public, taking into account security issues.

On the web sites of the Nuclear Regulatory Authorities (Danish Health Authority: [www.sis.dk](http://www.sis.dk), Danish Emergency Management Agency: [www.brs.dk](http://www.brs.dk)) information is provided regarding the Danish legislation on nuclear safety and radiation protection as well as the Operational Limits and Conditions issued to the licence holder, Danish Decommissioning. On the web site of Danish Decommissioning ([www.dekom.dk](http://www.dekom.dk)), reports etc. relevant to the operational and decommissioning activities of the nuclear facilities at Risø are presented.

### **Information in case of incidents and accidents**

Operational Limits and Conditions, chapter 9 on managing unexpected events, chapter 10 on on-site emergency preparedness and response, Chapter 11 on fire prevention and response and Chapter 14 on reporting set provisions *inter alia* on supply of information for relevant parties, including authorities, workers and members of the public in case of incidents and accidents. The provisions reflect the proportionality between the scope and level of detail required for a particular situation, adapted to the specific circumstances at the nuclear facilities at the Risø site. Specifically, Chapter 9.3 specifies procedures for

alarming and alerting of the Nuclear Regulatory Authorities, also with the purpose of being able to provide information to the public etc.

Consolidation Act no. 903 of 26 August 2019 (The Health Act) § 212 sets the requirement for the Danish Health Authority to inform the public in matters related to health, when circumstances require so.

In addition to having signed the Convention on Early Notification of a Nuclear Accident, Denmark has entered into the following multilateral agreements implying information to other states in case of incidents and accidents:

- Nordic Mutual Assistance Agreement in Connection with Radiation Accidents between Denmark, Finland, Sweden and Norway; signed in Vienna 17 October 1963 and in force since 19 June 1964
- Nordic Mutual Assistance Agreement in the event of a disaster or major accident (1989)
- Agreement (for the Nordic and Baltic region) on the Exchange of Radiation Monitoring Data (signed 7 June 2001)

Furthermore, the Nordic countries cooperate in accordance with The Nordic Manual (The so-called NORMAN): Co-operation between the Nordic Authorities in Response to and Preparedness for Nuclear and Radiological Emergencies and Incidents). For 51 defined types of incidents and accidents, the NORMAN specifies the type and mode of information as well as the country/countries responsible for notifying - with respect to both the initial notification and follow-up messages. The cooperation works under the so-called Nordic Chiefs Meeting (Heads of the Nordic Radiation Protection and Safety Authorities).

The Nordic authorities responsible for radiation and nuclear safety as well as radiation protection have established a forum for public communication for the exchange of information on common matters, ongoing work and projects. The cooperation on public communication (NPC) also works under the Nordic Chiefs Meeting.

Finally, Denmark has established bilateral agreements with a number of neighboring or near-by countries including Finland, Sweden, UK, Germany, Poland, Russia and Lithuania entailing exchange of information in case of incidents and accidents.

**Article 8 2.**

*“Information shall be made available to the public in accordance with relevant legislation and international instruments, provided that this does not jeopardise other overriding interests, such as security, which are recognised in relevant legislation or international instruments.”*

Circular 9450 on Nuclear Safety specifies that the nuclear regulatory authorities must report to the minister of health on the status of nuclear safety. The report must account for:

- the regulatory oversight performed by the nuclear regulatory authorities including statements on the status of expertise and skills within the nuclear regulatory authorities in the field nuclear safety as well as human resources of the nuclear regulatory authorities.
- The status and development of nuclear safety in the country
- Any situation prompting needs for adjustments of the regulatory provisions regarding nuclear safety, including proposals for such changes

See also text related to Article 8.1.(a) above.

The Health Act, § 212 sets the requirement for the Danish Health Authority to inform the public in matters related to health, when circumstances require so.

Reports to and outcome of the review process associated with the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management are made publicly available through the website of the Danish Health Authority.

Reports to and outcome of the review process associated with the Convention on Nuclear Safety are made publicly available through the website of the Danish Emergency Management Agency following the review meetings.

