

## **DECREE**

**No. 409**

**of 6 December 2016**

### **on activities especially important from nuclear safety and radiation protection viewpoint, special professional qualification and training of persons ensuring radiation protection of the registrant**

The State Office For Nuclear Safety sets, pursuant to § 236 of Act No. 263/2016 Coll., the Atomic Act, to implement § 24(7), § 31(6), § 32(10), § 33(8) and § 70(2) a):

#### **§ 1**

##### **Scope**

- This Decree incorporates the relevant Euratom legislation<sup>1))</sup> and regulates
- a) the content of the documents for the purposes of authorisation of professional training, other professional training of the selected personnel and training of persons ensuring radiation protection of the registrant;
  - b) a list of activities especially important from nuclear safety and radiation protection viewpoint;
  - c) the type and degree of the qualification required for individual activities;
  - d) the type and length of professional experience for individual activities;
  - e) the content and the way of implementation of professional training for individual activities;
  - f) performance and personal characteristics, which are essential for the performance of activity especially important from nuclear safety viewpoint, and the way of verification of personal competence;
  - g) the scope, content and way of the examination verifying special professional qualification for individual activities and the way of their evaluation;
  - h) the conditions of the re-examination verifying special professional qualification;
  - i) the duration of the authorisation to perform activities especially important from nuclear safety viewpoint;
  - j) the content, way and frequency of other professional training;
  - k) the interval of periodic verification of personal competence of a holder of authorisation to perform activity especially important from nuclear safety viewpoint;
  - l) the times of the absence of activities, which are essential for the withdrawal of authorisation to perform activities especially important from nuclear safety and radiation protection viewpoint; and
  - m) the scope, way and frequency of training the persons ensuring radiation protection of the registrant.

#### **§ 2**

##### **Activities especially important from nuclear safety viewpoint**

[To § 31(6) a) of the Atomic Act]

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<sup>1))</sup> Directive of 5 March 1962 on freedom to take skilled employment in the field of nuclear energy. Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom.

(1) The activity especially important from nuclear safety viewpoint performed at a nuclear power installation with a thermal power greater than 50 MW (hereinafter referred to as a “nuclear power installation”) is

- a) the control and supervision of commissioning and operation of a nuclear power installation and the independent nuclear reactor shutdown, including the manipulation in the main control room and the emergency control room;
- b) the control and supervision of commissioning and operation of one reactor unit and the independent nuclear reactor shutdown, including the manipulation in the main control room and the emergency control room;
- c) the manipulation in the main control room and the emergency control room relating to the primary part of reactor unit, including
  1. the independent nuclear reactor shutdown; and
  2. the control and supervision of commissioning and operation of the primary part of reactor unit;
- d) the manipulation in the main control room and the emergency control room relating to the secondary part of reactor unit, including the control and supervision of commissioning and operation;
- e) the control of performance of individual steps of physical and power start-up tests in the main control room of the reactor unit; or
- f) the control and supervision of handling of the individual fuel assemblies inside the reactor unit, off-side the fresh fuel storage.

(2) The activity especially important from nuclear safety viewpoint performed at a nuclear research installation is

- a) the manipulation in the control room, and the control of performance of individual steps of physical and power start-up tests of the nuclear reactor, and the control and supervision of other start-up works;
- b) the manipulation in the control room, the control and supervision of commissioning and operation of the nuclear reactor, the control and supervision of fuel handling in the nuclear reactor core, and the control and supervision of shift activities;
- c) the control and supervision of set-up and configuration of the nuclear reactor core, the realisation of physical measurements during the physical and power start-up of the nuclear reactor, and the control and supervision of basic critical experiment; or
- d) the manipulation in the control room, the control and supervision of the commissioning and the control and supervision of the reactor operation.

### § 3

#### **Activities especially important from radiation protection viewpoint**

[To § 31(6) a) of the Atomic Act]

The activities especially important from radiation protection viewpoint are

- a) the systematic surveillance over the fulfilment of radiation protection requirements as
  1. a supervisor; or
  2. a person with a direct supervision of radiation protection;
- b) the control and performance of the assessment of the properties of ionising radiation source pursuant to § 9(2) f) point 8 of the Atomic Act; or
- c) the performance of services important from radiation protection viewpoint pursuant to § 9(2) h) points 1 to 3 and 5 to 7 of the Atomic Act.

§ 4

**Type and level of education for activities especially important from nuclear safety viewpoint**

[To § 31(6) b) of the Atomic Act]

(1) The granting of authorisation to perform the activities especially important from nuclear safety viewpoint at a nuclear power installation requires for the activity referred to

- a) in § 2(1) a) to c), e) and f), the university education acquired in study programmes in the field of electrical engineering, power engineering, physics, chemistry or mechanical engineering, technology and materials; and
- b) in § 2(1) d)
  - 1. the university education acquired in study programmes in the field of electrical engineering, power engineering, physics, chemistry or mechanical engineering, technology and materials; or
  - 2. the secondary education completed by the exit exam in the field of mechanical engineering and machinery manufacture, electrical engineering, technical chemistry or general training.

(2) The granting of authorisation to perform the activities especially important from nuclear safety viewpoint at a nuclear research installation requires for the activity referred to

- a) in § 2(2) a) and c), the university education acquired in study programmes in the field of electrical engineering, power engineering, physics, chemistry or mechanical engineering, technology and materials; and
- b) in § 2(2) b) and d)
  - 1. the university education acquired in study programmes in the field of electrical engineering, power engineering, physics, chemistry or mechanical engineering, technology and materials; or
  - 2. the secondary education completed by the exit exam in the field of mechanical engineering and machinery manufacture, electrical engineering, technical chemistry or general training.

§ 5

**Type and length of professional experience for activities especially important from nuclear safety viewpoint**

[To § 31(6) c) of the Atomic Act]

(1) The granting of authorisation to perform the activities especially important from nuclear safety viewpoint at a nuclear power installation requires for the activity referred to

- a) in § 2(1) a), the performance of activity pursuant to § 2(1) b) for 2 years;
- b) in § 2(1) b), the performance of activity pursuant to § 2(1) c) for 1 year and pursuant to § 2(1) d) for 1 year; and
- c) in § 2(1) d), the performance of activity in connected posts for 4 years in case of education pursuant to § 4(1) b) point 2.

(2) The granting of authorisation to perform the activities especially important from nuclear safety viewpoint at a nuclear research installation requires for the activity referred to

- a) in § 2(2) a), the performance of activity pursuant to § 2(2) b) for 1 year and pursuant to § 2(2) c) for 1 year;
- b) in § 2(2) b), the performance of activity pursuant to § 2(2) d) for 2 years;

- c) for the activity referred to in § 2(2) c), the performance of activity in the field of related activities for 2 years; or
- d) in § 2(2) d)
  - 1. the performance of activity in the field of related activities for 2 years in case of education pursuant to § 4(2) b) point 1; or
  - 2. the performance of activity in the field of related activities for 3 years in case of education pursuant to § 4(2) b) point 2.

