Regulations on Radiation Protection and Use of Radiation (Radiation Protection Regulations)

[Unauthorised translation as of 20 August 2017]

Chapter I Introductory provisions

Section 1 Purpose

The purpose of these regulations is to ensure the proper use of radiation, prevent harmful effects of radiation on human health and contribute to the protection of the environment.

Section 2 Scope

The regulations apply to any manufacture, import, export, transfer, possession, installation, use, acquisition, storage, disposal, handling and extraction of radiation sources.

The regulations also applies to human activity, which in itself involves elevated levels of natural ionising radiation. This includes inter alia radon in existing buildings and premises where people may reside.

Chapter VI in the regulations regarding medical use of radiation applies to the use of radiological equipment for non-medical purposes, as appropriate.

The regulations do not apply to

a) radon and other elevated levels of natural ionising radiation in dwellings and holiday homes in which the owner lives or stays,
b) employers obligations with regard to radon levels in the workplace,
c) transport of radiation sources outside a closed area,
d) electrical appliances and components that unintentionally produce x-ray radiation provided that
   - the dose rate in normal use does not exceed 1 μSv/h from accessible surfaces, or
   - the maximal energy of the radiation produced is less than 5 keV, and
e) The use of consumer products containing weak non-ionising radiation sources, unless such sources are covered by section 4, paragraph w

The requirements stated in the sections 13, 17, 18 and 27 will not apply to the use of the radiation sources

a) smoke detectors containing less than 40 kBq Am-241,
b) other permitted consumer products containing radioactive substances,
c) welding electrodes containing thorium, or
d) depleted uranium used as balancing weights or shielding material.

Where specifically stated in the regulations, other radioactive radiation sources are exempted from the requirements stated in section 9, subsection one, paragraph r, sections 13, 17, 18 and 27 provided the total activity (Bq) or activity concentration (Bq/g) is lower or equal to the exemption limit values in the table in the annex. Regarding radiation sources involving several radionuclides, the sum of the ratio between the activity, or activity concentration, for each radionuclide and the exemption limit value, shall be less or equal to 1.

For work with open radioactive radiation sources in laboratories, the exemption limits applies to the activity used each time in the individual laboratory. Where work involves various radionuclides simultaneously, the sum of the ratio between the activity for each radionuclide

and the corresponding exemption limit value shall be lower than or equal to 1.

0 Changed by regulation 3. Feb. 2017 no. 118.

Section 3 Territorial scope

On Svalbard and Jan Mayen the requirements in this regulation applies except for section 6, subsection six.

Section 4 Definitions

In this regulation, the expressions have the meaning:

a) *Absorbed dose:* the energy imparted per unit mass in an exposed individual or material by ionising radiation. The unit for absorbed dose is gray (Gy).
b) *Activity:* the intensity of a radioactive radiation source expressed as the number of nuclear transformations (disintegrations) per unit of time. The unit for activity is Becquerel (Bq).
c) *Responsible health personnel:* medical practitioner, dentist, or other person authorised as health personnel, and empowered to take the clinical responsibility for the individual medical exposure in compliance with national requirements.
d) *Diagnostic reference value or reference level:* a specified value used in the optimisation of patient doses for medical exposures of patients in medical examinations.
e) *Dose rate:* specified dose rates in this regulation refers to measured ambient dose equivalent per unit time.
f) *Effective dose:* the average whole body dose calculated from the absorbed dose, corrected for radiation quality and weighted by radiation sensitivity for exposed organs. The unit for effective dose is Sievert (Sv).
g) *Orphan radiation source*: a radiation source that is not under the control of a public authority, either because it has never been under regulatory control, or abandoned, lost, misplaced, stolen or transferred without authorisation or registration.
h) *Equivalent dose:* absorbed dose multiplied by the weighting factor for different radiation qualities such as x-rays, gamma-, beta-, alfa-, or neutron radiation. The unit for equivalent dose is Sievert (Sv).
i) *Hybrid apparatus:* combined apparatus able to create images of anatomy and metabolism in one single examination.
j) *Consumer product:* object or appliance intended for use by consumers.
k) *Harmonised standard:* technical specifications approved by the European standardisation organisations and Norwegian standards published by Standard Norge (Standard Norway) or Norsk elektroteknisk komite (Norwegian Electro Technical Committee).
l) *IPL (intense pulsed light):* intense pulsed visible light potentially combined with radiofrequent, ultraviolet or infrared radiation.
m) *Sealed radioactive source:* a radioactive substance sealed in a capsule in order to prevent leakage of the radioactive substance to the surroundings.
n) *Clinical audit:* a systematic evaluation of clinical practice against professional recommendations with the aim to improve the quality and results in patient diagnostics and therapy.
o) *Laser pointer:* a handheld laser, powered by a battery or with a separate power supply with a rated voltage lower that 50 V for alternating current and 75 V for direct current, designed to be handheld or point at something on a distance.
p) *Nuclear medicine:* the application of radioactive pharmaceuticals or substance for medical and veterinary medicine diagnostics or therapy.
q) *Radioactive source:* a radiation source containing a radioactive substance, i.e. a substance that emits alpha-, beta-, gamma- or neutron radiation.
r) *Radon level:* the radon concentration in air determined according to the current measurement recommendations settled by the Norwegian Radiation and Nuclear Safety Authority.

s) *Representative activity:* the calculated mean value of administered activity for a typical nuclear medicine examination in an undertaking.
t) *Representative dose:* the calculated dose value based on the mean value of dose measurements for a specified x-ray examination in a specified laboratory, for a standardised examination protocol used in an undertaking.
u) *Screening:* a systematic examination of a larger group of asymptomatic people with the purpose to survey their condition of health regarding a specific disease.
v) *Solarium:* an appliance with one or more ultraviolet radiation sources designed for irradiation of the skin.
w) *Strong non-ionising radiation source:* A radiation source capable to expose persons exceeding the recommended limit values specified in Guidelines for limiting exposure to non-ionising radiation from the International Commission on Non- Ionizing Radiation Protection.
x) *Exemption limit:* a limit value, expressed in activity (Bq) or activity concentration (Bq/g), when a radioactive substance might be exempted from the whole or part of this regulation.
y) *Occupational exposure:* exposure of workers during their work, where the radiation source or exposure situation is an accountable part of the professional work and connected to this.
z) *Open radioactive source:* a radioactive substance that is not sealed.

Chapter II General provisions on ionising and non-ionising radiation

Section 5 Justification and optimization

All use of radiation shall be justified. This implies that the benefits of the radiation use shall outweigh the associated radiation detriments.

The use of radiation shall be optimised. This implies that the ionising radiation exposure shall be as low as practically achievable, taking into account technological knowledge, social and economic factors.

Regarding non-ionising radiation, all human exposures shall be as low as established by prevailing good practice.

Section 6 Exposure of humans: Dose limits, limit values and action levels

Dose limits and limit values applies to individuals exposed to radiation, but not for patients.

Dose limits and limit values for occupational exposure, as will appear in section 32.

The effective dose to the public and non-occupationally exposed workers shall not exceed 1 mSv/year for ionising radiation. Equivalent dose to the lens of the eye shall not exceed 15 mSv/year. Equivalent dose to the skin shall not exceed 50 mSv/year, measured or calculated over any skin area of 1 cm^2.

The undertaking shall plan the use of radiation and protective measures to ensure that exposure of the non-occupationally exposed workers and the public, shall not be exposed to an effective dose exceeding 0.25 mSv/year.

When no national guidelines or limit values regarding optical radiation and electromagnetic field exits, the last updated version of Guidelines on limited exposure to non-ionising radiation from the International Commission on Non-Ionizing Radiation Protection is a

guidance with respect to exposure limitation, taking into account the prevailing practical circumstances.

Radon mitigation measures shall be implemented in kindergartens, schools etc., that are covered by section 2 of regulations of 1 December 1995 no. 928 on environmental health protection at kindergartens, schools, etc., cf. section 2, if the radon level exceeds 100 Bq/m^3 (action level). The same applies to dwellings in which the owner neither lives nor stays. The radon level shall not exceed the limit value of 200 Bq/m^3 in such buildings and premises.

Section 7 Dose limits for rescue work

Rescue work in emergency situations shall as far as possible be carried out within the dose limits mentioned in section 32, subsection one, paragraph a) to c). Work that may result in effective doses exceeding of 50 mSv, shall be carried out by volunteers only being adequately informed about the actual risks and dangers involved. Pregnant women shall not participate. Exceeding this limit will only be acceptable to save lives, avoid serious damage to health or prevent a dramatic escalation of the accident. Effective doses above 500 mSv shall as far as possible be avoided. The provisions of sections 30 and 33 apply correspondingly.

Section 8 Application for authorisation

Undertakings intending to be authorised shall apply in writing to the Norwegian Radiation and Nuclear Safety Authority in such a way that an evaluation can be performed whether the requirements for authorisation is fulfilled and what general conditions should be made.

Section 9 Authorisation of activities involving radiation

Undertakings planning to perform the following activities involving ionising radiation shall have an authorisation from the Norwegian Radiation and Nuclear Safety Authority:

a) Acquisition, use and maintenance of industrial radiography equipment.
b) Acquisition and use of radiation sources for irradiation of animals, other biota, materials, products etc. for treatment, sterilisation, hardening or other purposes. This do not apply to closed X-ray facilities complying with the requirements in section 24, subsection 3.
c) Acquisition and use of sealed radioactive sources for logging operations, or accelerators for the characterisation of structures around bore holes.
d) Comprehensive, non-medical radiation use for research.
e) Acquisition and administration of radiopharmaceuticals or substance in connection with medical and veterinary medicine diagnostics and therapy.
f) Acquisition and use of equipment for radiation therapy of humans.
g) Acquisition and use of x-ray diagnostic apparatus within the health service, including ordinary x-ray radiography and fluoroscopy, angiography- and intervention procedures, computed tomography (CT) and mammography. The acquisition and use of simple X-ray diagnostic equipment giving low doses is exempted from the authorisation duty.
h) Acquisition and non-medical use of accelerators, except electron microscopes.
i) Manufacture and import of radiopharmaceuticals.
j) Addition of radioactive substances in products, and/or sale of such products. The sale of consumer products mentioned in section 2, subsection five is exempted from the authorisation requirement.
k) Manufacture of radioactive radiation sources.
l) Acquisition and use of open radioactive sources for tracer examinations outside laboratory.
m) Acquisition and use of sealed radioactive sources with activities greater than 2 x 10^6 times the exemption limits stated in the annex to this regulation.
n) Acquisition and use of open radioactive sources in type A isotope laboratory; cf. section

27;

o) Acquisition and use of ionising radiation to check persons and use of radiological equipment for non-medical purpose.
p) Import and export of high activity radioactive radiation sources.
q) Extraction of radioactive substances in connection with mining operations.
r) Trade and leasing of radiation sources. Authorisation requirements do not apply to radiation sources and areas of use mentioned in section 2, subsections five and six.

Undertakings planning to perform the following activities involving non-ionising radiation shall have an authorisation from the Norwegian Radiation and Nuclear Safety Authority:

s) Acquisition and use of magnetic resonance imaging (MR) for medical purposes.
t) Import or production of solariums for cosmetic purposes.

0 Changed by regulation 3. Feb. 2017 no. 118.

Section 10 Authorisation of strong laser pointers

It is prohibited to own, possess, manufacture, import, export, transfer, handle, use and sell laser pointers Class 3R, 3B and 4 without authorisation issued by the Norwegian Radiation and Nuclear Safety Authority. Authorisation is granted only when

a) the applicant can document that the laser pointer is designed, classified and marked in compliance with requirements stated in section 35,
b) the applicant can document that the planned use of the laser pointer is justified according to section 5, and
c) no reason to anticipate misuse of the laser pointer.

Authorisations can be granted to undertakings and individual persons. An authorisation can involve several laser pointers and be time limited.

