Statens strålskyddsinstitut
Swedish Radiation Protection Institute

SSI FS 1983:7 **Unofficial translation**

The Swedish Radiation Protection Institute's Regulations on Radioactive Waste Not Associated with Nuclear Energy;

issued on December 20th 1983.

On the basis of § 5 of the Swedish Radiation Protection Act (1958:110) the Swedish Radiation Protection Institute has issued regulations as follow.[1]

§ 1 These regulations apply to the handling of solid and liquid wastes not associated with nuclear power. The activity limitations specified in §§ 3 and 8 for wastes apply to each of the laboratories (or corresponding entities) covered by licenses granted by the Radiation Protection Institute for work with radioactive substances and at which the work results in the production of radioactive wastes.

NOTE: The handling of the waste may be controlled by reasons other than radiation protection, for example because of its toxicity or risks for infection or fire. In such cases these regulations form a complement to such other rules or regulations.

§ 2 If the conditions laid down in §§ 3 - 11 are complied with, the radioactive waste may be disposed of locally without a specific permission from the Radiation Protection Institute. Local deposition means either release into the municipal sewage system or delivery to a municipal refuse disposal plant.

Liquid waste

§ 3 The total activity released into the sewage system must not exceed 10 ALI_{min} per month per laboratory (or corresponding entity). On each occasion on which a release is made, the activity must not exceed 1 ALI_{min} and must not exceed 100 megabecquerel. On each release occasion flushing shall be carried out with considerable quantities of water.

The values of ALI_{min} which shall apply are shown in Table 1 in Annex 1. If the waste contains more than one radio nuclide, the maximum permitted activity shall be calculated in accordance with Annex 1.

§ 4 Release of radioactive waste should be confined to one release point for each laboratory.

§ 5 At each release point there shall be a visible label stating that radioactive waste may be released into the sewage system.

[1] Indented sections are not legally binding regulations.

§ 6 Urine and faeces from patients who have been administered radio nuclides in connection with diagnosis or treatment may be released to the sewage system without the activity included in the maximum permitted activity in accordance with § 3.

§ 7 Liquid scintillation solutions need not be treated as radioactive wastes provided that
1. the solution does not contain alpha-emitting radio nuclides,
2. the activity does not exceed 10 becquerel per millilitre or, if the solution only contains ^{3}H or ^{14}C, 100 becquerel per millilitre.

Solid wastes

§ 8 The total activity supplied to a municipal refuse disposal plant must not exceed 10 ALI_{min} per month per laboratory (or corresponding entity). The maximum activity per waste package must not exceed 1 ALI_{min}.

The values of ALI_{min} which shall apply are shown in Table 1 in Annex 1. If the waste contains more than one radio nuclide, the maximum permitted activity shall be calculated in accordance with Annex 1.

§ 9 The dose rate at the surface of a package supplied to a municipal refuse disposal plant must not exceed 5 microgray per hour.

§ 10 Radioactive waste in solid form shall be packed in such a way that there is no risk of leakage. When a package is sent to a municipal waste disposal plant it shall carry the following markings
1. the warning symbol for ionising radiation,
2. information as to the sender,
3. information as to the dominant radio nuclide and its activity,
4. a statement that the surface dose rate does not exceed 5 microgray per hour.

NOTE: The design of the warning symbol for ionising radiation is specified in the Swedish Standard SS 03 12 10.

Specific rules apply to the transportation of radioactive materials.

§ 11 Packages sent to a municipal refuse disposal plant must not contain any sealed radioactive source with an activity exceeding 50 kilobecquerels.

NOTE: The term "sealed radioactive source" is defined in the Swedish Standard SS-ISO 1677.

§ 12 While waiting for disposal radioactive waste shall be stored in a satisfactory manner. Storage of waste which is subject to change due to fermentation, rotting or similar processes shall be given special consideration.

§ 13 At the place of storage there shall be a conspicuous label stating that radioactive waste is stored there.

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These regulations enter into force on January 1st 1985.

On behalf of the Board of the Swedish Radiation Protection Institute

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The concept ALI_{min}

ALI (Annual Limit of Intake) is defined in ICRP Publication 30, "Limits for intakes of Radio nuclides by Workers" and it constitutes limits for intakes of radioactive substances by persons employed in radiological work. The limits have been set paying regard to the ICRP annual dose limit (50 mSv). There are different ALI values for oral intake as opposed to inhalation. ALI_{min} for each nuclide means the lesser of these two values.