§ 6

**Content and way of implementation of professional training for activities especially important from nuclear safety viewpoint**

[To § 31(6) d) of the Atomic Act]

(1) The professional training for activities especially important from nuclear safety viewpoint at a nuclear power installation shall be carried out as follows:

- a) for the activity referred to in § 2(1) a) and b)
  - 1. the theoretical training including information pursuant to Annex 1 hereto;
  - 2. the training on the full-scope simulator lasting 5 training days; and
  - 3. the on-the-job training in the activity especially important from nuclear safety viewpoint lasting 20 training days;
- b) for the activity referred to in § 2(1) c) and d)
  - 1. the theoretical training including information pursuant to Annex 1 hereto;
  - 2. the traineeship at a nuclear installation lasting 25 training days, where this is not a transfer from another activity especially important from nuclear safety viewpoint;
  - 3. the training on the full-scope simulator lasting 25 training days, where this is not a transfer from another activity especially important from nuclear safety viewpoint;
  - 4. the training on the full-scope simulator lasting five training days, where this is a transfer from another activity especially important from nuclear safety viewpoint;
  - 5. the on-the-job training in the activity especially important from nuclear safety viewpoint lasting 25 training days, where this is not a transfer from another activity especially important from nuclear safety viewpoint; and
  - 6. the on-the-job training in the activity especially important from nuclear safety viewpoint lasting 20 training days, where this is a transfer from another activity especially important from nuclear safety viewpoint; and
- c) for the activity referred to in § 2(1) e) and f)
  - 1. the theoretical training including information pursuant to Annex 1 hereto;
  - 2. the traineeship at a nuclear installation lasting 25 training days, where this is not a transfer from another activity especially important from nuclear safety viewpoint;
  - 3. the on-the-job training in the activity especially important from nuclear safety viewpoint lasting 25 training days, where this is not a transfer from another activity especially important from nuclear safety viewpoint; and
  - 4. the on-the-job training in the activity especially important from nuclear safety viewpoint lasting 20 training days, where this is a transfer from another activity especially important from nuclear safety viewpoint;

(2) The professional training for activities especially important from nuclear safety viewpoint at a nuclear research installation shall be carried out as follows:

- a) for the activity referred to in § 2(2) a) and b)
  - 1. the theoretical training including information pursuant to Annex 1 hereto;

2. the traineeship at a nuclear installation lasting 25 training days, where this is not a transfer from another activity especially important from nuclear safety viewpoint;
  3. the on-the-job training in the activity especially important from nuclear safety viewpoint lasting 25 training days, where this is not a transfer from another activity especially important from nuclear safety viewpoint; and
  4. the on-the-job training in the activity especially important from nuclear safety viewpoint lasting 20 training days, where this is a transfer from another activity especially important from nuclear safety viewpoint; and
- b) for the activity referred to in § 2(2) c) and d)
1. the theoretical training including information pursuant to Annex 1 hereto;
  2. the traineeship at a nuclear installation lasting 25 training days, where this is not a transfer from another activity especially important from nuclear safety viewpoint;
  3. the on-the-job training in the activity especially important from nuclear safety viewpoint lasting 25 training days, where this is not a transfer from another activity especially important from nuclear safety viewpoint; and
  4. the on-the-job training in the activity especially important from nuclear safety viewpoint lasting 20 training days, where this is a transfer from another activity especially important from nuclear safety viewpoint;
- (3) The professional training for activities especially important from nuclear safety viewpoint shall conform to the type of a nuclear installation where the activity will be performed.
- (4) The content of professional training for activities especially important from nuclear safety viewpoint shall be defined in Annex 1 hereto.

## § 7

### **Type and level of education for activities especially important from radiation protection viewpoint**

[To § 31(6) b) of the Atomic Act]

The granting of authorisation to perform the activities especially important from radiation protection viewpoint requires the following level of education:

- a) the university education for the performance of a systematic supervision as a supervisor at a workplace in radiation practices with the significant ionising radiation source, which is used for medical exposure;
- b) the university education for the performance of a systematic supervision as a supervisor
  1. at a category III workplace where medical exposure is not performed;
  2. at a category III workplace, or
  3. in decommissioning under point 1 or 2;
- c) the secondary education completed by the exit exam for the performance of a systematic supervision as a supervisor in the provision of services in the controlled area to the operator of a category IV workplace;
- d) the university education acquired in study programme in the field of radiological physics or the competence to perform paramedical profession of radiological physicist for the control of the assessment of the properties of the ionising radiation source used in medical exposure such as
  1. X-ray mammography equipment;
  2. computed tomography equipment;
  3. X-ray equipment incorporating a function of digital subtraction angiography; or
  4. used in radiation therapy;

- e) the university education for the control of the assessment of the properties of the ionising radiation source used in medical exposure, other than that referred to in letter d);
- f) the university education acquired in study programmes in the field of biology and ecology, electrical engineering, power engineer, physics, chemistry, information technology, cybernetics and technology, mathematics and statistics, civil engineering, mechanical engineering and materials, mining and mineral processing, earth sciences, veterinary medicine, veterinary hygiene, general medicine and dental medicine or agriculture for the control of the performance of services important from radiation protection viewpoint such as
  1. personal dosimetry;
  2. determination of individual doses to workers at a workplace with the possible increase in exposure to the natural source;
  3. determination of individual doses to workers at a workplace with the possible increase in radon exposure; or
  4. measurement and evaluation of the content of radionuclides in radioactive substance released from a workplace with the possible increase in exposure to the natural source;
- g) the university education for the control of the performance of service important from radiation protection viewpoint, which is the monitoring of
  1. category III workplace or category IV workplace;
  2. discharges from workplace under point 1;
  3. the surrounding of workplace under point 1;
  4. the surrounding of radioactive waste repository after the closure of a radioactive waste repository;
  5. heap, sludge bed or any other residues from the practices associated with the extraction of radioactive mineral or from any other mining practices associated with the occurrence of radioactive mineral; or
  6. for the purposes of siting or construction of a nuclear installation; and
- h) the secondary education completed by the exit exam for any other activity especially important from radiation protection viewpoint.

## § 8

### **Type and length of professional experience for activities especially important from radiation protection viewpoint**

[To § 31(6) c) of the Atomic Act]

The granting of authorisation to perform the activities especially important from radiation protection viewpoint requires for

- a) the activity referred to in § 3 letter a), except the activity performed at a workplace where an industrial stable meter is used; in § 3 letter b) and c), except the activity related to the control of the performance of services important from radiation protection viewpoint pursuant to § 9(2) h) point 2, 5, 6 and 7 of the Atomic Act, the performance of tasks constituting this activity for 1 year;
  1. a licensee, whose licensed practices involve the performance of the activity especially important from radiation protection viewpoint; and
  2. under supervision of a holder of authorisation to perform this or similar activity especially important from radiation protection viewpoint; or
- b) the activity not referred to in letter a), the performance of tasks constituting any other activity in the framework of exposure situations for 3 months.

§ 9

**Content and way of implementation of professional training for activities especially important from radiation protection viewpoint**

[To § 31(6) d) of the Atomic Act]

(1) The professional training for activities especially important from radiation protection viewpoint is the completion of training course lasting 20 hours of lessons.

(2) The content of professional training for activities especially important from radiation protection viewpoint shall be defined in Annex 2 hereto.

§ 10

**Performance and personal characteristics, which are essential for the performance of activities especially important from nuclear safety viewpoint**

[To § 31(6) e) of the Atomic Act]

(1) Performance characteristics, which are essential for the performance of activity especially important from nuclear safety viewpoint, are as follows

- a) intellectual capacity in the range of average to above-average;
- b) average to higher level of learning processes;
- c) resistance to perceptual load;
- d) resistance to monotony; and
- e) reliability of decision-making processes and job performance.

(2) Personal characteristics, which are essential for the performance of activity especially important from nuclear safety viewpoint, are as follows

- a) emotional stability;
- b) resistance to load;
- c) higher level of self-control;
- d) discipline;
- e) responsible attitudes;
- f) the developed ability of anticipation;
- g) the absence of tendencies to aggressive, hazardous or impulsive behaviour; and
- h) the absence of psychopathological symptomatology.

§ 11

**Verification of personal competence**

[To § 31(6) e) of the Atomic Act]

(1) The personal competence shall be verified in the form of a comprehensive psychological examination.

(2) The comprehensive psychological examination shall be performed by a psychologist, who graduated with a single-filed master's degree in psychology.

(3) The comprehensive psychological examination shall be performed to the extent verifying the performance and personal characteristics pursuant to § 10 and shall include

- a) an questionnaire of medical history;
- b) a structured interview;
- c) tests of intellectual capacity;
- d) personal questionnaires;

- e) tests of special skills; and
- f) projective methods.