Section 11 Conditions for authorisation

In the authorisation, the Norwegian Radiation and Nuclear Safety Authority may set further conditions to assure justified use of radiation and prevent against harmful effects of radiation on human health. This may include further conditions for the radiation use, registration, reporting, competence, training, security, use of measuring equipment, maintenance routines, quality control of apparatus and equipment for radiation use, return schemes, financial guarantees, import, export, emergency preparedness and design of premises.

Section 12 Change or withdrawal of authorisation

The Norwegian Radiation and Nuclear Safety Authority may cancel, change or set new conditions in an authorization, and if necessary withdraw an authorization if

a) the disadvantage of the radiation use proves to be significantly greater or different from what was expected when the authorization was granted,
b) the disadvantage of the radiation use can be reduced without unreasonable costs for the undertaking,
c) the radiation use can be significantly reduced or substituted; cf. section 23,
d) conditions set, or orders made pursuant to the Radiation Protection Act are materially or repeatedly ignored, or
e) it follows from an authorization issued under sections 9 or 10 or the Public Administration Act section 35

Section 13 Registration duty

Undertakings that acquire, lease out, use or handle x-ray apparatus, accelerators and radioactive sources above the exemption limit values in the annex to this regulation, and that are not subject to authorisation under section 9 or 10, shall transmit registration to the Norwegian Radiation and Nuclear Safety Authority.

Undertakings that sell, acquire, lease out or use solariums for cosmetic purposes shall transmit registrations to the Norwegian Radiation and Nuclear Safety Authority. The registration shall inter alia contain a description of the age control system cf. section 37.

Undertakings that lease out, acquire, lease out, use or handle laser class 4 and intense pulsed light (IPL) shall transmit registration to the Norwegian Radiation and Nuclear Safety Authority.

The radiation sources shall not be used before the undertaking has received confirmation regarding the registration. The registration shall be submitted electronically, and contain the information necessary for the Norwegian Radiation and Nuclear Safety Authority to evaluate whether the activity is subject to registration or not.
The Norwegian Radiation and Nuclear Safety Authority can decide an adjusted registration arrangement for radiation sources in the Norwegian Armed Forces.

0 Changed by regulation 3. Feb. 2017 no. 118.

Section 14 Disposal of radiation sources

Undertakings that acquires sealed radioactive sources have a duty to assure that a return scheme exists in the country of origin and to utilise that scheme as appropriate. The undertaking shall inform the Norwegian Radiation and Nuclear Safety Authority of the return scheme in connection with authorisation or registration under sections 9 and 13. The undertaking shall return radioactive sources taken permanently out of use.

Undertakings that dispose or transfer radiation sources subject to authorisation or registration under sections 9, 10 and 13 shall notify this to the Norwegian Radiation and Nuclear Safety Authority.

Disused radioactive sources not returned to the country of origin shall be disposed of in Norway and handled according to regulation of 1 June 2004 no 930, regarding recycling and treatment of waste, chapter 16.

Section 15 Closing, shutdown etc.

At all time, the undertaking shall have control of the radiation sources. In case of outage or shutting down, the Norwegian Radiation and Nuclear Safety Authority shall be notified without undue delay.

The undertaking shall notify the Norwegian Radiation and Nuclear Safety Authority in writing without undue delay, about change of the name of the undertaking, transfer of ownership, and termination of activities subject to authorisation cf. section 9 and 10 and registration cf. section 13.

An undertaking closed down or shut down for more than two years, but holds authorisation under section 9 or 10 or registrations under section 13 shall contact the Norwegian Radiation and Nuclear Safety Authority when resuming operations. The Norwegian Radiation and Nuclear Safety Authority will decide whether new authorisation or new registration is necessary before the operations restarts.

The Norwegian Radiation and Nuclear Safety Authority may order the owner or the user to

provide a financial guarantee to cover future costs and possible liability compensation.

Section 16 Internal control – competence, instructions and procedures
The duty for the undertaking to implement internal control follow from the regulations of 6 December 1996 no. 1127 related to systematic health-, environmental- and safety at work in undertakings.

Undertakings shall ensure that employees and other associated persons who install or work with radiation sources, or who may become exposed to radiation, have sufficient competence in the field of radiation protection including safe handling of radiation sources and competence regarding measurement and protective equipment.

The undertaking shall prepare instructions and work procedures in writing that ensures proper radiation protection. These shall contribute to prevent exposure of persons to levels that exceed dose limits or limit values pursuant to these regulations, applicable standards or international guidelines.

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Section 17 Radiation protection coordinator
Undertakings, subject to authorization under section 9 or 10 or registration under section 13, shall have a radiation protection system.

The undertaking shall designate one or more radiation protection coordinators who shall be able to

a) guide the employees regarding the safe use of the radiation sources as well as the use of protective and measuring equipment, and
b) perform or order measurements and assessments to determine radiation doses.

This applies also to undertakings that use or install strong non-ionising radiation sources. The radiation protection coordinator shall work to ensure that the undertaking meets the requirements for health, environment and safety as stated in the radiation protection legislation.

In the case of particularly extensive use or other handling of ionising radiation sources, the radiation protection coordinator must be able to assess health risks and consequences of various accidents, incidents and abnormal events, which may occur.

Section 18 Risk assessment and preventive measures
Undertakings, planning to use or handle radiation sources, shall prepare a written risk assessment related to the use of radiation. New activities involving radiation sources shall not start before the risk assessment is completed and necessary preventive measures implemented.

If the assessment shows an unacceptable risk to employees, patients or other persons, or that radiation sources may become out of control, the undertaking shall take preventive measures to reduce the risk, including

a) give the employees the necessary information and training about the risks associated with the use of radiation,
b) prepare appropriate work routines,
c) utilize appropriate protective equipment and materials, and
d) secure the radiation sources against theft, sabotage and other damage.

If the assessment shows that employee might get in touch with orphan radiation sources,

the undertaking shall give necessary information about the risks and provide training for handling such a situation.

The requirements of this provision do not apply to radiation sources and areas of use mentioned in section 2, subsection five and six.

Section 19 Emergency preparedness

Based on a risk assessment, the undertaking shall prepare an emergency preparedness plan and implement measures that maintain the ability to handle accidents and abnormal events.

Section 20 Duty to warn in the event of accidents and abnormal events

The undertaking shall immediately give notice of accidents and abnormal events to the Norwegian Radiation and Nuclear Safety Authority. A written report shall be prepared and sent from the undertaking to the Norwegian Radiation and Nuclear Safety Authority as soon as possible and within 3 days at the latest.

Accidents and abnormal events include inter alia the following:

a) Events, which cause or may have caused unintended exposures of employees, patients or other persons significantly above normal levels or unexpected radiation injuries.
b) Loss, theft or sabotage of radiation sources.
c) Unintended discharges of radioactive substances to the environment.
d) Events, which involve irradiation to the public, whereby an individual might be exposed to an effective dose more than 0.25 mSv/year.
e) Technical failure of importance for the radiation protection.
f) Significant deviation from planned dose/activity to the exposed tissue of a patient.
g) Serious radioactive contamination at the premises of the undertaking or equipment.
h) Discovery of orphan radiation sources.

0 Changed by regulation 3. Feb. 2017 no. 118.

Section 21 Overview and control of radiation sources

The undertaking shall have overview and control of ionising and strong non-ionising radiation sources. This involves inter alia registration of

a) type of radiation source and information which in a unique manner identifies the radiation source, such as serial number, manufacturer, or model,
b) the location of the radiation source, temporary movements, and
c) radionuclide and activity regarding radioactive sources.

Regarding open radioactive sources, the undertaking shall hold and update lists concerning radionuclides and activities.

Section 22 Requirements concerning radiation sources

The manufacturer, dealer, owner and user are obliged to ensure that radiation sources and equipment are in a state that the risk for accidents and abnormal events and undesired radiation exposure of users, patients and other persons is as low as practically achievable.

Ionising radiation sources shall be marked with standard symbol for ionising radiation. The symbol design is as described in the prevailing Norwegian standard NS 1029: Symbol for ioniserende stråling (Symbol for ionising radiation). For radioactive sources, information concerning radionuclide, activity on a specified date, serial number or other data suitable to uniquely identify the radiation sources, shall appear on the marking.

For each individual apparatus, a technical measurement protocol shall be available, showing results from completion, acceptance testing and periodic checks on the equipment, as well as maintenance and service reports.

The Norwegian Radiation and Nuclear Safety Authority can decide, regarding the Norwegian Armed Forces, exemptions from this requirement for military equipment, which is or contain radiation sources.

Chapter III Provisions on ionising radiation

Section 23 Selection of radiation source, duty to consider substitution

When using ionising radiation, the undertaking shall assess alternatives to the use, and if feasible without unreasonable costs or disadvantage, choose methods which do not involve the use of ionising radiation.

For non-medical use of radiation, x-ray apparatus shall be utilized rather than radioactive sources when practically achievable.

A reassessment, shall be performed when new information emerges relating to the justification of existing areas of use and methods.

Section 24 Technical requirements regarding sealed radioactive radiation sources and other ionising radiation sources

The manufacturer, dealer, owner and user shall ensure that, encapsulation is sufficiently solid to prevent leakage of the radioactive substance and that the encapsulation comply with the requirements recommended in ISO 2919. The undertaking shall perform a leakage test, where the source encapsulation regularly is exposed to mechanical or chemical wear and tear, and in the event of concrete suspicion of damage to the source encapsulation.

The manufacturer, dealer, owner and user shall ensure that, industrial nuclear gauges in permanent installations comply with the requirements stated in ISO 7205, class xx2323xxxxx regarding radiation leakage. The manufacturer shall ensure that the equipment is constructed to ensure no possibility for opening or disassembling it without using special tools, or it shall be sealed in such a manner that the radioactive source cannot be removed without breaking the seal.

The manufacturer, dealer, owner and user shall ensure that permanently positioned equipment in closed systems for non-medical imaging and technical analyses, including x-ray equipment in process, laboratory equipment containing sealed radiation sources or x-ray tubes, luggage x-ray equipment, body imaging equipment etc., is

a) shielded such that the dose rate on the surface does not exceed 5 µSv/h, and
b) that X-ray equipment have light or sound signals indicating when radiation is generated, and it shall not be possible to generate radiation without the use of a key or code.

Section 25 Storage of radioactive radiation sources

The undertaking is responsible for safe and proper storage of radioactive sources. This entails inter alia that

a) storage of open radioactive radiation sources shall be limited to a minimum,
b) at the storage site, an available inventory outline of the radiation sources,

c) the storage site shall be secured against access by unauthorised persons,
d) the storage site shall be marked with an ionising radiation warning sign in compliance with regulations of 6 December 2011 no. 1356 relating to the workplace,
e) the dose rate outside the storage site shall not exceed 7.5 μSv/h, and
f) radioactive sources shall not be stored together with explosives, highly flammable substances or in a corrosive environment.

Section 26 Shielding and safety equipment

The undertaking shall ensure that, radiation shielding and other safety equipment, such as personal protective equipment and technical safety systems, is available where necessary. The undertaking shall apply radiation shielding and other safety equipment in such a way that the risk of radiation doses to occupationally exposed employees, other employees and the public, and that the risk of accidents, incidents and abnormal events, is as low as practically achievable.

The undertaking shall regularly ensure that safety equipment and safety features function optimal.

Section 27 Work with open radioactive radiation sources and classification of isotope laboratories

All work with open radioactive radiation sources shall take place in an isotope laboratory of type A, B or C, depending on the activity. The activity limits for the various types of isotope laboratories are as follows:

Type of laboratory	Total activity that can be used per occasion in the laboratory
Type C	Up to 10 times the exemption limit value for activity stated in the annex to the regulation
Type B	Up to 10^4 times the exemption limit value for activity stated in the annex to the regulation
Type A	Above 10^4 times the exemption limit value for activity stated in the annex to the regulation

The activity limits apply to normal chemical work. For simple work processes, for example extraction of stock solutions and dilutions, the stated limits can be increased by a factor of 10. In the case of especially hazardous work, such as work involving dry substances, the activity limits shall be reduced by a factor of 10.

