

**2011 No. 0000**

**ATOMIC ENERGY AND RADIOACTIVE SUBSTANCES**

**The Radioactive Substances Act 1993 (Amendment) (NI)  
Regulations 2011**

<i>Made</i>	- - - -	***
<i>Laid before Parliament</i>		***
<i>Coming into force</i>	- -	*** 2011

The \*\*\*, in exercise of the powers conferred by \*\*\* of the \*\*\* (1), makes the following Regulations:

**Citation, commencement and extent**

1. These Regulations—
  - (a) may be cited as the Radioactive Substances Act 1993 (Amendment) (NI) Regulations 2011;
  - (b) come into force on \*\*\* 2011;
  - (c) extend to Northern Ireland.

**Interpretation**

2. In these Regulations—
  - (a) “the Act” means the Radioactive Substances Act 1993(a); and
  - (b) “the appeals regulations” means the Radioactive Substances (Appeals) Regulations 1990(b).

**Amendments to section 1 of the Radioactive Substances Act 1993**

3. For section 1 of the Act substitute—

**“Meaning of radioactive material and radioactive waste**

1. Except as provided by any of section 1D, 1E, 1F or 1G—
  - (a) “radioactive material” means a substance or article which satisfies the requirements of any of section 1A, 1B, or 1C, where that substance or article is not waste, and
  - (b) “radioactive waste” means any such substance or article where it is waste.”.

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(1)  
(b) S.I. 1990/2504.

## Insertion of sections 1A to 1F of the Radioactive Substances Act 1993

### 4. After section 1 of the Act insert—

#### “NORM industrial activities

**1A.** A substance or article which is used in or arises from a NORM industrial activity or which has been contaminated by radionuclides which arise from such an activity is radioactive material or radioactive waste where—

- (a) the concentration of any radionuclide of natural terrestrial or cosmic origin listed in column 1 of table 1 in that substance or article exceeds the following values in table 1 in respect of that radionuclide—
  - (i) for a solid substance or article, or a non-aqueous liquid substance or article, the value specified in column 2,
  - (ii) for any other liquid substance or article, the value specified in column 3, or
  - (iii) for a gaseous substance or article, the value specified in column 4, or
- (b) the sum of the quotient values of all such radionuclides in the substance or article, as determined by the table 1 summation rule, is greater than one.

#### Processed radionuclides of natural terrestrial or cosmic origin

**1B.** A substance or article is radioactive material or radioactive waste where—

- (a) it contains one or more of the radionuclides of natural terrestrial or cosmic origin which are listed in column 1 of table 2,
- (b) it—
  - (i) is processed or is intended to be processed for the radioactive, fertile or fissile properties of those radionuclides, or
  - (ii) has been contaminated by the application of such a process to another substance or article, and
- (c) it is—
  - (i) a solid, or a non-aqueous liquid, and—
    - (aa) the concentration of any radionuclide listed in column 1 of table 2 in that substance or article exceeds the value specified in column 2 of table 2 in respect of that radionuclide, or
    - (bb) the sum of the quotient values of all such radionuclides in the substance or article, as determined by the table 2 summation rule, is greater than one, or
  - (ii) any other liquid or a gas.

#### Radionuclides not of natural terrestrial or cosmic origin

**1C.** A substance or article which contains one or more radionuclides that are not of natural terrestrial or cosmic origin is radioactive material or radioactive waste where—

- (a) it is a solid, or a non-aqueous liquid, and—
  - (i) the concentration of any radionuclide that is not of natural terrestrial or cosmic origin listed in column 1 of table 2 in that substance or article exceeds the value specified in column 2 of table 2 in respect of that radionuclide, or
  - (ii) the sum of the quotient values of all such radionuclides in the substance or article, as determined by the table 2 summation rule, is greater than one, or
- (b) it is any other liquid or a gas.

### **Radionuclides with a short half-life**

**1D.** A substance or article is not radioactive material or radioactive waste where it does not contain or consist of any radionuclides with a half-life exceeding 100 seconds.