(4) The psychologist shall issue a certificate of personal competence on the basis of the findings of the comprehensive psychological examination. The conclusion on the findings of the comprehensive psychological examination stated in that certificate shall be as follows

- a) “Personally competent”, if the finding is fully in compliance with the requirements of § 10;
- b) “Personally competent with reservation”, if the finding is in compliance with the requirements of § 10 to the extent that it allows the full performance of activity especially important from nuclear safety viewpoint for a limited period of time; or
- c) “Personally incompetent”, if the finding is not in compliance with the requirements of § 10 at least to the extent that it allows the full performance of activity especially important from nuclear safety viewpoint for a limited period of time.

## § 12

### **Interval of periodic verification of personal competence of a holder of authorisation to perform activity especially important from nuclear safety viewpoint**

[To § 33(8) b) of the Atomic Act]

The interval of periodic verification of personal competence of a holder of authorisation to perform activity especially important from nuclear safety viewpoint is as follows

- a) two years in case of the activity pursuant to § 2(1), if his/her personal competency according to a recent verification is evaluated with the conclusion “Personally competent”;
- b) four years in case of the activity pursuant to § 2(2), if his/her personal competency according to a recent verification is evaluated with the conclusion “Personally competent”; or
- c) one year, if his/her personal competency according to a recent verification is evaluated with the conclusion “Personally competent with reservation”.

## § 13

### **Examination verifying special professional qualification for activities especially important from nuclear safety viewpoint**

[To § 32(10) a) of the Atomic Act]

(1) The examination verifying special professional qualification for activities especially important from nuclear safety viewpoint shall be performed to the following extent:

- a) full-scope simulator examination for the activity pursuant to § 2(1) a) to d);
- b) written part of the examination;
- c) oral part of the examination; and
- d) practical part of the examination, where it is not the granting of authorisation to perform activity especially important from nuclear safety viewpoint when the previous authorisation to perform the same activity has expired.

(2) The examination verifying special professional qualification for activities especially important from nuclear safety viewpoint can be performed as an integrated examination in the extent of an oral part of the examination and a full-scope simulator examination (hereinafter referred to as the “integrated examination”);



- a) where it is the activity pursuant to § 2(1) a) or b) when the previous authorisation to perform the same activity has ended on the expiry of the period of time for which it was granted; or
- b) where it is the activity pursuant to § 2(1) c) or d) when at least two previous authorisations to perform the same activity have ended on the expiry of the period of time for which they were granted.

(3) The applicant shall take part of the examination verifying special professional qualification pursuant to paragraph 1 letter c) and d) once he/she has passed part of the examination verifying special professional qualification pursuant to paragraph 1 letter a), if required, and paragraph 1 letter b).

(4) Where the examination on the full-scope simulator is required, it shall take place no more than 6 months before the oral part of the examination. The written part of the examination shall take place no more than 6 months before the oral part of the examination.

(5) Where it is the first granting of authorisation to perform activities especially important from nuclear safety viewpoint, the oral part of the examination shall be performed as standard oral part of the examination.

(6) The content of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint shall be defined in Annex 3 hereto.

(7) The procedure on the performance of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint shall be defined in Annex 4 hereto.

#### § 14

#### **Evaluation of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint and conditions of its repetition**

[To § 32(10) a) and b) of the Atomic Act]

(1) The Examining Committee shall evaluate parts of the examination verifying special professional qualification for activities specially important from nuclear safety viewpoint as follows:

- a) the examination on the full-scope simulator and the oral part of the examination - grade 1 to 4, namely in case of
  1. excellent result - grade 1;
  2. very good result - grade 2;
  3. good result - grade 3; or
  4. unsatisfactory result - grade 4; and
- b) the written part of the examination and the practical part of the examination - grade “passed” or “failed”.

(2) The applicant passes the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint when he/she achieves the satisfactory result according to the general evaluation.

(3) The applicant achieves the satisfactory result according to the general evaluation of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint if

- a) the examination on the full-scope simulator was evaluated by grade 1 to 3;

- b) the oral part of the examination was evaluated by grade 1 to 3;
- c) the written part of the examination was evaluated by grade “passed”; and
- d) the practical part of the examination was evaluated by grade “passed”.

(4) The general evaluation of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint shall be carried out by the Examining Committee in case of

- a) the satisfactory result by grade 1, 2 or 3; or
- b) the unsatisfactory result by grade 4.

(5) The evaluation procedure for parts of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint shall be defined in Annex 5 hereto.

(6) In case of re-examination verifying special professional qualification for activities especially important from nuclear safety viewpoint within a period of 12 months from the application, the applicant is not obliged to complete the parts of that examination, which were evaluated by grade “passed” or grade 1 to 3 in previous attempts to pass the examination. For the purposes of general evaluation of the current attempt to pass the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint, the parts shall be evaluated by the grade achieved in previous attempts to pass the examination.

## § 15

### **Examination verifying special professional qualification for activities especially important from radiation protection viewpoint**

[To § 32(10) a) of the Atomic Act]

(1) The examination verifying special professional qualification for activities especially important from radiation protection viewpoint shall be performed to the following extent:

- a) written part of the examination;
- b) oral part of the examination; and
- c) practical part of the examination where it is the assessment of the properties of the ionising radiation sources in
  1. radiotherapy;
  2. radiodiagnostics;
  3. intervention radiology; or
  4. veterinary medicine.

(2) The content of the examination verifying special professional qualification for activities especially important from radiation protection viewpoint shall be defined in Annex 6 hereto.

## § 16

### **Evaluation of the examination verifying special professional qualification for activities especially important from radiation protection viewpoint and conditions of its repetition**

[To § 32(10) a) and b) of the Atomic Act]

(1) The Examining Committee shall evaluate parts of the examination verifying special professional qualification for activities especially important from radiation protection viewpoint depending on applicant performance with the grade “passed” or “failed”. The

evaluation procedure for parts of the examination verifying special professional qualification for activities especially important from radiation protection viewpoint depending on applicant performance shall be defined in Annex 6 hereto.

(2) The applicant passes the examination verifying special professional qualification for activities especially important from radiation protection viewpoint when he/she achieves the satisfactory result according to the general evaluation.

(3) The Examining Committee shall evaluate the general examination verifying special professional qualification for activities especially important from radiation protection viewpoint depending on applicant performance with the grade “passed” or “failed”.

(4) The performance of the applicant can be generally evaluated by grade “passed” if all parts of the examination verifying special professional qualification for activities especially important from radiation protection viewpoint are evaluated by grade “passed”.

(5) In case of re-examination verifying special professional qualification for activities especially important from radiation protection viewpoint within a period of 12 months from the application, the applicant is not obliged to complete the parts of that examination, which were evaluated by grade “passed” in previous attempts to pass the examination. For the purposes of general evaluation of the last attempt to pass the examination verifying special professional qualification for activities especially important from radiation protection viewpoint, the parts shall be regarded as evaluated by grade “passed”.

#### § 17

### **Duration of the authorisation to perform activities especially important from nuclear safety viewpoint**

[To § 32(10) c) of the Atomic Act]

(1) The duration of the authorisation to perform activities especially important from nuclear safety viewpoint is in case of the first granting of authorisation 2 years.

(2) The duration of the authorisation to perform activities especially important from nuclear safety viewpoint is

- a) for first re-granting of authorisation to perform the same activity pursuant to § 2(1) a) to f) and § 2(2) a) to d), if the general evaluation of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint is
  1. grade 1 - 4 years;
  2. grade 2 - 3 years; or
  3. grade 3 - 2 years;
- b) for second re-granting of authorisation to perform the same activity pursuant to § 2(1) a), b), e) and f) and § 2(2) a) to c), if the general evaluation of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint is
  1. grade 1 - 6 years;
  2. grade 2 - 4 years; or
  3. grade 3 - 2 years; and
- c) for third and next re-granting of authorisation to perform the same activity pursuant to § 2(1) a), b), e) and f) and § 2(2) a) to c), if the general evaluation of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint is

1. grade 1 - 8 years;
2. grade 2 - 4 years; or
3. grade 3 - 2 years.