Regarding work with open radioactive radiation sources, measuring equipment for control of radioactive contamination shall be available. Measuring equipment and other safety equipment such as extraction cabinets and fans shall be controlled regularly.

Requirements regarding laboratory class A, B or C do not apply to work involving activity below the exemption limits in the annex to the regulations.

0 Changed by regulation 3. Feb. 2017 no. 118

Section 28 Isotope laboratories

All isotope laboratories shall be equipped and designed in such a way that

a) the radiation doses to personnel shall be as low as practically achievable,
b) any risk of contamination and of intake of radioactive substances is as low as practically achievable,
c) all surfaces are impervious and smooth to facilitate cleaning and resistant to the chemicals used in the laboratory,
d) recirculation of radioactive substances to the laboratory or other premises is prevented, normally by means of extraction cabinets. It shall, if necessary, be possible to install absorption filters in the ventilation system, and
e) hand washing can be performed.

Section 29 Additional requirements on type A and B isotope laboratory

Type A and B isotope laboratory shall be reserved for work with radioactive substances, and shall be designed in such a way that

a) a transition zone exists into the controlled area, containing a contamination monitor, a suitable wash basin and an emergency shower. The transition to the active area shall be clearly marked with a stripe painted on the floor or with a physical barrier,
b) the laboratory has reduced air pressure compared with the surroundings so that radioactive substances do not enter the working atmosphere, and
c) the ventilation system for exit air is connected to a separate ventilation duct whose discharge point is placed such that the air is not recirculated into the working atmosphere.

For isotope laboratory type A, additional requirements may be set regarding design and equipment in the authorisation under section 9, paragraph n).

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Chapter IV Provisions on occupational exposure to ionising radiation

Section 30 Classification and marking of the workplace

The undertaking shall classify the workplace as a controlled area if

a) employees may be exposed to effective doses above 6 mSv per year,
b) equivalent dose to the skin and extremities may exceed 150 mSv per year, or
c) equivalent dose to the lens of the eye may exceed 15 mSv per year.

The undertaking shall classify the workplace as a supervised area if
employees may be exposed to effective doses in excess of 1mSv per year, or
equivalent dose to the skin and extremities may exceed 50 mSv per year.

The undertaking shall ensure that exposed employees outside controlled and supervised area cannot be exposed to radiation doses exceeding 1 mSv per year.

The controlled area shall be physically delimited. If physical delimitation is not possible it shall clearly marked by other means. Controlled and supervised area shall be marked with a sign showing that it is a controlled or supervised area. Additionally, the workplace shall be marked with a warning sign against risk of danger for ionising radiation according to regulations of 6 December 2011 no. 1356 relating to the layout and arrangements in the workplace and work premises.

The requirements regarding marking of the workplace do not apply in the case of elevated cosmic radiation to aircraft personnel.

0 Changed by regulation 3. Feb. 2017 no. 118

Section 31 Categorisation of exposed workers

The undertaking shall ensure classification of exposed workers in two categories:

a. Category A : exposed worker who might be exposed to:
   - an effective dose above 6 mSv/year
   - an equivalent dose above 150 mSv/year to the skin and extremities, or
   - an equivalent dose above 15 mSv/year to the lens of the eye
b. Category B: exposed workers not classified as category A.

The undertaking shall classify each worker in category A or B before work involving exposure starts. In the categorisation, potential exposure shall be taken into account.

0 Changed by regulation 3. Feb. 2017 no. 118

Section 32 Dose limits etc.

The undertaking shall ensure that all radiation exposure are as low as practically achievable, and the following dose limits applies:

a) The effective dose for exposed workers, apprentices and students over the age of 18 shall not exceed 20 mSv per year. The Norwegian Radiation and Nuclear Safety Authority may grant dispensation for individuals, where in consideration of the nature of the work, it is not practically possible to establish an annual limit of 20 mSv. In such cases, a permit to practise a limit of 100 mSv over a consecutive five-year period may be granted, if the dose do not exceed 50 mSv in any single year.
b) The equivalent dose to the lens of the eye for exposed workers, apprentices and students over the age of 18 years, to the lens of the eye, shall not exceed 20 mSv per year, or 100 mSv over a consecutive five-year period, provided that the dose do not exceed 50 mSv in any single year.
c) The equivalent dose to the skin for exposed workers, apprentices and students shall not exceed 500 mSv per year. The dose limit apply to the mean value of measured dose or calculated over any 1cm² skin area. Equivalent dose for extremities shall not exceed 500 mSv/year.
d) Equivalent dose to the foetus for pregnant exposed workers, apprentices and students shall not exceed 1 mSv for the remainder of the pregnancy, i.e. after the pregnancy is known.

For apprentices and students between the age of 16 and 18 years who are using radiation sources as part of their education, the dose limits of respectively 5, 15 and 150 mSv per year shall apply instead of the doses stated under a-c.
Pregnant and breastfeeding workers, apprentices and students shall not work with assignments, which might imply a significant risk for intake of radionuclides or contamination.

The undertaking shall, if a worker might have exceeded the dose limits, immediately make an investigation and if possible find the cause, and initiate measures to avoid repeats.

The requirements regarding the transfer of pregnant women, medical practitioners'

notification duty, employers' duty to register etc., will appear from the regulations of 6 December 2011 no. 1358 on physical and chemical agents in the working environment and infectious risk groups for biological factors.

In force in parts from 1 Jan 2018, see section 64

Section 33 Personal dosimetry

The undertaking shall perform a systematic surveillance of exposed workers in category A. The surveillance of effective dose shall, be based on individual measurements from a personal dosimetry service. In cases, where individual measurements is practically impossible, individual surveillance shall, be based on dose calculations. In cases where workers can have a significant exposure via internal irradiation, or to the lens of the eye or extremities, a suitable surveillance system shall be established.

The undertaking shall ensure the determination individual doses, regarding exposed workers in category B who might have effective dose above 1 mSv per year.

The worker shall contribute to the monitoring of dose, and the undertaking shall ensure information to the worker in writing or electronically, about dose recordings and implement measures when needed.

In force in parts from 1 Jan 2018, see section 64

Section 34 National occupational dose register and dose reporting

The Norwegian Radiation and Nuclear Safety Authority have the operative responsibility for the national occupational dose register. The purpose is to give a national overview of doses from ionising radiation, protect workers against unnecessary doses and prevent damage to health.

In accordance with section 33 in this regulation and regulation 6. December 2011 no. 1357 regarding performance of work section 15-3, the undertakings shall ensure the determination of radiation exposure for the individual worker. Undertakings having determined workers individual radiation exposure shall at least annually, report dose data to the national dose register at the Norwegian Radiation and Nuclear Safety Authority. The doses shall be reported on an individual level, and the Norwegian Radiation and Nuclear Safety Authority may set requirements regarding reporting procedure and report frequency.

The report duty for the undertakings include also information about dose recordings, the name of the worker, personal identity number, type of work, employer (organisation number) and place of work.

The undertakings shall keep reports regarding personal dose for worker until, or would have attained the age of 75 years, and at least 30 years after termination of work involving radiation exposure.

The Norwegian Radiation and Nuclear Safety Authority may use information from the national occupational dose register for the purpose of assessments, development and surveillance work.

Chapter V Provisions on non-ionising radiation

Section 35 Use of IPL, lasers and strong non-ionising radiation sources

The manufacturer, importer, dealer, owner and user shall ensure that lasers are marked, classified and manufactured in compliance with NEK EN 60825-1.

For IPL and strong non-ionising radiation sources, including laser class 3R, 3B or 4, intended for exposure of humans, Chapter VI shall apply as relevant.

Owner and user of IPL and strong non-ionising radiation sources shall ensure that

a) appropriate protective goggles are available,
b) patient protective goggles is used,
c) worker protective goggles is used, if work procedures do not ensure non-violation of action levels and limit values settled in regulations of 6 December 2011 no. 1358 on physical and chemical agents in the working environment and infectious risk groups for biological factors,
d) reflective surfaces and windows are covered sufficiently before use, and
e) areas where laser or other strong non-ionising radiation sources are used, is marked with warning sign in accordance with regulations of 6 December 2011 no. 1356 relating to the layout and arrangements in the workplace and work premises.

The Norwegian Radiation and Nuclear Safety Authority may exempt the Norwegian Armed Forces the requirement of compliance with NEK EN 60825-1 regarding military laser equipment.

Section 36 Technical requirements for solariums

The manufacturer, importer, dealer, owner and user shall, ensure that solariums are produced and marked in compliance with harmonised standard EN 60335 – Part 2 -27. Only solariums classified as UV-type 3 according to EN 60335–2-27, and the published solariums on the published list by the Norwegian Radiation and Nuclear Safety Authority are permitted for sale, lease or use for cosmetic purposes.

Importer or dealer of solariums shall ensure that

a) the requirements in the first paragraph are fulfilled and necessary measurements done. Measurements confirming classification shall be performed by a laboratory complying with the quality criteria set by the Norwegian Radiation and Nuclear Safety Authority, and

b) the apparatus is equipped with instructions for use and shall be marked in Norwegian language. If complied with EN-60335.2-27, the requirement is fulfilled. The markings on the solarium shall be well visible and be of durable quality.

Section 37 Age control for the use of solarium

It is forbidden for undertakings to offer solarium for cosmetic purpose by sale, lease or use to persons under the age of 18 years. The undertakings shall provide an adequate system for age control. Satisfactory arrangements are:

a) Full time – or part time staff service combined with an electronic access control.
b) Video automate equipped with a document reader connected to a customer centre.
c) Other type of in advance access control and registration combined with subsequent

electronic access control.

The undertakings shall, declare the system for age control, in the registration to The Norwegian Radiation and Nuclear Safety Authority, cf. section 13. The age control system shall protect the personal data for the user.

Section 38 Other requirements regarding undertakings offering tanning in solariums

The undertaking shall ensure that the operative responsible person for the solariums, and employees in contact with the clients, have passed the competence test specified by the Norwegian Radiation and Nuclear Safety Authority. Passed test is a valid for 5 years.

The undertaking shall inform the individual customer regarding relevant risks factors connected to the use of solarium.

The undertaking shall ensure that

a) the solariums always comply, with the technical requirements, cf. section 36,
b) inform the customer about recommended schedule of exposure,
c) the timer on the solarium can be set according to the recommended schedule of exposure,
d) at the premises and with good visibility, display a warning text and protection advices prepared by the Norwegian Radiation and Nuclear Safety Authority, and
e) offer available and appropriate protection goggles for the customer.

The undertaking shall not display other posters, which may disturb the attention of the obligatory warning text, cf. subsection three, paragraph d.

Chapter VI Provisions on medical use of radiation

Section 39 Justification

The medical use of radiation is justified if the total diagnostic or therapeutic benefits, for the individual and society, is higher than the disadvantages involved with the use of radiation. The benefits and risks connected to alternative methods with the same purpose, involving little or no exposure to ionising radiation, shall be evaluated.

In order to implement the principle of justification, the undertaking shall:

a) Document the justification regarding the evaluation of new methods and applications in medical use of radiation on a general basis before such methods and applications become available for general use. Existing areas of use and methods shall, be reassessed when new information emerges concerning their justification.
b) In advance, assess whether the use of radiation is justified for the individual patient, based on purpose of the exposure and the state of health for the individual. Medical exposure may be justified in a particular case, even if not generally justified. Then the justification shall be evaluated and documented individually. To avoid the unnecessary use of radiation and if possible, previous relevant patient information journals and radiological images shall be obtained.
c) A regional ethical committee shall evaluate medical exposures in research.

The radiation detriment to the worker, carers and comforters, and the public shall be included in the evaluation of justification when relevant.

Section 40 Optimisation

The undertaking shall ensure optimisation of the medical use of radiation. Optimisation

includes inter alia choice of method, apparatus and equipment, work procedures, assessment of radiation dose and dose distribution to the patient, image quality and the effect of therapy.

