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Radiation Act¹

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Chapter 1 General Provisions

Division 1 Scope of Regulation and Application of Act

§ 1. Scope of application of Act

- (1) This Act provides for:
- 1) the basic safety requirements for the protection of people and the environment against the adverse impact of ionizing radiation;
 - 2) the rights and obligations of persons in using ionizing radiation;
 - 3) the requirements for radiation practices;
 - 4) the organisation of state supervision over compliance with the requirements provided for in this Act;
 - 5) the liability for failure to comply with the requirements provided for in this Act.
- (2) This Act regulates radiation practices and activities where natural radiation sources may cause a significant increase of the exposure incurred by workers or members of the public, and intervention in the case of accidental and existing exposure.
- (3) This Act does not regulate exposures to radon in dwellings, exposure caused by cosmic radiation at ground level or overground exposure to radionuclides present in the undisturbed earth's crust untouched by human activity.

§ 2. Application of Administrative Procedure Act and General Part of the Environmental Code Act

- (1) The Administrative Procedure Act shall apply to the administrative procedure provided for in this Act, taking account of the specifications provided for in this Act.
- (2) Chapter 5 of the General Part of the Environmental Code Act shall apply to the proceedings of environmental permits (hereinafter *radiation practice licence*) issued for radiation practices provided for in this Act, taking account of the specifications provided for in this Act.

Division 2 Definitions

§ 3. Radiation safety

Radiation safety is the protection of people and the environment against the adverse impact of ionizing radiation.

§ 4. Radiation practices

- (1) Radiation practices are any activities which increase or may increase the exposure of people to radiation emanating from artificial or natural sources of radiation.
- (2) Radiation practices *inter alia* include:

- 1) production, processing, use, possession, holding, storage, transportation, including import and export, and intermediate storage or final disposal of radioactive substances;
- 2) use of any electrical equipment emitting ionizing radiation and operating at a potential difference of more than 5 kilovolts;
- 3) operation of nuclear facilities.

§ 5. Ionizing radiation

Ionising radiation is the direct or indirect transfer of energy in the form of particles or electromagnetic waves of a wavelength of 100 nanometres or less.

§ 6. Radioactive substance, radionuclide and activity and activity concentration

(1) Radioactive substance is any substance that contains one or more radionuclides and which activity or activity concentration is important from the radiation safety point of view.

(2) Naturally occurring radioactive material (NORM) is a radioactive substance which primarily contains the naturally occurring radionuclides potassium-40, thorium-232, uranium-235 or uranium-238 or the radionuclides which belong to their decay chain and which activity or activity concentration is important from the radiation safety point of view.

(3) Radionuclide is an atom with a nucleus that undergoes radioactive decay and which is characterized by a specific atomic mass and atomic number.

(4) Activity (A) is the activity per quantity of a radionuclide in a specific energy state at a given time: $A = dN/dt$, where dN is the expectation value of the number of spontaneous nuclear transformations from that energy state in the time interval dt .

(5) Activity concentration is the activity of a radionuclide uniformly distributed in the substance per unit mass, per unit area or per unit volume.

§ 7. Radiation source

(1) Radiation source is an apparatus, radioactive substance or installation capable of emitting ionizing radiation or radioactive substances.

(2) Sealed source is a source which structure prevents any discharge of radioactive substances into the environment under proper use.

(3) High-activity source is a sealed source which contains a radionuclide which known activity during the manufacture or the first placing on the market is equal to or exceeds the established activity level.

(4) The minister responsible for the area shall establish by a regulation the levels of radionuclide activities at or above which value a radiation source is classified as a high-activity source.

(5) Disused source is a radiation source which is no longer used or no longer intended to be used for the purposes which comply with the radiation practice licence.

(6) Radiation source category is a risk level which is determined on the basis of the assessment of the potential exposure of a radiation source taking into account, where appropriate, the physical and chemical properties of the radioactive substance and the activity of the radionuclides contained in it.

(7) Recovery of a radiation source denotes all the activities which are necessary to render safe a dangerous radiation source upon termination of the radiation practices connected to the source.

§ 8. Exemption level and clearance level

(1) Exemption level is the value of activity or activity concentration of radioactive substances at or below which no radiation practice licence is required.

(2) Clearance level is the value of activity or activity concentration at or below which the radioactive substances or materials containing radioactive substances generated in the course of any radiation practice subject to the requirement of a radiation practice licence may be exempt, pursuant to the procedure established on the basis of subsection 62 (3) of this Act, from compliance with the requirements of this Act.

§ 9. Members of public

For the purposes of this Act, a member of the public is any natural person, except for people exposed to occupational or medical exposure.

§ 10. Exposed workers

Exposed worker is any person in employment or service relationship with a holder of a radiation practice licence, including any outside worker, who incurs exposure at work from practices governed by this Act and whose incurred radiation doses exceed or may exceed the dose limits established for members of the public on the basis of subsection 50 (6) of this Act.

§ 11. Exposures

Exposure is irradiation of people with ionising radiation.

§ 12. Accidental and existing exposure situations and radiological emergencies

(1) Accidental exposure situation is an exposure situation developed as a result of a nuclear accident or radiological accident, an exposure situation incurred as a result of a crime or other unexpected event which controlling requires the implementation of urgent protective measures for the protection of human life and health, property and the environment.

(2) Existing exposure situation denotes natural exposures higher than the normal natural radiation or radiation resulting from past radiation practices or accidental exposure situations or other unusual exposure situations which do not require or no longer require implementation of urgent protective measures.

(3) Radiological emergency is an accidental exposure situation which involves or may involve exceeding of the intervention levels established on the basis of subsection 105 (3) of this Act.

§ 13. Accidental exposure and emergency exposure

(1) Accidental exposure is an exposure of people incurred as a result of an accidental exposure situation which does not include emergency exposure.

(2) Emergency exposure is an exposure of volunteers taking urgent actions to bring help to endangered people, prevent exposure of a large number of people or save valuable equipment or assets and which may exceed the dose limits established for exposed workers on the basis of subsection 50 (6) of this Act.

§ 14. Public and occupational exposures

(1) Public exposure is an exposure which is incurred by a member of the public from intervention or radiation practices carried out on the basis of a radiation practice licence, except for occupational and medical exposures and natural exposures.

(2) Occupational exposure is an exposure which an exposed worker incurs or may incur from radiation practices which are carried out on the basis of a radiation practice licence.

§ 15. Potential exposures

Potential exposure is an exposure which is not expected to be delivered with certainty but the probability of which can be assessed in advance.

§ 16. Medical exposures

Medical exposure is an exposure which is incurred by:

- 1) a person during the assessment of his or her state of health, diagnosis or treatment of a disease;
- 2) an assistant of exposed persons if such assistance is not his or her professional activities and he or she is aware of the exposure;
- 3) a person who has voluntarily agreed to participate in biological or medical researches.

§ 17. Natural exposures

Natural exposures are exposures caused by natural ionising radiation sources of terrestrial or cosmic origin.

§ 18. Nuclear material

Nuclear material is plutonium, except for mixtures of plutonium isotopes with Pu-238 content greater than 80 per cent, uranium-233, uranium-235 and uranium enriched in the isotopes 233 or 235; uranium containing the mixture of isotopes as occurring in nature other than in the form of ore or ore-residue, thorium, and any material containing one or more of the above specified nuclear materials.

§ 19. Nuclear safety

Nuclear safety is the situation which is achieved by means of the activities related to radiation safety and which aim is to achieve proper operating conditions through compliance with the established operating requirements and to avert accidental exposures and mitigate the consequences of accidental exposures as a result of which the protection of workers and the other population against the dangers arising from ionizing radiation of nuclear facilities is improved.

§ 20. Nuclear facility, nuclear fuel cycle and spent fuel

(1) Nuclear facility is an enrichment plant, nuclear fuel manufacturing plant, nuclear power plant, processing plant and research reactor and facilities directly connected with these and located in the same place which is used for storing spent fuel, and facilities for storing radioactive waste which is directly connected to the above listed nuclear facilities and is located in the same place.

(2) Nuclear fuel cycle includes all operations related to the production of nuclear energy, including mining and processing of ores which contain nuclear materials, isotopic enrichment, manufacture, use and storage of nuclear fuel, reprocessing of spent fuel and processing, intermediate storage or final disposal of produced waste.

