How to apply for an environmental permit
Part RSR-C4 – Variation to a bespoke radioactive substances activity permit (non-nuclear site, open sources and radioactive waste)

Guidance notes

Cyfoeth Naturiol Cymru
Natural Resources Wales

Please read these guidance notes carefully before you fill in the form. Only enter details onto the form of the changes you wish to make.

Complete part RSR-C4 if you are applying to vary a bespoke permit for a radioactive substances activity involving open sources and/or waste from open sources.

You do not need a permit for sources which are within the scope of an exemption order, provided you can comply with all of the conditions in such an order.

When to use this form

Part RSR-C4 of the application form should be used for open sources kept or used or disposed of on a single defined premises or in the form of mobile radioactive apparatus.

The Environment Agency has also published additional details on radioactive substances regulation in its Radioactive Substances Guidance (RASAG) and 'How to Comply' documents.

You only need to give us details in this application for the parts of the permit that will be affected (for example, if you are adding a new radioactive substances activity or making changes to existing ones).

The tables should give us the information we need to issue a revised permit. You should include all the limits you need for each part of the permit that is to be changed.

For security reasons, do not refer to sealed sources on this part of the form. There is a separate part (RSR-C2) to vary permits for radioactive substances activities involving sealed sources.

Where you see the term 'document reference' on the form, give the document references here and send the documents with the application form when you've completed it.

Contents

1 About the permit

1a What is the permit number that this application relates to?

Tell us the reference number of the permit that you want to change.

2 About your proposed changes

2a What type of variation are you applying for?

Details of the different types of variations can be found in the current charging scheme.

2b Tick the relevant boxes to show which radioactive substances activities you are applying to change

Tell us which radioactive substances activities you wish to change and which are staying the same.

If you wish to be able to receive radioactive waste, you must have a permit to do so, even if you only intend to do this as a result of your participation in the National Arrangements for Incidents Involving Radioactivity (NAIR) or RADSAFE.

You should not apply to accumulate or dispose of radioactive waste if you can do so under the terms of an exemption order.

2d Describe how and why you intend to use the sources

We need to know:

- how you intend to use the sources;
- why you need the sources;
- why you cannot use sources of lower activity.

2e Where will you store the sources when they are not in use?

Give general details of the building, room, security measures, fire alarm systems and proximity of inflammable materials, etc. Do not supply details of security arrangements.

3 Using open sources on the premises

Only answer this section if you are applying for an activity described in Schedule 23, Part 2, paragraph 11(2)(a) or 11(5)(a) involving sealed sources. Do not use it for sources used for an activity described in Schedule 23, Part 2, paragraph 11(2)(a) on nuclear licensed sites if you are the site licensee. Do not use it for storage of radioactive packages in transit.

Give details of all the open sources that you will keep or use on the premises

3 Using open sources on the premises, continued

Users must apply the principles of best available techniques (BAT) to ensure that they hold only the types and quantities of radioactive material which are reasonably necessary for them to carry out their activities.

Do not include sources kept in packages which are stored in the course of a journey – you should use part RSR-C2.

List all open sources that you want permitted for these premises:

- in order, starting with the highest-activity material and finishing with the lowest-activity material;
- excluding exempt sources.

Where you use small amounts (for example, a few megabecquerels) of similar radionuclides you can opt to permit them as a group. This will give you flexibility. We will include the following open-source groups in new-style permits:

Total alpha-emitting radionuclides	Total beta/gamma (t1/2 >1 y)
Total beta/gamma-emitting radionuclides	Iodine radionuclides
Total positron-emitting radionuclides	Carbon-14, tritium
Total radionuclides	Carbon-14, tritium, iodine-125, phosphorus-32, sulphur-35
Total beta/gamma (t1/2 <1 day)	Thorium natural
Total beta/gamma (t1/2 1–10 days)	Uranium – depleted or natural
Total beta/gamma (t1/2 10 days–1 y)	Uranium – enriched

'Total' means not specified separately.

'Beta/gamma' includes electron capture and auger emission radionuclides.

For example, if you intend to use up to 10 MBq sulphur-35, 5 MBq iodine-125 and 15 MBq phosphorus-32, you can list them as carbon-14, tritium, iodine-125, phosphorus-32, sulphur-35 with a maximum activity 30 MBq.

We will not normally issue permits with different groups in from those listed. If you need to use a different grouping of radionuclides you should include a document giving your proposal and reasons with the application.

You do not need to include radionuclides which are present as a result of radioactive decay of the listed radionuclides.

Using becquerels

You should list activity in SI units (becquerels). Write the prefix kilo-, mega-, giga-, tera- or peta- clearly (in full) to minimise the risk of error.