### **Radionuclides not of natural terrestrial or cosmic origin in background radioactivity**

**1E.**—(1) A substance or article is not radioactive material or radioactive waste where—

- (a) it has been contaminated by radionuclides which—
  - (i) are not of natural terrestrial or cosmic origin,
  - (ii) have been deposited as a result of environmental processes, and
  - (iii) are not present in the substance or article at a concentration that exceeds that found normally in such a substance or article in the United Kingdom, and
- (b) in the absence of such contamination, the substance or article would not otherwise be classed as radioactive material or radioactive waste under this Act.

(2) In this section an “environmental process” includes wind, precipitation and the general circulation of the atmosphere and oceans.

### **Contaminated substances or articles**

**1F.** A substance or article is not radioactive material where it is contaminated and—

- (a) it has not been so contaminated with the intention of utilising its radioactive, fissile or fertile properties,
- (b) in the absence of such contamination, it would not be classed as radioactive material under this Act, and
- (c) the substance or article has not been moved off the premises at which the contamination occurred.

### **Substances or articles disposed of in accordance with a permission**

**1G.**—(1) Subject to subsections (2) and (3), a substance or article is not radioactive material or radioactive waste where it—

- (a) has been disposed of in accordance with a disposal permission and at the time of the disposal no further act of disposal was intended in respect of it, or
- (b) is contaminated by a substance or article described in paragraph (a), and in the absence of such contamination it would not otherwise be classed as radioactive material or radioactive waste under this Act.

(2) Subsection (1) ceases to apply where—

- (a) the substance or article which was disposed of was disposed of in accordance with one of the disposal permissions detailed in subsection (4)(a)(i) to (iv), and
- (b) after the disposal or the contamination (as relevant), the substance or article is subject to a process which—
  - (i) was not taken into account by the permitting authority at the time the disposal permission was granted; and
  - (ii) leads to an increase in the radiation exposure of the public or the environment.

(3) Subsection (1)(b) does not apply where the substance or article being contaminated is contaminated with the intention of using its radioactive, fertile or fissile properties.

(4) In this section—

- (a) “disposal permission” means—
  - (i) an authorisation under section 13 of this Act having effect at the time of disposal in any part of the United Kingdom,

- (ii) an authorisation under section 6 of the Radioactive Substances Act 1960<sup>(a)</sup> having effect at the time of disposal in any part of the United Kingdom,
  - (iii) an environmental permit in relation to the disposal of radioactive waste having effect in England and Wales,
  - (iv) an authorisation under section 5(4) of the Atomic Energy Authority Act 1954<sup>(b)</sup>,
  - (v) an exemption or exclusion from the requirement to seek the authorisation detailed in subsection (4)(a)(i) or (ii) in an order made under—
    - (aa) section 15(2) of this Act, or
    - (bb) under section 6(5) of the Radioactive Substances Act 1960,
 that applied to that disposal, having effect in any part of the United Kingdom, or
  - (vi) an exemption from the requirement for an environmental permit in relation to the disposal of radioactive waste that applied to that disposal, and
- (b) “permitting authority”—
- (i) in relation to—
    - (aa) a disposal authorised under section 13 of this Act, or section 6 of the Radioactive Substances Act 1960, or
    - (bb) an environmental permit in relation to the disposal of radioactive waste, having effect anywhere in Great Britain, means the appropriate Agency,
  - (ii) in relation to a disposal authorised under section 13 of this Act, or section 6 of the Radioactive Substances Act 1960 having effect in Northern Ireland, means the chief inspector,
  - (iii) in relation to a disposal authorised under section 5(4) of the Atomic Energy Authority Act 1954, means the Minister of Housing and Local Government and the Minister of Agriculture and Fisheries.”.

### **Amendments to section 2 of the Radioactive Substances Act 1993**

5.[ For section 2 of the Act substitute—

#### **“Variation of tables in Schedule 1**

2. The Department for the Environment for Northern Ireland may by order vary the provisions of table 1 and table 2 in Schedule 1, either by adding further entries to any column of those tables or by altering or deleting any entry for the time being contained in any column.”.]