(3) Spent fuel is nuclear fuel irradiated in a reactor core and permanently removed therefrom which can be treated as usable resources if it is intended for reprocessing, or as radioactive waste if it is subject to final disposal.

Division 3 Radiation Safety Principles

§ 21. Justification of radiation practices

(1) Planned radiation practices have to be justified by proving that they are the best based on their economic, social or other benefits in relation to the potential health detriment they may cause.

(2) The justification of radiation practices shall be reviewed whenever new and important evidence about the efficacy or consequences of existing types of radiation practices is acquired.

§ 22. Optimization of exposure

Any exposure shall be kept as low as reasonably achievable, taking into account the economic and social factors.

§ 23. Limitation of exposure doses

(1) The sum of exposure doses shall not exceed the limits established on the basis of subsection 50 (6) of this Act. This requirement does not apply to medical exposures.

(2) Effective dose is the sum of the equivalent doses multiplied by tissue weighting factors which characterise differences in sensitivities to radiation of human tissues and organs.

(3) Equivalent dose is the absorbed dose in human tissue or organ multiplied by radiation weighting factor of effective radiation.

(4) For the purposes of this Act, absorbed dose is the average dose for human tissue or organ of the energy of ionising radiation absorbed per unit mass of substance.

(5) Radiation weighting factor is a dimensionless factor which takes into account the different ability of types of radiation to cause health detriment and which is multiplied by the absorbed dose.

(6) Tissue weighting factor is a dimensionless factor which takes account of the different sensitivity which organs and tissues have to radiation and which is multiplied by the equivalent dose in a tissue or organ.

(7) Dose rate is an increase of dose per unit time.

(8) Dose limits are maximum values of exposure caused to exposed workers and the members of the public which are applied to the sum of doses incurred from external exposures and intake of radionuclides during a limited period of time. The dose incurred by intake of radionuclides during a year is totalled in 50 years (for children, up to 70 years).

(9) Intake is the entry of radionuclides into the body via the respiratory tract, gastro-intestinal tract or skin.

§ 24. Prohibition of addition of radioactive substances and import and export of goods with such additions

The intentional addition of radioactive substances in the foodstuffs, toys, jewellery and cosmetics, during their manufacture and the import and export of such goods which contain radioactive substances is prohibited.

Chapter 2 Radiation Safety Planning

§ 25. Organisation of activities related to radiation safety

The activities related to radiation safety shall be organised by the Ministry of the Environment within the limits of its competence through the Environmental Inspectorate and the Environmental Board.

§ 26. National development plan for radiation safety

(1) The national planning of implementation of the objective provided for in § 1 and the principles provided in §§ 8 to 13 of the General Part of the Environmental Code Act and the principles of radiation safety provided for in this Act is pursued through the national development plan for radiation safety (hereinafter *development plan*).

(2) The development plan analyses the situation of radiation safety in the country, determines the measures for improvement of radiation safety and gives an assessment on how the development plan promotes pursuing of the objectives and principles provided for in subsection (1) of this section.

(3) Development plans are approved by a directive of the minister responsible for the area.

§ 27. Content of development plan

The areas discussed in the development plan include in particular ensuring radiation protection, radioactive waste management, responding to accidental and existing exposure situations, increasing radiation awareness and issues concerning natural and medical exposures.

§ 28. Action plans for implementation of development plans

(1) In order to implement development plans or achieve the objectives of organization and improvement of radiation safety, the Ministry of the Environment may prepare development plans for the areas specified in § 27 of this Act.

(2) Development plans shall be approved by a directive of the minister responsible for the area.

§ 29. State radiation safety audit

(1) State radiation safety audit is an audit organised for the purpose of increasing radiation safety in the course of which the legal and organisational framework of state radiation safety and the authorities ensuring radiation and nuclear safety are assessed. Internationally recognized radiation experts shall be involved in the audit.

(2) State radiation safety audits shall be organised by the Ministry of the Environment at least every ten years.

§ 30. Radiation safety guidelines and information materials

The Environmental Board shall promote radiation awareness, use of good practice and compliance with radiation safety principles, and issue radiation and nuclear safety guidelines and information materials which are published on the website of the Environmental Board.

§ 31. Paid services to ensure radiation safety

(1) The Environmental Board may provide paid radiation safety services related to its main activities unless this hinders the performance of its functions arising from the statutes.

(2) Minimum and maximum rates for paid services by types of services are the following:

- 1) measurement of radiation level in one metering point – 25 to 75 euros;
- 2) preparation of radiation safety assessments for low or moderate risk radiation practices and shielding calculations – 10 to 30 euros per hour;
- 3) measurement of the reading of thermoluminescence dosimeter – 13 to 39 euros;
- 4) laboratory testing of radioactivity level of substances – 50 to 320 euros;
- 5) measurement of radon concentration in indoor air – 45 to 135 euros.

(3) Taking into consideration the provisions of subsection (2) of this section, the minister responsible for the area shall establish by a regulation a detailed list of paid services and the rates of fees on the basis of the labour, material, equipment and overhead costs required for the provision of the service.

Chapter 3

Requirements for Radiation Practices

Division 1

General Provisions

§ 32. General obligations of holders of radiation practice licences

(1) A holder of a radiation practice licence has the obligation to:

- 1) comply with the radiation safety principles;
- 2) ensure radiation safety and physical protection of the radiation sources in the holder's possession and to verify at least annually that the radiation source or the equipment containing thereof is present at the place of use or storage and in apparently good condition;
- 3) ensure the safety of the radiation source by correct installation and placement of the radiation source in the premises, mark the radiation source and the premises and use protective equipment;
- 4) keep records of every radiation source and radioactive waste for which the holder is responsible, the location and transfer thereof, take annual inventories of radiation sources and radioactive waste;
- 5) prepare the rules necessary for carrying out radiation works and instructing exposed workers and ensure updating of these rules upon commissioning of new technology or equipment;
- 6) organise health surveillance of exposed workers;
- 7) ensure regular control and calibration of measuring instruments used and be responsible for their fitness for use and professional use thereof;
- 8) at the request of competent authorities, prove the legality of possession of radioactive substances or radiation apparatuses containing radioactive substances;
- 9) ascertain that the recipient has an appropriate radiation practice licence before transfer of radiation sources;
- 10) recover radiation sources after the use thereof is terminated pursuant to the recovery plan submitted in the application for the licence;
- 11) ensure that radioactive waste is managed in such a manner that the estimated harmful effect on future generations will not exceed the effect permitted by this Act or legislation established on the basis thereof;
- 12) cover all expenses incurred in radioactive waste management;
- 13) ensure that the activity and quantities of generated radioactive waste and emissions are as low as possible;
- 14) alleviate the consequences of accidental exposure situations;
- 15) immediately inform the Environmental Board and the Emergency Centre of loss, theft or unauthorised use of radiation sources and of any incidents or accidents which took place during radiation practices and resulted in unintentional exposure of workers or members of the public;
- 16) control the integrity of radiation sources after each incident if it may have damaged the radiation source and, if necessary, inform the Environmental Board of this incident and the measures implemented;
- 17) during procurement procedures for radiation sources, prefer manufacturers who agree to include a clause in the contract of sale regarding return of the radiation source to the producer.

(2) Upon high risk radiation practices, a holder of a radiation practice licence is obliged to:

- 1) prepare a response plan to accidental exposure situations;
- 2) ensure that a recognized radiation expert has approved the design documentation of the facilities of radiation practices and the commissioning of new radiation sources.

(3) A holder of a radiation practice licence must ensure that the holder has sufficient funds to cover the expenses of recovering radioactive substances, radiation sources containing radioactive substances and radioactive waste.

(4) The minister responsible for the area shall establish by a regulation the requirements for premises where radiation sources are located, for marking the premises and radiation sources, and radionuclide activity levels.

§ 33. Obligations of persons in possession of nuclear material

(1) A person in possession of nuclear materials is required to keep records of the nuclear material used from the time of acquisition until the time of storage thereof as waste, recovery of the material or change of ownership, and to appoint a person responsible for keeping records of nuclear materials.

(2) A person in possession of nuclear materials shall immediately inform the Environmental Board of changes in the quantity of nuclear materials.

