Exemption guidance

Small sealed radioactive sources, etc

September 2011
Version 1

Radioactive Substances Act 1993
The Environmental Permitting (England and Wales) (Amendment) Regulations 2011

1 General questions

What regulations apply to permitting radioactive substances in the UK?

The Environmental Permitting (England and Wales) (Amendment) Regulations 2011
Radioactive Substances Act 1993
The Radioactive Substances Exemption (Scotland) Order 2011
The Radioactive Substances Act 1993 Amendment (Scotland) Regulations 2011
The Radioactive Substances Exemption (Northern Ireland) Order 2011
The Radioactive Substances Act 1993 (Amendment) Regulations (Northern Ireland) 2011

What other guidance is available?

The UK Government and Devolved Administrations have issued guidance for environmental regulators and users of radioactive substances as follows:
Guidance on the Exemptions Framework under the Radioactive Substances Act 1993 and Schedule 23 to the Environmental Permitting (England and Wales) Regulations 2011.

This document is one of a series of guidance documents issued by the environmental regulators to assist users in complying with the above regulations. They are available on the Environment Agency and SEPA web sites. The guidance is intended to apply to all parts of the UK. Because the regulations are different though, reference is made here to the tables in the Government Guidance to keep the text simple.

1 General questions

What is a small sealed source, tritium foil source or electrodeposited source?

For the purposes of exemption, a sealed source is defined as a radioactive source containing radioactive material where the structure is designed to prevent, under normal use, any dispersion of radioactive substances, excluding such a source where it is an electrodeposited source or a tritium foil source. Typically, commercially produced small sealed sources are used in analytical instruments or for calibration. In view of the wide range of different source types in use, the regulators intend to take a broad view of what constitutes a sealed source for exemption of small sources.

For the purposes of this guidance, a small sealed source is one within the definitions in rows 1 and 2 of the following Table 1 (derived from Table 3.2 of Government Guidance). This guidance also applies to tritium foil sources and electrodeposited sources within the definitions in rows 3 and 4 of Table 1, because of their similarity to sealed sources.

Table 1

Radioactive material or accumulated radioactive waste type	Maximum quantity of radionuclides for each item of material or waste	Maximum quantity of radionuclides: - on any premises in items of the material or waste which satisfy the limit in column 2; or -in mobile radioactive apparatus held by a person
A sealed source (note that some types of sources are excluded from this category – see note below)	4×10^6 Bq	2×10^8 Bq
Any sealed source containing only tritium as a radioactive component (including GTLDs)	2×10^{10} Bq	5×10^{12} Bq
A tritium foil source	2×10^{10} Bq	5×10^{12} Bq
An electrodeposited source	6×10^8 Bq Ni-63 or 2×10^8 Bq Fe-55	6×10^{11} Bq

Note – This category excludes gaseous tritium light devices, smoke detectors fixed to premises, luminised articles and Ba-137 eluting sources, as described in Government Guidance.

Although tritium foil sources and electrodeposited sources are not sealed sources for the purposes of exemption, they share many properties with sealed sources (convenient radiation source intended for small scale use without spread of contamination), require similar controls and are subject to similar exemption provisions. They are included in this section of guidance for these reasons.

Who is this guidance for?

This guidance is for businesses and other organisations that:

- use small sealed sources, tritium foil sources or electrodeposited sources (including producing/disposing of waste);
- supply small sealed sources, tritium foil sources or electrodeposited sources;
- receive waste small sealed sources, tritium foil sources or electrodeposited sources.

This guidance is not aimed at manufacturers of small sealed sources, tritium foil sources or electrodeposited sources because manufacture of such items will not be exempt.

Does it apply in England, Wales, Scotland and Northern Ireland?

Yes. The requirements are the same across the UK.

What do 'exemption' and 'out of scope of regulation' mean?

Out of scope of regulation equates to 'not radioactive' for the purposes of the legislation. Radioactive substances which are 'out of scope' are not subject to any regulatory requirement under EPR or RSA93 relating to radioactive substances or radioactive waste.

Exempt means that no radioactive substances permit is required under EPR or RSA93 to keep or use such radioactive sources, or accumulate and dispose of such radioactive waste, provided that the conditions specified are met.

Who is responsible for deciding if my sources are out of scope or exempt?

The person or organisation responsible for the sources, eg company or university. Responsibility for the use of exemptions and compliance with the conditions rests with the person or organisation responsible for the sources. If the environment agencies become aware of failure to hold a permit or to comply with exemption conditions, action will be taken to obtain compliance.

Do I need to tell anyone I believe my small sealed sources are out of scope or exempt?

No.

Where can I get more advice?

