



**RADIOACTIVE SUBSTANCES ACT 1993**  
**GUIDANCE FOR**  
**MODULAR APPLICATION FORM**

## **Contents**

Introduction .....	2
What you need to complete .....	3
Application Fees .....	4
Submission of application and Duly Made checks .....	4
What SEPA will do .....	5
Section 1: General Information.....	7
Section 2: Unsealed Source Registration .....	12
Section 3: Radioactive Waste Characterisation, Accumulation and Disposal .....	16
Section 4: Accumulation and Treatment of Radioactive Waste.....	18
Section 5: Liquid Radioactive Waste Disposals .....	21
Section 6: Gaseous Radioactive Waste Disposals .....	28
Section 7: Radioactive Waste Disposals by Transfer to Another Person .....	34
Section 8: Radioactive Waste Disposals to the Offshore Environment .....	39

## **Introduction**

This guidance document relates to SEPA's Modular Application Form, which will allow you to apply under the Radioactive Substances Act 1993, as amended (RSA93), for the keeping and use of radioactive material and the accumulation and disposal of radioactive waste. The modular application form is suitable for applications from nuclear and non-nuclear operators.

This modular application form is suitable for applying for new permits<sup>1</sup>, variations to existing permits, and cancellations for any or all of the following activities under RSA93:

1. Keeping and use of unsealed source radioactive material
2. Accumulation of radioactive waste
3. Disposal of radioactive waste

## **What this application can be used for**

The purpose of the modular application form is to allow you to only have to complete those sections of the form that are relevant to what you are applying for. SEPA would expect that the amount and detail of the information submitted would be proportional to the complexity of the proposed application.

In those cases where you are required to hold both a registration for the keeping of unsealed radioactive sources and a non-nuclear authorisation for the accumulation and disposal of radioactive waste, you may apply for both using the same form. In addition, in those situations where you are cancelling/revoking one permit and replacing it with another, you may also use this form.

Please note that the modular application form does **NOT** cover applications relating to:

1. Sealed Source Registrations (new, variation, cancellations)
2. Nuclear Authorisation Transfers
3. On-site Incineration at non-nuclear premises
4. Landfills accepting non-exempt radioactive waste

For applications relating to sealed source registrations, please complete the SEPA Sealed Source Registration Application Form available on SEPA's website. For the other types of applications listed above, please contact SEPA for more information.

---

<sup>1</sup> The use of 'permit' within this guidance document means RSA Authorisation or Registration

## What you need to complete

Please complete Section 1 for all types of application, and only the relevant sections for those activities being applied for. Once Section 1 has been completed and signed, the following sections will also require to be completed:

- For the following applications, no further sections require to be completed, although additional information may be requested:
  - applications relating to Nuclear Authorisations (including variations and revocations)
  - all other applications for revocation/cancellation
- For Unsealed Source Registration applications (except cancellation):  
Section 2
- For Non-Nuclear Authorisation applications (except revocation):  
Section 3 **AND** the following as applicable:
  - for accumulation and/or treatment of radioactive waste: Section 4
  - for authorised liquid discharges to the environment: Section 5
  - for authorised gaseous discharges to the environment: Section 6
  - for transfers of radioactive waste to another person except low level waste to a Waste Permitted Person: Section 7
  - for authorised disposal to the offshore environment: Section 8

For variations, the additional sections of the modular application form you must complete very much depends on what you wish to change in your existing permit. If you are unsure, please contact SEPA before you submit the application. Here are some general guidelines:

- If you wish to add new radionuclide(s) to your existing unsealed source registration or increase the registered limit of existing radionuclide(s), Section 2 will also require to be completed;
- If you wish to increase an existing authorised limit, add new radionuclide(s) to an existing authorised limit or add a new disposal route to your Non-Nuclear Authorisation, Section 3 will also require to be completed along with:
- Section 4 if your proposed change involves the accumulation of new or a significantly increased amount of already authorised radioactive waste;

- Section 5 if your proposed change involves authorised liquid discharges to the environment;
- Section 6 if your proposed change involves authorised gaseous discharges to the environment;
- Section 7 if your proposed change involves transfer of waste other than low level waste to a Waste Permitted Person; and
- Section 8 if your proposed change involves authorised disposals of radioactive waste to sea (NB this route is only available to the offshore industry).