The optimisation shall be performed multidisciplinary and as a continuous process, and to be evaluated against existing national reference values or professional recommendations when available.

Section 41 Procedures

The undertaking shall establish written procedures regarding radiological examinations and radiation therapy that ensures the safety of the patient. The procedures shall inter alia describe the methods and apparatus settings for accomplishment of examinations and treatment. The procedures shall be revised regularly.

Section 42 Referral

The undertaking shall ensure that medical exposure of patients or asymptomatic persons, are performed only after referral from health personnel with responsibility and competence to follow up these patients and persons. The referral shall be based on a clinical evaluation of the patient, and contain sufficient information enabling responsible health personnel, cf. section 47, to evaluate the justification of the examination or treatment. This requirement regarding referral does not apply to examinations in a screening programme cf. section 51.

The undertaking shall ensure that examinations and treatments are justified, evaluated against applicable guidelines, standardized procedures and/or referral criteria. In non-acute cases, where the examination or treatment involves a particular high radiation dose, a relevant medical specialist, cf. section 47, shall evaluate the justification.

Section 43 Compulsory information and guidance

The undertaking shall inform the patients or relatives, carers and comforters, and asymptomatic persons about radiation doses and risks related to medical exposure. The information shall be adapted to the relevant examination or treatment, and be provided when needed.

The undertaking shall inform the referral health personnel, the patient or relatives about accidents and unintended exposures of significance for the patient.

Section 44 Clinical audit

The undertaking shall accomplish clinical audits regularly.

Section 45 Representative doses and administered activity

The undertaking shall establish representative doses and activity administered to patients regarding typical x-ray diagnostic, nuclear medical examinations and interventional procedures. The representative doses and administered activity values, shall be evaluated and compared with the national diagnostic reference values/reference levels laid down by the Norwegian Radiation and Nuclear Safety Authority. If the dose values significantly deviates from the national reference values, the undertaking shall investigate the causes and consider implementing measures to reduce or increase the doses.

The representative doses/activity administered shall be revised regularly.

Section 46 Pregnancy and breastfeeding

Concurrent with examining or treating breastfeeding women, and woman who is or can be pregnant, the undertaking shall give particular attention to protect the embryo/foetus and child being breastfed.

In the evaluation of justification, the undertaking shall inter alia consider

a) expected dose to the embryo/foetus or child being breastfed,
b) postponement of the examination or treatment, having considered the health status of the woman, and
c) evaluate if alternative methods exists, implying less risk to the embryo/foetus, and child being breastfed.

Section 47 Medical personnel with radiation protection competence

Undertakings using radiation as described in paragraphs a-l below shall ensure inclusion of health personnel with medical competence and radiation protection competence in order to enable evaluation of the justification and optimisation.

a) For the use of X-rays and MR subject to an authorisation requirement under section 9 subsection two, paragraph g and section 9, subsection three, paragraph s; a medical practitioner with specialist competence in medical radiology or a dentist with specialist competence in maxillofacial radiology. Within specific disciplines, including heart diseases and pulmonary diseases: a medical practitioner with specialist competence in his/her discipline. For the use of X-rays in chiropractic; a chiropractor.
b) For nuclear medical examinations; a medical practitioner with specialist competence in nuclear medicine; for hybrid modality examinations; also a medical practitioner with specialist competence in radiology.
c) For high- and medium-energy radiation therapy; a medical practitioner with specialist competence in oncology.
d) For skin therapy with tube voltage not exceeding 15 kV X-ray radiation; a medical practitioner with specialist competence in dermatology and venereal diseases.
e) For nuclear medicine therapy; a medical practitioner with specialist competence in oncology or nuclear medicine.
f) For intraoral dental radiography; a dentist or dental hygienist, for extra oral dental radiography not including CT; a dentist
g) For other X-ray diagnostics not subject to an authorisation requirement; a medical practitioner.
h) For medical treatment with laser class 4 or IPL; a medical practitioner.
i) For medical treatment with laser class 3B or other strong non-ionising sources; a medical practitioner, chiropractor or physiotherapist.
j) For medical treatment of the oral cavity with optical sources, a medical practitioner, dentist or dental hygienist.
k) For treatment of the eyes with laser; a medical practitioner with specialist competence in eye diseases.
l) For treatment of jaundice in new-borns with visible light, a medical practitioner with specialist competence in children's diseases.

The number of health personnel with medical competence shall be commensurate to the size and complexity of the undertaking.

Within each category of use (paragraphs a-l), the undertaking must designate a medically responsible person

Section 48 Competence to operate apparatus for medical use of radiation

The undertaking shall ensure that health personnel operating radiation sources, as

described in this section, possess radiation protection competence commensurate to the area of use. The undertaking shall ensure that health personnel operating the following types of equipment

a) X-ray and MR apparatus; shall be a radiographer or a medical practitioner with relevant specialist competence, or by a dentist with specialist competence in maxillofacial radiology. The requirement regarding specialist competence for medical practitioners do not apply for simple x-ray apparatus. X-ray equipment in a chiropractic undertaking can be operated by a chiropractor
b) extra oral dental x-ray apparatus with CT function; shall be a dentist and regarding extra oral dental x-ray apparatus without CT function; shall be a dentist or dental hygienist
c) intraoral dental x-ray apparatus; shall be a dentist, dental hygienist or a dental secretary
d) nuclear medicine apparatus; shall be an educated health personnel at bachelor level (radiographer, bioengineer or similar) with post-qualifying education in nuclear medicine and radiation protection corresponding to at least 15 study points, or medical practitioner with relevant specialist competence. Personnel operating hybrid apparatus shall be competent in both nuclear medicine and radiography
e) independent radiation therapy apparatus; shall be professionally educated as radiotherapy technician at bachelor level
f) apparatus for treatment of jaundice in new-borns with visible light; shall be authorised health personnel
g) laser class 3B, 4, IPL and other strong non-ionising sources to be used on humans; shall be authorised health personnel.

Health personnel under education can operate apparatus as specified in the categories above when performed as a part of the education.

Section 49 Training in radiation protection and medical use of radiation

The undertaking shall ensure, on an annual basis, that personnel obtain relevant training and update, in radiation protection and radiation use in relation to the work and tasks for the individual. Before implementation of new apparatus or new methods for clinical use, all involved personnel shall receive apparatus-specific training. All training provided shall be individually documented, with regard to the scope and content.

Section 50 Competence in medical physics

Undertakings, using radiation for medical purposes that require authorisation under section 9, shall have personnel with scientific competence to master's degree level with real competence in the relevant discipline of medical physics. The undertaking shall document their responsibilities and work tasks. The number of physicists and work tasks shall be adapted to the undertaking's scope and complexity. The responsible physicist shall have a further clinical experience of two years.

In cases, with simple use of radiation with a low level of complexity, the Norwegian Radiation and Nuclear Safety Authority can decide that the regulatory requirement regarding competence in medical physics shall not be applicable regarding the use of simple X-ray apparatus.

Section 51 Screening activity etc.

Screening programmes and other examination programmes that use apparatus subject to authorisation, cf. section 9, and are prepared for asymptomatic groups, shall notify to the Norwegian Radiation and Nuclear Safety Authority. If necessary, the undertaking must be authorised for the medical use of x-ray apparatus in compliance with section 9, paragraph g). The following requirements will additionally apply to such activity:

a) The justification for the programme shall be documentable and based on scientific and social assessments.
b) The programme shall be systematic and well defined regarding what population group to be included and have routines for follow-up positive findings and any ancillary findings.
c) The screening programme shall document positive and negative findings in order to enable an evaluation of the effect of the programme on a regular basis.
d) The individual shall be informed about radiation doses and risk of the examination.
e) A technical and medical quality assurance programme shall exist.

0 Changed by regulation 3. Feb. 2017 no. 118.

Section 52 Duty to provide information

The undertaking shall, when requested by the Norwegian Radiation and Nuclear Safety Authority, provide necessary information to monitor the medical use of radiation.

The undertaking shall, when requested by the Norwegian Radiation and Nuclear Safety Authority, be able to present a technical record of measurements for each individual apparatus showing results from completion, acceptance testing and periodical checks of the equipment, calibration certificates, as well as maintenance and service reports.

Section 53 Equipment, quality assurance and quality control

The undertaking shall ensure that

a) radiation apparatus and equipment for medical use is adapted to the areas of use and comply with acknowledged acceptance criteria,
b) there exists a documented system regarding quality assurance of equipment and apparatus,
c) an acceptance control, including parameters and features influencing geometry, radiation dose, energy imparted and image quality, is performed before radiation equipment and apparatus is used for clinical purposes,
d) there exists a system for periodic quality control of radiation equipment and apparatus for medical use. The control shall include parameters and features as specified in paragraph c), and
e) there exists a system for maintenance of apparatus and equipment.

The acceptance test, quality controls and maintenance shall be planned, systematic and documented properly.

0 Changed by regulation 3. Feb. 2017 no. 118.

Section 54 Dosimetry regarding ionising radiation therapy, x-ray diagnostics and nuclear medicine

The undertaking shall have a reference instrument for dose measurement in radiation therapy. This reference instrument shall be calibrated every second year against the national standard. Radiation sources in radiation therapy shall be calibrated against the reference instrument for the radiation qualities used clinically. Calibration of radiation sources for radiation therapy shall be performed during acceptance test, after maintenance of significance for dosimetry and in accordance with planned routines. Calibration shall be carried out in compliance with acknowledged international or national protocols where applicable.

On a regular basis, all devices that show a measure of radiation dose in X-ray diagnostics and nuclear medicine, shall be calibrated and controlled.

Section 55 Accidents and incidents

The undertaking shall

a) implement measures to minimize the risk for accidents and incidents related to the medical use of radiation, and
b) apply a deviation system to register, analyze and follow-up the accidents and incidents related to the medical use of radiation, and if necessary implement corrective actions to prevent the repetition of such accident or incident occurrence.

Section 56 X-ray apparatus and dose monitoring

Regarding X-ray diagnostics and interventional procedures, the undertaking shall ensure that

a) X-ray apparatus be equipped with a device providing a measure of the radiation dose to the patient,
b) interventional equipment displays relevant dose information during the examination,
c) CT, interventional equipment and new apparatus capable to communicate and transfer dose information automatically,
d) a system is established to monitor individual patient doses, able to support analysis and reports. The dose monitoring shall transfer doses automatically, and
e) the patient dose shall be recorded in the patient journal.

To be partly implemented 1. January 2020, cf. section 64

Section 57 External radiation therapy and brachytherapy

The use of ionising radiation to cure disease or prevent and palliative care, the undertaking shall ensure that

a) the radiation therapy treatment is planned and accomplished in accordance with proper and documented procedures regarding target volume, organs at risk, fractionation and doses,
b) the individual radiation therapy treatment plan is approved by the oncologist and physicist before the treatment starts,
c) the radiation therapy treatment is accomplished according to the treatment plan,
d) the treatment is documented and might be reconstructed based on the documentation, and
e) the undertaking has appointed a professionally responsible physicist.

Section 58 Nuclear medicine diagnostics and therapy

Regarding nuclear medicine diagnostics and therapy, the undertaking shall determine and verify the quantity of activity administrated to the patient.

Regarding nuclear medicine therapy, the undertaking shall prepare an individual dose planning.

The undertaking shall register the administered activity of radiopharmaceuticals, radionuclide and the chemical form, and administration form in the patient journal.

Section 59 Therapy with non-ionising sources

Therapy with non-ionising sources for the purpose to prevent and cure disease or palliative care, shall take place in compliance with professionally proper and documented procedures. This applies also concerning cosmetic treatment.

In the case of therapy with non-ionising sources, there shall be a system regarding dosimetry, based on an evaluation or control measurement of the output of the radiation source.

Chapter VII Administrative provisions

Section 60 Supervision

The undertaking shall provide to the Norwegian Radiation and Nuclear Safety Authority the information necessary to enable it to carry out supervision and verify compliance with decisions made pursuant to these regulations.

