How to apply for an environmental permit Part RSR-B1 – Standard facility

Guidance notes

Please read these guidance notes carefully before you fill in the forms.

This guidance will help you complete your application to keep or use sealed sources which fall within 'category 5'. It concerns only category 5 sealed sources and it tells you how to decide if that is what you have or intend to have. You should use our form RSR–B1 to make your application.

In addition to this guidance, you should also read the standard rules and our guidance to operators about how to comply with the standard rules which are available from our web site.

For information security reasons, applications for radioactive substances activities involving sealed sources must not be sent to us by email.

Contents

1 About your use of sources

We ask if you use your sources only as a part of a combine harvester so we can copy applications of that type to the Health and Safety Executive (HSE) and so that you need not notify the HSE yourself.

2 Your confirmations

In this section, we ask you to make a number of important confirmations, so that we can be confident that a standard rules permit is suitable for you.

2.1 We want to make sure you understand the process and that you make properly informed decisions.

2.2 The standard rules permit you will receive if your application is successful contains all the rules we think are relevant to category 5 sources. But it is not suitable for other sources, and so we need to make sure that you will keep or use only sources of that type.

Sources within the following descriptions do not fall within source category 5, irrespective of any calculation of A/D (see below):

- Medical teletherapy, including multi-beam ('gamma knife') machines (but A/D calculation should be used for Strontium-90 eye plaques);
- Irradiators, including those for sterilisation or preservation of materials, products, blood or tissue and shelf-shielded units;
- Industrial radiography using any radionuclide;
- Brachytherapy using Cobalt-60, Caesium-137 or Iridium-192;
- Level, density, thickness, moisture or spinning pipe gauges (except for the types listed below in the Note);
- Bone densitometry;
- Static eliminators using Americium-241 or Polonium-210 (where the source is greater than 1 GBq);
- Strontium-90 sources greater than 3 GBq;
- **Other uses where for any source, or for all the sources taken together, the activity divided by the relevant D-values given at Table 1 is greater than 0.01.**

Note

The following types of gauges are category 5 if the A/D calculation indicates they are:

– Americium-241 sources in crop-yield meters on combine harvesters;

– Caesium-137 sources in Panax level gauges used for checking fire extinguishers;

– Promethium-147 or Strontium-90 sources in Fisher Betascopes;

– Any sources used in calibration or well logging;

– Krypton-85 sources of any description.

Example calculation

An organisation proposes to hold four Cs-137 sources each of 0.2 GBq and one Co-60 source of 0.04 GBq

a. The D values from Table 1 are 100 GBq and 30 GBq respectively

b. A/D = 0.2/100 = 0.002 and so each Cs source is within category 5

c. A/D = 0.04/30 = 0.00133 and so each Co source is within category 5

d. Overall 4 x 0.002 + 1 x 0.00133 = 0.00933 and so all the sources taken together are within category 5

2 Your confirmations, continued

2.3 You will need to comply with the requirements of your permit and we will check that you do. Therefore we need to be sure you know what they will be.

3 How to contact us

You may have got your application form from our website, or been sent one by our radioactive substances permit support team or the local regulator for your part of the country. Either will speak with you about your application but you should ask the local regulator about technical matters. The permit support team can tell you who that is. For information security reasons, you must not send your application by email.