If your proposed change does not involve changing an existing limit in your permit, it is possible that you will not need to complete any other than Section 1. It is imperative that whatever change you wish to make is made clear in the application form. If there is no obvious place to describe what it is you are seeking within the spaces provided in the form, please provide the information on a separate sheet and include it under section 1i.

### **Application Fees**

Most types of application will be required to be accompanied by the appropriate application fee. For more information on the relevant application fees and accepted payment methods, please refer to the Radioactive Substances Fees and Charges Scheme for the current year which is published on SEPA's website. SEPA cannot progress an application until the relevant fee has been paid. Payment can also be submitted online via the Applications page on the SEPA website using the web payment facility.

### **Submission of application and Duly Made checks**

If you are printing out the form to fill in by hand, please use black ink and ensure that all information provided is legible. Further information may be submitted on additional sheets and/or reports. These must be clearly marked with the name and address of the applicant. Applications that are incorrect or incomplete may be deemed not to be Duly Made.

For an application to be Duly Made, it must be:

1. Submitted on the correct application form
2. Accompanied by the appropriate fee(s)
3. Signed by a relevant person
4. All relevant sections/questions have been completed

5. All supporting documentation has been included.

Once completed, please forward the application, any supporting information and the relevant fee to the SEPA Registry at the appropriate area office. Completed modular application forms can also be submitted via email from the Applications page on the SEPA website.

Aberdeen Office	Angus Smith Building
Inverdee House	6 Parklands Avenue
Baxter Street	Eurocentral
Torry	Holytown
Aberdeen	North Lanarkshire
AB11 9QA	ML1 4WQ
Tel: 01224 266600	Tel: 01698 839000
Fax: 01224 896657	Fax: 01698 738155

If you believe your application contains classified information (e.g. commercially confidential or national security restricted), please refer to Section 1j below and contact SEPA before progressing further with your application.

#### What SEPA will do

SEPA will check the application to ensure that it is Duly Made, and notify you of the outcome, normally within two weeks of receipt of an application. If an application has been deemed to not be Duly Made, the application form and fee will be returned to you along with an explanation of why it is not Duly Made.

Applicants for non-nuclear permits should normally allow up to 4 months from the date an application is deemed Duly Made for the application to be determined. Applications relating to Nuclear Authorisations may take considerably longer. In exceptional circumstances, the applicant may contact SEPA to discuss if the application(s) can be processed in accordance with the timescales of the applicant.

Please note that by making an application you are not guaranteed to be granted a permit. SEPA reserves the right to determine the application which may result in the application being refused. If refused, SEPA will write to you to explain the reasons for the refusal and provide details of how to appeal SEPA's decision.

Furthermore, you have the right to withdraw your application at any time. Should you wish to withdraw your application, you must write to SEPA to request it. SEPA will acknowledge your request in writing.

You may find the following checklist helpful when completing your application. Please note this is a guide only, and depending on circumstances, additional

information and/or site visits may be required by SEPA prior to a permit being issued or cancelled/revoked.

All Applications	Section 1 completed/all other sections relevant to application completed	
	Declaration signed	
	Relevant fee paid	
New applications/variations	Site map (if change to premises)	
	Justification for limits requested	
Non-Nuclear Authorisation involving disposal by transfer to another person	Disposal route confirmation	
Authorisation (sewer/water course/gaseous)	Dose assessments	
Non-Nuclear Authorisations involving disposal to sewer	Permit to discharge from your sewerage undertaker	
Revocation of Non-Nuclear Authorisation	Decommissioning report <sup>2</sup>	
Cancellation of Unsealed Source Registration	Decommissioning report <sup>2</sup>	

---

<sup>2</sup> For details of a Decommissioning Report, please refer to 'Guidance on Decommissioning of Non-Nuclear Facilities' on SEPA's website

## **Section 1: General Information**

This section is applicable to all applications made on this form.