(3) Standard data formats characterising radiation sources are used to keep records of nuclear materials.

(4) The minister responsible for the area shall establish by a regulation the standard data formats characterising radiation sources.

§ 34. Radiation practice risk levels

(1) Depending of the category of radioactive sources or the extent of risk connected with radiation practices, difference is made between:

- 1) low risk radiation practices during which an exposed worker incurs or may incur an effective dose of up to one millisievert per year;
- 2) moderate risk radiation practices during which an exposed worker incurs or may incur an effective dose of up to six millisieverts per year;
- 3) high risk radiation practices during which an exposed worker incurs or may incur an effective dose exceeding six millisieverts per year.

(2) In addition to the provisions of clause (3) 1) of this section, radiation practices involve high risks if a radiation practice licence is applied for:

- 1) radiation practices related to high-activity sources;
- 2) operation of nuclear facilities;
- 3) exploitation, closure and decommissioning of any facility of nuclear fuel cycle;
- 4) intermediate storage or final disposal of radioactive waste.

(3) Categories of radioactive sources and requirements for physical protection of radiation sources depending on the category of radiation source shall be established by a regulation of the minister responsible for the area.

§ 35. Radiation safety quality management system

(1) A holder of a radiation practice licence is required to develop and implement a quality management system for radiation safety and other activities related thereto which ensures compliance with the requirements provided for in this Act and legislation issued on the basis thereof and the requirements determined in the radiation practice licence.

(2) Radiation safety quality management systems cover:

- 1) planned and systematic activities which objective is to ensure radiation safety;
- 2) analysis of duties, and skills required for and requirements for use of radiation sources which include, in particular, description of radiation practice, guidelines for radiation practice, workers' training procedure;
- 3) requirements for procurement, use and disuse of materials and equipment;
- 4) description of radiation safety procedures implemented during radiation practices;
- 5) procedure for controlling the functioning and improvement of the radiation safety quality management system.

(3) In addition to the provisions of subsection (2) of this section, a nuclear facility radiation safety quality management system covers:

- 1) description of systematic activities conducted for the purpose of ensuring nuclear safety;
- 2) analysis of duties and requirements for competence required to operate nuclear facilities;
- 3) description of the control system for compliance with nuclear safety requirements;
- 4) plans for training and instructing the workers.

§ 36. Installation, repairs and maintenance of radiation sources

(1) A source may be installed, repaired and maintained only by a person who holds a radiation practice licence issued for the specified activity.

(2) The provisions of subsection (1) of this section do not apply to repair and maintenance works of a radiation source which is not connected with radiation emitting parts of the source.

§ 37. Inventory report of radiation sources and radioactive waste

(1) A holder of a radiation practice licence is required to submit a report to the Environmental Board on the inventory provided for in clause 32 (1) 4) of this Act by 1 March of the year following the accounting year.

(2) Unless the requirements of the radiation practice licence specify otherwise, the accounting documents must contain data on the radiation source which are required when applying for a radiation practice licence.

§ 38. Obligations of holders of radiation practice licences in case of high-activity radiation sources

In addition to the general obligations provided for in § 32 of this Act, a holder of a radiation practice licence is required to do the following in the case of radiation practices related to high-activity radiation sources:

- 1) ensure that written information is included with the radiation source which proves that the radiation source is identified by a unique number and includes photos of the source, container, transport packaging of the source and, if necessary, devices and equipment;

- 2) ensure that proper tests have been performed with the frequency determined by the issuer of the licence in order to check and maintain the integrity of the radiation source;
- 3) return every disused source immediately after discontinuing the use thereof to the manufacturer, transfer it to another holder of a radiation practice licence or to a radioactive waste management facility;
- 4) enter into a contract with manufacturer upon purchase of a radiation source according to which the manufacturer undertakes to take back the radiation source at the latest 15 years after the importation of the source if the activity of the source exceeds 10 MBq ten years after the importation thereof into the county.

§ 39. Obligations of holders of radiation practice licences related to radioactive waste

In addition to the general obligations provided for in § 32 of this Act, a holder of a radiation practice licence is required to do the following in the case of radiation practices related to radioactive waste management:

- 1) ensure safety of the radioactive waste storage premises during the entire of use thereof;
- 2) organise the management of radioactive waste if this is necessary for modifying the properties of the radioactive waste prior to the release thereof into the environment, or the conditioning and intermediate storage and final disposal thereof;
- 3) take into account other risks and various stages of generating radioactive waste and interaction of radioactive waste when planning activities and in the course of activities;
- 4) transfer radioactive waste to a final disposal facility for radioactive waste within five years from the generation thereof at the latest.

§ 40. Obligations of holders of radiation practice licences upon operation of nuclear facilities

In addition to the general obligations provided for in § 32 of this Act, a holder of a radiation practice licence is required to do the following in the case of operation of nuclear facilities:

- 1) ensure implementation of nuclear safety measures and compliance with relevant requirements;
- 2) ensure that the workers and subcontractors of the nuclear facility comply with the nuclear safety culture and nuclear safety quality management system implemented at the nuclear facility on the basis of their official duties;
- 3) assess nuclear safety at the nuclear facility at least with the same frequency as provided for in the requirements of the radiation practice licence.

§ 41. Transportation of radioactive substances and apparatuses containing radioactive substances

(1) Radioactive substances and apparatuses containing radioactive substances in which the activity or activity concentration of radionuclides exceeds the exemption level shall be transported by road, railway and air and waterway pursuant to the procedure provided for in legislation concerning hazardous loads.

(2) Transportation of radioactive substances and apparatuses containing radioactive substances over the state border shall comply with international agreement which have entered into force for the Republic of Estonia and on the basis of the legislation.

(3) Transportation of radioactive substances and apparatuses containing radioactive substances includes the operations related to transportation of radioactive substances from a point of departure to a point of destination, including loading and unloading.

Division 2 Medical Exposures

§ 42. Requirements for medical radiology procedures

(1) A health care provider conducting a medical radiology procedure is required to:

- 1) conduct the procedures reasonably and in an optimized manner and ensure that exposure is incurred only in the necessary quantity to the designated body parts and the quantity of the radioactive substance administered to the patient is correct;
- 2) inform the patients of the risk involved in ionizing radiation;
- 3) ascertain, on the basis of the information at his or her disposal, the data of the previous medical radiology procedures administered to the patient.

(2) Medical radiology procedure is any activity related to medical exposure.

(3) A health care provider conducting a medical radiology procedure shall ensure the safety of the source and the working order of protective systems.

(4) Radiation safety requirements set for medical radiology procedures and requirements for protection of persons incurring medical exposure shall be established by a regulation of the minister responsible for the area.

§ 43. Clinical audit of medical radiology procedures

(1) A holder of a radiation practice licence who is carrying out medical radiology procedures must conduct an independent clinical audit of medical radiology procedures.

(2) A clinical audit of medical radiology procedures is a purposeful review of the clinical performance of medical exposures, including medical radiology practices with the purpose of safety and quality improvement and their comparison with best practice standards.

(3) Clinical activity related to medical exposure shall be assessed in an integrated manner during a clinical audit.

(4) Clinical audits which are carried out by auditors who have clinical competence in the field and are connected to the same authority must take place once per year. External auditors with clinical competence in the field audited have to be involved in a clinical audit once every five years.

§ 44. Diagnostic reference level

(1) Diagnostic reference levels are used for optimising medical radiology procedures. If these are exceeded, measures for decreasing patient exposure have to be considered.

(2) Diagnostic reference level is a level of comparison of incurred dose or the activity of a radiopharmaceutical involved in diagnostic medical radiology procedure with a standard value which is used for optimising patient doses.

(3) The diagnostic reference levels shall be established by a regulation of the minister responsible for the area.

Division 3 Radiation Safety at Workplace

§ 45. Categories of exposed workers

Categories of exposed workers are:

1) exposed workers of category A who may incur an effective dose exceeding six millisieverts or exceeding three tenths of the equivalent dose limit for the lens of the eye, skin and extremities established on the basis of subsection 50 (6) of this Act;

2) exposed worker of category B who are exposed workers and who are not classified as exposed workers of category A.

§ 46. Radiation safety specialist

(1) A radiation safety specialist is a person with technical competence in the issues connected to relevant radiation practices who may be designated the person in control of compliance with radiation safety requirements at the undertaking by the holder of radiation practice licence.