§ 18

**Other training**

[To § 33(8) a) of the Atomic Act]

(1) The other professional training for activities especially important from nuclear safety viewpoint shall be conducted

- a) by completing the theoretical training, containing information pursuant to Annex 1 hereto, lasting 4 days per calendar year; and
- b) for the activity pursuant to § 2(1) a) to d), by completing the training on the full-scope simulator, lasting 10 training days per calendar year.

(2) The content of other professional training for activities especially important from nuclear safety viewpoint shall be defined in Annex 1 hereto.

(3) The other professional training for activities especially important from radiation protection viewpoint shall be conducted by completing training course lasting 6 hours of lessons.

(4) The training course under paragraph 3 shall be completed every 5 years.

(5) The content of other training for activities especially important from radiation protection viewpoint shall be defined in Annex 2 hereto.

§ 19

**The time leading to the withdrawal of authorisation to perform activities especially important from nuclear safety and radiation protection viewpoint**

[To § 33(8) c) of the Atomic Act]

(1) The time of the absence of activities, which is essential for the withdrawal of authorisation to perform activities especially important from nuclear safety viewpoint, is for the activities pursuant to

- a) § 2(1) a) to d), more than 6 consecutive months;
- b) § 2(1) e) to f), more than 18 consecutive months; or
- c) § 2(2), more than 12 consecutive months.

(2) The time of the absence of activities, which is essential for the withdrawal of authorisation to perform activities especially important from radiation protection viewpoint, is in case of

- a) the assessment of the properties of the ionising radiation source and the control of performance of services important from radiation protection viewpoint, more than 5 consecutive years; or
- b) the activity especially important from radiation protection viewpoint not listed under letter a), more than 30 consecutive years.

§ 20

**Training of person ensuring radiation protection of the registrant**

[To § 70(2) a) of the Atomic Act]

(1) The method of training of person ensuring radiation protection of the registrant is the completion of training course lasting 6 hours of lessons on the premises of a licensee pursuant to § 9(6) b) of the Atomic Act.

(2) The training course under paragraph 1 shall be completed every 5 years.

(3) The content of the training course under paragraph 1 shall be defined in Annex 7 hereto.

#### § 21

#### **Content of the documents for the purposes of authorisation of professional training, other professional training of the selected personnel and training of persons ensuring radiation protection of the registrant**

[To § 24(7) of the Atomic Act]

(1) The content of the documents giving the evidence of organisational and technical qualification is the description of the way of staffing and technical support.

(2) The content of the documents giving evidence of the method of training includes the training programmes determining the content, scope, aims and the way of training, including

- a) the outlines of training;
- b) the methodology of lessons, including the procedures for the evaluation and the analysis of process of training;
- c) the way of verifying worker's knowledge acquired in training process; and
- d) the way of verifying worker's skills acquired in training process.

#### § 22

#### **Repealing provisions**

Decree of the State Office for Nuclear Safety No. 193/2005 Coll., setting the list of theoretical and practical areas forming the education and preparation content required in the Czech Republic for the performance of regulated activities belonging to the competence of State Office for Nuclear Safety, is hereby repealed.

#### § 23

#### **Entry into force**

This Decree shall enter into force on 1 January 2017.

Chairperson:

Ing. Drábová, Ph.D., m. p.

**Content of professional training and other professional training for activities especially important from nuclear safety viewpoint**

**A. Content of professional training for activities especially important from nuclear safety viewpoint**

**A.1. *Content of professional training, where this is not a transfer from another activity***

General information:

1. Nuclear safety and radiation protection;
2. Occupational safety and protection of health at work, first aid, fire protection, environmental protection;
3. Security of nuclear installations and nuclear materials;
4. The elements of nuclear and reactor physics;
5. The elements of hydromechanics and thermomechanics;
6. The elements of electrical engineering;
7. The elements of I&C system of a nuclear installation;
8. Legislation of the Czech Republic, the European Union and Euratom in the field of peaceful utilisation of nuclear energy.

Special information:

1. The principle, purpose and function of a nuclear installation;
2. The layout of a nuclear installation;
3. Nuclear reactor design;
4. Main components of a nuclear installation, the configuration, location and marking of primary technological systems;
5. Primary part of a nuclear power installation: the main components and their characteristics, the purpose and configuration of the basic parts of the primary part, the location of individual systems, the marking system of technological systems of the primary part; this information does not apply in case of a nuclear research installation;
6. Secondary part of a nuclear power installation: the main components and their characteristics, the purpose and configuration of the basic parts of the secondary part, the location of individual systems, the marking system of technological systems of the secondary part; this information does not apply in case of a nuclear research installation;
7. Chemistry in a nuclear installation, the elements of chemical processes, water treatment, chemistry and radiochemistry in a nuclear installation, chemical control, radioactive waste processing;
8. Electrical diagrams of a nuclear installation, the purpose and configuration of main electrical components, the location of individual electrical equipment, the marking system of electrical equipment;
9. I&C system of a nuclear installation, data acquisition and transmission of information, measurement of electrical and non-electrical quantities, measurement of neutron flux, the location of individual equipment of the I&C system, the marking system of equipment of

the I&C system, protection and safety systems, process information systems, description of the control centres of a nuclear installation;

10. IT, used information technologies and software of a nuclear installation;
11. Radiation protection in a nuclear installation, ionising radiation detectors, delineated controlled area in a nuclear installation, description and characteristics of the radiation situation monitoring system in a nuclear installation, radiation situation monitoring system of technological units, discharges, the surrounding environment of a nuclear installation and individuals in a nuclear installation, radiological emergency response preparedness, radiological emergency response;
12. Internal procedures for the states of a nuclear installation, other operating documents and documents arising from the requirements laid down in legislation;
13. Normal operation, abnormal operation, accident conditions of a nuclear installation, management of operating conditions and accident conditions, radiological emergency management, transport of fresh nuclear fuel and its storage in a nuclear installation, refuelling, storage and transport of spent nuclear fuel, nuclear safety in handling of nuclear fuel, safety limits and protection system setting, limiting condition for operation, orders and limitation for operation of a nuclear installation, rules for shift operation;
14. Operations physics of a nuclear installation, selected processes of medium-term and long-term kinetics of nuclear reactor, reactivity control;
15. Maintenance of a nuclear installation, repairs of manufacturing equipment, maintenance economy, defects in material, NDT testing, diagnostics;
16. Experimental equipment and methodologies, basic critical experiment, diffusion and transport theory, field neutron calculations; this information does not apply in case of a nuclear research installation;
17. Control system of a nuclear installation;
18. Dispatching control of energy network;
19. Principles of probabilistic safety assessment, safety analysis reports, emergency analyses, control system, safety culture, quality of human performance, human factor;
20. Principles of management work and communication, adaptation and psychological stress in operator activity, dealing with conflict situations.

Special information applies to a nuclear power installation or nuclear research installation where worker will perform his/her duties.

## ***A.2. Content of professional training in transfer from another activity in a nuclear power installation***

### **A.2.1. Content of professional training in transfer from activity pursuant to § 2(1) b) to activity pursuant to § 2(1) a)**

1. Shift operation control;
2. Nuclear safety of unit;
3. Maintenance coordination and implementation;
4. Radiological emergency management;
5. Dispatching control of electricity network;
6. Operating conditions;
7. Accident conditions;
8. Managerial training.

**A.2.2. Content of professional training in transfer from activity pursuant to § 2(1) c) or d) to activity pursuant to § 2(1) b)**

1. Chemistry of a nuclear power installation;
2. Electrical part of a nuclear power installation;
3. Radiation protection;
4. Radiological emergency management;
5. Nuclear safety of reactor unit;
6. Handling of nuclear fuel;
7. External technological equipment;
8. Operating conditions and accident conditions;
9. Managerial training.

**A.2.3. Content of professional training in transfer from activity pursuant to § 2(1) d) to activity pursuant to § 2(1) c)**

1. Primary part of a nuclear power installation;
2. Operations and reactor physics;
3. Chemistry of a nuclear power installation;
4. I&C system of a nuclear power installation;
5. Radiation protection;
6. Operating conditions;
7. Accident conditions;
8. Handling of nuclear fuel.