### **Please state which of the following application(s) you are making**

Please indicate which type of application is being made by ticking the appropriate box. List all relevant certificates under RSA93 which are currently held by the applicant. Give a brief explanation of why you are seeking to apply (e.g. variation to increase liquid discharge limits to sewer).

Please also list any other SEPA permits you currently hold for this particular site. Other SEPA permits include those made under the Pollution Prevention and Control Regulations (PPC), the Water Environment (Controlled Activities) Regulations (CAR) and the Waste Management Licensing Regulations (WML).

## **Site Details**

### **1a Please provide details of the premises to which this application refers**

Please provide the address of the site where the radioactive material will be kept or used and/or where the radioactive waste will be accumulated and disposed from, including its postcode and the telephone number of the main reception, if applicable.

For mobile source registrations, this address would be the one where the sources are usually kept, including those usually kept in other parts of the UK or abroad.

For offshore applications, please state the installation name, block number(s) and any satellite platforms and sub-sea manifolds associated with the site. Include block numbers of the satellite platforms and sub-sea manifolds where these are different from the main installation.

The permit must be sent to the registered/principal address in accordance with Section 41 of RSA93, however if you require an additional copy to be sent to an alternate address please specify the details in writing.

### **1b Please state the local government area in which the premises are situated**

Please state which local government area the site is in (e.g. Aberdeenshire, Dumfries and Galloway, etc.).

For mobile source registrations and all offshore applications this information is **NOT** required.

**1c Please give the grid reference of the main entrance to the premises**

Please provide the 10-digit national grid reference (NGR) for the main entrance to the site. This should consist of 2 letters followed by 8 numbers, for example, SJ 1234 5678.

**Legal Status of Applicant**

Any permit, Notice of Variation or Notice of Cancellation/Revocation issued by SEPA is a legally binding document. Therefore, it is imperative that you are correctly described in legal terms on the front sheet to the permit or notice.

**1d Please describe the applicant's undertaking**

Please provide a description of your undertaking. "Undertaking" is defined in Section 47 of RSA93 as follows:

*"includes any trade, business or profession, and, in relation to a public or local authority, includes any of the powers or duties of that authority, and, in relation to any other body of persons, whether corporate or unincorporated includes any of the activities of that body".*

The undertaking is not the same as the purpose for which radioactive substances will be used by you. For example, a firm may have its undertaking described as "light engineering works" whilst the reason for the radioactive substances being on site may be liquid level detection using a gauge.

SEPA prefers to use the Standard Industrial Classification (SIC) description and code for your undertaking. For companies registered in the UK this information can be obtained from Companies House of the Office of National Statistics ([www.companieshouse.gov.uk](http://www.companieshouse.gov.uk)).

**1e Please indicate what the legal status of the applicant is by selecting one option from the drop down menu**

There are 4 categories of legal status, and you will fall into only one of these categories. Your legal status has been broken down into the following options:

- Individual/sole trader
- Organisation of individuals/partnership
- Public body
- Company or corporate body

Please select one option. If in doubt, please contact SEPA before making the application.

An organisation of individuals may be a club or similar organisation. In those circumstances where there is more than 1 individual involved, please use separate sheets to complete the same information and note these sheets under section 1i.

#### **Applicant Details**

Please complete this section carefully. The information given here is what will appear on the front sheet of the permit, Notice of Variation or Notice of Cancellation or Revocation and allow SEPA to formally serve it on the correct legal person.

#### **Applicant Contact Details**

##### **1f. Please provide details about the person that we may contact about the application**

This section refers to the person authorised by the applicant to be the primary contact for queries about the application. This could include a person within the applicant's organisation or those outside of the organisation such as consultants or Radiation Waste Advisers (RWAs). Queries are likely to be of a technical nature.