The Norwegian Radiation and Nuclear Safety Authority decides by itself which of the representatives from the undertaking to provide necessary information during the supervision.

The Norwegian Radiation and Nuclear Safety Authority shall prepare a report to the undertaking in writing after the supervision.
The supervisory power regarding solariums under the Norwegian Radiation and Nuclear Safety Authority, including the power to make necessary individual decisions, is delegated to the municipal authorities; cf. section 18, regarding radiation protection in Act of 12 May no. 36.

Section 61 Retain, confiscation and destruction of laser pointers

Laser pointers, imported in violation with section 10, can be retained, confiscated and destructed by the customs authority.

Undertakings engaged in forwarding of goods and clearance through customs shall give notice to the importer of the laser pointer regarding the retained laser pointer, the cause for this, and that it can be confiscated and destructed.

The importer of the laser pointer may express their opinion and make a statement within 10 days after the notice is given.

If the undertaking engaged in forwarding of goods and clearance through customs have stated an e-mail address concerning reception of electronic replies, the reply is timely forwarded, if received to this address within the time limit regarding response.
If the response is mailed through a postal operator the response is timely valid if posted before the expiration of the time limit.

If the importer of the laser pointer has not made a statement within the time limit, the laser pointer can be confiscated and destructed. The Public Administration Act sections 23, 24, 25 and 27 are not applicable in such cases.

If the importer of the laser pointer has made a statement within the time limit as mentioned in subsection three, the Norwegian Radiation and Nuclear Safety Authority
shall make an individual decision regarding if the laser pointer shall be released or be confiscated and destructed.

Section 62 Dispensation

If one or more of the requirements in these regulations will appear highly unreasonable, the Norwegian Radiation and Nuclear Safety Authority can decide to offer dispensation.

Section 63 Amendments to the regulations

The Ministry may adopt amendments to these regulations.

The Norwegian Radiation and Nuclear Safety Authority may lay down and change exemption limit values in the annex to the regulations. When exemption limit values are changed, the Radiation Protection Authority shall lay down necessary transitional arrangements.

Chapter VII Final provisions

0 Changed by regulation 3. Feb. 2017 no. 118.

Section 64 Entry into force

These regulations enter into force on 1. January 2017 with the exception of section 32, subsection one paragraph b, and section 33, subsection one fourth stop which enters into force on 1. January 2018 and section 56 subsection one paragraph c and d which enters into force 1. January 2020. On the 1. January 2017 the regulations of 29 October 2011 no. 1380 on radiation protection and radiation use (Radiation Protection Regulations) are revoked.

0 Changed by regulation 3. Feb. 2017 no. 118.

Section 65 Transitional provisions

Undertakings performing activities which are to be authorised pursuant to section 9, paragraph g, o and t in this regulation, and not holding a valid authorisation, shall apply for authorisation from the Norwegian Radiation and Nuclear Safety Authority as soon as possible and before 1. January 2018.

Nevertheless, the Norwegian Radiation and Nuclear Safety Authority may lay down an order to an undertaking as mentioned in subsection one, to apply for authorisation within a shorter time limit and declare the activities performed by the undertaking as unlawful after a fixed date, if the order is not complied with.

0 Changed by regulation 3. Feb. 2017 no. 118.

Annex concerning exemption limits; cf. section 2, paragraph sixth and seventh

Radionuclide	Activity (Bq)	Acivity concentration (Bq/g)
H-3	1×10^9	1×10^6
Be-7	1×10^7	1×10^3
Be-10	1×10^6	1×10^4
C-11	1×10^6	1×10^1
C-14	1×10^7	1×10^4
N-13	1×10^9	1×10^2
Ne-19	1×10^9	1×10^2
O-15	1×10^9	1×10^2
F-18	1×10^6	1×10^1
Na-22	1×10^6	1×10^1
Na-24	1×10^5	1×10^1
Mg-28	1×10^5	1×10^1
Al-26	1×10^5	1×10^1
Si-31	1×10^6	1×10^3
Si-32	1×10^6	1×10^3
P-32	1×10^5	1×10^3
P-33	1×10^8	1×10^5
S-35	1×10^8	1×10^5
Cl-36	1×10^6	1×10^4
Cl-38	1×10^5	1×10^1
Cl-39	1×10^5	1×10^1
Ar-37	1×10^8	1×10^6
Ar-39	1×10^4	1×10^7
Ar-41	1×10^9	1×10^2
K-40	1×10^6	1×10^2
K-42	1×10^6	1×10^2
K-43	1×10^6	1×10^1
K-44	1×10^5	1×10^1
K-45	1×10^5	1×10^1
Ca-41	1×10^7	1×10^5
Ca-45	1×10^7	1×10^4
Ca-47	1×10^6	1×10^1
Sc-43	1×10^6	1×10^1
Sc-44	1×10^5	1×10^1

Sc-45	1×10^{7}	1×10^{2}
Sc-46	1×10^{6}	1×10^{1}
Sc-47	1×10^{6}	1×10^{2}
Sc-48	1×10^{5}	1×10^{1}
Sc-49	1×10^{5}	1×10^{3}
Ti-44	1×10^{5}	1×10^{1}
Ti-45	1×10^{6}	1×10^{1}
V-47	1×10^{5}	1×10^{1}
V-48	1×10^{5}	1×10^{1}
V-49	1×10^{7}	1×10^{4}
Cr-48	1×10^{6}	1×10^{2}
Cr-49	1×10^{6}	1×10^{1}
Cr-51	1×10^{7}	1×10^{3}
Mn-51	1×10^{5}	1×10^{1}
Mn-52	1×10^{5}	1×10^{1}
Mn-52m	1×10^{5}	1×10^{1}
Mn-53	1×10^{9}	1×10^{4}
Mn-54	1×10^{6}	1×10^{1}
Mn-56	1×10^{5}	1×10^{1}
Fe-52	1×10^{6}	1×10^{1}
Fe-55	1×10^{6}	1×10^{4}
Fe-59	1×10^{6}	1×10^{1}
Fe-60	1×10^{5}	1×10^{2}
Co-55	1×10^{6}	1×10^{1}
Co-56	1×10^{5}	1×10^{1}
Co-57	1×10^{6}	1×10^{2}
Co-58	1×10^{6}	1×10^{1}
Co-58m	1×10^{7}	1×10^{4}
Co-60	1×10^{5}	1×10^{1}
Co-60m	1×10^{6}	1×10^{3}
Co-61	1×10^{6}	1×10^{2}
Co-62m	1×10^{5}	1×10^{1}
Ni-56	1×10^{6}	1×10^{1}
Ni-57	1×10^{6}	1×10^{1}
Ni-59	1×10^{8}	1×10^{4}
Ni-63	1×10^{8}	1×10^{5}
Ni-65	1×10^{6}	1×10^{1}

Ni-66	1×10^{7}	1×10^{4}
Cu-60	1×10^{5}	1×10^{1}
Cu-61	1×10^{6}	1×10^{1}
Cu-64	1×10^{6}	1×10^{2}
Cu-67	1×10^{6}	1×10^{2}
Zn-62	1×10^{6}	1×10^{2}
Zn-63	1×10^{5}	1×10^{1}
Zn-65	1×10^{6}	1×10^{1}
Zn-69	1×10^{6}	1×10^{4}
Zn-69m	1×10^{6}	1×10^{2}
Zn-71m	1×10^{6}	1×10^{1}
Zn-72	1×10^{6}	1×10^{2}
Ga-65	1×10^{5}	1×10^{1}
Ga-66	1×10^{5}	1×10^{1}
Ga-67	1×10^{6}	1×10^{2}
Ga-68	1×10^{5}	1×10^{1}
Ga-70	1×10^{6}	1×10^{2}
Ga-72	1×10^{5}	1×10^{1}
Ga-73	1×10^{6}	1×10^{2}
Ge-66	1×10^{6}	1×10^{1}
Ge-67	1×10^{5}	1×10^{1}
Ge-68[a]	1×10^{5}	1×10^{1}
Ge-69	1×10^{6}	1×10^{1}
Ge-71	1×10^{8}	1×10^{4}
Ge-75	1×10^{6}	1×10^{3}
Ge-77	1×10^{5}	1×10^{1}
Ge-78	1×10^{6}	1×10^{2}
As-69	1×10^{5}	1×10^{1}
As-70	1×10^{5}	1×10^{1}
As-71	1×10^{6}	1×10^{1}
As-72	1×10^{5}	1×10^{1}
As-73	1×10^{7}	1×10^{3}
As-74	1×10^{6}	1×10^{1}
As-76	1×10^{5}	1×10^{2}
As-77	1×10^{6}	1×10^{3}
As-78	1×10^{5}	1×10^{1}
Se-70	1×10^{6}	1×10^{1}

Se-73	1×10^{6}	1×10^{1}
Se-73m	1×10^{6}	1×10^{2}
Se-75	1×10^{6}	1×10^{2}
Se-79	1×10^{7}	1×10^{4}
Se-81	1×10^{6}	1×10^{3}
Se-81m	1×10^{7}	1×10^{3}
Se-83	1×10^{5}	1×10^{1}
Br-74	1×10^{5}	1×10^{1}
Br-74m	1×10^{5}	1×10^{1}
Br-75	1×10^{6}	1×10^{1}
Br-76	1×10^{5}	1×10^{1}
Br-77	1×10^{6}	1×10^{2}
Br-80	1×10^{5}	1×10^{2}
Br-80m	1×10^{7}	1×10^{3}
Br-82	1×10^{6}	1×10^{1}
Br-83	1×10^{6}	1×10^{3}
Br-84	1×10^{5}	1×10^{1}
Kr-74	1×10^{9}	1×10^{2}
Kr-76	1×10^{9}	1×10^{2}
Kr-77	1×10^{9}	1×10^{2}
Kr-79	1×10^{5}	1×10^{3}
Kr-81	1×10^{7}	1×10^{4}
Kr-81m	1×10^{10}	1×10^{3}
Kr-83m	1×10^{12}	1×10^{5}
Kr-85	1×10^{4}	1×10^{5}
Kr-85m	1×10^{10}	1×10^{3}
Kr-87	1×10^{9}	1×10^{2}
Kr-88	1×10^{9}	1×10^{2}
Rb-nat	1×10^{7}	1×10^{4}
Rb-79	1×10^{5}	1×10^{1}
Rb-81	1×10^{6}	1×10^{1}
Rb-81m	1×10^{7}	1×10^{3}
Rb-82m	1×10^{6}	1×10^{1}
Rb-83[a]	1×10^{6}	1×10^{2}
Rb-84	1×10^{6}	1×10^{1}
Rb-86	1×10^{5}	1×10^{2}
Rb-87	1×10^{7}	1×10^{3}

Rb-88	1×10^{5}	1×10^{2}
Rb-89	1×10^{5}	1×10^{2}
Sr-80	1×10^{7}	1×10^{3}
Sr-81	1×10^{5}	1×10^{1}
Sr-82[a]	1×10^{5}	1×10^{1}
Sr-83	1×10^{6}	1×10^{1}
Sr-85	1×10^{6}	1×10^{2}
Sr-85m	1×10^{7}	1×10^{2}
Sr-87m	1×10^{6}	1×10^{2}
Sr-89	1×10^{6}	1×10^{3}
Sr-90[a]	1×10^{4}	1×10^{2}
Sr-91	1×10^{5}	1×10^{1}
Sr-92	1×10^{6}	1×10^{1}
Y-86	1×10^{5}	1×10^{1}
Y-86m	1×10^{7}	1×10^{2}
Y-87[a]	1×10^{6}	1×10^{1}
Y-88	1×10^{6}	1×10^{1}
Y-90	1×10^{5}	1×10^{3}
Y-90m	1×10^{6}	1×10^{1}
Y-91	1×10^{6}	1×10^{3}
Y-91m	1×10^{6}	1×10^{2}
Y-92	1×10^{5}	1×10^{2}
Y-93	1×10^{5}	1×10^{2}
Y-94	1×10^{5}	1×10^{1}
Y-95	1×10^{5}	1×10^{1}
Zr-86	1×10^{7}	1×10^{2}
Zr-88	1×10^{6}	1×10^{2}
Zr-89	1×10^{6}	1×10^{1}
Zr-93[a]	1×10^{7}	1×10^{3}
Zr-95	1×10^{6}	1×10^{1}
Zr-97[a]	1×10^{5}	1×10^{1}
Nb-88	1×10^{5}	1×10^{1}
Nb-89	1×10^{5}	1×10^{1}
Nb-89m	1×10^{5}	1×10^{1}
Nb-90	1×10^{5}	1×10^{1}
Nb-93m	1×10^{7}	1×10^{4}
Nb-94	1×10^{6}	1×10^{1}