Table 1 D values

Radionuclide	Symbol	D value GBq	Radionuclide	Symbol	D value GBq
Americium 241[1]	Am-241	60	Americium 243	Am-243	200
Antimony 124	Sb-124	40	Antimony 125	Sb-125	200
Argon 41	Ar-41	50	Arsenic 76	As-76	200
Astatine 211	At-211	500	Barium 133	Ba-133	200
Barium 137m	Ba-137m	10,000	Beryllium 7	Be-7	1,000
Bismuth 210	Bi-210	8,000	Bromine 76	Br-76	30
Bromine 77	Br-77	200	Bromine 82	Br-82	30
Cadmium 109	Cd-109	20,000	Caesium 134	Cs-134	40
Caesium 135	Cs-135	Unlimited	Caesium 137	Cs-137	100
Calcium 41	Ca-41	Unlimited	Calcium 45	Ca-45	100,000
Californium 252	Cf-252	20	Carbon 11	C-11	60
Carbon 14	C-14	50,000	Cerium 141	Ce-141	1,000
Cerium 144	Ce-144	900	Chlorine 36	Cl-36	20,000
Chromium 51	Cr-51	2,000	Cobalt 55	Co-55	30
Cobalt 56	Co-56	20	Cobalt 57	Co-57	700
Cobalt 58	Co-58	70	Cobalt 60	Co-60	30
Copper 61	Cu-61	10,000	Copper 64	Cu-64	300
Copper 67	Cu-67	700	Curium 242	Cm-242	40
Curium 243	Cm-243	200	Curium 244	Cm-244	50
Erbium 171	Er-171	200	Europium 152	Eu-152	60
Europium 154	Eu-154	60	Fluorine 18	F-18	60
Gadolinium 148	Gd-148	400	Gadolinium 153	Gd-153	1,000
Gallium 67	Ga-67	500	Gallium 68	Ga-68	70
Germanium 68	Ge-68	70	Gold 198	Au-198	200
Holmium 166	Ho-166	2,000	Indium 111	In-111	200
Indium 113m	In-113m	300	Iodine 120	I-120	10,000
Iodine 123	I-123	500	Iodine 124	I-124	60
Iodine 125	I-125	200	Iodine 129	I-129	Unlimited
Iodine 131	I-131	200	Iridium 192	Ir-192	80
Iron 52	Fe-52	20	Iron 55	Fe-55	800,000
Iron 59	Fe-59	60	Krypton 79	Kr-79	1,000
Krypton 81	Kr-81	30,000	Krypton 85	Kr-85	30,000
Lanthanum 140	La-140	30	Lead 210	Pb-210	300
Manganese 52	Mn-52	20	Manganese 54	Mn-54	80
Manganese 56	Mn-56	40	Mercury 203	Hg-203	300
Molybdenum 99	Mo-99	300	Neptunium 237	Np-237	70
Nickel 59	Ni-59	1,000,000	Nickel 63	Ni-63	60,000

Table 1 D values, continued

Nitrogen 13	N-13	60	Oxygen 15	O-15	60
Palladium 103	Pd-103	90,000	Phosphorus 32	P-32	10,000
Phosphorus 33	P-33	200,000	Plutonium 238	Pu-238	60
Plutonium 239	Pu-239	60	Plutonium 240	Pu-240	60
Plutonium 241	Pu-241	3,000	Plutonium 242	Pu-242	70
Polonium 210	Po-210	60			
Potassium 40	K-40	Unlimited	Potassium 42	K-42	200
Protactinium 231	Pa-231	60	Promethium 147	Pm-147	40,000
Radium 224	Ra-224	50	Radium 226[1]	Ra-226	40
Radium 228	Ra-228	30	Rhenium 186	Re-186	4,000
Rhenium 188	Re-188	1,000	Rubidium 81	Rb-81	100
Rubidium 81m	Rb-81m	10,000	Rubidium 82	Rb-82	10,000
Rubidium 82m	Rb-82m	10,000	Rubidium 84	Rb-84	70
Rubidium 86	Rb-86	700	Ruthenium 103	Ru-103	100
Ruthenium 106	Ru-106	300	Samarium 151	Sm-151	500,000
Samarium 153	Sm-153	2,000	Scandium 46	Sc-46	30
Scandium 47	Sc-47	700	Selenium 75	Se-75	200
Silver 110m	Ag-110m	20	Sodium 22	Na-22	30
Sodium 24	Na-24	20	Strontium 83	Sr-83	1,000
Strontium 85	Sr-85	100	Strontium 89	Sr-89	20,000
Strontium 90	Sr-90	1,000	Sulphur 35	S-35	60,000
Tantalum 182	Ta-182	60	Technetium 94	Tc-94	1,000
Technetium 99m	Tc-99m	700	Thallium 201	Tl-201	1,000
Thallium 204	Tl-204	20,000	Thorium natural	Th-nat	Unlimited
Thorium 228	Th-228	40	Thorium 229	Th-229	10
Thorium 230	Th-230	70	Thorium 232	Th-232	Unlimited
Thulium 170	Tm-170	20,000	Tin 113	Sn-113	300
Tin 117m	Sn-117m	500	Tin 119m	Sn-119m	100
Tin 121	Sn-121	20,000	Tin 121m	Sn-121m	70,000
Tin 125	Sn-125	100	Tritium	H-3	2,000,000
Uranium depleted	U Dep DU	Unlimited	Uranium natural	U Nat	Unlimited
Vanadium 48	V-48	20	Xenon 133	Xe-133	3,000
Ytterbium 169	Yb-169	300	Ytterbium 175	Yb-175	2,000
Yttrium 86	Y-86	1,000	Yttrium 88	Y-88	30
Yttrium 90	Y-90	5,000	Zinc 62	Zn-62	1,000
Zinc 65	Zn-65	100	Zirconium 89	Zr-89	1,000
Zirconium 95	Zr-95	40			

Notes

[1] Includes neutron sources with beryllium.

[2] Where it is necessary to categorise a radionuclide not listed here, please consult your Environment Agency regulator.