**A.2.4. Content of professional training in transfer from activity pursuant to § 2(1) c) to activity pursuant to § 2(1) d)**

1. Secondary part of a nuclear power installation;
2. Chemistry of a nuclear power installation;
3. Electrical part of a nuclear power installation;
4. Operating conditions;
5. Accident conditions.

**A.2.5. Content of professional training in transfer from activity pursuant to § 2(1) f) to activity pursuant to § 2(1) e)**

1. Physical start-up;
2. Power start-up.

**A.2.6. Content of professional training in transfer from activity pursuant to § 2(1) e) to activity pursuant to § 2(1) f)**

1. Handling of nuclear fuel;
2. Work and activities with refuelling machine.

**A.2.7. Content of professional training in transfer from activity pursuant to § 2(1) c) or d) to activity pursuant to § 2(1) e) or f)**



1. Physical start-up;
2. Power start-up;
3. Handling of nuclear fuel;
4. Work and activities with refuelling machine.

***A.3. Content of professional training in transfer from another activity in a nuclear research installation***

**A.3.1. Content of professional training in transfer from activity pursuant to § 2(2) b) or c) to activity pursuant to § 2(2) a)**

1. Dynamics and thermohydraulics of nuclear research reactors;
2. Safety analysis reports, emergency analyses;
3. Design of research nuclear reactors;
4. Control and protection systems of nuclear research reactors;
5. Dosimetry and radiation protection;
6. Nuclear safety;
7. Limits and Conditions;
8. Operating conditions and accident conditions.

**A.3.2. Content of professional training in transfer from activity pursuant to § 2(2) d) to activity pursuant to § 2(2) b)**

1. Radiological emergency management;
2. Safety analysis reports, emergency analyses;
3. Nuclear safety;
4. Limits and Conditions;
5. Operating conditions and accident conditions.

**A.3.3. Content of professional training in transfer from activity pursuant to § 2(2) b) or d) to activity pursuant to § 2(2) c)**

1. Reactor physics;
2. Dynamics and thermohydraulics of nuclear research reactors;
3. Nuclear safety;
4. Safety analysis reports, emergency analyses;
5. Limits and Conditions.

**A.3.4. Content of professional training in transfer from activity pursuant to § 2(2) c) to activity pursuant to § 2(2) d)**

1. Design of research nuclear reactors;
2. Control and protection systems of nuclear research reactors;
3. Dosimetry and radiation protection;
4. Operating conditions and accident conditions.

**B. Content of other professional training for activities especially important from**

**nuclear safety viewpoint**

1. Operating knowledge and experience, analysis of failures;
2. Organisational changes, feedback, safety culture;
3. New technical modifications of systems, structures and components;
4. Limit and Conditions, changes in internal procedures, new internal procedures;
5. Changes in legislation, requirements of state authorities;
6. Security of a nuclear installation, environmental protection;
7. Radiation protection;
8. Radiological emergency management;
9. IT, cyber security;
10. Operations physics;
11. Operating conditions and accident conditions.

**Annex 2 to Decree No. 409/2016 Coll.**

**Content of professional training and other professional training for activities especially important from radiation protection viewpoint**

General information:

1. The elements of atomic and nuclear physics;
2. Radio-biological documents of radiation protection, in particular interactions between ionising radiation and living matter, deterministic (tissue reactions) and stochastic effects, assessment of health consequences, health damage;
3. Detection methods and methods of ionising radiation counting;
4. Quantities and units used in dosimetry and in radiation protection;
5. Principles of radiation protection, justification, optimisation, dose limits and protection of sources;
6. Health care system for occupationally exposed individuals (occupational medical services) and for individuals exposed in radiological emergencies;
7. Critical group of the population or representative person, method of determination;
8. Exposure control;
9. Classification of ionising radiation sources, radioactive substance, sealed and unsealed radionuclide sources, criteria for exempting ionising radiation sources from regulation, clearance levels;
10. Ionising radiation as risk factor of working conditions, health risk assessment;
11. For activities linked to category III and IV workplace, decommissioning;
12. Handover, destruction of ionising radiation sources, release of radionuclides to the environment;
13. Monitoring: workplace, individual monitoring, discharges, the environment, limits for exposed workers and derived limits, reference levels;
14. Radiological emergency response preparedness, radiological emergency response, exposure reduction, ways to protect against ionising radiation, calculation of shielding;
15. Types of contamination, decontamination;
16. Transport of ionising radiation sources;
17. Legislative requirements for testing of ionising radiation sources, demonstration of knowledge in the scope of methods of constancy testing of ionising radiation sources, interpretation of measured quantities, evaluation of the results.

Information on organisation of radiation protection:

1. Basic legislation and other acts in the field of radiation protection applicable in the Czech Republic, European Union and Euratom legislation, legislation of the International Atomic Energy Agency, international recommendations, related national legislation and related standards;
2. Job description of the supervisor;
3. Roles of other persons performing activities especially important from radiation protection viewpoint;
4. For category III and IV workplaces, the control system, its control and on-site emergency plan;
5. For category IV workplace, with the emergency planning zone defined, proposal of urgent protective measures, i.e. evacuation of the public from the emergency planning zone;

6. Accounting for ionising radiation sources, quantities, parameters and facts important from radiation protection viewpoint;
7. Requirements for a license for practices in exposure situations, notification, registration;
8. Classification of workplaces, exposed workers, ionising radiation sources;
9. Delineation of supervised and controlled areas;
10. Personal radiation passports and conditions of their use.

Special information:

- I. Activities especially important from radiation protection viewpoint at workplaces with generators and sealed radionuclide sources for industrial applications pursuant to § 3 a) and b)
  1. Access control to delineated areas at temporary workplaces;
  2. Rules for safe operation of workplaces which involve ionising radiation sources for industrial application;
  3. Transport of radionuclide sources;
  4. Potential risk in handling of the given type of radionuclide source;
  5. Exposure reduction for workers other than exposed workers;
  6. Knowledge of procedure and intervention instruction, if required by legislation, for the case of radiological emergency.
  
- II. Activities especially important from radiation protection viewpoint at workplaces with unsealed radionuclide sources for industrial application pursuant to § 3 a)
  1. Risk associated with preparation and use of radionuclides;
  2. Special conditions of radioactive waste management;
  3. Special conditions connected with knowing and intentional use of radionuclides;
  4. Types of contamination, methods of decontamination.
  
- III. Activities especially important from radiation protection viewpoint at workplaces which involve medical exposure pursuant to § 3 a) and b)
  1. Basic terms and requirements set out in legislation and other documents in the field of radiation protection in medical exposure;
  2. Role of the referrer, the practitioner, the medical physics expert, clinical responsibility;
  3. Way to protect patients, optimisation principle and its application in practice, referral guidelines, diagnostic reference levels, dose constraints, influence of technical parameters on patient dose;
  4. Procedures for calculation of doses for patients and workers, calculation of shielding;
  5. Testing of ionising radiation sources (acceptance test, status test, constancy test), clinical audits;
  6. Specific requirements for ionising radiation sources used for medical exposure, knowledge of recommendations of the State Office for Nuclear Safety;
  7. Ways to protect against undesirable external exposure and internal contamination (if applicable);
  8. For activity, which may produce radioactive waste, radioactive waste management in health facilities;
  9. National radiological standards, radiological events.
  
- IV. Activities especially important from radiation protection viewpoint pursuant to § 3 b)
  1. Physical and technical principle of ionising radiation and interactions between ionising radiation and mass and tissue;

2. In case of radiotherapy, calculation of dose and quality of radiation appropriate to the given therapeutic effect, principles of delivery of prescribed dose to the target volume, its accuracy and verification, and ways to protect against undesirable effects of ionising radiation in therapeutic exposure;
3. Ionising radiation spectrum and its properties and links to the creation and to the interactions of ionising radiation;
4. Physical and technical principle of ionising radiation detection, used dosimetric quantities (measurable and derivable), their definitions, importance and correlations, and calculation of radiation burden for patients (in case of medical exposure) and other physical persons;
5. In case of imaging with the use of ionising radiation, physical and technical principle of image creation and reconstruction;
6. In case of imaging with the use of ionising radiation in medical exposure, ways of quantitative image quality assessment and its relations to patient dose;
7. Possibilities of reducing doses for patients (in medical exposure) as well as for other physical persons while maintaining the purpose of exposure;
8. Meters and other equipment used in testing of ionising radiation sources, principles of function and construction;
9. Theory of measurement and its inaccuracies, analysis of inaccuracies, evaluation of test results, formalism of uncertainties of measurement;
10. Practical knowledge of implementation of testing of ionising radiation sources – practical implementation of tests, key parameters and setting, used equipment and meters, importance of tests, tolerance, possible defects and their impact and evaluation of test results.