**Article 8 3.**

*“Member States shall, without prejudice to Article 5(2), ensure that the competent regulatory authority engages, as appropriate, in cooperation activities on the nuclear safety of nuclear installations with competent regulatory authorities of other Member States in the vicinity of a nuclear installation, inter alia, via the exchange and/or sharing of information.”*

Denmark has signed/ratified international conventions and agreements implying cooperation on nuclear safety, providing a fundamental level of transparency in terms of the guiding principles and criteria applied among the signatories/ratifiers in nuclear safety.

The Nuclear Safety Act §11 requires the Danish Emergency Management Agency to participate in international cooperation regarding nuclear safety. Denmark participates in several international fora and expert groups such as ENSREG, HERCA, WENRA, WPAQ as well as in the framework of cooperation between the Nordic countries (See also text related to Article 8 1.), and associated working groups, which provide transparency and cooperation amid the competent regulatory authorities of participating countries – including other Member States.

**Article 8 4.**

*“Member States shall ensure that the general public is given the appropriate opportunities to participate effectively in the decision-making process relating to the licensing of nuclear installations, in accordance with relevant legislation and international instruments.”*

Consolidation Act no. 287 of 16 April 2018 on Planning specifically stipulates - as a core purpose - provisions for the involvement of interested parties and for their input to decision making. The Planning Act thus fundamentally ensures the involvement of the public in coherent planning that combines social interests in land use, contributes to protecting the country's nature and environment - and creates a good framework for growth and development throughout the country so that community development can be done on a sustainable basis with respect for human living conditions, conservation of animal and plant life and increased economic prosperity.

Pursuant to The Environmental Impact Assessment Act for plans, programs and specific projects (Consolidation Act no. 1225 of 25 October 2018), § 35: The authority that carries out an environmental assessment of the developer's application and makes a decision in accordance with the rules shall consult: a) the public and the relevant authorities in defining the content of the environmental impact assessment report and before issuing an opinion, and b) the relevant authorities and the public on the environmental impact assessment report submitted by the developer, including the application for a licence, before making a decision on the licence. The Environmental Impact Assessment Act further specifies that the authority shall publish a brief description of the main features of the proposed project for the purpose of the consultation. For consultation with the public, the consultation period must be at least 8 weeks.

The planned upgraded storage facility at the Risø site does not constitute a nuclear installation covered by the Nuclear Safety Directive.

Nevertheless, Parliamentary Resolution B90, Chapter VIII, stipulates that in addition to the statutory involvement and consultation of the public in different stages of the planning process ahead of realising a disposal facility, the involvement of stakeholders will include the continuation and adaptation of the contact forum instrument.

A National Contact Forum was established in 2016, providing access to information and dialogue between central stakeholders. The National Contact Forum discusses all items of relevance to the national programme and provides input and opinions to the decision making process.

In Roskilde Municipality, following the Parliamentary decision to construct an upgraded long-term storage facility at the Risøe location, a local contact forum was established in 2019 in recognition of the special interests of the municipality which has hosted Denmark's nuclear facilities and radioactive waste storage facility since the 1950s.

Parliamentary Resolution B90 envisages the formation of further local contact fora on sites to be surveyed for the localisation of the disposal facility.

Following Parliamentary Resolution B90, the operation of a communications platform with access to all relevant material in the case, including a contact person function and a panel of independent experts to answer questions from the public, continues to form

an intrinsic part of the provision of information to the general public. Further information is accessible online on the website of the Ministry of higher Education and Science (<https://ufm.dk/en/newsroom/issues/radio-active-waste/stakeholders-in-the-process>).

## 2.6. Article 8a – Nuclear safety objective for nuclear installations

In Denmark, no new nuclear installations have been established after 14. August 2014, cf. Article 10 1a.

The planned upgraded storage facility at the Risø site, established in accordance with Parliamentary Resolution B90, does not constitute a nuclear installation covered by the Nuclear Safety Directive. Hence, following completion of decommissioning of the existing nuclear facilities at Risø and subsequent release of the site from regulatory control in accordance with Parliamentary Resolution B48, there will be no nuclear installations within the scope of the directive in Denmark.