Nb-95	1×10^{6}	1×10^{1}
Nb-95m	1×10^{7}	1×10^{2}
Nb-96	1×10^{5}	1×10^{1}
Nb-97	1×10^{6}	1×10^{1}
Nb-98	1×10^{5}	1×10^{1}
Mo-90	1×10^{6}	1×10^{1}
Mo-93	1×10^{8}	1×10^{3}
Mo-93m	1×10^{6}	1×10^{1}
Mo-99	1×10^{6}	1×10^{2}
Mo-101	1×10^{6}	1×10^{1}
Tc-93	1×10^{6}	1×10^{1}
Tc-93m	1×10^{6}	1×10^{1}
Tc-94	1×10^{6}	1×10^{1}
Tc-94m	1×10^{5}	1×10^{1}
Tc-95	1×10^{6}	1×10^{1}
Tc-95m	1×10^{6}	1×10^{1}
Tc-96	1×10^{6}	1×10^{1}
Tc-96m	1×10^{7}	1×10^{3}
Tc-97	1×10^{8}	1×10^{3}
Tc-97m	1×10^{7}	1×10^{3}
Tc-98	1×10^{6}	1×10^{1}
Tc-99	1×10^{7}	1×10^{4}
Tc-99m	1×10^{7}	1×10^{2}
Tc-101	1×10^{6}	1×10^{2}
Tc-104	1×10^{5}	1×10^{1}
Ru-94	1×10^{6}	1×10^{2}
Ru-97	1×10^{7}	1×10^{2}
Ru-103	1×10^{6}	1×10^{2}
Ru-105	1×10^{6}	1×10^{1}
Ru-106[a]	1×10^{5}	1×10^{2}
Rh-99	1×10^{6}	1×10^{1}
Rh-99m	1×10^{6}	1×10^{1}
Rh-100	1×10^{6}	1×10^{1}
Rh-101	1×10^{7}	1×10^{2}
Rh-101m	1×10^{7}	1×10^{2}
Rh-102	1×10^{6}	1×10^{1}
Rh-102m	1×10^{6}	1×10^{2}

Rh-103m	1×10^{8}	1×10^{4}
Rh-105	1×10^{7}	1×10^{2}
Rh-106m	1×10^{5}	1×10^{1}
Rh-107	1×10^{6}	1×10^{2}
Pd-100	1×10^{7}	1×10^{2}
Pd-101	1×10^{6}	1×10^{2}
Pd-103	1×10^{8}	1×10^{3}
Pd-107	1×10^{8}	1×10^{5}
Pd-109	1×10^{6}	1×10^{3}
Ag-102	1×10^{5}	1×10^{1}
Ag-103	1×10^{6}	1×10^{1}
Ag-104	1×10^{6}	1×10^{1}
Ag-104m	1×10^{6}	1×10^{1}
Ag-105	1×10^{6}	1×10^{2}
Ag-106	1×10^{6}	1×10^{1}
Ag-106m	1×10^{6}	1×10^{1}
Ag-108m[a]	1×10^{6}	1×10^{1}
Ag-110m	1×10^{6}	1×10^{1}
Ag-111	1×10^{6}	1×10^{3}
Ag-112	1×10^{5}	1×10^{1}
Ag-115	1×10^{5}	1×10^{1}
Cd-104	1×10^{7}	1×10^{2}
Cd-107	1×10^{7}	1×10^{3}
Cd-109	1×10^{6}	1×10^{4}
Cd-113	1×10^{6}	1×10^{3}
Cd-113m	1×10^{6}	1×10^{3}
Cd-115	1×10^{6}	1×10^{2}
Cd-115m	1×10^{6}	1×10^{3}
Cd-117	1×10^{6}	1×10^{1}
Cd-117m	1×10^{6}	1×10^{1}
In-109	1×10^{6}	1×10^{1}
In-110	1×10^{6}	1×10^{1}
In-110m	1×10^{5}	1×10^{1}
In-111	1×10^{6}	1×10^{2}
In-112	1×10^{6}	1×10^{2}
In-113m	1×10^{6}	1×10^{2}
In-114	1×10^{5}	1×10^{3}

In-114m	1×10^{6}	1×10^{2}
In-115	1×10^{5}	1×10^{3}
In-115m	1×10^{6}	1×10^{2}
In-116m	1×10^{5}	1×10^{1}
In-117	1×10^{6}	1×10^{1}
In-117m	1×10^{6}	1×10^{2}
In-119m	1×10^{5}	1×10^{2}
Sn-110	1×10^{7}	1×10^{2}
Sn-111	1×10^{6}	1×10^{2}
Sn-113	1×10^{7}	1×10^{3}
Sn-117m	1×10^{6}	1×10^{2}
Sn-119m	1×10^{7}	1×10^{3}
Sn-121	1×10^{7}	1×10^{5}
Sn-121m[a]	1×10^{7}	1×10^{3}
Sn-123	1×10^{6}	1×10^{3}
Sn-123m	1×10^{6}	1×10^{2}
Sn-125	1×10^{5}	1×10^{2}
Sn-126[a]	1×10^{5}	1×10^{1}
Sn-127	1×10^{6}	1×10^{1}
Sn-128	1×10^{6}	1×10^{1}
Sb-115	1×10^{6}	1×10^{1}
Sb-116	1×10^{6}	1×10^{1}
Sb-116m	1×10^{5}	1×10^{1}
Sb-117	1×10^{7}	1×10^{2}
Sb-118m	1×10^{6}	1×10^{1}
Sb-119	1×10^{7}	1×10^{3}
Sb-120	1×10^{6}	1×10^{2}
Sb-120m	1×10^{6}	1×10^{1}
Sb-122	1×10^{4}	1×10^{2}
Sb-124	1×10^{6}	1×10^{1}
Sb-124m	1×10^{6}	1×10^{2}
Sb-125	1×10^{6}	1×10^{2}
Sb-126	1×10^{5}	1×10^{1}
Sb-126m	1×10^{5}	1×10^{1}
Sb-127	1×10^{6}	1×10^{1}
Sb-128	1×10^{5}	1×10^{1}
Sb-128m	1×10^{5}	1×10^{1}

Sb-129	1×10^{6}	1×10^{1}
Sb-130	1×10^{5}	1×10^{1}
Sb-131	1×10^{6}	1×10^{1}
Te-116	1×10^{7}	1×10^{2}
Te-121	1×10^{6}	1×10^{1}
Te-121m	1×10^{6}	1×10^{2}
Te-123	1×10^{6}	1×10^{3}
Te-123m	1×10^{7}	1×10^{2}
Te-125m	1×10^{7}	1×10^{3}
Te-127	1×10^{6}	1×10^{3}
Te-127m	1×10^{7}	1×10^{3}
Te-129	1×10^{6}	1×10^{2}
Te-129m	1×10^{6}	1×10^{3}
Te-131	1×10^{5}	1×10^{2}
Te-131m	1×10^{6}	1×10^{1}
Te-132	1×10^{7}	1×10^{2}
Te-133	1×10^{5}	1×10^{1}
Te-133m	1×10^{5}	1×10^{1}
Te-134	1×10^{6}	1×10^{1}
I-120	1×10^{5}	1×10^{1}
I-120m	1×10^{5}	1×10^{1}
I-121	1×10^{6}	1×10^{2}
I-123	1×10^{7}	1×10^{2}
I-124	1×10^{6}	1×10^{1}
I-125	1×10^{6}	1×10^{3}
I-126	1×10^{6}	1×10^{2}
I-128	1×10^{5}	1×10^{2}
I-129	1×10^{5}	1×10^{2}
I-130	1×10^{6}	1×10^{1}
I-131	1×10^{6}	1×10^{2}
I-132	1×10^{5}	1×10^{1}
I-132m	1×10^{6}	1×10^{2}
I-133	1×10^{6}	1×10^{1}
I-134	1×10^{5}	1×10^{1}
I-135	1×10^{6}	1×10^{1}
Xe-120	1×10^{9}	1×10^{2}
Xe-121	1×10^{9}	1×10^{2}

Xe-122[a]	1×10^{9}	1×10^{2}
Xe-123	1×10^{9}	1×10^{2}
Xe-125	1×10^{9}	1×10^{3}
Xe-127	1×10^{5}	1×10^{3}
Xe-129m	1×10^{4}	1×10^{3}
Xe-131m	1×10^{4}	1×10^{4}
Xe-133m	1×10^{4}	1×10^{3}
Xe-133	1×10^{4}	1×10^{3}
Xe-135	1×10^{10}	1×10^{3}
Xe-135m	1×10^{9}	1×10^{2}
Xe-138	1×10^{9}	1×10^{2}
Cs-125	1×10^{4}	1×10^{1}
Cs-127	1×10^{5}	1×10^{2}
Cs-129	1×10^{5}	1×10^{2}
Cs-130	1×10^{6}	1×10^{2}
Cs-131	1×10^{6}	1×10^{3}
Cs-132	1×10^{5}	1×10^{1}
Cs-134m	1×10^{5}	1×10^{3}
Cs-134	1×10^{4}	1×10^{1}
Cs-135	1×10^{7}	1×10^{4}
Cs-135m	1×10^{6}	1×10^{1}
Cs-136	1×10^{5}	1×10^{1}
Cs-137[a]	1×10^{4}	1×10^{1}
Cs-138	1×10^{4}	1×10^{1}
Ba-126	1×10^{7}	1×10^{2}
Ba-128	1×10^{7}	1×10^{2}
Ba-131	1×10^{6}	1×10^{2}
Ba-131m	1×10^{7}	1×10^{2}
Ba-133	1×10^{6}	1×10^{2}
Ba-133m	1×10^{6}	1×10^{2}
Ba-135m	1×10^{6}	1×10^{2}
Ba-137m	1×10^{6}	1×10^{1}
Ba-139	1×10^{5}	1×10^{2}
Ba-140[a]	1×10^{5}	1×10^{1}
Ba-141	1×10^{5}	1×10^{2}
Ba-142	1×10^{6}	1×10^{2}
La-131	1×10^{6}	1×10^{1}

La-132	1×10^{6}	1×10^{1}
La-135	1×10^{7}	1×10^{3}
La-137	1×10^{7}	1×10^{3}
La-138	1×10^{6}	1×10^{1}
La-140	1×10^{5}	1×10^{1}
La-141	1×10^{5}	1×10^{2}
La-142	1×10^{5}	1×10^{1}
La-143	1×10^{5}	1×10^{2}
Ce-134	1×10^{7}	1×10^{3}
Ce-135	1×10^{6}	1×10^{1}
Ce-137	1×10^{7}	1×10^{3}
Ce-137m	1×10^{6}	1×10^{3}
Ce-139	1×10^{6}	1×10^{2}
Ce-141	1×10^{7}	1×10^{2}
Ce-143	1×10^{6}	1×10^{2}
Ce-144[a]	1×10^{5}	1×10^{2}
Pr-136	1×10^{5}	1×10^{1}
Pr-137	1×10^{6}	1×10^{2}
Pr-138m	1×10^{6}	1×10^{1}
Pr-139	1×10^{7}	1×10^{2}
Pr-142	1×10^{5}	1×10^{2}
Pr-142m	1×10^{9}	1×10^{7}
Pr-143	1×10^{6}	1×10^{4}
Pr-144	1×10^{5}	1×10^{2}
Pr-145	1×10^{5}	1×10^{3}
Pr-147	1×10^{5}	1×10^{1}
Nd-136	1×10^{6}	1×10^{2}
Nd-138	1×10^{7}	1×10^{3}
Nd-139	1×10^{6}	1×10^{2}
Nd-139m	1×10^{6}	1×10^{1}
Nd-141	1×10^{7}	1×10^{2}
Nd-147	1×10^{6}	1×10^{2}
Nd-149	1×10^{6}	1×10^{2}
Nd-151	1×10^{5}	1×10^{1}
Pm-141	1×10^{5}	1×10^{1}
Pm-143	1×10^{6}	1×10^{2}
Pm-144	1×10^{6}	1×10^{1}