(2) In the case of high risk radiation practice licences or if the holder of a radiation practice licence has more than ten exposed workers, designation of a radiation safety specialist is mandatory.

(3) Designation of a radiation safety specialist does not release the holder of a radiation practice licence of the responsibility to ensure radiation safety.

(4) The requirements for radiation safety training of radiation safety specialists shall be established by a regulation of the minister responsible for the area.

§ 47. Age limits for radiation works

Persons under the age of 18 years shall not be designated to perform any radiation works.

§ 48. Radiation safety training and instructions of exposed workers

(1) A holder of a radiation practice licence is required to ensure that exposed workers receive radiation safety training and instructions which take into account the nature of work and the conditions at workplace.

(2) The requirements for radiation safety training of exposed workers shall be established by a regulation of the minister responsible for the area.

§ 49. Medical surveillance of exposed workers

- (1) A holder of a radiation practice licence is required to ensure health surveillance of exposed workers of category A at least once per year.
- (2) If exposure exceeding the established dose limits to exposed workers is ascertained, the holder of a radiation practice licence shall immediately refer the exposed workers to health surveillance.
- (3) Health surveillance of exposed workers takes place pursuant to the procedure provided for in the Occupational Health and Safety Act.

§ 50. Individual dose monitoring

- (1) A holder of a radiation practice licence shall organise monitoring of individual doses incurred by exposed workers and submission of monitoring data to a dose register.
- (2) Individual doses of exposed workers of category A shall be continuously monitored at workplaces and verification of individual dose monitoring shall be performed at least once per month.
- (3) Individual dose monitoring of exposed workers of category B must be sufficient to demonstrate that the workers are correctly classified in category B.
- (4) If an exposed worker may incur significant exposure due to intake of radionuclides, the monitoring of individual doses organised by the holder of a radiation practice licence must enable to assess or measure the individual doses incurred by intake of radionuclides.
- (5) The measurements conducted during individual dose monitoring must be accredited.
- (6) The limits for effective doses of exposed workers and members of the public and the limits for equivalent doses of the lens of the eye, skin and extremities shall be established by a regulation of the Government of the Republic.

§ 51. Outside worker

An outside worker is an exposed worker, including a trainee and student, who is temporarily or permanently employed at another undertaking in the control area specified in clause 53 (1) 1) of this Act, including repairing or maintaining radiation emitting parts of sources.

§ 52. Ensuring radiation safety of outside workers

- (1) A holder of a radiation practice licence shall ensure radiation safety for outside workers which is equal to that of exposed workers and training and instruction on radiation safety taking account of the specific nature of their work and the conditions on their workplaces.
- (2) The data indicated in the dose card of an outside worker and the procedure for formalising dose cards and the standard format of dose cards shall be established by a regulation of the minister responsible for the area.

§ 53. Control and surveillance areas

- (1) Workplaces shall be divided into the following areas based on the type of premises and building in which the radiation source is located, category of the radiation source, and the radiation risk at the workplace:
 - 1) control areas;
 - 2) surveillance areas.
- (2) Protection in control areas against ionizing radiation or prevention of spreading of radioactive contamination is ensured by establishment of appropriate rules. Access to control areas is controlled.
- (3) Protection in surveillance areas against ionizing radiation is ensured through appropriate monitoring.
- (4) The minister responsible for the area shall establish by a regulation the bases for formation of control and surveillance areas and the obligations applicable there.

§ 54. Monitoring in control and surveillance areas

- (1) A holder of a radiation practice licence ensures monitoring of control and surveillance areas.
- (2) Depending on the need, monitoring of controlled and supervised areas shall include:
 - 1) monitoring of dose rates;
 - 2) monitoring of levels of radioactive contaminants in the air or on surfaces together with determining the properties of the radioactive emissions and their physical and chemical state.

(3) A holder of a radiation practice licence shall register the monitoring results and preserve the results during the entire radiation practice.

§ 55. Additional measures to ensure radiation safety

If any exposure to members of the public caused by radiation practices may exceed one-tenth of the dose limits for members of the public established on the basis of subsection 50 (6) of this Act per year, the holder of a radiation practice licence shall consult with a radiation expert with regard to the need to adopt possible additional measures in order to ensure radiation safety.

Division 4 Radioactive Residues, Waste and Emissions

§ 56. Radioactive waste, NORM residues and NORM waste

(1) Radioactive waste is any substances or items which contain or are contaminated with radioactive substances and the activity concentration of which exceeds the clearance levels established on the basis of subsection 62 (3) of this Act and which are not intended to be used in the future.

(2) The classification of radioactive waste and the detailed requirements for registration, management and transfer of radioactive waste shall be established by a regulation of the minister responsible for the area.

(3) NORM residues are substances which contain naturally occurring radioactive materials resulting from any activities or which are contaminated therewith and the activity or activity concentration of which exceeds the established clearance levels and which are intended to be used in the future.

(4) NORM waste is radioactive waste which contains naturally occurring radioactive materials, including NORM residues, which are not intended to be used in the future.

(5) The procedure for management of NORM residues, including storage, dispersion and release thereof, and intermediate storage or final disposal of NORM waste shall be determined by a radiation practice licence.

§ 57. Radioactive emissions

(1) Radioactive emissions are radioactive substances which are emitted in the course of radiation practices and released into the environment with the aim of their dispersion.

(2) The detailed requirements for management of emissions generated in the course of radiation practices shall be established by a radiation practice licence.

§ 58. Radioactive waste management

(1) Radioactive waste management includes pre-processing, processing, conditioning of radioactive waste, transportation thereof at the management facility, storage, decommissioning, intermediate storage or final disposal and other activities related to radioactive waste.

(2) Conditioning of radioactive waste includes all operations related to the production of packaging for radioactive waste which purpose is to make the packaging easy to handle.

(3) Packaging of radioactive waste must comply with the requirements for management, including conditioning, and it contains the form of waste and any containers and internal barriers.

(4) Decommissioning includes all the activities and measures which are implemented for partial or complete termination of the operation of any facility which poses a radiation risk to individuals and which includes deactivation and full or partial dismantling of the facility.

§ 59. Radioactive waste storage premises

Radioactive waste storage premises are premises for collection, storage, pre-processing or packaging of radioactive waste at the producer of radioactive waste which complies with the requirements established by a radiation practice licence.

§ 60. Radioactive waste management facility

Radioactive waste management facility is a facility intended for receipt of radioactive waste from the producers thereof, collection, processing and conditioning and intermediate storage or final disposal of radioactive waste.

§ 61. Radioactive waste storage facility

(1) Radioactive waste storage facility is a facility intended specifically for intermediate storage or final disposal of radioactive waste.

(2) Intermediate storage is placing of radioactive waste in a facility, which is technically equipped for this purpose, in order to ensure the isolation thereof with the intention to remove radioactive waste from the facility in the future for release, processing and conditioning or final disposal.

(3) Final disposal is placing of radioactive waste in storage facilities which conform to certain requirements or facilities which are prepared for such purposes without the intent to retrieve it later.

(4) The intermediate storage and final disposal of radioactive waste shall be organised by the Ministry of Economic Affairs and Communications.

§ 62. Exemption from radiation safety requirements

(1) The Environmental Board may decide that the requirements of this Act shall not apply to radioactive substances generated during radiation practices and the holder thereof if the substance has so low activity or activity concentration that the processing and storing thereof as radioactive waste is not necessary for radiation safety.

(2) The Environmental Board may adopt the decision provided for in subsection (1) of this section on the basis of a reasoned application of a holder of radioactive substances.

(3) The clearance levels for radioactive substances and items contaminated with radioactive substances resulting from radiation practices and the requirements for their clearance, recycling and reuse shall be established by a regulation of the minister responsible for the area.

§ 63. Cleared waste management

The Waste Act shall apply to management of the waste cleared pursuant to the requirements established on the basis of subsection 62 (3) of this Act.

§ 64. Delivery of radioactive waste to radioactive waste storage facilities

(1) In the cases where radioactive waste cannot be released into the environment with the aim of dispersion thereof or, within a period of five years after production thereof, cannot be exempted from the requirements of this Act or legislation established on the basis thereof, the person who produced the radioactive waste shall deliver the waste to radioactive waste storage facilities.