### **Article 8a 1:**

*“Member States shall ensure that the national nuclear safety framework requires that nuclear installations are designed, sited, constructed, commissioned, operated and decommissioned with the objective of preventing accidents and, should an accident occur, mitigating its consequences and avoiding:*

- a) early radioactive releases that would require off-site emergency measures but with insufficient time to implement them;*
- b) large radioactive releases that would require protective measures that could not be limited in area or time. Member States shall ensure that the general public is given the appropriate opportunities to participate effectively in the decision-making process relating to the licensing of nuclear installations, in accordance with relevant legislation and international instruments.”*

Circular 9450 on Nuclear Safety specifies that the nuclear regulatory authorities must oversee that the licensee ensures nuclear safety as defined in the circular. Specifically the nuclear regulatory authorities must ensure this through inspections, enforcement of terms for safety and regulatory overview of licensee’s activities regarding siting, design, construction, operation and decommissioning of a nuclear facility.

### **Article 8a 2.**

*“Member States shall ensure that the national framework requires that the objective set out in paragraph 1:*

- a) applies to nuclear installations for which a construction licence is granted for the first time after 14 August 2014;*

*b) is used as a reference for the timely implementation of reasonably practicable safety improvements to existing nuclear installations, including in the framework of the periodic safety reviews as defined in Article 8c(b)."*

The nuclear facilities at the Risø site, have been constructed, operated and are now being decommissioned in accordance with the provisions in the Nuclear Installations Act and the Radiation Protection Act, and as such have been designed, sited, constructed, commissioned, operated and decommissioned with the objective of preventing accidents and, should an accident occur, mitigating its consequences.

As such the objectives set out in Article 8a 1, have been used as a reference cf. Article 8a 2. b), for the assurance of safety, including implementation of reasonably practicable safety improvements to the existing nuclear installation in Denmark.

In agreement herewith, Circular 9450 on Nuclear Safety specifies that the nuclear regulatory authorities must oversee that the licensee ensures nuclear safety through:

- Continued assessment and improvement of conditions related to safety with the aim of preventing accidents and mitigating the consequences thereof applying the defence-in-depth concept where relevant.
- Identifying means of improving safety considering:
  - The effects of ageing, operational experience, research and international standards
  - Operational processes deviating from normal operation as well as more severe conditions such as the complete loss of all trains of a safety system.

## **2.7. Article 8b – Implementation of the nuclear safety objective for nuclear installations**

In Denmark, no new nuclear installations have been established after 14. August 2014, cf. Article 10 1a.

The planned upgraded storage facility at the Risø site, established in accordance with Parliamentary Resolution B90, does not constitute a nuclear installation covered by the Nuclear Safety Directive. Hence, following completion of decommissioning of the existing nuclear facilities at Risø and subsequent release of the site from regulatory control in accordance with Parliamentary Resolution B48, there will be no nuclear installations within the scope of the directive in Denmark.

### **Article 8b 1.**

*"In order to achieve the nuclear safety objective set out in Article 8a, Member States shall ensure that the national framework requires that where defence-in-depth applies, it shall be applied to ensure that:*

- a) *the impact of extreme external natural and unintended man-made hazards is minimised;*
- b) *abnormal operation and failures are prevented;*
- c) *abnormal operation is controlled and failures are detected;*
- d) *accidents within the design basis are controlled;*
- e) *severe conditions are controlled, including prevention of accidents progression and mitigation of the consequences of severe accidents;*
- f) *organisational structures according to Article 8d(1) are in place.”*

Following Circular 9450 on Nuclear Safety, the nuclear regulatory authorities must oversee that the licensee ensures nuclear safety through amongst other:

- Continued assessment and improvement of conditions related to safety with the aim of preventing accidents and mitigating the consequences thereof, applying the defence-in-depth concept where relevant.
- Identifying means of improving safety considering:
  - The effects of ageing, operational experience, research and international standards
  - Operational processes deviating from normal operation as well as more severe conditions such as the complete loss of all trains of a safety system.