Rounding up substances of nominal activity

If you use radioactive substances of nominal activity (particularly with radionuclides of short half-life), you may round up the figure to ensure you do not risk exceeding your registered limit (even temporarily). If you do round up a figure, please make sure you say how and where you have done this.

4 Radioactive waste

Very low-level waste (VLLW) means:

- radioactive waste which can be disposed of with municipal, commercial or industrial waste, each 0.1m^3 of waste containing less than 400 kilobecquerels (kBq) of total activity and single items containing less than 40 kBq of total activity.

For wastes containing carbon-14 or hydrogen-3 (tritium):

- in each 0.1m^3, the activity limit is 4,000 kBq for carbon-14 and hydrogen-3 (tritium) taken together; and
- for any single item, the activity limit is 400 kBq for carbon- 4 and hydrogen-3 (tritium) taken together.

Note that in assessing whether radioactive waste can be disposed of with municipal, commercial or industrial waste, the non-radioactive properties of the waste must be considered.

We will not permit direct inputs of radioactive waste to groundwater (for example, a discharge to a borehole that extends down to or into the water table). If you are proposing to dispose of radioactive waste into the ground (for example, a discharge to a soakaway that is not directly connected to the saturated zone):

- you should also tell us about any non-radioactive pollutants in the waste;
- we strongly advise you to talk to us before completing this form.

We may permit an environmental study involving the discharge of radioactive material to groundwater subject to strict controls and provided it is for scientific purposes to characterise, protect or remediate bodies of water.

4a Enclose your assessment of how you plan to use the 'best available techniques' to reduce the amount of radioactive waste you have to dispose of

'Best available techniques' (BAT) replaces and is equivalent to the former requirement to assess 'best practicable means' (BPM).

You should describe how you will use BAT for the following aspects, as far as they are relevant to you:

(a) to minimise the activity of radioactive material kept or used on the premises;

4 Radioactive waste, continued

(b) to minimise the period over which radioactive waste is accumulated;

(c) to minimise the activity of radioactive waste produced on the premises that will need to be disposed of on or from the premises;

(d) to minimise the activity of gaseous and aqueous radioactive waste disposed of by discharge to the environment;

(e) to minimise the volume of radioactive waste disposed of by transfer to other premises; and

(f) to dispose of radioactive waste at times, in a form, and in a manner so as to minimise the radiological effects on the environment and members of the public.

You should be aware that permits for open source use and disposal also contain other requirements for use of BAT, which you should be prepared to comply with.

4b Do you have an emergency role under the National Arrangements for Incidents Involving Radioactivity (NAIR) or RADSAFE schemes?

You can find more information about these schemes by searching the internet.

4c Do you want us to include the standard conditions for organisations taking part in NAIR or RADSAFE on this permit?

If you are a NAIR or RADSAFE respondent we can include in your permit conditions which would enable you to accumulate and dispose of radioactive waste collected as part of the scheme.

5 Accumulation of radioactive waste from open sources

5a Why do you plan to accumulate radioactive waste?

Explain why you want to accumulate waste from open sources. You should put in place procedures to reduce the amount of waste you accumulate as far as is practical. Our RASAG guidance contains information on accumulation of waste.

5b How do you plan to accumulate radioactive waste?

Explain what facilities and controls you will use to accumulate waste from open sources. Give details of what controls you will use to help keep the waste safe; for example, security, fire alarms, procedures for preventing fires.

5c Give the chemical and physical details of the radioactive waste

Describe the types of waste from open sources and what it is made from or composed of.

5d How will you measure the activity of all the types of the radioactive waste?

Outline the principal steps in the estimation or analysis of waste from open sources, including type of radiation detection; for example, liquid scintillation counter.

5e, 5g, 5i Give the following details of all the gaseous, aqueous or organic liquid waste you will accumulate

Give the maximum activity and volume of the relevant waste types you will hold at any one time. Also give the maximum time you will hold the waste for. Different radionuclides or types of waste may need different periods.

Very low-level solid waste accumulation

5k Give the following details of all the very low-level waste (VLLW) you will accumulate

The normal accumulation period permitted for VLLW is two weeks as it is usually disposed of with normal regular refuse collections. If you need longer before you dispose of it you should tell us why you need the extra time.

Low-level solid waste other than VLLW

5l Give the following details of all low-level waste you will accumulate

Give the maximum activity and volume of the LLW other than VLLW you will hold at any one time. Also give the maximum time you will hold the waste for. Different radionuclides or types of waste may need different periods.