### **Amendments to Schedule 1 to the Radioactive Substances Act 1993**

6. For Schedule 1 to the Act substitute the contents of the Schedule to these Regulations.

### **Amendment to section 47 of the Radioactive Substances Act 1993**

7. Insert the following definitions into the relevant place in section 47(1) of the Act—

““+” where it appears after a radionuclide means that the radionuclide includes such of its daughter radionuclides in the decay chain as are relevant for the purposes of radiological impact assessment.”;

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(a) 1960 c. 34.  
 (b) 1954 c. 32.

““concentrated mineral acid” means a mineral acid that is at a concentration of greater than 50% by volume,”;

““environmental permit” means a permit under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010(a) and an “environmental permit in relation to the disposal of radioactive waste” means an environmental permit in relation to the radioactive substances activity described in paragraph 5(2)(b) of Part 2 of Schedule 23 to those Regulations,”;

““m” where it appears after a radionuclide means a radionuclide in a metastable state of radioactive decay in which gamma photons are emitted,”;

““NORM industrial activity” means the industrial activities involving radionuclides of natural terrestrial or cosmic origin which are listed in table 3 in Schedule 1,”;

““table 1” means the table with that number in Schedule 1,”;

““table 1 summation rule” means the summation rule following table 1,”;

““table 2” means the table with that number in Schedule 1,”;

““table 2 summation rule” means the summation rule following table 2,”; and

““sec” where it appears after a radionuclide means that all radionuclides in the decay chain in secular equilibrium have been taken into account for the purposes of radiological impact assessment.”.

### **Amendment to section 48 of the Radioactive Substances Act 1993**

**8.** Insert the following into the relevant place in the table in section 48 of the Act—

“+	section 47(1)”;
“concentrated mineral acid	section 47(1)”;
“environmental permit	section 47(1)”;
“m	section 47(1)”;
“NORM industrial activity	section 47(1)”;
“table 1	section 47(1)”;
“table 1 summation rule	section 47(1)”;
“table 2	section 47(1)”;
“table 2 summation rule	section 47(1)”;
“sec	section 47(1)”.

### **Amendment ‘exclusion’ to ‘exemption’**

**9.** In section 15(2)—

- (a) for “exclude”, substitute “exempt”; and
- (b) for “exclusion”, substitute “exemption”.

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(a) S.I. 2010/675.

## Repeals

10. The following sections of the Act are repealed—

- (a) 8(4);
- (b) 8(5); and
- (c) 15(1).

## Transitional provisions

11.—(1) For the purposes of section 1G(4)(a)(v) of the Act, where a disposal occurred in accordance with an exclusion from authorisation under an order under section 15(2) of the Act before the relevant time, that disposal is treated as being a disposal in accordance with an exemption from authorisation, and any conditions that applied to the exclusion are treated as being conditions of the exemption.

(2) Where a substance or article which immediately before the relevant time was not categorised as radioactive material becomes radioactive material at the relevant time by virtue of these Regulations—

- (a) a person carrying on any activity described in section 6 of the Act (prohibition of use of radioactive material without registration) in relation to that substance or article at the relevant time is exempt from the requirement to hold a registration under section 7 of the Act (registration of users of radioactive material) in relation to that activity until—
  - (i) where a registration under that section is applied for in relation to that activity before the day that is 6 months after the relevant time—
    - (aa) if the application is granted, the date of grant;
    - (bb) if the application is refused and the applicant appeals against the refusal under section 26 (registrations, authorisations and notices: appeals from decisions of appropriate agency) of the Act, the date on which the appeal is determined or withdrawn;
    - (cc) if the application is refused, and the applicant is entitled to appeal against the refusal in accordance with section 26 of the Act, but does not do so, the date which is the day after the last day on which an appeal could have been brought, determined in accordance with the appeals regulations; or
    - (dd) if the application is refused, and the applicant is not entitled to appeal against the refusal in accordance with section 26 of the Act, the date on which the application is refused; or
  - (ii) where no such application is made, the earlier of—
    - (aa) the day that is 6 months after the relevant time;
    - (bb) where, in relation to the activity in paragraph (1), that person becomes exempted from the duty to hold a registration under an Order made under section 8(6) of the Act which is made after the relevant time, the day after that person first becomes so exempted; or
    - (cc) the day on which the activity ceases;
- (b) a person carrying on any activity described in section 9 of the Act (prohibition of use of mobile radioactive apparatus without registration) in relation to that substance or article at the relevant time is exempt from the requirement to hold a registration under section 10 of the Act (registration of mobile radioactive apparatus) in relation to that activity until—
  - (i) where a registration under that section is applied for in relation to that activity before the day that is 6 months after the relevant time—
    - (aa) if the application is granted, the date of grant;
    - (bb) if the application is refused and the applicant appeals against the refusal under section 26 (registrations, authorisations and notices: appeals from decisions of