Systems for prevention and detection of abnormal operation and failures are thus continuously reviewed and updated as decommissioning of the nuclear facilities progresses, as are the scope and relevance of accident or severe conditions scenarios. For instance, practicable safety improvements to the existing nuclear installation have been implemented in order to ensure that the potential impact of extreme external natural hazards (flooding) is minimised. These measures were implemented following the passage of the storm “Bodil” in 2013, which caused elevated sea levels, albeit no flooding of the nuclear facilities, in Roskilde Fjord surrounding the Risø site.

**Article 8b 2.**

*“In order to achieve the nuclear safety objective set out in Article 8a, Member States shall ensure that the national framework requires that the competent regulatory authority and the licence holder take measures to promote and enhance an effective nuclear safety culture. Those measures include in particular:*

- a) *management systems which give due priority to nuclear safety and promote, at all levels of staff and management, the ability to question the effective delivery of relevant safety principles and practices, and to report in a timely manner on safety issues, in accordance with Article 6(d);*
- b) *arrangements by the licence holder to register, evaluate and document internal and external safety significant operating experience;*

- c) *the obligation of the licence holder to report events with a potential impact on nuclear safety to the competent regulatory authority; and,*
- d) *arrangements for education and training, in accordance with Article 7.”*

The Operational Limits and Conditions for Danish Decommissioning, chapter 2 detail further requirements for management systems and quality assurance related to operation and decommissioning of the nuclear facilities at Risø. Chapter 4 in Operational Limits and Conditions for Danish Decommissioning addresses further organizational aspects required to ensure safety, and chapter 14 includes the requirement for the licence holder to record and report events with a potential impact on nuclear safety (cf. Article 6). The Nuclear Regulatory Authorities are in turn likewise obliged through Circular 9450 on Nuclear Safety concerning the requirement to report on the need to address changes in the regulatory system and to report on issues relevant for nuclear safety (cf. Article 8).

Regarding safety culture, Executive Order 669 on Ionising Radiation and Radiation Protection, § 93 requires licensees to establish and maintain an effective quality management system commensurate with the nature and scale of the undertaking's use of radiation sources or exposure. § 94 of same order specifies that all radiation protection measures, including safety and emergency procedures, must be tested at suitable intervals, and that written instructions must be available for the performance of all such tests, which must be documented in a systematic manner.

## **2.8. Article 8c – Initial assessment and periodic safety reviews**

In Denmark, no new nuclear installations have been established after 14. August 2014, cf. Article 10 1a.

The planned upgraded storage facility at the Risø site, established in accordance with Parliamentary Resolution B90, does not constitute a nuclear installation covered by the Nuclear Safety Directive. Hence, following completion of decommissioning of the existing nuclear facilities at Risø and subsequent release of the site from regulatory control in accordance with Parliamentary Resolution B48, there will be no nuclear installations within the scope of the directive in Denmark.

### **Article 8c**

*“Member States shall ensure that the national framework requires that:*

- a) *any grant of a licence to construct a nuclear installation or operate a nuclear installation, is based upon an appropriate site and installation-specific assessment, comprising a nuclear safety demonstration with respect to the national nuclear safety requirements based on the objective set in Article 8a;*

- b) *the licence holder under the regulatory control of the competent regulatory authority, re-assesses systematically and regularly, at least every 10 years, the safety of the nuclear installation as laid down in Article 6(c). That safety reassessment aims at ensuring compliance with the current design basis and identifies further safety improvements by taking into account ageing issues, operational experience, most recent research results and developments in international standards, using as a reference the objective set in Article 8a.”*

Executive Order 278 on Protective Measures against Accidents at Nuclear Facilities and Executive Order 669 on Ionising Radiation and Radiation Protection ensure that any licence to construct a nuclear installation or operate a nuclear installation, is based upon an appropriate site and installation-specific assessment, comprising a nuclear safety demonstration with respect to the national nuclear safety requirements (kindly refer to further text related to Article 6).