(2) Radioactive waste delivered to storage facilities must be packaged according to the compliance criteria of packaging.

(3) Compliance criteria of packaging are indicators or identifiers which characterise the suitability of packaging of radioactive waste for management.

(4) The compliance criteria for packaging shall be established by a regulation of the minister responsible for the area.

§ 65. Taking possession of radioactive substances, equipment containing thereof and radioactive waste by state

(1) If the owner of radioactive substances, equipment containing thereof or radioactive waste is unknown or the person responsible for them cannot be established or if the possession thereof is illegal or there is reasonable doubt in connection with that an accidental exposure situation can occur, the state shall take possession of the radioactive substances, equipment containing thereof and radioactive waste.

(2) Radioactive substances, equipment containing thereof and radioactive waste which possession is taken by the state shall be delivered for management to the radioactive waste manager appointed on the basis of subsection 107 (5) of this Act.

(3) If the owner of radioactive substances, equipment containing thereof and radioactive waste is unknown or the person responsible for them cannot be established, the state shall cover the costs related to taking the possession and management thereof.

(4) In the case of illegal possession of radioactive substances, equipment containing thereof or radioactive waste or if an accidental exposure situation may occur in connection therewith, the owner shall cover the costs related to taking the possession thereof by the state and management thereof.

(5) The procedure for taking possession of radioactive substances, equipment containing thereof and radioactive waste by the state and management thereof and compensation for the costs relating thereto may be established by a regulation of the Government of the Republic.

§ 66. Closure of radioactive waste storage facilities

(1) A holder of a radiation practice licence shall collect and analyse data on the use of radioactive waste storage facilities and send such information to the Environmental Board for preservation.

(2) The Environmental Board may order a holder of a radiation practice licence to submit a new application for a radiation practice licence for closure of storage facilities on the basis of the information provided in subsection (1).

(3) Requirements for closing of storage facilities shall be established by a radiation practice licence.

§ 67. Safety of radioactive waste storage facilities after closure thereof

After closure of radioactive waste storage facilities, the Environmental Board shall:

- 1) preserve the documents concerning the location and design of the radioactive waste storage facilities and the inventory of radioactive waste for an indefinite time;
- 2) organise radiation monitoring and control the restriction of access, if necessary;
- 3) organise intervention if, based on monitoring results or upon inspection, release of radioactive substances into the environment is established.

Chapter 4 Licences related to Radiation Practices

Division 1 Radiation Practice Licences

§ 68. Radiation practice licences

(1) Radiation practice licence is required for:

- 1) exploitation, closure and decommissioning of any facility of nuclear fuel cycle;
- 2) production, use, storage and transportation of radioactive substances and products containing it, including for importation and exportation;
- 3) use and storage of electrical radiation apparatuses;
- 4) management and transportation of radioactive waste;
- 5) activities related to the presence of increased natural exposures in the case of which the exposure caused by natural radionuclides is important from the radiation safety point of view.

(2) No radiation practice licence is required for any activities:

- 1) in the case of which the activity or activity concentration of radionuclides used is below the exemption level;
- 2) in which an electrical radiation apparatus is used during the operation of which the dose rate does not exceed one microsievert per hour at a distance of 0.1 metres from the surface of the apparatus;
- 3) an apparatus containing a sealed radiation source is used during the operation of which the dose rate at a distance of 0.1 meter from the surface of the apparatus does not exceed one microsievert per hour, and the apparatus has a valid type approval and its recovery plan is approved by the Environmental Board.

(3) The type approval specified in clause (2) 2) of this section is not required upon use of cathode ray tubes intended to display visual images or other electric radiation apparatuses which operate at electrical potential difference up to 30 kilovolts.

(4) Commencement of radiation practices or performance of radiation works which require a radiation practice licence without a radiation practice licence is prohibited.

(5) The Government of the Republic shall establish by a regulation the bases for calculation of exemption levels of radionuclides and the exemption levels below which no radiation practice licence is required.

§ 69. Issuer of radiation practice licences

Radiation practice licences are issued by the Environmental Board (hereinafter *issuer of licences*).

§ 70. Applications for radiation practice licences

(1) In addition to the provisions of subsection (42) 1) of the General Part of the Environmental Code Act, applications for radiation practice licences shall include:

- 1) data which characterise the radiation source and technology used and the equipment;
- 2) data on radioactive waste or emissions generated during radiation practices, the management thereof and waste packaging compliance criteria and radioactive waste storage premises;
- 3) recovery plan of radiation source after the termination of use of the radiation source;
- 4) upon application for a licence for management, intermediate storage and final disposal of radioactive waste, data on the management or methods of final closure of storage facilities;
- 5) radiation safety assessment, which gives an overview of the aspects of radiation practices which are related to the protections of people and safety of radiation sources, including of the protective and safety measures used, and of the potentially assessed doses of exposed workers and members of the public both under normal working conditions and in the cases of accidental and existing exposure situations, to which data on measures adopted to ensure radiation safety are appended;
- 6) emergency response plan to accidental exposure in the case of radiation practices involving high risk which is based on the assessment of potential exposures;
- 7) data on radioactive waste, equipment containing thereof and financial collaterals required for recovery of radioactive waste;
- 8) description of the radiation safety quality management system;
- 9) data on exposed workers and their professional training;
- 10) radiation work rules, which must contain activities for the use of a radiation source, discontinuation of the use thereof and activities related thereto depending on the specific character of the radiation work;
- 11) plan for radiation monitoring and data on the equipment used for radiation monitoring.

(2) Documents and data provided for in subsection 42 (3) of the General Part of the Environmental Code Act shall be appended to applications for radiation practice licences.

(3) If a radiation practice licence is applied for importation of radioactive substances into the Republic of Estonia from a country which is not a member state of the European Union, or for exportation from Estonia to a country which is not a member state of the European Union, the applicant for the licence shall submit the data provided for in clauses 42 (1) 1), 2), 5) and 6) of the General Part of the Environmental Code Act and the data characterising the radioactive substance.

(4) The minister responsible for the area shall establish detailed requirements for applications for radiation practice licences and standard format of applications by a regulation.

§ 71. Application of open proceedings to review of applications for radiation practice licences

In the case of the radiation practices specified in clauses 68 (1) 1), 4) and 5) of this Act, open proceedings apply to issue or amendment of radiation practice licences.

§ 72. Opinion of local governments concerning applications for radiation practice licences

If an application for a radiation practice licence is applied for radiation practices specified in clauses 68 (1) 1), 4) and 5) of this Act, the issuer of licences must submit the application to the local government for its opinion.

§ 73. Time limits for deciding on issue of radiation practice licences

(1) Issue of radiation practice licences shall be decided within 90 days as of the receipt of a conforming application.

(2) If a radiation practice licence is applied for high risk radiation practices, the issuer of licences may extend the time limit provided for in subsection (1) of this section by up to 90 days.

§ 74. Refusal to issue radiation practice licences

The issuer of licences shall refuse to issue a radiation practice licence in addition to the cases provided for in § 52 of the General Part of the Environmental Code Act if:

- 1) the planned practice is not best practice for economic, social or other benefits with regard to potential health detriment caused by the radiation practice;
- 2) the practice for which the radiation practice licence is applied involves or may involve a risk to national or international security;
- 3) the applicant for radiation practice licence has no exposed workers with required professional training;
- 4) the location applied for radiation practice or other terms and conditions do not allow for compliance with radiation safety requirements;
- 5) the applicant for a radiation practice licence does not prove the existence of the collateral provided for in Chapter 6 of this Act in the amount and on the requirements determined by the issuer of radiation practice licences.

§ 75. Data subject to entry in radiation practice licence

(1) In addition to the provisions of § 53 of the General Part of the Environmental Code Act, a radiation practice licence shall indicate:

- 1) number and date of issue of the radiation practice licence;
- 2) name of radiation practice;
- 3) data on and description of radiation sources;
- 4) methods of management of radioactive waste, maximum quantities and management and storage facilities thereof;
- 5) maximum quantities of radioactive emissions, and modes of release thereof into the environment;
- 6) requirements for radiation safety and radiation monitoring arising from radiation practice and the specific character thereof;
- 7) risk level of the radiation practice;
- 8) existence of financial collateral.