Pm-145	1×10^{7}	1×10^{3}
Pm-146	1×10^{6}	1×10^{1}
Pm-147	1×10^{7}	1×10^{4}
Pm-148	1×10^{5}	1×10^{1}
Pm-148m	1×10^{6}	1×10^{1}
Pm-149	1×10^{6}	1×10^{3}
Pm-150	1×10^{5}	1×10^{1}
Pm-151	1×10^{6}	1×10^{2}
Sm-141	1×10^{5}	1×10^{1}
Sm-141m	1×10^{6}	1×10^{1}
Sm-142	1×10^{7}	1×10^{2}
Sm-145	1×10^{7}	1×10^{2}
Sm-146	1×10^{5}	1×10^{1}
Sm-147	1×10^{4}	1×10^{1}
Sm-151	1×10^{8}	1×10^{4}
Sm-153	1×10^{6}	1×10^{2}
Sm-155	1×10^{6}	1×10^{2}
Sm-156	1×10^{6}	1×10^{2}
Eu-145	1×10^{6}	1×10^{1}
Eu-146	1×10^{6}	1×10^{1}
Eu-147	1×10^{6}	1×10^{2}
Eu-148	1×10^{6}	1×10^{1}
Eu-149	1×10^{7}	1×10^{2}
Eu-150	1×10^{6}	1×10^{1}
Eu-150m	1×10^{6}	1×10^{3}
Eu-152	1×10^{6}	1×10^{1}
Eu-152m	1×10^{6}	1×10^{2}
Eu-154	1×10^{6}	1×10^{1}
Eu-155	1×10^{7}	1×10^{2}
Eu-156	1×10^{6}	1×10^{1}
Eu-157	1×10^{6}	1×10^{2}
Eu-158	1×10^{5}	1×10^{1}
Gd-145	1×10^{5}	1×10^{1}
Gd-146[a]	1×10^{6}	1×10^{1}
Gd-147	1×10^{6}	1×10^{1}
Gd-148	1×10^{4}	1×10^{1}
Gd-149	1×10^{6}	1×10^{2}

Gd-151	1×10^{7}	1×10^{2}
Gd-152	1×10^{4}	1×10^{1}
Gd-153	1×10^{7}	1×10^{2}
Gd-159	1×10^{6}	1×10^{3}
Tb-147	1×10^{6}	1×10^{1}
Tb-149	1×10^{6}	1×10^{1}
Tb-150	1×10^{6}	1×10^{1}
Tb-151	1×10^{6}	1×10^{1}
Tb-153	1×10^{7}	1×10^{2}
Tb-154	1×10^{6}	1×10^{1}
Tb-155	1×10^{7}	1×10^{2}
Tb-156	1×10^{6}	1×10^{1}
Tb-156m (24.4 h)	1×10^{7}	1×10^{3}
Tb-156m′ (5 h)	1×10^{7}	1×10^{4}
Tb-157	1×10^{7}	1×10^{4}
Tb-158	1×10^{6}	1×10^{1}
Tb-160	1×10^{6}	1×10^{1}
Tb-161	1×10^{6}	1×10^{3}
Dy-155	1×10^{6}	1×10^{1}
Dy-157	1×10^{6}	1×10^{2}
Dy-159	1×10^{7}	1×10^{3}
Dy-165	1×10^{6}	1×10^{3}
Dy-166	1×10^{6}	1×10^{3}
Ho-155	1×10^{6}	1×10^{2}
Ho-157	1×10^{6}	1×10^{2}
Ho-159	1×10^{6}	1×10^{2}
Ho-161	1×10^{7}	1×10^{2}
Ho-162	1×10^{7}	1×10^{2}
Ho-162m	1×10^{6}	1×10^{1}
Ho-164	1×10^{6}	1×10^{3}
Ho-164m	1×10^{7}	1×10^{3}
Ho-166	1×10^{5}	1×10^{3}
Ho-166m	1×10^{6}	1×10^{1}
Ho-167	1×10^{6}	1×10^{2}
Er-161	1×10^{6}	1×10^{1}
Er-165	1×10^{7}	1×10^{3}
Er-169	1×10^{7}	1×10^{4}

Er-171	1×10^{6}	1×10^{2}
Er-172	1×10^{6}	1×10^{2}
Tm-162	1×10^{6}	1×10^{1}
Tm-166	1×10^{6}	1×10^{1}
Tm-167	1×10^{6}	1×10^{2}
Tm-170	1×10^{6}	1×10^{3}
Tm-171	1×10^{8}	1×10^{4}
Tm-172	1×10^{6}	1×10^{2}
Tm-173	1×10^{6}	1×10^{2}
Tm-175	1×10^{6}	1×10^{1}
Yb-162	1×10^{7}	1×10^{2}
Yb-166	1×10^{7}	1×10^{2}
Yb-167	1×10^{6}	1×10^{2}
Yb-169	1×10^{7}	1×10^{2}
Yb-175	1×10^{7}	1×10^{3}
Yb-177	1×10^{6}	1×10^{2}
Yb-178	1×10^{6}	1×10^{3}
Lu-169	1×10^{6}	1×10^{1}
Lu-170	1×10^{6}	1×10^{1}
Lu-171	1×10^{6}	1×10^{1}
Lu-172	1×10^{6}	1×10^{1}
Lu-173	1×10^{7}	1×10^{2}
Lu-174	1×10^{7}	1×10^{2}
Lu-174m	1×10^{7}	1×10^{2}
Lu-176	1×10^{6}	1×10^{2}
Lu-176m	1×10^{6}	1×10^{3}
Lu-177	1×10^{7}	1×10^{3}
Lu-177m	1×10^{6}	1×10^{1}
Lu-178	1×10^{5}	1×10^{2}
Lu-178m	1×10^{5}	1×10^{1}
Lu-179	1×10^{6}	1×10^{3}
Hf-170	1×10^{6}	1×10^{2}
Hf-172[a]	1×10^{6}	1×10^{1}
Hf-173	1×10^{6}	1×10^{2}
Hf-175	1×10^{6}	1×10^{2}
Hf-177m	1×10^{5}	1×10^{1}
Hf-178m	1×10^{6}	1×10^{1}

Hf-179m	1×10^{6}	1×10^{1}
Hf-180m	1×10^{6}	1×10^{1}
Hf-181	1×10^{6}	1×10^{1}
Hf-182	1×10^{6}	1×10^{2}
Hf-182m	1×10^{6}	1×10^{1}
Hf-183	1×10^{6}	1×10^{1}
Hf-184	1×10^{6}	1×10^{2}
Ta-172	1×10^{6}	1×10^{1}
Ta-173	1×10^{6}	1×10^{1}
Ta-174	1×10^{6}	1×10^{1}
Ta-175	1×10^{6}	1×10^{1}
Ta-176	1×10^{6}	1×10^{1}
Ta-177	1×10^{7}	1×10^{2}
Ta-178	1×10^{6}	1×10^{1}
Ta-179	1×10^{7}	1×10^{3}
Ta-180	1×10^{6}	1×10^{1}
Ta-180m	1×10^{7}	1×10^{3}
Ta-182	1×10^{4}	1×10^{1}
Ta-182m	1×10^{6}	1×10^{2}
Ta-183	1×10^{6}	1×10^{2}
Ta-184	1×10^{6}	1×10^{1}
Ta-185	1×10^{5}	1×10^{2}
Ta-186	1×10^{5}	1×10^{1}
W-176	1×10^{6}	1×10^{2}
W-177	1×10^{6}	1×10^{1}
W-178[a]	1×10^{6}	1×10^{1}
W-179	1×10^{7}	1×10^{2}
W-181	1×10^{7}	1×10^{3}
W-185	1×10^{7}	1×10^{4}
W-187	1×10^{6}	1×10^{2}
W-188[a]	1×10^{5}	1×10^{2}
Re-nat	1×10^{9}	1×10^{6}
Re-177	1×10^{6}	1×10^{1}
Re-178	1×10^{6}	1×10^{1}
Re-181	1×10^{6}	1×10^{1}
Re-182	1×10^{6}	1×10^{1}
Re-182m	1×10^{6}	1×10^{1}

Re-184	1×10^{6}	1×10^{1}
Re-184m	1×10^{6}	1×10^{2}
Re-186	1×10^{6}	1×10^{3}
Re-186m	1×10^{7}	1×10^{3}
Re-187	1×10^{9}	1×10^{6}
Re-188	1×10^{5}	1×10^{2}
Re-188m	1×10^{7}	1×10^{2}
Re-189[a]	1×10^{6}	1×10^{2}
Os-180	1×10^{7}	1×10^{2}
Os-181	1×10^{6}	1×10^{1}
Os-182	1×10^{6}	1×10^{2}
Os-185	1×10^{6}	1×10^{1}
Os-189m	1×10^{7}	1×10^{4}
Os-191	1×10^{7}	1×10^{2}
Os-191m	1×10^{7}	1×10^{3}
Os-193	1×10^{6}	1×10^{2}
Os-194[a]	1×10^{5}	1×10^{2}
Ir-182	1×10^{5}	1×10^{1}
Ir-184	1×10^{6}	1×10^{1}
Ir-185	1×10^{6}	1×10^{1}
Ir-186	1×10^{6}	1×10^{1}
Ir-186m	1×10^{6}	1×10^{1}
Ir-187	1×10^{6}	1×10^{2}
Ir-188	1×10^{6}	1×10^{1}
Ir-189[a]	1×10^{7}	1×10^{2}
Ir-190	1×10^{6}	1×10^{1}
Ir-190m (3.1 h)	1×10^{6}	1×10^{1}
Ir-190m′ (1.2 h)	1×10^{7}	1×10^{4}
Ir-192	1×10^{4}	1×10^{1}
Ir-192m	1×10^{7}	1×10^{2}
Ir-193m	1×10^{7}	1×10^{4}
Ir-194	1×10^{5}	1×10^{2}
Ir-194m	1×10^{6}	1×10^{1}
Ir-195	1×10^{6}	1×10^{2}
Ir-195m	1×10^{6}	1×10^{2}
Pt-186	1×10^{6}	1×10^{1}
Pt-188[a]	1×10^{6}	1×10^{1}