appropriate agency) of the Act, the date on which the appeal is determined or withdrawn;

- (cc) if the application is refused, and the applicant is entitled to appeal against the refusal in accordance with section 26 of the Act, but does not do so, the date which is the day after the last day on which an appeal could have been brought, determined in accordance with the appeals regulations; or
  - (dd) if the application is refused, and the applicant is not entitled to appeal against the refusal in accordance with section 26 of the Act, the date on which the application is refused; or
- (ii) where no such application is made, the earlier of—
- (aa) the day that is 6 months after the relevant time; or
  - (bb) the day on which the activity ceases.

(3) Where a substance or article which immediately before the relevant time was not categorised as radioactive waste becomes radioactive waste at the relevant time by virtue of these Regulations—

- (a) a person carrying on any activity described in section 13 of the Act (disposal of radioactive waste) in relation to that substance or article at the relevant time is exempt from the requirement to hold an authorisation under that section in relation to that activity until—
  - (i) where an authorisation under that section is applied for in relation to that activity before the day that is 6 months after the relevant time—
    - (aa) if the application is granted, the date of grant;
    - (bb) if the application is refused and the applicant appeals against the refusal under section 26 (registrations, authorisations and notices: appeals from decisions of appropriate agency) of the Act, the date on which the appeal is determined or withdrawn;
    - (cc) if the application is refused, and the applicant is entitled to appeal against the refusal in accordance with section 26 of the Act, but does not do so, the date which is the day after the last day on which an appeal could have been brought, determined in accordance with the appeals regulations; or
    - (dd) if the application is refused, and the applicant is not entitled to appeal against the refusal in accordance with section 26 of the Act, the date on which the application is refused; or
  - (ii) where no such application is made, the earlier of—
    - (aa) the day that is 6 months after the relevant time; or
    - (bb) the day on which the activity ceases;
- (b) a person carrying on any activity described in section 14 of the Act (accumulation of radioactive waste) in relation to that substance or article at the relevant time is exempt from the requirement to hold an authorisation under that section in relation to that activity until—
  - (i) where an authorisation under that section is applied for in relation to that activity before the day that is 6 months after the relevant time—
    - (aa) if the application is granted, the date of grant;
    - (bb) if the application is refused and the applicant appeals against the refusal under section 26 (registrations, authorisations and notices: appeals from decisions of appropriate agency) of the Act, the date on which the appeal is determined or withdrawn;
    - (cc) if the application is refused, and the applicant is entitled to appeal against the refusal in accordance with section 26 of the Act, but does not do so, the date which is the day after the last day on which an appeal could have been brought, determined in accordance with the appeals regulations; or

(dd) if the application is refused, and the applicant is not entitled to appeal against the refusal in accordance with section 26 of the Act, the date on which the application is refused; or

(ii) where no such application is made, the earlier of—

(aa) the day that is 6 months after the relevant time; or

(bb) the day on which the activity ceases.