Table 1 shows the values for ALI_{min} for the most common radio nuclides. For nuclides not included in the table, the Radiation Protection Institute specifies applicable values.

Wastes which contain more than one radio nuclide

For wastes released into the sewage system or sent to a municipal refuse disposal plant the following shall apply to the total activity during one month:

$$\sum_k \frac{A_k}{ALI_{mink}} \leq 10$$

For the activity in one individual package the following shall apply:

$$\sum_k \frac{A_k}{ALI_{mink}} \leq 1$$

For each occasion on which a release is made to the municipal sewage system the following shall apply:

$$\sum_k \frac{A_k}{ALI_{mink}} \leq 1$$

The total activity, however, must not exceed 100 megabecquerel.

A_k is the activity of radio nuclide k and ALI_{mink} is the ALI_{min} value in the table for radio nuclide k.

Table 1 ALI_{min} values for some common radionuclides

Nuclide	ALI_{min} (Bq)	Nuclide	ALI_{min} (Bq)
H-3 water	3×10^{9}	Sr-85m	8×10^{9}
C-14	9×10^{7}	Sr-85	6×10^{7}
F-18	2×10^{9}	Sr-87m	1×10^{9}
Na-22	2×10^{7}	Sr-89	5×10^{6}
Na-24	1×10^{8}	Sr-90	1×10^{5}
P-32	1×10^{7}	Y-90	2×10^{7}
P-33	1×10^{8}	Mo-99	4×10^{7}
S-35	8×10^{7}	Tc-99m	3×10^{9}
Cl-36	9×10^{6}	Cd-108	1×10^{6}
Cl-38	6×10^{8}	Cd-115	3×10^{7}
K-42	2×10^{8}	In-111	2×10^{8}
K-43	2×10^{8}	In-113m	2×10^{9}
Ca-45	3×10^{7}	Sb-124	9×10^{6}
Ca-47	3×10^{7}	I-123	1×10^{8}
Cr-51	7×10^{8}	I-125	1×10^{6}
Mn-52	3×10^{7}	I-129	2×10^{5}
Mn-52m	1×10^{9}	I-130	1×10^{7}
Mn-54	3×10^{7}	I-131	1×10^{6}
Mn-56	2×10^{8}	I-132	1×10^{8}
Fe-52	3×10^{7}	Cs-129	9×10^{8}
Fe-55	7×10^{7}	Cs-130	2×10^{9}
Fe-59	1×10^{7}	Cs-131	8×10^{8}
Co-56	7×10^{6}	Cs-134	3×10^{6}
Co-57	2×10^{7}	Cs-134m	4×10^{9}
Co-58	3×10^{7}	Cs-137	4×10^{6}
Co-60	1×10^{6}	Ba-131	1×10^{8}
Ni-63	6×10^{7}	Ba-133m	9×10^{7}
Cu-64	4×10^{8}	Ba-135m	1×10^{8}
Cu-67	2×10^{8}	La-140	2×10^{7}
Zn-62	5×10^{7}	Yb-169	3×10^{7}
Zn-65	1×10^{7}	Ir-192	8×10^{6}
Zn-69m	2×10^{8}	Au-198	4×10^{7}
Ga-67	3×10^{8}	Hg-197	2×10^{8}
Ga-68	6×10^{8}	Hg-203	2×10^{7}
As-73	6×10^{7}	Tl-207	6×10^{8}
As-74	3×10^{7}	Tl-204	6×10^{7}
Se-75	2×10^{7}	Pb-210	9×10^{3}
Br-76	1×10^{8}	Pb-212	1×10^{6}
Br-77	6×10^{8}	Po-210	2×10^{4}
Br-82	1×10^{8}	Ra-226	2×10^{4}
Rb-81m	9×10^{9}	Th-232	4×10^{1}
Rb-81	1×10^{9}	U-238	2×10^{3}
Rb-86	2×10^{7}	Am-241	2×10^{2}
Rb-88	7×10^{8}	Cm-244	4×10^{2}
Rb-89	1×10^{9}	Cf-252	1×10^{3}