(2) A radiation practice licence issued for radiation practice related to high-activity sources contains the following information in addition to the provisions of subsection (1) of this section:

- 1) radiation protection competence of the workers, including informing and training of them;
- 2) requirements for the radiation source, container of the radiation source and additional equipment and their maintenance;
- 3) proper radiation safety management of disused sources until delivery thereof to a manufacturer, another person holding the radiation practice licence or radioactive waste storage facilities.

(3) The standard formats of radiation practice licences shall be established by a regulation of the minister responsible for the area.

§ 76. Validity of radiation practice licences

(1) The term of validity of a radiation practice licence in the case of low risk radiation practices is determined according to subsection 53 (2) of the General Part of the Environmental Code Act.

(2) In the case of moderate and high risk radiation practices, a radiation practice licence is issued for a term of up to five years.

§ 77. Amendment and revocation of radiation practice licences

(1) A radiation practice licence is amended or revoked pursuant to the procedure provided for in §§ 59, 60 and 62 General Part of the Environmental Code Act.

(2) In the cases provided for in clauses 78 (1) 1), 3), 4), 5) and 7) of this Act, the Environmental Board shall decide on amendment of the radiation practice licence within 30 days as of receipt of the application.

(3)) In addition to the provisions of § 62 of the General Part of the Environmental Code Act, a radiation practice licence is revoked if:

- 1) the holder of a licence does not ensure existence of a financial collateral;
- 2) the holder of a licence has repeatedly failed to ensure compliance with radiation safety principles, obligations and the requirements provided for in the licence involving a serious risk of radiation;
- 3) the holder of a licence, its representatives or employees have purposefully and in bad faith prevented the Environmental Inspectorate and its representatives from controlling the practice of the holder of the licence.

§ 78. Obligation to notify of changes in radiation practices

(1) A holder of a radiation practice licence shall give prior notice to the issuer of licences if the holder intends to:

- 1) commission new or additional radiation sources;
- 2) terminate the use of the radiation source indicated in the radiation practice licence;
- 3) deliver the radiation source to another person or dispose of it as radioactive waste;
- 4) change the radiation practice, method of management, maximum quantities or storage facilities of produced radioactive waste determined in the radiation practice licence;
- 5) change the location, facilities or premises where the radiation practice is carried out;
- 6) employ a new radiation safety specialist;
- 7) significantly change the radiation practice described in the licence in any other manner.

(2) In the cases provided for in clauses (1) 1), 4), 5) and 7) of this section, if the amendment is significant from the point of view of radiation safety, the specified notices shall be treated as an application for a new radiation practice licence.

§ 79. Radiation practice licences for operation of nuclear facilities

A radiation practice licence for the operation of a new nuclear facility can be applied for after the *Riigikogu* has adopted a decision on commissioning of a nuclear facility.

§ 80. Register of radiation sources and nuclear materials

(1) A register of radiation sources and nuclear materials is maintained with the aim of ensuring protection of people and the environment, safety and physical protection of radiation sources and nuclear materials.

(2) The chief processor of the register of radiation sources and nuclear materials is the Environmental Board.

(3) Holders of radiation practice licences and persons in possession of nuclear materials shall submit data to the register of radiation sources and nuclear materials.

(4) The register of radiation sources and nuclear materials contains data on radiation practice licences and holders thereof, and data characterizing radiation sources and nuclear materials.

(5) For the purpose of ensuring protection of people and the environment, safety and physical protection of radiation sources and nuclear materials, the information in the register of radiation sources and nuclear materials is intended for internal use.

(6) The register of radiation sources and nuclear materials and the statute thereof shall be established by a regulation of the minister responsible for the area.

Division 2

Radiation Practice Licences for Importation, Exportation and Transit of Radioactive Waste

§ 81. Transportation of radioactive waste

The provisions of Division 1 of Chapter 4 of this Act shall apply to application for a radiation practice licence for transportation of radioactive waste (hereinafter *transport permit*) taking into account the specifications provided for in this Division.

§ 82. Application for transport permits

(1) Applications for transport permits are submitted separately for each transportation.

(2) An application for transport permits may be submitted for more than one transportation, provided that:

- 1) all radioactive waste for the transportation of which the application is submitted has similar physico-chemical and radioactive properties;

- 2) the transportation takes place from the same possessor of radioactive waste to the same recipient, and the transport documents have been approved and issued by the same competent authorities;

- 3) the transportation takes place through the same border checkpoints and the same transit countries.

§ 83. Documents for importation, exportation or transit of radioactive waste

(1) Documents for importation, exportation or transit of radioactive waste include:

- 1) application for transport permit;

- 2) approval by competent authorities;

- 3) transport permit;

- 4) list of packagings;

- 5) notice on receipt of radioactive waste.

(2) The specifications of the procedure for processing of documents for importation, exportation or transit of radioactive waste and the time limits thereof based on the countries of origin and destination shall be established by a regulation of the minister responsible for the area.

(3) The standard formats of documents for importation, exportation or transit of radioactive waste are set out in the Commission Decision 2008/312/Euratom of 5 March 2008 establishing the standard document for the supervision and control of shipments of radioactive waste and spent fuel referred to in Council Directive 2006/117/Euratom (OJ L 107, 17.04.2008, pp. 32-59).

§ 84. Approval of transport permits and transit

(1) The Environmental Board shall send applications for transport permits and transit to competent authorities of the country of destination and all countries of transit for approval.

(2) The Environmental Board shall issue a transport permit after receipt of approvals of all appropriate authorities.

§ 85. Validity of approvals of transport permits and transit

(1) Single transport permits and approvals of transit are issued for one carriage for a specified term.

(2) Multiple transport permits and approvals of transit shall be valid for the term of up to three years.

§ 86. Refusal to issue transport permits and approve transit

In addition to the provision of § 74 of this Act, the Environmental Board shall refuse to issue transport permits and approve transit of radioactive waste if:

- 1) the country of destination of the radioactive waste is south of 60° south latitude;
- 2) the country of destination is not a member state of the European Union but it has entered into a contract prohibiting importation or transit of radioactive waste with the European Union;
- 3) there is reason to believe that it is not possible to manage radioactive waste safely in the country of destination;
- 4) the radioactive waste is intended to be imported into Estonia for intermediate storage or final disposal.

§ 87. Returning of radioactive waste

If it is impossible to complete the transportation of radioactive waste or if the requirements for the transportation do not comply with the requirements set out in the application for the transport permit, the Environmental Board shall apply substitutive enforcement in the form of returning the radioactive waste to its initial owner pursuant to the procedure provided for in the Substitutive Enforcement and Penalty Payment Act.

§ 88. Importation, exportation and transit of spent fuel

The provisions of this Division also apply to importation, exportation and transit of spent fuel.

Division 3 Radiation Experts and Medical Physics Experts

§ 89. Radiation experts

(1) A radiation expert is a person who consults holders of radiation sources and other persons to the extent of his or her knowledge and skills. Radiation experts consult, *inter alia*, in the following areas:

- 1) taking into account of radiation safety requirements when designing facilities intended for radiation practices;
- 2) classifying of jobs at the location of radiation practice into control and surveillance areas;
- 3) monitoring programmes for locations of radiation practices;
- 4) measuring equipment used for radiation monitoring;
- 5) preparation of radiation safety quality management systems;
- 6) safe management of radioactive waste;
- 7) risk analyses and radiological emergency response plans;
- 8) training of exposed workers.

(2) Any natural person holding a respective certificate or an authorised person may act as a radiation expert.

§ 90. Certificates of radiation experts

(1) Certificates of radiation experts are issued based on applications to persons who:

- 1) have higher education;
- 2) have passed radiation safety training which study programme includes radiation safety principles and the Republic of Estonian and European Union legislation and relevant international recommendations and subjects discussing ionizing radiation to such an extent that it allows to operate in the area specified in the certificate;
- 3) have at least five years of practical experience in the field of radiation safety;
- 4) have passed the examination for radiation experts;

(2) The certificates of radiation experts shall be issued by the Environmental Board.

(3) For review of an application for a certificate of radiation expert, the applicant shall pay a state fee in the rate provided for in the State Fees Act.

(4) The minister responsible for the area shall establish by a regulation the curriculum for training of radiation experts, their professional skills requirements, the procedure for application for the certificate and the standard format of applications and certificates.