(4) Where a person described in paragraph (2)(a)—

(a) holds a registration under section 7 (registration of users of radioactive material) of the Act covering radioactive material which is not described in paragraph (2); and

(b) in relation to the activity and material described in paragraph (2)(a), applies for a variation of that registration instead of applying for a new registration,

the exemption in paragraph (2)(a) applies to that person but with references in that paragraph to an application for a variation of a registration under section 12 (cancellation and variation of registrations) of the Act substituted for references to an application for a registration under section 7 of the Act.

(5) Where a person described in paragraph (2)(b)—

(a) holds a registration under section 10 (registration of mobile radioactive apparatus) of the Act covering radioactive material which is not described in paragraph (2); and

(b) in relation to the activity and material described in paragraph (2)(b), applies for a variation of that registration instead of applying for a new registration,

the exemption in paragraph (2)(b) applies to that person but with references in that paragraph to an application for a variation of a registration under section 12 (cancellation and variation of registrations) of the Act substituted for references to an application for a registration under section 10 of the Act.

(6) Where a person described in paragraph (3)(a)—

(a) holds an authorisation under section 13 (disposal of radioactive waste) of the Act covering radioactive waste which is not described in paragraph (3); and

(b) in relation to the activity and waste described in paragraph (3)(a), applies for a variation of that authorisation instead of applying for a new authorisation,

the exemption in paragraph (3)(a) applies to that person but with references in that paragraph to an application for a variation of an authorisation under section 17 (revocation and variation of authorisations) of the Act substituted for references to an application for an authorisation under section 13 of the Act.

(7) Where a person described in paragraph (3)(b)—

(a) holds an authorisation under section 14 (accumulation of radioactive waste) of the Act covering radioactive waste which is not described in paragraph (3); and

(b) in relation to the activity and waste described in paragraph (3)(b), applies for a variation of that authorisation instead of applying for a new authorisation,

the exemption in paragraph (3)(b) applies to that person but with references in that paragraph to an application for a variation of an authorisation under section 17 (revocation and variation of authorisations) of the Act substituted for references to an application for an authorisation under section 14 of the Act.

(8) In this regulation, the “relevant time” means the time at which these Regulations come into force.

*Name*

Date



# SCHEDULE

Regulation 6

## New Schedule 1 to the Act

### “SCHEDULE 1

Sections 1A to 1C

#### Tables of radionuclides, summation rules and NORM industrial activities

**Table 1**

**Concentration levels of radionuclides: NORM industrial activities**

<i>Radionuclide</i>	<i>Solid, or non-aqueous liquid, concentration level in becquerels per gram (Bq/g)</i>	<i>Any other liquid concentration level in becquerels per litre (Bq/l)</i>	<i>Gaseous concentration level in becquerels per cubic metre (Bq/m<sup>3</sup>)</i>
U-238sec including Th-234, Pa-234m, Pa-234, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210	0.5	0.1	0.001
U-238+ including U-238, Th-234, Pa-234m, Pa-234	5	10	0.01
U-234	5	10	0.01
Th-230	10	10	0.001
Ra-226+ including Rn-222, Po-218, Pb-214, Bi-214, Po-214	0.5	1	0.01
Pb-210+ including Bi-210, Po-210	5	0.1	0.01
Po-210	5	0.1	0.01
U-235sec including Th-231, Pa-231, Ac-227, Th-227, Fr-223, Ra-223, Rn-219, Po-215, Pb-211, Bi-211, Tl-207, Po-211	1	0.1	0.0001
U-235+ including Th-231	5	10	0.01
Pa-231	5	1	0.001
Ac-227+ including Th-227, Fr-223, Ra-223, Rn-219, Po-215, Pb-211, Bi-211, Tl-207, Po-211	1	0.1	0.0001
Th-232sec including	0.5	0.1	0.001

<i>Radionuclide</i>	<i>Solid, or non-aqueous liquid, concentration level in becquerels per gram (Bq/g)</i>	<i>Any other liquid concentration level in becquerels per litre (Bq/l)</i>	<i>Gaseous concentration level in becquerels per cubic metre (Bq/m<sup>3</sup>)</i>
Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Po-212, Tl-208			
Th-232	5	10	0.001
Ra-228+ including Ac-228	1	0.1	0.01
Th-228+ including Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208	0.5	1	0.001

1. “The table 1 summation rule” means the sum of the quotient A/B where—
- (a) “A” means the quantity of each radionuclide listed in column 1 of table 1 that is present in the substance or article; and
  - (b) “B” means the quantity of that radionuclide specified in—
    - (i) column 2 of table 1 where the substance or article is a solid or a non-aqueous liquid;
    - (ii) column 3 of table 1 where the substance or article is any other liquid; or
    - (iii) column 4 of table 1 where the substance or article is a gas.