From an appropriate adviser, eg a suitable Radioactive Waste Adviser or Radiation Protection Adviser. Or from the environment agency which regulates your premises.

2 Keeping and using small sealed sources, tritium foil sources and electrodeposited sources

Are any small sources out of scope?

Small sealed sources, tritium foil sources and electrodeposited sources (collectively termed 'small sources' in this guidance) are out of scope if the concentration of radioactivity in them is below the level for that radionuclide in Table 2.3 of the Government Guidance. In practice this is unlikely for most sources used for their radioactive properties. Small sealed sources comprising natural radionuclides which are not listed in Table 2.3 of the Government Guidance would be exempt.

Which small sources are exempt?

The maximum activity of each item which can be exempt is specified in Column 2 of Table 1 above. For example a sealed source of up to 4 MBq.

How many small sources may I keep and still be exempt?

The maximum holding on a premises or by a user of mobile sources is specified in Column 3 of Table 1. The values in Column 3 apply to the total held by one person of all exempt fixed sources, mobile sources and waste sources accumulated on the premises. If a person only has mobile sources the value in Column 3 of Table 1 applies to all the mobile sources held. Each line of the table can be read separately, so that, for example, the number of tritium foil sources held does not affect the number of electrodeposited sources which can be held under the exemption.

For sealed sources each no more than 4 MBq, a total activity of 200 MBq can be held in the form of premises-based, mobiles or waste sources.

So for example the following items held on a premises would be considered exempt:

Source	Number of sources held	Explanation
2 MBq C-14 fixed source	50	Sources in row 1 of Table 1. Total activity 180 MBq. Less than 2×10^8 Bq
4 MBq Cs-137 mobile source	10	
4 MBq Cs-137 waste accumulation	10	
400 MBq Ni-63 electrodeposited source	5	Total activity 2 GBq. Less than 6×10^{11} Bq
1 GBq tritium foil	10	Total activity 10 GBq. Less than 5×10^{12} Bq

If another person, such as a visiting test engineer, brings additional small sources onto site and retains control of them, that does not affect the exempt status of sources you hold.

What premises are exempt from the need for a permit?

All types of premises may be exempt providing that the radioactivity in any given source and the total radioactivity in all the sources held by one person are less than the limits specified above.

The regulations do not apply to homes and no permit is needed for them.

Can I use the small sources on more than one premises?

Yes provided that you meet the limits.

What do I need to do if I use more or stop using small sources?

If you need more than the limits then, before increasing your holding, you must apply for and receive a permit. You do not need to tell anyone that you have stopped using small radioactive sources, but you must dispose of them properly (see below).

I already have a permit for some radioactive sources, can I be exempt for others?

There is no interaction between the exemption and a permit for sources that are not covered by the exemption. For example a permit for sealed sources with activity greater than 4 MBq does not affect the ability to make use of the exemption order for sources smaller than this.

It is legal to have small sealed sources listed on a permit but they still count towards the 200 MBq limit for exemption. Above a total of 200 MBq of small sealed sources, they all need permitting. Some current permits include small sources which can be exempt and these continue in operation until varied. In future only in exceptional cases will the regulators issue permits for sources which can be exempt.

3 Waste small sources

How much waste can I create?

As stated above you can hold up to the quantity specified in Column 3 of Table 1, in the form of fixed sources and waste, in total. For sealed sources each less than 4

MBq, a total activity of 200 MBq can be held in the form of premises-based, mobile and waste sources. See separate guidance for larger waste sealed sources.

Can I store waste small sources?

Yes but they should be disposed of as soon as reasonably practicable and within 26 weeks, unless agreed in writing with the relevant environment agency.

How should I dispose of my waste small sources?

Small sealed sources up to the quantities specified in rows 1 or 2 of Table 2 (derived from Table 3.3 of Government Guidance) can be disposed of to a person who disposes of substantial quantities of non-radioactive waste by burial in landfill, incineration or recovery as described in paragraph 3.6 of the Government Guidance.

Electrodeposited or tritium foil sources up to the quantities specified in rows 3 or 4 of Table 2 (these are the limits for very low level waste (VLLW – see separate guidance)) can be disposed of to a person who disposes of substantial quantities of non-radioactive waste by burial in landfill, incineration or recovery (eg with ordinary refuse) as described in Government Guidance.