V. Activities especially important from radiation protection viewpoint pursuant to § 3 c)

1. Risk of natural exposure, method of its assessment and control;
2. Principle of optimisation and its application in practice;
3. The elements of measuring methods, including spectrometry, metrological requirements;
4. Methodologies and recommendations of the State Office for Nuclear Safety;
5. Radon Programme of the Czech Republic;
6. The elements of pedology as a condition for the application of the method of expert assessment of gas permeability of soil;
7. Building and geological factors influencing the inflow of radon to structures, climatic, ventilation and other regimes influencing the quantity of radon in structures, procedures to reduce exposure in structures;
8. Individual dosimetry issue and calculation of individual doses;
9. Issue of release of radionuclides from workplaces with the possibility of increased exposure to the natural source of radiation and pathways, models and assessment of exposure to members of the public.

VI. Activities especially important from radiation protection viewpoint pursuant to § 3 a) in the provision of services in the controlled area to the operator of category IV workplace

1. Ionising radiation sources at category IV workplace, risk of exposure and contamination;
2. Legislative requirements for external workers;
3. Requirements for keeping a personal radiation passport;
4. Organisation of radiation protection at category IV workplace (responsibilities of the operator and the service provider);

5. Requirements for the performance of activities in a nuclear installation (planning of activities with respect to radiation situation in various areas, conditions of work in the area involving increased radiation risk, protective equipment and ensuring their availability).

**Annex 3 to Decree No. 409/2016 Coll.**

**Content of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint**

**I. Content of the examination on the full-scope simulator**

The examination on the full-scope simulator verifies the applicant's ability

1. To solve the tasks in a practical manner in the field of dealing with abnormal operation and accident conditions; and
2. To respond in compliance with the internal procedures to any situation, without its precise identification, only on the basis of symptoms, i.e. values of safety parameters and basic safety functions with regard to the performance of the activity.

**II. Content of the written part of the examination**

1. The set of examination tasks for the written part of the examination is prepared in the breakdown by special areas for the relevant activities.
2. The written part of the examination for activities pursuant to § 2(1) a) to f) consists of 80 questions.
3. Questions in the written part of the examination for activities pursuant to § 2(1) aim to verify particularly knowledge of the fields of
  - 3.1. Reactor physics;
  - 3.2. Hydromechanics and thermomechanics;
  - 3.3. Instrumentation and control system;
  - 3.4. Electrical equipment;
  - 3.5. Chemistry;
  - 3.6. Operation of primary and secondary circuits;
  - 3.7. Limits and Conditions;
  - 3.8. Nuclear safety;
  - 3.9. Dealing with the states of a nuclear installation;
  - 3.10. Operating procedures and limitations;
  - 3.11. Radiological emergency response preparedness and radiological emergency response.
4. The written part of the examination for activities pursuant to § 2(2) a) and b) consists of 24 questions.
5. The written part of the examination for activities pursuant to § 2(2) c) and d) consists of 20 questions.
6. Questions in the written part of the examination for activities pursuant to § 2(2) aim to verify particularly knowledge of the fields of
  - 6.1. Nuclear and neutron physics;
  - 6.2. Dynamics and thermodynamics of nuclear reactors and emergency analyses;
  - 6.3. Research nuclear reactors;
  - 6.4. Nuclear safety;
  - 6.5. Legislation;
  - 6.6. Limits and Conditions;
  - 6.7. Operational organisations;
  - 6.8. Handling of nuclear fuel;
  - 6.9. Basic critical experiment;
  - 6.10. Alteration of nuclear reactor core;

6.11. Radiological emergency response preparedness and radiological emergency response.

### **III. Content of the standard oral part of the examination**

1. The set of examination tasks for the standard oral part of the examination for activities pursuant to § 2(1) a) to d) includes questions
  - 1.1. From normal operation of a nuclear installation;
  - 1.2. From dealing with abnormal operation and accident conditions;
  - 1.3. From radiological emergency response preparedness and radiological emergency response;
  - 1.4. From the principles of severe accident management;
  - 1.5. From nuclear safety and reactor physics.
2. The set of examination tasks for the standard oral part of the examination for activities pursuant to § 2(1) e) and f) includes
  - 2.1. Questions from operations physics and thermohydraulics of nuclear reactor;
  - 2.2. questions from handling of nuclear fuel;
  - 2.3. Questions from nuclear unit start-up after refuelling;
  - 2.4. Examples from reactor physics.
3. The set of examination tasks for the oral part of the examination for activities pursuant to § 2(2) includes questions from
  - 3.1. Theory of nuclear reactors;
  - 3.2. Nuclear reactor design;
  - 3.3. Nuclear safety of nuclear reactors;
  - 3.4. Operation of nuclear reactors.
4. A sub-question is added to special questions from the field of legislative requirements for the applicant for the given activity.

### **IV. Content of the oral part of the examination under the integrated examination**

1. The set of examination tasks for the oral part of the examination under the integrated examination includes questions from dealing with
  - 1.1. Abnormal operation;
  - 1.2. Accident conditions.
2. A sub-question is added to special questions from the field of legislative requirements for the applicant for the given activity.

### **V. Content of the practical part of the examination**

1. The applicant shall perform the practical part of the examination in a nuclear installation as work activity under the relevant activity especially important from nuclear safety viewpoint.
2. The content of the practical part of the examination shall be defined by training programme prepared by a holder of a license for professional training and other professional training of selected personnel.
3. The practical part of the examination takes place in the following areas:
  - 3.1. Activities at workplace;
  - 3.2. Dealing with normal operation;
  - 3.3. Dealing with abnormal operation and accident conditions.



**Annex 4 to Decree No. 409/2016 Coll.**

**Procedure on the performance of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint**

**I. Procedure on the performance of the examination on the full-scope simulator**

1. If knowledge of more than one applicant is verified under one examination, the number of the members of the Examining Committee shall be set so that each applicant can be supervised by at least one of its members.
2. Under the examination on the full-scope simulator, the applicant is involved in standard operation of the main control room with regard to the performance of activity.
3. The Examining Committee shall choose the task to best verify the abilities of the examined applicant.
4. The trainer on the full-scope simulator shall enter the chosen examination task in full-scope simulator software and notify all those present that the task was entered without the members of operating personnel knowing the content of the examination task.
5. The trainers on the full-scope simulator shall ensure the performance of the examination on the full-scope simulator from technical point of view, and supervise and record the activity of the operator, in particular the applicant, during the examination.
6. After the completion of the examination, the trainers on the full-scope shall analyse the activities and procedures performed by the operator, in particular the applicant. Additional questions may be put to the applicant by the members of the Examining Committee.
7. The applicant's examination on the full-scope simulator is completed in a standard manner if the nuclear installation was put into stabilised state in compliance with the internal procedures for abnormal operation and accident conditions. The applicant's procedure and activities are analysed and the examination is generally evaluated on the basis of evaluation of individual criteria.
8. The examination on the full-scope simulator may be interrupted based on wrong decision or procedure of the applicant, which consists in derogation from the correct solution when it is clear that the nuclear installation will not be put into stabilised state in compliance with the internal procedures, In such case, any member of the Examining Committee may suggest to interrupt the examination. The applicant's procedure and activities are analysed. After the correction of the wrong decision or procedure, the examination may continue until the nuclear installation is put into stabilised state in compliance with the internal procedures for abnormal operation and accident conditions. The applicant's procedure and activities are finally analysed and the examination is generally evaluated on the basis of evaluation of individual criteria.
9. Depending on the severity of the wrong decision or procedure of the applicant, the examination may be terminated prematurely. The applicant's procedure and activities are finally analysed and the examination is generally evaluated on the basis of evaluation of individual criteria.
10. If the wrong decision or procedure is caused by any unexamined member of operating personnel, the examination may be interrupted depending on the severity of the wrong decision or procedure. The Examining Committee shall decide on the continuation of the examination.
11. If the examination on the full-scope simulator is generally evaluated by grade 4, the applicant shall repeat the examination on the full-scope simulator. In such case, the standard part of the examination shall always follow.