In addition, Circular 9450 on Nuclear Safety specifies that the nuclear regulatory authorities must oversee that the licensee ensures nuclear safety through:

- Continued assessment and improvement of conditions related to safety with the aim of preventing accidents and mitigating the consequences thereof applying the defence-in-depth concept where relevant.
- Identifying means of improving safety considering:
  - The effects of ageing, operational experience, research and international standards
  - Operational processes deviating from normal operation as well as more severe conditions such as the complete loss of all trains of a safety system.

The Operational Limits and Conditions for operation and decommissioning of the nuclear facilities, Chapter 2, sets conditions for systematic and regular, at least every 5 years, assessment of the safety of the nuclear installation.

## **2.9. Article 8d – On-site emergency preparedness and response**

In Denmark, no new nuclear installations have been established after 14. August 2014, cf. Article 10 1a.

The planned upgraded storage facility at the Risø site, established in accordance with Parliamentary Resolution B90, does not constitute a nuclear installation covered by the Nuclear Safety Directive. Hence, following completion of decommissioning of the existing nuclear facilities at Risø and subsequent release of the site from regulatory control in accordance with Parliamentary Resolution B48, there will be no nuclear installations within the scope of the directive in Denmark.

### **Article 8d 1.**

*“Without prejudice to the provisions of the Directive 2013/59/Euratom, Member States shall ensure that the national framework requires that an organisational structure for on-site emergency preparedness and response is established with a clear allocation of responsibilities and coordination between the licence holder, and competent authorities and organisations, taking into account all phases of an emergency”.*

With reference to the Nuclear Installations Act (and by inference, Executive Order 278 on Protective Measures against Accidents at Nuclear Facilities), the Operational Limits and Conditions, chapter 10, sets the requirements to establish a management system, an emergency organization and an (on-site) emergency plan, as well as requirements to conduct exercises on a regular basis, in order to ensure prevention of accidents and mitigation of the consequences thereof.

The Danish Emergency Management Agency is, according to § 5.2 in the Danish Emergency Management Act, responsible for the preparation and revision of the national nuclear emergency plan. The nuclear emergency plan addresses coordination and cooperation between the sector responsible authorities.

**Article 8d 2.**

*“Member States shall ensure that there is consistency and continuity between the on-site emergency preparedness and response arrangements required by the national framework and other emergency preparedness and response arrangements required under Directive 2013/59/Euratom.”*

Executive Order 669 on Ionising Radiation and Radiation Protection, Chapter 12 and Executive Order 670 on Use of Radioactive Substances, §83-85, set requirements for establishment of emergency procedures and for management of emergencies on site.

The Danish Emergency Management Agency is, according to § 5.2 in the Danish Emergency Management Act, responsible for the preparation and revision of the national nuclear emergency plan. The nuclear emergency plan addresses coordination and cooperation between the sector responsible authorities.

## **2.10. Article 8e – Peer reviews**

**Article 8e 1.**

*“Member States shall, at least once every 10 years, arrange for periodic self-assessments of their national framework and competent regulatory authorities and invite an international peer review of relevant segments of their national framework and competent regulatory authorities with the aim of continuously improving nuclear safety. Outcomes of such peer reviews shall be reported to the Member States and the Commission, when available.”*

Denmark invited the International Atomic Energy Agency (IAEA) to undertake a full-scope IRRS in May 2020 and completed all required preparatory self-assessments and submissions to the IAEA prior to the mission. With the outbreak of the COVID-19 pandemic, the mission was postponed due to worldwide travel restrictions, preventing peer review experts from travelling to Denmark.

A new date for conduct of the review has been scheduled and agreed with the IAEA for April 2021.

**Article 8e 2.**

*“Member States shall ensure that, on a coordinated basis:*

- a) a national assessment is performed, based on a specific topic related to nuclear safety of the relevant nuclear installations on their territory;*
- b) all other Member States, and the Commission as observer, are invited to peer review the national assessment referred to in point (a);*
- c) appropriate follow-up measures are taken of relevant findings resulting from the peer review process;*
- d) relevant reports are published on the above mentioned process and its main outcome when results are available.”*

Kindly refer to the text relating to Article 8e 3. and Article 8e 4.