Table 2

Radioactive waste	Maximum concentration of radionuclides	Maximum quantity of waste to be disposed of in the period stated
Individual sealed sources	2×10^5 Bq for the sum of all radionuclides per $0.1m^3$	1×10^7 Bq/year
Individual sealed sources containing only tritium	2×10^{10} Bq of tritium per $0.1m^3$	1×10^{13} Bq/year
Tritium foil sources with an individual activity not exceeding 4×10^5 Bq	4×10^6 Bq per 0.1 m^3	2×10^9 Bq/year
Electrodeposited sources with an individual activity not exceeding 4×10^4 Bq	4×10^5 Bq for the sum of all radionuclides per 0.1 m^3	2×10^8 Bq/year

Alternatively all types of waste small sources may be disposed of as exempt items to a person who holds a permit to receive them. This could be a supplier of such items or a specialist radioactive waste contractor. Such a waste permitted person can also receive sealed sources, tritium foil sources and electrodeposited sources of unlimited activity under exemption (see separate guidance).

Should I handle the waste small sources the same as my other waste?

Waste in the form of sealed sources is not itself subject to other waste legislation. But if it they are disposed of mixed in other waste, then all of the waste is treated as subject to conventional waste legislation. Waste in the form of exempt electrodeposited and tritium foil sources is directly subject to conventional waste legislation.

I receive waste small sources from other people, are there special requirements on me?

If you receive exempt radioactive waste small sources mixed with other waste, as part of your business of managing, treating or disposing of substantial quantities of waste which is not radioactive waste, then you are exempt from the need for a permit for the radioactivity.

In any other circumstances, organisations can send you their waste sources as exempt but you will need a permit to receive and deal with them, even if they are small sources.

4 Conditions on exemption

Are there any conditions that I need to comply with?

You will need to comply with all the conditions of the exemption, which include the need to:

Prevent accidental removal, loss or theft of sources,
Keep adequate records,
Label sources as radioactive where practicable,
Remove radioactive labels before source disposal with ordinary refuse, where practicable,
Not modify or mutilate the sources ,
Allow the environmental regulator access to records / premises,
Dispose of the sources within 26 weeks of them becoming waste.

More information is given in the Government Guidance.

What do I do if I have an incident or lose a small sealed source?

You must notify the regulator as soon as practicable if:

- the amount of exempt radioactive substances lost or stolen (or suspected to have been lost or stolen) in the incident exceeds 10 times the value in column 2 of Table 3.1 in the government guidance; or
- the total amount of such substances lost or stolen (or suspected to have been lost or stolen) in the incident and in all other such incidents in the preceding 12 months exceeds that value.

The notification must include the details of any other losses or thefts (or suspected losses or thefts) in the preceding 12 months

I use small sealed sources at different premises, are there any special things I need to do?

You should retain control over the sources, unless agreed otherwise with the occupier of the premises. You may use the occupier's storage facilities at the premises but it must be clear who is responsible for the sources at all times.

Exemption example – use and disposal of sealed sources on a single premises, etc

Circumstances	Permitted/Exempt	Explanation
Keeping or Use:		
Cs-137 – 10 sources max 200 kBq Sr-90 – 10 sources max 40 kBq Ni-63 electrodeposited – 5 sources max 400 MBq Tritium foil - 10 sources max 1 GBq	Exempt	Individual sources within relevant limits (4 MBq for sealed, 600 MBq Ni-63, 20 GBq tritium foil). Total activities within limits (200 MBq for sealed, 600 GBq Ni-63, 5 TBq tritium foil, including accumulation below). Table 3.2 GG refers
Waste accumulated:		
Am-241 – 1 sources max 10 GBq Co-60 – 1 sources max 5 GBq Cs-137 – 1 sources max 200 kBq Sr-90 - 5 sources max 40 kBq Ni-63 electrodeposited – 5 sources max 400 MBq Tritium foil - 1 sources max 1 GBq	Exempt	No limits on activity of waste sealed sources exempt for accumulation Disposal as soon as reasonably practicable and within 26 weeks unless longer agreed Security measures continue for accumulated waste high activity sources
Disposals per year:		
Am-241 – 1 sources max 10 GBq Co-60 – 1 sources max 5 GBq Ni-63 electrodeposited – 5 sources max 400 MBq Tritium foil - 10 sources max 1 GBq	Exempt	No limits for disposal to permitted person, nuclear site or entitled foreign recipient
Cs-137 – 10 sources max 200 kBq	Exempt (if distributed in sufficient waste)	Limit in 0.1 cubic metres of 200 kBq and annual total 10 MBq. Disposal to person who manage substantial quantity of non-radioactive waste, permitted person, nuclear site or entitled foreign recipient. GG Table 3.3 refers
Sr-90 – 1 source max 40 kBq	Exempt	Meets VLLW definition (single item no more than 40 kBq, total 400 kBq per 0.1 cubic metres and 200 MBq per year), so in addition to above limits. Can use VLLW route. Table 3.3 GG