12. The chairperson of the Examining Committee shall notify the applicant of the result of the examination on the full-scope simulator.

## **II. Procedure on the performance of the written part of the examination**

1. The written part of the examination shall be performed in the form of test by choosing any of the given options or written answers to the questions referred.
2. Before the beginning of the written part of the examination, the applicant shall be informed of the time set for working-out, which is 60 minutes, and of the evaluation method for the written part of the examination.
3. The chairperson of the Examining Committee shall notify the applicant of the result of the written part of the examination.

## **III. Procedure on the performance of the standard oral part of the examination**

1. Questions for the oral part of the examination shall be drawn by the applicant of the prepared sets of questions.
2. The applicant shall answer the questions gradually without time to prepare.
3. For the standard oral part of the examination, the applicant's time for answering the questions is 60 minutes.
4. Additional questions may be put to the applicant by the members of the Examining Committee.
5. The lack of basic knowledge of the applicant identified in the course of the examination may cause the standard oral part of the examination to be terminated prematurely on a proposal of the chairperson of the Examining Committee or any of the present members of the Examining Committee with the consent of the chairperson of the Examining Committee.
6. The chairperson of the Examining Committee shall notify the applicant of the result of the standard oral part of the examination.
7. Other physical persons may watch the standard oral part of the examination as observers, with the consent of the chairperson of the Examining Committee.

## **IV. Procedure on the performance of the oral part of the examination under the integrated examination**

1. When the applicant has been absent from the same activity, for which the applicant requires the authorisation, for more than 2 years and is signed up for the examination to regain the authorisation, the oral part of the examination cannot be performed under the integrated examination but only as the standard oral part of the examination.
2. When the examination on the full-scope simulator has been evaluated by grade 3, the applicant cannot continue the oral part of the examination under the integrated examination but only under the standard oral part of the examination.
3. The chairperson of the Examining Committee shall decide on the performance of the oral part of the examination under the integrated examination, if the applicant completed the examination verifying special professional competence for the previous authorisation to perform the same activity with the general evaluation of the examination with the satisfactory result of grade 1.
4. For the oral part of the examination under the integrated examination, questions from the field of abnormal operation or accident conditions shall be drawn by the applicant depending on the field of task which the applicant dealt with on the full-scope simulator in such a way as to ensure that the question is from different field.

5. The applicant shall answer the question without time to prepare.
6. The lack of basic knowledge of the applicant identified in the course of the examination may cause the oral part of the examination under the integrated examination to be terminated prematurely on a proposal of the chairperson of the Examining Committee or any of the present members of the Examining Committee with the consent of the chairperson of the Examining Committee.
7. Other physical persons may watch the oral part of the examination under the integrated examination as observers, with the consent of the chairperson of the Examining Committee.
8. In the event the applicant fails in the oral part of the examination under the integrated examination, the applicant may repeat the oral part of the examination only as the standard oral part of the examination.
9. The chairperson of the Examining Committee shall notify the applicant of the result of the oral part of the examination under the integrated examination.
10. Additional questions may be put to the applicant by the members of the Examining Committee.

#### **V. Procedure on the performance of the practical part of the examination**

1. The duration of the practical part of the examination shall be laid down by the Examining Committee on the basis of
  - 1.1. The general evaluation for the examination on the full-scope simulator; and
  - 1.2. The general evaluation of the standard oral part of the examination.
2. The lower grade of evaluation of the evaluation under point 1 is always crucial for determining the duration of the practical part of the examination.
3. If the evaluation is
  - 3.1. For workers with university education for activities pursuant to § 2(1) a) to d)
    - 3.1.1. Grade “excellent”, the duration of the practical part of the examination is 18 shifts;
    - 3.1.2. Grade “very good”, the duration of the practical part of the examination is 27 shifts;
    - 3.1.3. Grade “good”, the duration of the practical part of the examination is 36 shifts;
  - 3.2. For workers with university education for activities pursuant to § 2(1) f)
    - 3.2.1. Grade “excellent”, the duration of the practical part of the examination is 6 shifts;
    - 3.2.2. Grade “very good”, the duration of the practical part of the examination is 9 shifts;
    - 3.2.3. Grade “good”, the duration of the practical part of the examination is 12 shifts;
  - 3.3. For workers with university education for activities pursuant to § 2(1) e)
    - 3.3.1. Grade “excellent”, the duration of the practical part of the examination is 5 shifts;
    - 3.3.2. Grade “very good”, the duration of the practical part of the examination is 7 shifts;
    - 3.3.3. Grade “good”, the duration of the practical part of the examination is 9 shifts;
  - 3.4. For workers with university education for activities pursuant to § 2(1) e) and f)
    - 3.4.1. Grade “excellent”, the duration of the practical part of the examination is 10 shifts;
    - 3.4.2. Grade “very good”, the duration of the practical part of the examination is 14 shifts;
    - 3.4.3. Grade “good”, the duration of the practical part of the examination is 18 shifts;

- 3.5. For workers with secondary education completed by the exit exam for activities pursuant to § 2(1) d
  - 3.5.1. Grade “excellent”, the duration of the practical part of the examination is 36 shifts;
  - 3.5.2. Grade “very good”, the duration of the practical part of the examination is 54 shifts;
  - 3.5.3. Grade “good”, the duration of the practical part of the examination is 72 shifts;
- 3.6. For workers for activities pursuant to § 2(2)
  - 3.6.1. Grade “excellent”, the duration of the practical part of the examination is 24 shifts;
  - 3.6.2. Grade “very good”, the duration of the practical part of the examination is 36 shifts;
  - 3.6.3. Grade “good”, the duration of the practical part of the examination is 48 shifts.
4. The member of the Examining Committee shall notify the applicant of the result of the practical part of the examination.

**Annex 5 to Decree No. 409/2016 Coll.**

**Evaluation procedures for parts of the examination verifying special professional qualification for activities especially important from nuclear safety viewpoint**

**I. Evaluation procedure for the examination on the full-scope simulator**

1. The examination on the full-scope simulator shall be evaluated on the basis of standard criteria for training aimed at
  - 1.1. Theoretical knowledge;
  - 1.2. Operational skills;
  - 1.3. Diagnostic skills;
  - 1.4. Communication skills;
  - 1.5. Work with operating documents;
  - 1.6. Team cooperation;
  - 1.7. Team management; and
  - 1.8. Use of the error prevention techniques.
2. The present members of the Examining Committee shall decide on the general evaluation of the examination on the full-scope simulator by voting on the basis of the analysis and the results of the evaluation of standard criteria for training, at the end of the examination without the presence of the applicant.
3. If all standard criteria for training are evaluated by grade 1 to 3, the examination on the full-scope simulator shall be generally evaluated by grade 1 to 3 with a weighted average of all standard criteria for training.
4. If any of the standard criteria for training is evaluated by grade 4, the examination on the full-scope simulator shall be generally evaluated by grade 4 - unsatisfactory.
5. In case of premature termination, the examination of the applicant who caused the wrong decision or incorrect procedure shall be evaluated by grade 4.

