Radiological Protection Ordinance
(RPO)

of 26 April 2017 (Status as of 1 January 2022)

The Swiss Federal Council,

based on the Radiological Protection Act of 22 March 1991[1] (RPA) and on Article 83 of the Federal Act of 20 March 1981[2] on Accident Insurance,

ordains:

Title 1 General Provisions
Chapter 1 Purpose, Scope and Definitions

Art. 1 Purpose and scope

[1] For the protection of people and the environment against ionising radiation, this Ordinance regulates:

a. for planned exposure situations:
   1. licences,
   2. public exposure,
   3. unjustified activities,
   4. medical exposure,
   5. occupational exposure,
   6. handling of radiation sources,
   7. handling of radioactive waste,
   8. prevention and management of failures;

b. for emergency exposure situations: preparedness and management;

c. for existing exposure situations: management of radiological legacies, radon, naturally occurring radioactive material and long-term contamination following an emergency;

d. training and continuing education of persons handling ionising radiation or radioactivity;

e. supervision and enforcement;

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1 SR **814.50**
2 SR **832.20**

f. advisory activities of the Federal Commission for Radiological Protection (KSR).

[2] It applies to all exposure situations for artificial and for natural ionising radiation.

[3] It does not apply to:

a. exposures to radionuclides naturally present in the human body;

b. exposures to cosmic radiation; it does, however, apply to exposures of aircrew to cosmic radiation;

c. aboveground exposures to radionuclides present in the undisturbed earth's crust.

Art. 2 Definitions

[1] In this Ordinance:

a. *planned exposure situation* means an exposure situation which arises from the planned operation of a radiation source or from a human activity which alters exposure pathways, so as to cause the exposure or potential exposure of people or the environment;

b. *emergency exposure situation* means an exposure situation due to an emergency, as defined in Article 132;

c. *existing exposure situation* means an exposure situation that already exists when a decision on its control has to be taken and which does not call or no longer calls for urgent measures to be taken; this involves, in particular, radiological legacies, radon, naturally occurring radioactive material and long-term contamination following an emergency;

d. *occupational exposure* means exposure due to occupational activities; occupational exposure may involve employees, self-employed persons, apprentices and students;

e. *medical exposure* means the exposure of patients or asymptomatic individuals for diagnostic or therapeutic purposes, with the aim of improving their health, and exposure of carers and comforters in medicine and of participants in human research;

f. *public exposure* means any exposure of persons, excluding occupational and medical exposures;

g. *radiological protection experts* means experts, as specified in Article 16 of the RPA, who have the knowledge, training and experience in radiological protection needed to ensure the effective protection of people and the environment; experts are responsible for implementation of the legal requirements in internal radiological protection directives and for monitoring compliance within the enterprise;

h. *naturally occurring radioactive material (NORM[3])* means material with naturally occurring radionuclides which does not contain artificial radioactive substances; material in which the activity concentrations of naturally occurring radionuclides have been unintentionally changed by some process is also NORM; if concentrations of naturally occurring radionuclides are deliberately enhanced, in particular to utilise their radioactive properties, then they are no longer considered to be NORM;

i. *ionising radiation* means energy transmitted in the form of particles or electromagnetic waves of a wavelength of 100 nm or less capable of ionising an atom or molecule directly or indirectly;

j. *clearance limit (LL)* means the value corresponding to the specific activity level of a material below which handling of this material is no longer subject to mandatory licensing or, accordingly, supervision; the values are specified in Annex 3 Column 9;

k. *NORM clearance limit (LLM)* means the value corresponding to the specific activity level of natural radionuclides in NORM below which this material may be freely discharged into the environment; the values are specified in Annex 2;

l. *licensing limit (LA)* means the value corresponding to the absolute activity level of a material above which handling of this material is subject to mandatory licensing; the values are specified in Annex 3 Column 10; they do not apply to NORM;

m. *guidance value* means a value, derived from a limit, the exceedance of which triggers certain measures and compliance with which also ensures compliance with the associated limit; guidance values for airborne activity (CA) and surface contamination (CS) are specified in Annex 3 Columns 11 and 12;

n. *radiation source* means a radioactive material or installation capable of emitting ionising radiation;

o. *material* is a general term covering solid, liquid or gaseous substances, mixtures, raw materials and finished products and articles manufactured therefrom;

p. *radioactive material* means a material that incorporates radionuclides, is activated or contaminated with radionuclides and which meets the following conditions:

   1. handling thereof is subject to mandatory licensing and supervision under radiological protection or nuclear energy legislation,
   2. handling thereof is not exempt from mandatory licensing and supervision under radiological protection or nuclear energy legislation;

q. *radioactive substance* is synonymous with *radioactive material*;

[3] Footnote relevant to Swiss language texts.

r. *radioactive source* means radioactive material employed for the purpose of utilising its radioactivity;

s. *sealed radioactive source* means a radioactive source whose structure is such as to prevent, under normal conditions of use, the release of radioactive substances and thus exclude the risk of contamination;

t. *unsealed radioactive source* means a radioactive source that does not meet the requirements for a sealed radioactive source;

u. *orphan radioactive material* means radioactive material that is no longer under the control of the owner or licence holder;

v. *installations* is an abbreviated form of *installations that generate ionising radiation*; installations are equipment and devices used to generate photon or particle radiation.

[2] In addition, for this Ordinance, the following apply:

a. the definitions given in Articles 5–7, 26, 49, 51, 80, 85, 96, 108, 122, 149 and 175;

b. the definitions of predominantly technical terms given in Annex 1 and the definitions of dose-related terms given in Annex 4.

Chapter 2 Principles of Radiological Protection

Art. 3 Justification

An activity is justified within the meaning of Article 8 of the Radiological Protection Act (RPA) if:

a. the associated benefits clearly outweigh the radiation-related drawbacks; and

b. overall, for people and the environment, no more favourable alternative is available involving no or lower radiation exposure.

Art. 4 Optimisation

[1] Radiological protection must be optimised for all exposure situations.

[2] Optimisation involves reducing as far as possible and reasonable:

a. the likelihood of exposure;

b. the number of people exposed;

c. the individual dose to the persons exposed.

Art. 5 Dose limits

For planned exposure situations, limits shall be specified which must not be exceeded by the sum of all radiation doses accumulated by a person in a calendar year (dose limit). For medical exposures, no such limits shall be specified.

Art. 6 Reference levels

[1] If in existing exposure situations or in emergency exposure situations the dose limits cannot be complied with, or if in these situations compliance with the dose limits would involve disproportionate efforts or would be counterproductive, then reference levels shall be applied.

[2] To ensure that the reference level can be complied with, the requisite measures must be taken.

Art. 7 Dose constraints

[1] For planned exposure situations, the dose received by a person from a single radiation source or activity shall be specified (dose constraint). This dose constraint shall be specified for each radiation source in such a way that the sum of all doses received from the various radiation sources does not exceed the dose limit.

[2] The licence holder shall specify the dose constraints for the occupationally exposed persons within the enterprise.

[3] The licensing authority (Art. 11) shall decide whether source-related dose constraints are required for the public and shall specify these in the licence. If this has not been done in the case of activities already licensed, the supervisory authority (Art. 184) may specify source-related dose constraints.

[4] Dose constraints are optimisation instruments. When defining dose constraints, the current state of science and technology must be taken into account.

[5] If a dose constraint is exceeded, measures must be taken.

Art. 8 Risk-based graded approach

All radiological protection measures must be graduated according to the underlying risk.

Title 2 Planned Exposure Situations

Chapter 1 Licences

Section 1 Mandatory Licensing

Art. 9 Activities subject to mandatory licensing

In addition to the activities specified in Article 28 of the RPA, or by way of clarification thereof, the following activities are subject to mandatory licensing:

a. the handling of material whose specific activity exceeds the clearance limit and whose absolute activity exceeds the licensing limit;

b. the handling of contained gaseous material whose absolute activity exceeds the licensing limit;