##### **1g. Please provide contact details for person responsible for day to day management of radioactive substances on site**

This is the person who has the direct management of the radioactive substances on the site (e.g. Radiation Protection Officer or Radiation Protection Supervisor), usually on a day-to-day basis. This is usually the person with whom SEPA would ask for if undertaking an inspection. It may be the same person as listed under 1f above.

##### **1h. Please provide details of the contact and billing address for invoices to be sent to**

The granting of a permit will attract an annual subsistence fee as set out in the Radioactive Substances Fees and Charges Scheme for the current year, available from SEPA's website. Please state the address and contact information to be used for all financial correspondence between SEPA and the site to which application relates.

#### **Supporting Documents and Attachments**

##### **1i Please list any supporting documents or additional pages supplied**

In this section, SEPA expects the following information to be included with the completed application form:

- For new applications, a site plan showing the location of the site in relation to its surroundings. The site plan must also delineate the site boundary by marking this clearly in red. It would be preferred if no other markings on the

plan were in red other than the site boundary. The site plan scale must be sufficient to allow the location to be identified and a clear distinction to be made between the site and surrounding premises. It can also be used to show the location of gaseous or liquid discharge points. For sites which contain multiple buildings where radioactive substances are kept (e.g. university campus), the site boundary must encompass only those buildings where radioactive substances are kept or used and exclude, as far as practicable, areas such as car parks and other public areas.

Note: a site plan will **NOT** be required for:

- mobile unsealed source registrations;
- cancellations/revocations;
- variations where this is no change to the site boundary; or
- applications relating to offshore installations.
- If applicable, a list of the additional sheets and/or other supporting information that has been attached to the application.
- If applicable, dose assessment(s) in support of the gaseous and liquid effluent discharge limits being sought or in relation to a mobile radioactive apparatus involving unsealed sources (see Sections 2b, 5h, 6i and 8i).
- If applicable, confirmatory paperwork such as Trade Effluent Licences from Scottish Water or Letters of Acceptance from organisations accepting transferred waste.

All separate sheets must be clearly marked with the name and address of the applicant.

#### National Security and Trade Secrets

#### 1j Please inform us about any National Security or Commercial in Confidence Claim

National Security - you may claim that your application includes information that needs to be protected for reasons of national security. Any such claim should be submitted for determination by the Scottish Ministers, who will direct SEPA. It is also possible that a Direction is already in place which covers your application or relevant parts of it.

If you believe there is any information in your application that should be kept from the public register for reasons of national security, please tick the “yes” box but do not write anything else on the application form that reveals this information. Rather, you

should provide details on a separate sheet and attach a copy of the application that you have made to the Scottish Ministers for national security direction. You should contact the appropriate SEPA office before submitting the application to ascertain who is authorised to receive such information. You must then submit the full application in a sealed package with the name of that person clearly marked upon it.

If a National Security direction exists for other permitted regimes for the site, then an appeal should be made to Scottish Ministers for the direction to be extended to cover Radioactive Substances.

Trade Secrets - you may claim that your application includes information that needs to be protected on the grounds of it being a trade secret or commercially confidential. If you believe there is any information in your application that should be kept from the public register for reasons of it being a trade secret, please tick the "yes" box but do not write anything else on the application form that reveals this information. You should contact the appropriate SEPA office before submitting the application to discuss the requirements for determining such a claim.

#### **Remittance Information**

##### **1k Please provide payment details for application fees.**

Most applications will attract an application fee, although some applications will not. For more information on the fee (or the reason why no fee is required) and the acceptable means of paying, please refer to the Radioactive Substances Fees and Charges Scheme for the current year which is available from SEPA's website. If you have any doubt, please contact SEPA before submitting the application.

On the application, please indicate whether your application requires a fee, (if not, why) the amount paid and the method of payment used.

#### **Declaration**

This section must be signed by a person that is authorised to sign on the applicant's behalf.