**II. Evaluation procedure for the written part of the examination**

1. For written part of the examination in the form of test by choosing from the given options, each question shall be given 1 point for correct and complete answer, and 0 point for incorrect or missing answer.
2. The written part of the examination in the form of test by choosing from the given options shall be evaluated according to the number of the points achieved as follows:
  - 2.1. For 90% and more of points, grade "passed";
  - 2.2. For less than 90% of points, grade "failed".
3. For written part of the examination in the form of written answers to the questions referred, each question shall be given 2 points for correct and complete answer, 1 point for correct and incomplete answer, and 0 point for incorrect or missing answer.
4. The written part of the examination in the form of written answers to the questions referred shall be evaluated according to the number of the points achieved as follows:
  - 4.1. For 90% and more of points, grade "passed";
  - 4.2. For less than 90% of points, grade "failed".

**III. Evaluation procedure for the standard oral part of the examination**

1. The evaluation of the standard oral part of the examination shall be carried out for single questions and on a general basis.

2. If any of the questions of the standard oral part of the examination is evaluated by grade 4, the standard oral part of the examination shall be generally evaluated as unsatisfactory.

**IV. Evaluation procedure for the oral part of the examination under the integrated examination**

1. The evaluation of the oral part of the examination under the integrated examination shall be carried out for the question referred and on a general basis.
2. If the question of the oral part of the examination under the integrated examination is evaluated by grade 4, the oral part of the examination under the integrated examination shall be generally evaluated as unsatisfactory.

**V. Evaluation procedure for the practical part of the examination**

1. The following shall be assessed in evaluation of the practical part of the examination:
  - 1.1. Level of ability to handle the program jobs within the specified time and range;
  - 1.2. Capacity for orientation in systems and equipment;
  - 1.3. Capacity for orientation in documentation;
  - 1.4. Level of theoretical knowledge and its use;
  - 1.5. Interest in work, effort to get to know the problems of workplace;
  - 1.6. Teamwork capability.
2. The practical part of the examination shall be evaluated by the member of the Examining Committee authorised by the chairperson of the Examining Committee.
3. If the applicant's results are satisfactory in all the aspects assessed, the practical part of the examination shall be evaluated as satisfactory.

**Annex 6 to Decree No. 409/2016 Coll.**

**Content of the examination verifying special professional qualification for activities especially important from radiation protection viewpoint and evaluation procedures for parts of the examination**

**I. Content of the written part of the examination**

1. The set of examination questions for the written part of the examination is broken down by special areas for the relevant activities.
2. The written part of the examination consists of 40 questions in the form of test with 3 options offered.
3. Questions for the written part of the examination are particularly aimed to verify knowledge of
  - 3.1. Activities especially important from radiation protection viewpoint;
  - 3.2. The organisation of radiation protection;
  - 3.3. The elements of atomic and nuclear physics;
  - 3.4. The elements of the effects of ionising radiation;
  - 3.5. Radio-biological documents for the principles of radiation protection.
4. Choosing the correct option shall be given 1 point.
5. The written part of the examination shall be evaluated
  - 5.1. For 32 and more points, by grade “passed”;
  - 5.2. For less than 32 points, by grade “failed”.

**II. Content of the oral part of the examination**

1. The set of examination questions for the oral part of the examination consists
  - 1.1. Of one question from the field of the use of ionising radiation sources or from the field of the activity pursuant to § 3 to be performed by the applicant;
  - 1.2. Of two questions from the field of legislation for the activity in question; and
  - 1.3. For the activity pursuant to § 3 b) and c), of one question from the field of interpretation of measured quantities in relation to the effects of ionising radiation on human.
2. Additional questions may be put to the applicant by the members of the Examining Committee.
3. Where it is the activity under activity pursuant to § 3 a), the oral part of the examination shall be evaluated by grade “passed” if two of the examination questions for the oral part of the examination are answered correctly.
4. Where it is the activity under activity pursuant to § 3 b) or c), the oral part of the examination shall be evaluated by grade “passed” if three of the examination questions for the oral part of the examination are answered correctly.

**III. Content of the practical part of the examination**

1. The practical examination, where it is the assessment of the properties of the ionising radiation sources used for medical exposure or in veterinary applications, contains
  - 1.1. Three tasks; or
  - 1.2. In the event that the applicant intends to assess the properties on more than three modalities of ionising radiation sources, one task for each modality.
2. The task involves the practical performance of subject-specific parts of the assessment of the properties of the ionising radiation source in question.

3. Under the task, the applicant is given related physical, technical and dosimetric questions, and questions from the field of radiation protection, arranged in the following areas:
  - 3.1. Parameters and setting of tested ionising radiation source, its accessories, testing equipment and meters, used equipment and meters, significance of performed tests, their tolerances, potential defects on tested ionising radiation source or its accessories identified during tests and evaluation of test results;
  - 3.2. Physical principle of ionising radiation and interactions between ionising radiation and mass and tissue;
  - 3.3. Physical and technical principle of ionising radiation detection;
  - 3.4. Used measurable and derived dosimetric quantities;
  - 3.5. In case of radiotherapy, calculation of dose and quality of ionising radiation appropriate to the required therapeutic effect, principles of delivery of prescribed dose to the target volume, its accuracy and verification, and ways to protect against undesirable effects of ionising radiation in therapeutic exposure;
  - 3.6. Calculation of radiation burden for patients and other physical persons;
  - 3.7. In case of imaging with the use of ionising radiation, physical and technical principle of image creation and reconstruction, and ways of quantitative image quality assessment and its relations to patient dose;
  - 3.8. Possibilities of reducing doses for patient in medical exposure and any other physical person while maintaining the purpose of exposure;
  - 3.9. Meters and other equipment used in testing of ionising radiation source, principles of function and construction;
  - 3.10. Theory of measurement and its inaccuracies, analysis of inaccuracies, evaluation of test results, formalism of uncertainties of measurement;
  - 3.11. Practical knowledge of the performance of the tests of ionising radiation source, in particular practical performance of tests.
4. If within the performance of the given task the applicant answers correctly more than one-half of the related questions referred and, at the same time, performs correctly the required practical tasks, the task shall be evaluated as completed.
5. The practical part of the examination shall be evaluated by grade “passed” if the applicant accomplishes at least 70% of the given tasks.



## **Content of the training course for training of person ensuring radiation protection of the registrant**

### **I. General information**

The training course for training of person ensuring radiation protection of the registrant contains the following general information:

1. The elements of ionising radiation physics with respect to the specification of registered practice;
2. Radio-biological documents of radiation protection, in particular
  - 2.1. Interactions between ionising radiation and living matter;
  - 2.2. Stochastic effects of ionising radiation and tissue reactions and assessment of health consequences;
3. Detection methods and methods of ionising radiation counting;
4. Quantities and units used in dosimetry and for the purposes of radiation protection;
5. Principles of radiation protection, i.e. justification, optimisation, dose limits and protection of ionising radiation sources;
6. Exposure control;
7. Categorisation of ionising radiation sources;
8. Monitoring of workplace;
9. Limits for exposed workers;
10. Derived limits;
11. Minimisation of the risk of ionising radiation, ways to protect against ionising radiation, shielding and its use.

### **II. Information on organisation of radiation protection**

The training course for training of person ensuring radiation protection of the registrant contains the following information in the field of organisation of radiation protection:

1. Role of person ensuring radiation protection of the registrant;
2. Requirements for the registrant and registration;
3. Delineation of the supervised area;
4. National radiological standards and internal clinical audit for medical exposure in dentistry or in bone densitometry.

### **III. Special information**

The training course for training of person ensuring radiation protection of the registrant contains the following special information:

1. Legislative requirements in the field of radiation protection in medical exposure in dentistry, bone densitometry and in veterinary applications;
2. Responsibility for justification and indication in dentistry and bone densitometry;
3. Optimisation principle, diagnostic reference levels in dental radiodiagnostics, influence of technical parameters on dose for patient, personnel and accompanying person;
4. Tests of ionising radiation source, i.e. acceptance tests, status tests, constancy tests;
5. Basic ways to protect against external exposure;
6. Requirements for the procedures for radiation protection assurance in the use of ionising radiation source;

7. Requirements for the scope and frequency of constancy tests and way of their performance.