6 Waste disposal

Discharge of radioactive gas or aqueous liquid and incineration of waste on the premises

6a Provide a description of your arrangements for disposing of radioactive waste by the above means

Explain the arrangements you have made to dispose of your radioactive waste gases or liquids or incinerate solid or organic liquid waste on the premises. You should describe the disposal routes you intend to use and why you have chosen those. Note question 4a requires a description of your use of best available techniques and 6c disposal details for radiological assessment.

6b Indicate which discharge points or routes you plan to use

We need to know which routes to permit.

6c Provide your assessment of the risk of radiation from the waste you plan to discharge

This is called a 'radiological assessment'.

You should assess the potential dose of radiation to the individuals who are likely to receive the highest radiation dose but are not involved in your work with radioactive substances. You must show your calculations.

6 Waste disposal, continued

For each gaseous discharge point you should give details of:

- the height of the discharge point above the ground;
- the height of the discharge point above the highest part of the nearest building;
- the rate that gases are discharged;
- details of any filters on the discharge system;
- how you plan to measure or assess the activity of the waste;
- the number of days a year you intend to make discharges.

For each aqueous discharge route you should give details (as relevant) of:

- the name of any water body you plan to release into;
- whether any water body is a lake, pond or estuary;
- the ordnance survey national grid reference of the discharge point;
- the name and ordnance survey national grid reference of any sewage treatment works receiving the discharge;
- the total volume of water you plan to release;
- how you plan to measure or assess the activity of the waste;
- the number of days a year you intend to make discharges;
- details of disposal of any sludges or solids resulting from aqueous waste.

For each incinerator on your premises to be used for radioactive waste you should give details of:

- the Natural Resources Wales reference number of the environmental permit;
- the height of the discharge point above the ground;
- the height of the discharge point above the highest part of the nearest building;
- details of any filters on the discharge system;
- the maximum volumes of organic liquid and solid wastes that you plan to burn in a day and a month;
- the number of days a year you plan to make discharges;
- how you plan to measure or assess the activity of ash and the solids from your filter system;
- how you plan to dispose of ash and the solids from your filter system.

You may describe and quantify your assessment of the radiological impact of the waste management practices you propose in ways which best suit you and your circumstances. But you must make clear the approach you have adopted, any underpinning assumptions and the dose estimates you conclude.

The Environment Agency has developed an initial radiological assessment tool which we use when determining applications. The underpinning science is published and freely available in the following documents:

Science Report SC030162 Initial Radiological Assessment Methodology – Part 1 User Report April 2006 http://publications.environment-agency.gov.uk/epages/eapublications.storefront – search on ISBN 1844325423.

Science Report SC030162 Initial Radiological Assessment Methodology – Part 2 Methods and Input Data April 2006 http://publications.environment-agency.gov.uk/epages/eapublications.storefront – search on ISBN 1844325431.

We use a spreadsheet tool based on this methodology which is available from your Regulatory Officer.

If you use our tool to support your application, you should confirm the input data you have used and the output from the tool. Providing a hard copy of the completed spreadsheet is the most straightforward way to do that.

We use the tool to do a screening assessment for the impact on both human health and non-human species. You need not include an estimate of the impact on non-human species in your application; we will continue to do that, so that we can confirm that the combined challenges to relevant sites are not significant.

6d State the limits you need for discharge of all gaseous waste

You should give the daily and annual maximums for each radionuclide or group of radionuclides.

6e State the limits you need for discharge of all aqueous waste

You should give the monthly maximum for each radionuclide or group of radionuclides.

Disposal of waste by incineration on the premises

6f What type(s) of incinerator do you have on the premises?

Give the make, model number, capacity and date of installation.

6g What will you do if your incinerator breaks down?

You should state your plans, including what will happen to waste already created.

6h Give the following details of all organic liquid and solid waste you will incinerate

You should give the daily and annual maximums for each radionuclide or group of radionuclides.

7 Transfer of waste to another person

Organic liquid and solid waste

The operator consigning organic liquid and solid waste (excluding VLLW) must have in place contracts with a waste disposal/storage company or companies to dispose of all of the waste. (It is acceptable to establish a contract or contracts with a waste disposal company. It is not necessary to specify any particular site which will receive the waste.) These contracts and transfer records should be available for inspection by Natural Resources Wales, either at the application stage or any subsequent stage of regulatory activity.

You should provide evidence that you have contractual arrangements in place to do this, or, where disposal may not take place for some time, that such contractual arrangements can be put in place. This may take the form of a letter of agreement in principle from a waste recipient to accept waste.

To ensure the previous level of transparency under RSA 93 is maintained, we will include in new permits for sites that receive waste for final disposal a condition requiring operators to inform their local authority before they first receive waste from any new consignor. This condition will also be added to existing permits before operator of such disposal facilities accept radioactive waste from a new consignor. Operators should inform the local authority of the origin and nature of the radioactive waste before the first waste is received from a new consignor.