If the declaration is being signed by someone outside of the applicant's organisation, he/she will also need to provide written evidence that they have been authorised to sign in that capacity.

Any person named on the application form, such as under 1e, 1f, 1g or 1h should be informed that they have been so named and the contents of SEPA's Data Protection Notice made known to them.

## **Section 2: Unsealed Source Registration**

### **Details of the radioactive material to be kept and used**

This section must be completed if you intend to apply for a new registration to keep and use radioactive material in the form of unsealed sources or you wish to vary an existing registration relating to such material.

“Radioactive material” has the same meaning as the Radioactive Substances Act 1993 Amendment (Scotland) Regulations 2011. “Unsealed sources” is a source that is not defined as a sealed source, (which means a radioactive source containing radioactive material where the structure is designed to prevent, under normal use, any dispersion of radioactive substances, excluding a source where it is an electrodeposited source or a tritium foil source).

Please note: in order to apply for a registration for sealed sources, you must complete a separate application form. The modular application form is not suitable for this type of application and no information relating to sealed sources must be entered on this form.

### **2a. Please state the justified practice for which you will be using the radioactive material**

All uses of radioactive material require to be justified in accordance with the Justification of Practices Involving Ionising Radiation Regulations 2004, as amended. Scottish Ministers are the competent authority for this legislation; however, SEPA cannot issue a registration unless a practice is justified.

A list of justified practices can be obtained from:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/256253/justification-guidance.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/256253/justification-guidance.pdf)

Annex 3 of The Justification of Practices Involving Ionising Radiation Regulations 2004, lists the justified practices.

Also, the Justification Register contains further updates:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/345740/Justification\\_Application\\_Centre - Register - 2014 - 07.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/345740/Justification_Application_Centre - Register - 2014 - 07.pdf)

If this application relates to NORM industrial activities, please specify which activity, otherwise state the justified practice.

**2b. Do you intend to operate mobile radioactive apparatus which is designed to release radioactive material into the environment or introduce it into organisms?**

If you intend to operate mobile radioactive apparatus designed to release radioactive material into the environment or introduce it into organisms, SEPA would expect that the application is supported by a suitable dose assessment that assesses the dose to the most likely exposed individual(s) who are **NOT** involved in the work with the radioactive substances.

SEPA does not recommend any particular model for carrying out dose assessments. However, whatever model is used, it is imperative that all assumptions used and calculations made are clear and the outcome can be replicated. SEPA will use its own confirmatory modelling to ensure that the outcome submitted is reasonable. You may require assistance from an RWA to undertake these assessments.

**2c. Please provide details in the table below of the radioactive material to be kept or used**

Please complete the table with the unsealed sources you intend to keep and use:

- ‘Radionuclide’ - state the full name of the element followed by the mass number of the isotope (e.g. ‘Carbon-14’);
- ‘Maximum Activity’ - State the maximum quantity of each radionuclide that will be on the premises at any one time. This must be quoted in becquerels (Bq), or multiples thereof (e.g. kBq, MBq, GBq), and must take into account all radioactive material comprising the radionuclide in question including stocks, samples, aliquots etc. but **DOES NOT** include waste. Each radionuclide should only be listed once;
- ‘Expected Monthly Usage’ - The maximum amount of each radionuclide that is expected to be used each month in becquerels (Bq) or multiples thereof; and
- ‘Purpose for which Radioactive Material will be used’ - List all the purposes for the specified radionuclide. Please use generic categories where possible (e.g. medical diagnosis and, treatment, scientific research). SEPA is likely to ask for more detailed information during the determination process. Please note that the purpose will usually be more descriptive of how you are using the source than the justified practice.

For variations, it is only necessary to complete the table where you intend to hold new radionuclides or where there is a proposed change in the number/activity/purpose of an existing radionuclide. In such cases, all registered unsealed sources must be listed, including those already appearing on an existing

registration in order to avoid confusion on what is to be registered. It may be necessary to provide additional information on a separate sheet and list it under 1i.