**Table 2**  
**Concentration levels of radionuclides**

<i>Radionuclide</i>	<i>Concentration level in becquerels per gram (Bq/g)</i>
H-3	10 <sup>2</sup>
Be-7	10
C-14	10
F-18	1
Na-22	0.1
Na-24	0.1
Si-31	10 <sup>2</sup>
P-32	10 <sup>2</sup>
P-33	10 <sup>2</sup>
S-35	10 <sup>2</sup>
Cl-36	1
Cl-38	1
K-42	10
K-43	1
Ca-45	10 <sup>2</sup>
Ca-47	1
Sc-46	0.1
Sc-47	10
Sc-48	0.1

<i>Radionuclide</i>	<i>Concentration level in becquerels per gram (Bq/g)</i>
V-48	0.1
Cr-51	10
Mn-51	1
Mn-52	0.1
Mn-52m	1
Mn-53	10 <sup>3</sup>
Mn-54	0.1
Mn-56	1
Fe-52+ including Mn-52m	1
Fe-55	10 <sup>2</sup>
Fe-59	0.1
Co-55	1
Co-56	0.1
Co-57	1
Co-58	0.1
Co-58m	10 <sup>2</sup>
Co-60	0.1
Co-60m	10 <sup>3</sup>
Co-61	10 <sup>2</sup>
Co-62m	1
Ni-59	10 <sup>2</sup>
Ni-63	10 <sup>2</sup>
Ni-65	1
Cu-64	10
Zn-65	1
Zn-69	10 <sup>2</sup>
Zn-69m+ including Zn-69	1
Ga-72	1
Ge-71	10 <sup>4</sup>
As-73	10 <sup>2</sup>
As-74	1
As-76	1
As-77	10 <sup>2</sup>
Se-75	1
Br-82	0.1
Rb-86	10
Sr-85	1
Sr-85m	10
Sr-87m	10
Sr-89	10
Sr-90+ including Y-90	1
Sr-91+ including Y-91m	1
Sr-92	1
Y-90	10 <sup>2</sup>
Y-91	10
Y-91m	1
Y-92	10
Y-93	10
Zr-93	10

<i>Radionuclide</i>	<i>Concentration level in becquerels per gram (Bq/g)</i>
Zr-95+ including Nb-95m	0.1
Zr-97+ including Nb-97m, Nb-97	1
Nb-93m	10 <sup>2</sup>
Nb-94	0.1
Nb-95	1
Nb-97+ including Nb-97m	1
Nb-98	1
Mo-90	1
Mo-93	10
Mo-99+ including Tc-99m	1
Mo-101+ including Tc-101	1
Tc-96	0.1
Tc-96m	10
Tc-97	10
Tc-97m	10
Tc-99	1
Tc-99m	10 <sup>2</sup>
Ru-97	1
Ru-103+ including Rh-103m	1
Ru-105+ including Rh-105m	1
Ru-106+ including Rh-106	1
Rh-103m	10 <sup>4</sup>
Rh-105	10
Pd-103+ including Rh-103m	10 <sup>3</sup>
Pd-109+ including Ag-109m	10 <sup>2</sup>
Ag-105	1
Ag-108m+ including Ag-108	0.1
Ag-110m+ including Ag-110	0.1
Ag-111	10
Cd-109+ including Ag-109m	10
Cd-115+ including In-115m	1
Cd-115m+ including In-115m	10
In-111	1
In-113m	10
In-114m+ including In-114	1
In-115m	10
Sn-113+ including In-113m	1
Sn-125	1
Sb-122	1
Sb-124	0.1
Sb-125+ including Te-125m	1
Te-123m	1
Te-125m	10 <sup>2</sup>
Te-127	10 <sup>2</sup>
Te-127m+ including Te-127	10
Te-129	10
Te-129m+ including Te-129	10
Te-131	10
Te-131m+ including Te-131	1