7a Provide a description of your arrangements for transferring radioactive waste to another person

Explain the arrangements you have made to transfer your radioactive waste to another person. You should describe the waste types, how and why they arise, why you have chosen those, who you intend to transfer the waste to and what you expect them to do with it.

7b Give the following details of your plans to transfer all organic liquid waste

You should give the annual maximum for each radionuclide or group of radionuclides.

7c Give the following details of your plans to transfer all solid waste excluding VLLW

You should give the specified information for each radionuclide or group of radionuclides.

7e Describe contingency arrangements should your planned transfer routes for organic liquid or solid waste become unavailable

You should state your plans, including what will happen to waste already created.

7f Do you intend to transfer solid waste (excluding VLLW) to a landfill site?

Answer 'Yes' if you wish to dispose of solid waste (excluding VLLW) to a named landfill with its own permit to receive radioactive waste. If you do then we will contact you for further details of your proposal. You will need to show that your waste is within the types permitted to be received at the site. If you have a special precautions burial authorisation and need to vary it answer 'Yes' and we will contact you to discuss. Otherwise answer 'No'.

Disposal of organic liquid or solid waste by other means

7g Describe any other method you intend to use to dispose of liquid organic or solid waste

Attach your description and radiological assessment. The radiological assessment should cover the same points as the guidance in section 6.

Disposal of very low-level waste

7h What is the maximum amount of very low-level waste (VLLW) you plan to dispose of in a month with your normal rubbish?

You should give us this in cubic metres.

In a few cases (where volumes of VLLW exceed 50 m^3 per year, e.g. major decontamination of a former radium luminising site), it is necessary for different limits and further consideration to be given to disposal of VLLW. Our guidance on disposing of radioactive waste to landfill gives more details.

7i Tell us how you plan to dispose of the VLLW

If permitted, you may dispose of VLLW to any suitable disposal route.

Disposal of solid wastes by transfer for the purposes of final disposal at the Low-Level Waste Repository (LLWR) at Drigg

7j Confirm that you have attached a document of agreement from the site operator to receive your waste

This should be from the LLWR operator if disposal is directly there, or an intermediate site operator if the waste is to be pre-treated before going to the LLWR.

7k Will any consignment of waste for the LLWR contain alpha-emitting radionuclides in excess of 4 gigabecquerels per tonne or all other radionuclides in excess of 12 gigabecquerels per tonne?

We will not permit disposals above these levels.

7l What is the chemical and physical nature of the waste for the LLWR?

Give a general description. You will need to comply with the conditions of the LLWR operator.

7m What is the maximum annual disposal activity (at the time of transfer) for the LLWR for each of the following?

You should give a value for each radionuclide or group of radionuclides listed in the table. Enter zero if none.

8 Receipt of waste

8a Provide details of the origin, nature and quantity of waste from open sources to be accepted onto the premises, and how you will manage and dispose of it

Give a general description here and complete the sections in the form on waste accumulation and disposal regarding your handling and disposal of it.

Do not answer this question if the only radioactive waste that you will receive from elsewhere is that which may arise as a result of your participation in NAIR or RADSAFE.

9 Use of mobile radioactive apparatus

9a Fill in the table with details of the radioactive material that you will use in mobile form

Only answer this question if you are applying for an activity described in Schedule 23, Part 2, paragraph 5(5)(a) or 5(5)(b). Examples include a mobile PET facility, certain tests in GP surgeries or industrial tracer studies. Further guidance on these (RASAG) is available from our website.

You should provide details of the radioactive material that you will use in mobile form. Include the total radioactivity to be used for the environmental study (allowing for all reasonably foreseeable requirements) and the maximum radioactivity to be released to the environment in a day.

9b Where will the mobile radioactive apparatus be used?

We need to be able to locate the premises. Give an Ordnance Survey map reference if no address exists; for example, ST 12345 67890.

9c Is it within a 5km radius of any environmentally sensitive site?

For example, an SSSI, SAC or SPA.

9d What is the size of the area to be used?

Give the approximate size in square metres.

9g Give the frequency of use over the period

For example, daily, weekly or monthly.

9i What measures will be in place to avoid human or animal contact with the radioactive materials when being used?

Unless the activity involves directly introducing radioactivity into organisms, you should describe the precautions you take to prevent people or animals coming into contact with radioactivity.

9j Provide your assessment of the risk of radiation from the use of mobile radioactive apparatus to release radioactivity to the environment

State the expected amounts of radioactivity likely to be released. Give the same details and calculations as stated in section 6 for waste discharges.

Now fill in part RSR-F of the form.