**Article 8e 3.**

*“Member States shall ensure that arrangements are in place to allow for the first topical peer review to start in 2017, and for subsequent topical peer reviews to take place at least every six years thereafter.”*

Provisions for conduct of topical peer reviews in accordance in Article 8e 2. are stipulated in Circular 9450 on Nuclear Safety.

**Article 8e 4.**

*“In case of an accident leading to situations that would require off-site emergency measures or protective measures for the general public, the Member State concerned shall ensure that an international peer review is invited without undue delay.”*

Provisions for conduct of international peer reviews in case of an accident are stipulated in Circular 9450 on Nuclear Safety.

# List of references

## 1. List of main Acts, Executive Orders, Circulars and Parliamentary Resolutions etc. referenced in this report.

### Acts

- 4) Act no. 170 of 16 May 1962 on Nuclear Installations (The Nuclear Installations Act)  
<https://www.retsinformation.dk/eli/ta/1962/170>
- 5) Act no. 244 of 12 May 1976 on Safety and Environmental Conditions at Nuclear Facilities, etc. (The Nuclear Safety Act)  
<https://www.retsinformation.dk/eli/ta/1976/244>
- 6) Act no. 23 of 15 January 2018 on Ionising Radiation and Radiation Protection (The Radiation Protection Act)  
<https://www.retsinformation.dk/eli/ta/2018/23>

### Executive Orders

- 4) Executive Order no. 278 of 27 June 1963 on Protective Measures against Accidents at Nuclear Facilities, etc.  
<https://www.retsinformation.dk/eli/ta/1963/278>
- 5) Executive Order no. 502 of 10 January 1974 on amendment of Executive Order no. 278 of 27 June 1963 on Protective Measures against Accidents at Nuclear Facilities, etc  
<https://www.retsinformation.dk/eli/ta/1974/502>
- 6) Executive Order no. 669 of 1 July 2019 on Ionising Radiation and Radiation Protection.  
<https://www.retsinformation.dk/eli/ta/2019/669>
- 7) Executive Order no. 670 of 1 July 2019 on Use of Radioactive Substances  
<https://www.retsinformation.dk/eli/ta/2019/670>

### Circulars

Circular no. 9450 on Nuclear Safety  
<https://www.retsinformation.dk/eli/retsinfo/2020/9450>

### Parliamentary Resolutions

- 4) Parliamentary Resolution B103, 1985 on Energy Planning without Nuclear Energy  
[https://www.folketingstidende.dk/samling/19841/beslutningsforslag/B103/19841\\_B103\\_som\\_vedtaget.pdf](https://www.folketingstidende.dk/samling/19841/beslutningsforslag/B103/19841_B103_som_vedtaget.pdf)
- 5) Parliamentary Resolution B48, 2003 on the Decommissioning of the Nuclear Facilities at Research Centre, Risø,  
[http://webarkiv.ft.dk/Samling/20021/beslutningsforslag\\_som\\_vedtaget/B48.htm](http://webarkiv.ft.dk/Samling/20021/beslutningsforslag_som_vedtaget/B48.htm)
- 6) Parliamentary Resolution B90, 2018 on a Long-Term Solution for Denmark's Radioactive Waste.  
[https://www.ft.dk/ripdf/samling/20171/beslutningsforslag/b90/20171\\_b90\\_som\\_fremset.pdf](https://www.ft.dk/ripdf/samling/20171/beslutningsforslag/b90/20171_b90_som_fremset.pdf)

### Operational Limits and Conditions

Operational Limits and Conditions for Danish Decommissioning, 06. March 2020.  
<https://www.sst.dk/-/media/Opgaver/Str%C3%A5lebeskyttelse/Radioaktivitet/BfDA-Danish-Decommissioning.ashx?la=da&hash=5D1C98C7AB9B50647A296CD2DB2B70F4D9CC9741>



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