<i>Radionuclide</i>	<i>Concentration level in becquerels per gram (Bq/g)</i>
Te-132+ including I-132	0.1
Te-133+ including I-133, Xe-133m, Xe-133	1
Te-133m+ including Te-133, I-133, Xe-133m, Xe-133	1
Te-134	1
I-123	10
I-125	1
I-126	1
I-129	0.1
I-130	1
I-131+ including Xe-131m	1
I-132	1
I-133	1
I-134	1
I-135	1
Cs-129	1
Cs-131	10 <sup>3</sup>
Cs-132	1
Cs-134	0.1
Cs-134m	10 <sup>3</sup>
Cs-135	10
Cs-136	0.1
Cs-137+ including Ba-137m	1
Cs-138	1
Ba-131	1
Ba-140	0.1
La-140	0.1
Ce-139	1
Ce-141	10
Ce-143	1
Ce-144+ including Pr-144, Pr-144m	10
Pr-142	10
Pr-143	10 <sup>2</sup>
Nd-147	10
Nd-149	10
Pm-147	10 <sup>2</sup>
Pm-149	10 <sup>2</sup>
Sm-151	10 <sup>2</sup>
Sm-153	10
Eu-152	0.1
Eu-152m	10
Eu-154	0.1
Eu-155	10
Gd-153	10
Gd-159	10
Tb-160	0.1
Dy-165	10 <sup>2</sup>
Dy-166	10
Ho-166	10

<i>Radionuclide</i>	<i>Concentration level in becquerels per gram (Bq/g)</i>
Er-169	10 <sup>2</sup>
Er-171	10
Tm-170	10
Tm-171	10 <sup>2</sup>
Yb-175	10
Lu-177	10
Hf-181	1
Ta-182	0.1
W-181	10
W-185	10 <sup>2</sup>
W-187	1
Re-186	10 <sup>2</sup>
Re-188	10
Os-185	1
Os-191	10
Os-191m	10 <sup>3</sup>
Os-193	10
Ir-190	0.1
Ir-192	0.1
Ir-194	10
Pt-191	1
Pt-193m	10 <sup>2</sup>
Pt-197	10 <sup>2</sup>
Pt-197m	10 <sup>2</sup>
Au-198	1
Au-199	10
Hg-197	10
Hg-197m	10
Hg-203	1
Tl-200	1
Tl-201	10
Tl-202	1
Tl-204	10
Pb-203	1
Pb-210+ including Bi-210, Po-210	0.01
Pb-212+ including Bi-212, Tl-208	1
Bi-206	0.1
Bi-207	0.1
Bi-210	10
Bi-212+ including Tl-208	1
Po-203	1
Po-205	1
Po-207	1
Po-210	0.01
At-211	10 <sup>2</sup>
Ra-223+ including Rn-219, Po-215, Pb-211, Bi-211, Tl-207	1
Ra-224+ including Rn-220, Po-216, Pb-212, Bi-212, Tl-208	1