§ 91. Validity of certificates

A certificate shall be valid for the term of five years.

§ 92. Refusal to issue certificates

The Environmental Board shall refuse to issue a certificate if:

- 1) the person does not meet the requirements provided for in subsection 90 (1) of this Act;
- 2) the person has significantly violated the requirements of the Radiation Act and the legislation issued on the basis thereof with his or her earlier activities within three years before application for the certificate;
- 3) the certificate has been revoked within three years before the application for a new certificate.

§ 93. Revocation of certificate

The Environmental Board shall revoke the validity of a certificate upon notifying the holder thereof in writing in advance if:

- 1) the holder of the certificate has submitted inaccurate information about his or her education, passing of radiation safety training or work experience;
- 2) the holder of the certificate does not comply with the radiation safety principles.

§ 94. Recognition of foreign professional qualifications

(1) Persons who have acquired foreign professional qualifications may be employed as radiation experts if their professional qualifications have been recognised in accordance with the Recognition of Foreign Professional Qualifications Act.

(2) The competent authority according to subsection 7 (2) of the Recognition of Foreign Professional Qualifications Act is the Environmental Board.

§ 95. Medical physics experts

(1) A medical physics expert is any person who agrees to consult persons carrying out medical radiology procedures and other interested parties to the extent of his or her knowledge and skills, *inter alia*, in the following areas:

- 1) patient dosimetry;
- 2) optimization of medical exposure;
- 3) quality assurance of medical services.

(2) A medical physics expert shall participate in the optimization of medical radiological procedures and in the process of quality assurance and procurement of medical exposure apparatuses and radiation protection means.

(3) Any natural person who has a professional certificate of a biomedical technology engineer or equal in the speciality of diagnostic radiology, nuclear medicine or radiation therapy may act as a medical physics expert.

(4) A professional certificate of biomedical technology engineer is issued pursuant to procedure provided for in the Professions Act.

Chapter 5 Natural exposures

§ 96. Increased natural exposures

(1) The Environmental Board shall ensure, by means of surveys or other appropriate methods, the identification of all activities in the case of which natural radiation sources may cause exposures to workers or members of the public in excess of the effective dose limits established for members of the public on the basis of this Act.

(2) The activities specified in subsection (1) of this section *inter alia* include:

- 1) work at mineral springs, in caves, mines and underground facilities;
- 2) work with substances which contain natural radioactive substances as additives;
- 3) work of flight crews in high-altitude flights.

§ 97. Measures to protect workers and members of public

(1) In order to protect flight crews who, due to exposure to cosmic radiation, may incur exposures in excess of the annual effective dose limit for members of the public established by this Act, the employer must:

- 1) organise monitoring of the doses caused by the exposures;

- 2) take into account the amount of doses when preparing work schedules;
- 3) inform the workers of the health risks related to their work;
- 4) implement special measures for the protection of the health of female workers during pregnancy and, if necessary, during breastfeeding.

(2) If the Environmental Board has reasonable doubts that the area of activity of the employer includes activities where natural sources may cause higher exposure to workers or members of the public than the effective dose limit for members of the public established on the basis of this Act, the Environmental Board has the right to demand that the employer organises radiation monitoring or submits a radiation safety assessment.

(3) If the radiation monitoring or assessment of radiation safety reveal that the effective dose limit for members of the public is exceeded, the employer must implement the measures provided for in subsection (1) of this section and adopt measures which prevent the members of the public from incurring any doses exceeding the limit.

(4) If the Environmental Board assesses that the implementation of the measures provided for in subsection (1) of this section is insufficient for lasting protection of human health, it may require a radiation practice licence from the employer.

Chapter 6 Financial Collateral

§ 98. Financial collateral

(1) The issuer of radiation practice licences may require that applicants for radiation practice licences have financial collaterals to recover radioactive substances, equipment containing thereof and radioactive waste (hereinafter *collateral*).

(2) The issuer of radiation practice licences shall decide on the need for collateral within 20 days as of registration of an application for a radiation practice licence or the amendment thereof. The importance of ensuring recovery of radioactive substances, equipment containing thereof or radioactive waste from the radiation safety point of view and the estimated cost of recovery shall be taken into account upon making the decision.

(3) The collateral must be only intended for recovery of radioactive substances, equipment containing thereof and radioactive waste and it must be immediately realizable, if appropriate.

(4) The amount of collateral shall be the estimated cost of recovery of radioactive substances, equipment containing thereof or radioactive waste on the basis of the data submitted by the applicant of a radiation practice licence and it shall be determined by the issuer of the radiation practice licence.

(5) The availability of collateral shall be certified by a guarantee of an Estonian or international credit or financial institution accepted by the issuer of radiation practice licences. The issuer of radiation practice licences has the right to refuse to accept any issuer of guarantees if there are reasons to doubt the reliability of the guarantee issued by such issuer on the basis of the former activities, financial status or reputation of the issuer of the guarantee.

(6) Collateral must be valid up to the end of the recovery of radioactive substances, equipment device containing thereof or radioactive waste.

§ 99. Increase of collateral

If the issuer of radiation practice licences establishes that the amount of the existing collateral no longer covers the costs of recovery of radioactive substances, equipment containing thereof or radioactive waste, it has the right to demand that the collateral is increased.

Chapter 7 Radiation Monitoring

§ 100. Assessment of effective and equivalent doses of members of public and reference groups of population

(1) The Environmental Board shall ensure dose assessment for members of the public and reference groups of the population.

(2) A reference group of the population is a group of persons whose exposure incurred from any radiation practices is uniform and who represents the most exposed part of the population for this radiation practice.

(3) A holder of a radiation practice licence who holds a licence for radiation practices provided for in clauses 68 (1) 1), 4) or 5) shall ensure assessment of the doses incurred by reference groups of the population.

(4) The procedure for monitoring and assessment of effective doses of members of the public, the dose coefficient values for doses resulting from radionuclide intake and the procedure for measuring thereof and radiation and tissue weighting factor values shall be established by a regulation of the minister responsible for the area.

§ 101. Assessment of effective and equivalent doses of exposed workers

(1) Holders of radiation practice licences shall ensure the assessment of effective and equivalent dose incurred by exposed workers.

(2) The procedure for monitoring and assessment of effective doses of exposed workers, the dose coefficient values for doses resulting from radionuclide intake and the procedure for measuring thereof and radiation and tissue weighting factor values shall be established by a regulation of the minister responsible for the area.

§ 102. Dose register

(1) A national dose register of exposed workers shall be maintained for keeping records on occupational exposure doses incurred by exposed workers.

(2) The chief processor of the national dose register of exposed workers is the Environmental Board.

(3) The national dose register of exposed workers contains the personal data of exposed workers, data on their employers and incurred doses of occupational exposure.

(4) The data specified in subsection (3) of this section must be preserved in the national dose register of exposed workers during the entire time the exposed worker is engaged in radiation works. Thereafter the data shall be preserved until the time the person attains or would have attained 75 years of age but not for a shorter period than 30 years after the person no longer engages in radiation works.

(5) The following persons shall be enabled access to the results of the individual dose monitoring of exposed workers:

- 1) the exposed worker himself or herself with regard to the data concerning him or her;
- 2) the expert providing occupational health services to an exposed worker;
- 3) the holder of a radiation practice licence with regard to the information concerning the exposed workers of such holder;
- 4) the persons carrying out radiation safety inspection;
- 5) the persons carrying out scientific research on exposure and the influences thereof to the extent of the data which do not concern the person of any exposed worker.

(6) The national dose register of exposed workers and the statutes thereof shall be established by a regulation of the minister responsible for the area.

Chapter 8 Intervention and Implementation of Protective Measures

§ 103. Intervention

Intervention is human activity directed to sources, exposure pathways and persons which is used to prevent or decrease human exposure in accidental and existing exposure situations.

§ 104. Exposure pathways

Exposure pathway is a route in the environment through which a radioactive substance moves to a person and causes exposure to the person.

§ 105. Intervention and action levels

(1) Intervention level is the value of avertable equivalent or effective dose upon exceeding of which implementation of measures have to be considered for the protection of the members of the public whereas the an avertable dose is only connected to the exposure pathway and source to which the intervention measures are to be implemented.

