

SSI FS 2000:9

The Swedish Radiation Protection Institute's Regulations on Accelerators and Sealed Sources;

issued on May 26, 2000.

On the basis of §§ 7 and 8 of the Radiation Protection Ordinance (1988:293) the Swedish Radiation Protection Institute has issued the following regulations.¹

§ 1 These regulations apply to practices with accelerators as well as sealed sources with activities exceeding 100 gigabecquerel. The regulations do not apply to practices

1. that are covered by the Law (1994:3) on Nuclear Technology,
2. that are covered by the Swedish Radiation Protection Institute's Regulations and General Advice (SSI FS 2000:8) on Radiography,
3. that are covered by the Swedish Radiation Protection Institute's Regulations (SSI FS 1995:2) on use of Devices containing Sealed Sources or X-ray Tubes in Industry or
4. that are covered by the Swedish Radiation Protection Institute's Regulations (SSI FS 2000:4) on Radiation Therapy.

Definitions

§ 2 In these regulations the following concepts are used with the meanings specified here.

Accelerator: a technical device able to accelerate electrically charged particles into energies exceeding 1 mega electron volt,

primary radiation: direct radiation from an accelerator or a radioactive source,

sealed source: a radioactive substance firmly bound to a non-radioactive solid or sealed within a capsule of non-radioactive material strong enough to prevent diffusion of the radioactive substance at normal use.

Organisation and competence

§ 3 The licence-holder shall have established an organisation on radiation protection, which is documented in an organisation scheme. The scheme shall show how the different tasks are delegated to the qualified expert, the contact person and other persons working with different

¹ Cf. Council Directive 96/29/Euratom of May 13, 1996, laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation. OJ L159, 29.6.1996, p. 1. (Celex 396L0029).

sub-operations in the practice, as well as the person or persons who have the task to ensure that radiation protection measures are taken and that the work on the whole is performed under good radiation protection conditions. The names of the persons shall be shown, and the scheme shall be kept up to date.

§ 4 The licence-holder shall ensure that the persons involved, according to the organisation scheme, have sufficient competence on radiation protection. In this respect they shall have been granted the authority and resources needed for the radiation protection work.

§ 5 A radiation protection expert who shall be approved by the Swedish Radiation Protection Institute shall be included in the staff. The expert shall possess such competence that is described in the Swedish Radiation Protection Institute's General Advice² (SSI FS 2000:6) on the Competence of Radiation Protection Experts, regarding moments that are included in the practice.

In order to be approved, documents on the competence of the intended expert shall be shown to the Swedish Radiation Protection Institute.

§ 6 The licence-holder shall ensure that all workers who take part in the practice are given education before the work starts. The education shall be adjusted with respect to the extent and kind of work and comprise an examination. The curriculum shall at least cover

1. applicable regulations,
2. information on the hazards that may be related to work with radiation,
3. local radiation protection rules,
4. handling of protective equipment and safety systems,
5. routines for individual dose monitoring and
6. measures in case of an emergency alarm.

Recurrent education shall be performed at regular intervals.

§ 7 The curriculum and requirements for different worker categories shall be documented. For each person the extent of the education and the time it was given shall be recorded.

§ 8 The licence-holder shall appoint a person, within the company, to be charged with the task of being the contact person with the Swedish Radiation Protection Institute. The contact person shall possess good knowledge of the practice and related radiation protection issues. Nothing prevents that the radiation protection expert is contact person.

The Swedish Radiation Protection Institute shall be notified of the contact person's name.

Quality assurance

§ 9 The licence-holder shall ensure that a written quality manual is established. The manual shall be kept up to date and contain no less than

1. a copy of the licence, conditions if any, and applicable regulations,
2. organisation scheme,

² The general advice describe the content of the Commission's Communication concerning the implementation of Council Directive 96/29/Euratom, regarding qualified experts. (OJ C 133, April 30 1998)

3. internal rules for the categorisation of workers and workplaces,³
4. routines for education of the personnel,
5. locally adjusted radiation protection rules,
6. descriptions of equipment used and manuals for their handling,
7. descriptions of existing safety systems and manuals for their handling,
8. instructions for the use of radiation protection devices,
9. routines for function checks at regular intervals of safety systems, equipment, instruments and dose monitoring systems,
10. instructions for dose monitoring of individuals and working areas,
11. routines for calibration and check of radiation protection instruments at regular intervals,
12. routines for transport of radioactive substances,
13. routines for yearly inventory of sealed sources,
14. plans for measures in case of unplanned events of significance from a radiation protection point of view,
15. routines for safety analysis, its documentation and reporting and
16. routines for internal audit⁴ of the practice.

The quality manual shall be known by, and available to, all persons who take part in the practice.

Safety system

§ 10 A safety analysis of the conditions at the plant, regarding the risk of potential exposure, shall be performed before the plant is put into operation.