<i>Radionuclide</i>	<i>Concentration level in becquerels per gram (Bq/g)</i>
Ra-225	1
Ra-226+ including Rn-222, Po-218, Pb-214, Bi-214, Po-214	0.01
Ra-227	10
Ra-228+ including Ac-228	0.01
Ac-227+ including Th-227, Fr-223, Ra-223, Rn-219, Po-215, Pb-211, Bi-211, Tl-207, Po-211	0.01
Ac-228	1
Th-226+ including Ra-222, Rn-218, Po-214	10 <sup>2</sup>
Th-227	1
Th-228+ including Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208	0.1
Th-229+ including Ra-225, Ac-225, Fr-221, At-217, Bi-213, Tl-209, Pb-209	0.1
Th-230	0.1
Th-231	10 <sup>2</sup>
Th-232	0.01
Th-232+ including Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208	0.01
Th-232sec including Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Po-212, Tl-208	0.01
Th-234+ including Pa-234m, Pa-234	10
Pa-230	1
Pa-231	0.01
Pa-233	1
U-230+ including Th-226, Ra-222, Rn-218, Po-214	1
U-231	10
U-232+ including Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208	0.1
U-233	1
U-234	1
U-235+ including Th-231	1
U-235sec including Th-231, Pa-231, Ac-227, Th-227, Fr-223, Ra-223, Rn-219, Po-215, Pb-211, Bi-211, Tl-207, Po-211	0.01
U-236	1
U-237	10
U-238+ including Th-234, Pa-234m, Pa-234	1
U-238sec including Th-234, Pa-234m, Pa-234, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210	0.01
U-239	10 <sup>2</sup>
U-240+ including Np-240m, Np-240	10
Np-237+ including Pa-233	0.1
Np-239	10
Np-240	1

<i>Radionuclide</i>	<i>Concentration level in becquerels per gram (Bq/g)</i>
Pu-234	10 <sup>2</sup>
Pu-235	10 <sup>2</sup>
Pu-236	0.1
Pu-237	10
Pu-238	0.1
Pu-239	0.1
Pu-240	0.1
Pu-241	1
Pu-242	0.1
Pu-243	10 <sup>2</sup>
Pu-244+ including U-240, Np-240m, Np-240	0.1
Am-241	0.1
Am-242	10 <sup>2</sup>
Am-242m+ including Np-238	0.1
Am-243+ including Np-239	0.1
Cm-242	1
Cm-243	0.1
Cm-244	0.1
Cm-245	0.1
Cm-246	0.1
Cm-247+ including Pu-243	0.1
Cm-248	0.1
Bk-249	10
Cf-246	10
Cf-248	1
Cf-249	0.1
Cf-250	0.1
Cf-251	0.1
Cf-252	0.1
Cf-253	1
Cf-253+ including Cm-249	1
Cf-254	0.1
Es-253	1
Es-254+ including Bk-250	0.1
Es-254m+ including Fm-254	1
Fm-254	10 <sup>2</sup>
Fm-255	10
Any other solid or non-aqueous liquid radionuclide that is not of natural terrestrial or cosmic origin	0.01, unless the concentration level which gives rise to the same 10 µSv/ year dose criteria as used in column 2 of this table can be calculated using guidance by Euratom in RP 122 part 1[1] or any successor Euratom guidance or decision applying to the

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[1] EC 2000. Radiation Protection 122: Practical use of the concepts of clearance and exemption. Report RP122 Luxembourg. European Commission.



<i>Radionuclide</i>	<i>Concentration level in becquerels per gram (Bq/g)</i>
	derivation of the levels in this table, in which case that level.

2. “The table 2 summation rule” means the sum of the quotient A/B where—
- (a) “A” means the concentration of each radionuclide listed in column 1 of table 2 that is present in the substance or article; and
  - (b) “B” means the concentration of that radionuclide specified in column 2 of table 2.

**Table 3**  
**NORM industrial activities**

Extraction, production and use of rare earth elements and rare earth element alloys
Production and use of thorium, thorium compounds and products where thorium is deliberately added
Mining and processing of ores other than uranium ore
Production of oil and gas
Removal and management of radioactive scales and precipitates from equipment associated with industrial activities
Manufacture of phosphorous, phosphates and phosphoric acid
Manufacture of titanium dioxide pigments
The extraction and refining of zircon and manufacture of zirconium compounds
Production of tin, copper, aluminium, zinc, lead, and iron and steel
Activities related to coal mine de-watering plants
Water treatment associated with provision of drinking water and remediation of past work activities
China clay extraction
Production and use of uranium other than for its radioactive, fertile and fissile properties”

**EXPLANATORY NOTE**

*(This note is not part of the Regulations)*

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