Pt-189	1×10^{6}	1×10^{2}
Pt-191	1×10^{6}	1×10^{2}
Pt-193	1×10^{7}	1×10^{4}
Pt-193m	1×10^{7}	1×10^{3}
Pt-195m	1×10^{6}	1×10^{2}
Pt-197	1×10^{6}	1×10^{3}
Pt-197m	1×10^{6}	1×10^{2}
Pt-199	1×10^{6}	1×10^{2}
Pt-200	1×10^{6}	1×10^{2}
Au-193	1×10^{7}	1×10^{2}
Au-194	1×10^{6}	1×10^{1}
Au-195	1×10^{7}	1×10^{2}
Au-198	1×10^{6}	1×10^{2}
Au-198m	1×10^{6}	1×10^{1}
Au-199	1×10^{6}	1×10^{2}
Au-200	1×10^{5}	1×10^{2}
Au-200m	1×10^{6}	1×10^{1}
Au-201	1×10^{6}	1×10^{2}
Hg-193	1×10^{6}	1×10^{2}
Hg-193m	1×10^{6}	1×10^{1}
Hg-194[a]	1×10^{6}	1×10^{1}
Hg-195	1×10^{6}	1×10^{2}
Hg-195m[a]	1×10^{6}	1×10^{2}
Hg-197	1×10^{7}	1×10^{2}
Hg-197m	1×10^{6}	1×10^{2}
Hg-199m	1×10^{6}	1×10^{2}
Hg-203	1×10^{5}	1×10^{2}
Tl-194	1×10^{6}	1×10^{1}
Tl-194m	1×10^{6}	1×10^{1}
Tl-195	1×10^{6}	1×10^{1}
Tl-197	1×10^{6}	1×10^{2}
Tl-198	1×10^{6}	1×10^{1}
Tl-198m	1×10^{6}	1×10^{1}
Tl-199	1×10^{6}	1×10^{2}
Tl-200	1×10^{6}	1×10^{1}
Tl-201	1×10^{6}	1×10^{2}
Tl-202	1×10^{6}	1×10^{2}

Tl-204	1×10^{4}	1×10^{4}
Pb-195m	1×10^{6}	1×10^{1}
Pb-198	1×10^{6}	1×10^{2}
Pb-199	1×10^{6}	1×10^{1}
Pb-200	1×10^{6}	1×10^{2}
Pb-201	1×10^{6}	1×10^{1}
Pb-202	1×10^{6}	1×10^{3}
Pb-202m	1×10^{6}	1×10^{1}
Pb-203	1×10^{6}	1×10^{2}
Pb-205	1×10^{7}	1×10^{4}
Pb-209	1×10^{6}	1×10^{5}
Pb-210[a]	1×10^{4}	1×10^{1}
Pb-211	1×10^{6}	1×10^{2}
Pb-212[a]	1×10^{5}	1×10^{1}
Pb-214	1×10^{6}	1×10^{2}
Bi-200	1×10^{6}	1×10^{1}
Bi-201	1×10^{6}	1×10^{1}
Bi-202	1×10^{6}	1×10^{1}
Bi-203	1×10^{6}	1×10^{1}
Bi-205	1×10^{6}	1×10^{1}
Bi-206	1×10^{5}	1×10^{1}
Bi-207	1×10^{6}	1×10^{1}
Bi-210	1×10^{6}	1×10^{3}
Bi-210m[a]	1×10^{5}	1×10^{1}
Bi-212[a]	1×10^{5}	1×10^{1}
Bi-213	1×10^{6}	1×10^{2}
Bi-214	1×10^{5}	1×10^{1}
Po-203	1×10^{6}	1×10^{1}
Po-205	1×10^{6}	1×10^{1}
Po-206	1×10^{6}	1×10^{1}
Po-207	1×10^{6}	1×10^{1}
Po-208	1×10^{4}	1×10^{1}
Po-209	1×10^{4}	1×10^{1}
Po-210	1×10^{4}	1×10^{1}
At-207	1×10^{6}	1×10^{1}
At-211	1×10^{7}	1×10^{3}
Fr-222	1×10^{5}	1×10^{3}

Fr-223	1×10^{6}	1×10^{2}
Rn-220[a]	1×10^{7}	1×10^{4}
Rn-222[a]	1×10^{8}	1×10^{1}
Ra-223[a]	1×10^{5}	1×10^{2}
Ra-224[a]	1×10^{5}	1×10^{1}
Ra-225	1×10^{5}	1×10^{2}
Ra-226[a]	1×10^{4}	1×10^{1}
Ra-227	1×10^{6}	1×10^{2}
Ra-228[a]	1×10^{5}	1×10^{1}
Ac-224	1×10^{6}	1×10^{2}
Ac-225[a]	1×10^{4}	1×10^{1}
Ac-226	1×10^{5}	1×10^{2}
Ac-227[a]	1×10^{3}	1×10^{-1}
Ac-228	1×10^{6}	1×10^{1}
Th-nat	1×10^{3}	1×10^{0}
Th-226[a]	1×10^{7}	1×10^{3}
Th-227	1×10^{4}	1×10^{1}
Th-228[a]	1×10^{4}	1×10^{0}
Th-229[a]	1×10^{3}	1×10^{0}
Th-230	1×10^{4}	1×10^{0}
Th-231	1×10^{7}	1×10^{3}
Th-232	1×10^{4}	1×10^{1}
Th-234[a]	1×10^{5}	1×10^{3}
Pa-227	1×10^{6}	1×10^{1}
Pa-228	1×10^{6}	1×10^{1}
Pa-230	1×10^{6}	1×10^{1}
Pa-231	1×10^{3}	1×10^{0}
Pa-232	1×10^{6}	1×10^{1}
Pa-233	1×10^{7}	1×10^{2}
Pa-234	1×10^{6}	1×10^{1}
U-nat	1×10^{3}	1×10^{0}
U-230[a]	1×10^{5}	1×10^{1}
U-231	1×10^{7}	1×10^{2}
U-232[a]	1×10^{3}	1×10^{0}
U-233	1×10^{4}	1×10^{1}
U-234	1×10^{4}	1×10^{1}
U-235[a]	1×10^{4}	1×10^{1}

U-236	1×10^{4}	1×10^{1}
U-237	1×10^{6}	1×10^{2}
U-238[a]	1×10^{4}	1×10^{1}
U-239	1×10^{6}	1×10^{2}
U-240	1×10^{7}	1×10^{3}
U-240[a]	1×10^{6}	1×10^{1}
Np-232	1×10^{6}	1×10^{1}
Np-233	1×10^{7}	1×10^{2}
Np-234	1×10^{6}	1×10^{1}
Np-235	1×10^{7}	1×10^{3}
Np-236	1×10^{5}	1×10^{2}
Np-236m	1×10^{7}	1×10^{3}
Np-237[a]	1×10^{3}	1×10^{0}
Np-238	1×10^{6}	1×10^{2}
Np-239	1×10^{7}	1×10^{2}
Np-240	1×10^{6}	1×10^{1}
Pu-234	1×10^{7}	1×10^{2}
Pu-235	1×10^{7}	1×10^{2}
Pu-236	1×10^{4}	1×10^{1}
Pu-237	1×10^{7}	1×10^{3}
Pu-238	1×10^{4}	1×10^{0}
Pu-239	1×10^{4}	1×10^{0}
Pu-240	1×10^{3}	1×10^{0}
Pu-241	1×10^{5}	1×10^{2}
Pu-242	1×10^{4}	1×10^{0}
Pu-243	1×10^{7}	1×10^{3}
Pu-244	1×10^{4}	1×10^{0}
Pu-245	1×10^{6}	1×10^{2}
Pu-246	1×10^{6}	1×10^{2}
Am-237	1×10^{6}	1×10^{2}
Am-238	1×10^{6}	1×10^{1}
Am-239	1×10^{6}	1×10^{2}
Am-240	1×10^{6}	1×10^{1}
Am-241	1×10^{4}	1×10^{0}
Am-242	1×10^{6}	1×10^{3}
Am-242m[a]	1×10^{4}	1×10^{0}
Am-243[a]	1×10^{3}	1×10^{0}

Am-244	1×10^{6}	1×10^{1}
Am-244m	1×10^{7}	1×10^{4}
Am-245	1×10^{6}	1×10^{3}
Am-246	1×10^{5}	1×10^{1}
Am-246m	1×10^{6}	1×10^{1}
Cm-238	1×10^{7}	1×10^{2}
Cm-240	1×10^{5}	1×10^{2}
Cm-241	1×10^{6}	1×10^{2}
Cm-242	1×10^{5}	1×10^{2}
Cm-243	1×10^{4}	1×10^{0}
Cm-244	1×10^{4}	1×10^{1}
Cm-245	1×10^{3}	1×10^{0}
Cm-246	1×10^{3}	1×10^{0}
Cm-247	1×10^{4}	1×10^{0}
Cm-248	1×10^{3}	1×10^{0}
Cm-249	1×10^{6}	1×10^{3}
Cm-250	1×10^{3}	1×10^{-1}
Bk-245	1×10^{6}	1×10^{2}
Bk-246	1×10^{6}	1×10^{1}
Bk-247	1×10^{4}	1×10^{0}
Bk-249	1×10^{6}	1×10^{3}
Bk-250	1×10^{6}	1×10^{1}
Cf-244	1×10^{7}	1×10^{4}
Cf-246	1×10^{6}	1×10^{3}
Cf-248	1×10^{4}	1×10^{1}
Cf-249	1×10^{3}	1×10^{0}
Cf-250	1×10^{4}	1×10^{1}
Cf-251	1×10^{3}	1×10^{0}
Cf-252	1×10^{4}	1×10^{1}
Cf-253	1×10^{5}	1×10^{2}
Cf-254	1×10^{3}	1×10^{0}
Es-250	1×10^{6}	1×10^{2}
Es-251	1×10^{7}	1×10^{2}
Es-253	1×10^{5}	1×10^{2}
Es-254	1×10^{4}	1×10^{1}
Es-254m	1×10^{6}	1×10^{2}
Fm-252	1×10^{6}	1×10^{3}

Fm-253	1×10^6	1×10^2
Fm-254	1×10^7	1×10^4
Fm-255	1×10^6	1×10^3
Fm-257	1×10^5	1×10^1
Md-257	1×10^7	1×10^2
Md-258	1×10^5	1×10^2

Radionuclides marked with [a] in the table above are mother nuclides in equilibrium with the associated daughter products listed below. Work with a mother nuclide in the table below will practically imply work with its daughter products. The radiation contribution from these daughter products is considered when setting the exemption values for the relevant mother nuclides. This implies that the activity for the mother nuclide will lay down which regulatory requirement will be relevant cf. section 2, fifth and sixth paragraph.

Mother nuclide	Daughter nuclide	
Ge-68	Ga-68	
Rb-83	Kr-83m	
Sr-82	Rb-82	
Sr-90	Y-90	
Y-87	Sr-87m	
Zr-93	Nb-93m	
Zr-97	Nb-97	
Ru-106	Rh-106	
Ag-108m	Ag-108	
Sn-121m	Sn-121 (0,776)	
Sn-126	Sb-126m	
Xe-122	I-122	
Cs-137	Ba-137m	
Ba-140	La-140	
Ce-144	Pr-144	
Gd-146	Eu-146	
Hf-172	Lu-172	
W-178	Ta-178	
W-188	Re-188	
Re-189	Os-189m (0,241)	
Os-194	Ir-194, Pt-194	
Ir-189	Os-189m	
Pt-188	Ir-188	
Hg-194	Au-194	
Hg-195m	Hg-195 (0,542)	
Pb-210	Bi-210, Po-210	
Pb-212	Bi-212, Tl-208 (0,36), Po-212 (0,64)	
Bi-210m	Tl-206	
Bi-212	Tl-208 (0,36), Po-212 (0,64)	

Rn-220	Po-216
Rn-222	Po-218, Pb-214, Bi-214, Po-214
Ra-223	Rn-219, Po-215, Pb-211, Bi-211, Tl-207
Ra-224	Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0,36), Po-212 (0,64)
Ra-226	Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
Ra-228	Ac-228
Ac-225	Fr-221, At-217, Bi-213, Po-213 (0,978), Tl-209 (0,0216), Pb-209 (0,978)
Ac-227	Fr-223 (0,0138)
Th-226	Ra-222, Rn-218, Po-214
Th-228	Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0,36), Po-212 (0,64)
Th-229	Ra-225, Ac-225, Fr-221, At-217, Bi-213, Po-213, Pb-209
Th-234	Pa-234m
U-230	Th-226, Ra-222, Rn-218, Po-214
U-232	Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0,36), Po-212 (0,64)
U-235	Th-231
U-238	Th-234, Pa-234m
U-240	Np-240m
Np-237	Pa-233
Am-242m	Am-242
Am-243	Np-239

Radionuclides in metastable states are marked with m and m′, where m′ is a metastable state with higher energy than m.