(2) Action level is the value of dose rates or activity concentrations upon the exceeding of which protective measures are implemented.

(3) Intervention and action levels and limits for emergency exposure which constitute the basis for preparation of radiological emergency plans and implementation of measures for protecting the members of the public shall be established by a regulation of the Government of the Republic.

§ 106. Principles of application of protective measures

(1) The method, extent and duration of implementation of protective measures shall be planned in a manner that the benefit of decreased health detriment of people is maximum compared to the damage caused by intervention.

(2) Preventive measures are implemented if the decrease in detriment is sufficient to justify the damage and costs of implementation of protective measures.

§ 107. Intervention in accidental exposure situations

(1) Participants in the intervention are the Rescue Board on the basis of and pursuant to the procedure provided for in the Rescue Act, the Police and Border Guard Board on the basis of and pursuant to the procedure provided for in the Police and Border Guard Act, the Environmental Board, the manager of radioactive waste participating in the intervention and, as appropriate, any other persons.

(2) The Environmental Board is competent to:

- 1) assess possible dispersion of radioactive substances in time and space and possible incurred exposures;
- 2) ascertain areas of increased exposure and organise radiation monitoring in these areas;
- 3) carry out measurements and provide an assessment on exceeding or not exceeding the criteria for radioactive contamination;
- 4) assessment and documentation of radiation doses of persons who stayed in an area of heightened radiation levels;
- 5) exchange of information on radiation with the European Commission and the International Atomic Energy Agency.

(3) In the case of intervention, the Environmental Board may apply special state supervision measures provided for in §§ 50 and 51 of the Law Enforcement Act on the bases of and pursuant to the procedure provided for in the Law Enforcement Act.

(4) Managers of radioactive waste who participate in intervention are legal persons holding a radiation practice licence for management of a radioactive waste storage facilities and transportation of radioactive substances and have capability for removal of contamination from radioactively contaminated areas.

(5) The minister responsible for the area shall appoint by a directive the radioactive waste manager who participates in intervention.

§ 108. Intervention in radiological emergency

According to the Emergency Act, a radiological emergency response plan shall be prepared to ensure readiness to respond to radiological emergencies.

§ 109. Intervention in existing exposure situations resulting from accidental exposure

The Environmental Board shall ensure that any existing exposure situation resulting from accidental exposure is ascertained by means of research or other relevant measures and, if necessary, prepare single plans which contain at least a description of the existing exposure situation and address the time and way of responding to the existing exposure situation.

§ 110. Medical examination of persons having stayed in areas of influence of radiological emergency

(1) If necessary, the Environmental Board shall ensure the assessment of individual dose monitoring of accidental or emergency exposures and submission of assessment results to a physician who performs the medical examination.

(2) The cost of medical examination shall be covered from the reserve fund of the Government of the Republic and subsequently collected from the person who caused the radiological emergency.

§ 111. Radiation hazard early notification system

The Environmental Board shall ensure the operation of the radiation hazard early notification system.

Chapter 9

State supervision

§ 112. Exercise of state supervision

The Environmental Inspectorate exercises state supervision over radiation safety. The Environmental Board, the Rescue Board and the Police and Border Guard Board shall also exercise supervision over implementation of the protective measures specified in Chapter 8 of this Act.

§ 113. Special state supervision measures

The Environmental Inspectorate may apply the special measures for state supervision provided for in §§ 30, 31, 32, 45, 49, 50, 51, 52 and 53 of the Law Enforcement Act for exercise of the state supervision provided for in this Act on the bases and pursuant to the procedure provided for in the Law Enforcement Act.

§ 114. Use of direct coercion

The Environmental Inspectorate is permitted to use physical force on the basis of and pursuant to the procedure provided by the Law Enforcement Act.

§ 115. Penalty payment rate

Upon failure to comply with a precept, the upper limit of penalty payment pursuant to the procedure provided for in the Substitutive Enforcement and Penalty Payment Act is 32,000 euros.

§ 116. Obligations arising from international agreements

International inspectors who check the compliance with the terms and conditions of international agreements binding on the Republic of Estonia shall have access to all the objects in the scope of regulation of these international agreements and to relevant data, and they have the right to take samples.

Chapter 10 Liability

§ 117. Operation without radiation practice licence or in violation of requirements of licence

(1) Operation without a radiation practice licence, if the licence is required, and in violation of the requirements of the licence is punishable by a fine of up to 300 fine units.

(2) The same act, if committed by a legal person, is punishable by a fine of up to 20,000 euros.

§ 118. Violation of obligations of holders of radiation practice licences

(1) Violation of obligations of holders of radiation practice licences provided for in this Act is punishable by a fine of up to 300 fine units.

(2) The same act, if committed by a legal person, is punishable by a fine of up to 20,000 euros.

§ 119. Manufacture of goods containing radioactive substances

(1) Addition of radioactive substances upon manufacture of foodstuffs, toys, personal ornaments and cosmetics is punishable by a fine of up to 300 fine units.

(2) The same act, if committed by a legal person, is punishable by a fine of up to 32,000 euros.

§ 120. Transportation of sources containing radioactive substances and radioactive waste and goods across state border

(1) Transportation of sources containing radiation substances, radioactive waste or goods listed in § 119 across the state border without an appropriate authorisation is punishable by a fine of up to 300 fine units.

(2) The same act, if committed by a legal person, is punishable by a fine of up to 20,000 euros.

§ 121. Delivery of radiation sources containing radioactive substances and delivery of radioactive waste to person who does not hold radiation practice licence

(1) Delivery of radiation sources containing radioactive substances or delivery of radioactive waste to persons who do not hold a radiation practice licence is punishable by a fine of up to 300 fine units.

(2) The same act, if committed by a legal person, is punishable by a fine of up to 20,000 euros.

§ 122. Proceedings

Extra-judicial proceedings concerning the misdemeanours provided for in this Chapter shall be conducted by the Environmental Inspectorate.

Chapter 11 Implementing Provisions

§ 123. Validity of low risk radiation practice licences

Low risk radiation practice licences issued for a specified term prior to the entry into force of this Act shall remain in force until the date of expiry set out therein.

§ 124. Proceedings for issue of low risk radiation practice licences

Proceedings for issue of low risk radiation practice licences commenced prior to entry into force of this Act shall be conducted pursuant to the General Part of the Environmental Code Act and this Act.

§ 125. Amendment to State Fees Act

The State Fees Act is amended as follows:

1) the words "radiation practice licence" are substituted by words "environmental permits granted for radiation practice" in the title of section 131 and in subsection (1);

2) subsection 131 (2) is amended and worded as follows:

"(2) A state fee of 64 euros shall be paid for the review of an application for amendment of an environmental permit granted for radiation practice in case of changes in radiation practice provided for in clause 78 (1) 1), 4), 5) or 7) of the Radiation Act.";

3) subsection 132 is amended and worded as follows:

" § 132. Review of applications for certificates of radiation experts

A state fee of 32 euros shall be paid for the review of an application for a certificate of a radiation expert."

§ 126. Repeal of Radiation Act

The Radiation Act (RT I 2004, 26, 173) is repealed.

§ 127. Entry into force of Act

This Act and the fifth chapter of the General Part of the Environmental Code Act enter into on 1 November 2016.

¹Council Directive 89/618/Euratom on informing the general public about health protection measures to be applied and steps to be taken in the event of a radiological emergency (OJ L 357, 07.12.1989, p. 31-34); Council Directive 90/641/Euratom on the operational protection of outside workers exposed to the risk of ionizing radiation during their activities in controlled areas (OJ L 349, 13.12.1990, pp. 21-25); Council Directive 96/29/Euratom laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation (OJ L 159, 29.06.1996, pp. 1-114); Council Directive 97/43/Euratom on health protection of individuals against the dangers of ionizing radiation in relation to medical exposure, and repealing Directive 84/466/Euratom (OJ L 180, 09.07.1997, pp. 22-27); Council Directive 2003/122/Euratom on the control of high-activity sealed radioactive sources and orphan sources (OJ L 346, 31.12.2003, pp. 57-64); Council Directive 2006/117/Euratom on the supervision and control of shipments of radioactive waste and spent fuel (OJ L 337, 05.12.2006, pp. 21-32); Council Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations (OJ L 172, 02.07.2009, p 18-22).