§ 11 Based upon the safety analysis according to section 10, administrative and technical measures shall be taken to prevent foreseeable cases of unintentional personal exposures.

§ 12 Before primary radiation or its equivalence is emitted into an area, the area shall be checked to ensure that nobody is within the area. The entrance to such an area shall be blocked when radiation is emitted. There shall be at least two independent technical systems each of which prevents exposure if anybody forces the blocking.

³ From the Swedish Radiation Protection Institute's regulations (SSI FS 1998:3) on Categorisation of Workers and Workplaces at Work with Ionising Radiation follow that individuals participating in the practice belong to Category A, as a rule. Additional regulations are connected to Category A:

The Swedish Radiation Protection Institute's Regulations (SSI FS 1998:4) on Dose Limits at Work with Ionising Radiation.

The Swedish Radiation Protection Institute's Regulations (SSI FS 1998:5) on the Monitoring and Reporting of Individual Radiation Doses.

The Swedish Radiation Protection Institute's Regulations (SSI FS 1998:6) on Medical Examinations for Work involving Ionising Radiation.

⁴ In addition to the requirement of audit from a radiation protection point of view, there are regulations from the Board of Occupational Safety and Health (AFS 1996:6) on Audit of the Working Environment.

Dose monitoring

§ 13 At stay in an area where the radiation level might imply that some dose limit will be exceeded or there might be a risk of rapid change of the dose-rate, a dose or dose-rate measurement instrument provided with an alarm function shall be worn, regardless of other personal dose measurement devices. If there is neutron radiation, an neutron detector with an alarm function shall be used as well. Such a detector may be permanently installed in the area.

§ 14 All persons working within a controlled area where there is a risk of contamination of the air or working desks, shall undergo a contamination check when leaving the area.

Check of equipment and instruments

§ 15 Instruments and equipment used for the measurement of personal doses, dose-rate or contamination shall be calibrated and checked with respect to their functions at regular intervals. A written manual on handling, calibration and check shall be provided for each type of instrument.

Transport

§ 16 Transport of radioactive substances within the plant shall, as far as it is practically possible, be made on the same safety level as transport on roads⁵, regarding applicable requirements on dose-rate, surface contamination, marking and transport containers.

Storage

§ 17 Radioactive sources shall be stored under lock so they are not accessible to unauthorised persons. The storage shall be safe in case of fire.

§ 18 The storage shall be marked with the symbol for ionising radiation⁶, the text "förvaringsplats för radioaktiva ämnen"* and information on the contact person's name and telephone number.

§ 19 The storage shall be designed so that the dose-rate at the place does not exceed 20 microsievert per hour ($\mu\text{Sv/h}$) where personnel temporarily may be, and does not exceed 2 $\mu\text{Sv/h}$ where personnel stay permanently.

⁵ For transport of radioactive substances, regulations by the Swedish Rescue Services Agency apply, given on the basis of the Law (1982:821) on Transport of Hazardous Goods. For transport on roads ADR applies.

⁶ The warning symbol for ionising radiation is provided in Svensk Standard SIS 031210 "Bildsymboler för märkning". The symbol is identical to the symbol provided in Council Directive 92/58/EEC of 24 June 1992 on the minimum requirements for the provision of safety and/or health signs at work (OJ L 245, 26.8.92, p. 23, Celex 392L0058)

* "Radioactive sources are stored here"

Decommissioning

§ 20 The licence-holder shall ensure that there exists an up to date and documented plan for decommissioning of the plant. The plan shall include an analysis of the resources needed in order to take care of all radioactive substances and radioactive demolition waste in a safe way from a radiation protection point of view, should the question of decommissioning arise.

Documentation

§ 21 The following shall be recorded:

1. data on operation of accelerators and other equipment, signed by the responsible operator
2. operational disturbances and other circumstances of significance from a radiation protection point of view,
3. information, of significance for the radiation protection, on produced radioactivity,
4. the results of instrument calibrations,
5. transfer of radio nuclides, their activity and the consignee,
6. a list of possessed sealed sources, information on the latest inventory and the results of performed leakage check, if performed and,
7. a list of radioactive waste that can not come under the clearance levels.

Reports

§ 22 Any unplanned event of significance from a radiation protection point of view shall immediately be reported to the Swedish Radiation Protection Institute.

§ 23 A written report shall annually be sent to the Swedish Radiation Protection Institute from any plant where radio nuclides are produced on purpose. The report shall be sent not later than two months after the end of the year regarded. The report shall include

1. the amount of produced radio nuclides (nuclide and activity),
2. transfer of radio nuclides (nuclide and activity) and
3. a compilation of experiences related to radiation protection.

Exception

§ 24 If special grounds exist, the Swedish Radiation Protection Institute may grant exceptions from these regulations.

These regulations enter into force on October 1, 2000.

On behalf of the Board of the Swedish Radiation Protection Institute

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