**2d. Please explain how you have derived the levels of radioactive material(s) that you have applied for**

SEPA expects a robust methodology to be submitted including a full list of all assumptions used and calculations made in arriving at the limits for each radionuclide in the above table. The starting point is for you to determine the minimum activity you need to carry out whatever task you intend (e.g. experiment, imaging, etc.). It is recommended that you take account of other considerations other than just the minimum activity required for the task, such as what size pots are commercially available and the shelf-life of the chemical components which may degrade more quickly than the radioactive half-life of the radionuclide.

Example 1 - a laboratory expects to conduct 2 experiments using 10 MBq of C-14 every week, therefore needing 20 MBq every week. The sources will be ordered monthly, so a stock of 80 MBq is required to get through a four week month and 100 MBq for a five week month. Discussions with the supplier indicates that the radionuclide can only be supplied in 37.5 MBq pots, so in order to have enough for a five week month, the laboratory will need to order 3 pots per month ( $3 \times 37.5 \text{ MBq} = 112.5 \text{ MBq}$ ). Therefore, allowing for some variability in pot activity, the laboratory applies for a limit of 115 MBq.

Example 2 - a hospital intends to increase its usage of Tc-99m from their existing limit of 500 MBq. The increase in usage is expected to be 2 doses of 37.5 MBq each morning and afternoon during clinics held 3 times a week ( $4 \times 37.5 \text{ MBq} = 150 \text{ MBq}$ ). Since Tc-99m decays relatively quickly, the doses are supplied at higher activity than that required, so a limit for the “new” usage has headroom of 50 MBq added to allow for the decay ( $150 \text{ MBq} + 50 \text{ MBq} = 200 \text{ MBq}$ ). The new total limit applied for is 700 MBq (existing 500 MBq + 200 MBq new usage).

Example 3 – a laboratory analyses routine samples from a nuclear power station for total alpha activity. Five samples are received monthly and kept for a further six months after analysis for QC purposes, before being disposed of as waste. Therefore thirty samples are held on site at any one time. The nuclear power station has advised previous data indicate the activity per sample is no more than 100 Bq/g, and the sample size will be 500 g, meaning a maximum activity of 1.5 MBq held on site. The lab also holds a 1 MBq mixed isotope unsealed source to use as a tracer in the analytical procedure. Therefore, a limit of 2.5 MBq alpha emitting radionuclides is applied for.

**2e. How will the radioactive material be stored when not in use**

You will be required to demonstrate that radioactive materials will be kept securely, preventing loss, theft or damage to the radioactive materials through contact with other hazardous substances (e.g. flammable, corrosive, explosive) and by unauthorised persons. You will also be required to demonstrate that suitable arrangements are in place to account for radioactive material. Only a brief description of the measures should be provided on the application form. The full arrangements, including procedures, will be examined when the premises are inspected.

**2f. Please state how you intend to dispose of any radioactive waste generated**

If it is believed that radioactive waste will arise from the keeping or use of the radioactive material that is not exempt as defined by the Radioactive Substances Exemption (Scotland) Order 2011, then you must either:

- Make application for an authorisation (complete Section 3 of the modular application form as well as Sections 4, 5, 6, 7 and/or 8 as appropriate); or
- Already have an authorisation in force that covers the type of radioactive waste that will be produced.

If the waste arising is considered to be exempt or excluded at the point of use, please indicate how you came to this conclusion (e.g. only solid waste <400 kBq/0.1 m<sup>3</sup> is generated).

If the waste is short half-life radionuclides only, but requires decay storage before it becomes exempt, you will require an accumulation-only authorisation and will need to complete section 4.

### **Section 3: Radioactive Waste Characterisation, Accumulation and Disposal**

#### **Details of the radioactive waste to be accumulated and/or disposed of**

If you intend to generate, receive, accumulate, treat and/or dispose of non-exempt radioactive waste on or from your premises, you must complete this section.

Radioactive waste has the same meaning as the Radioactive Substances Act 1993 Amendment (Scotland) Regulations 2011. “Accumulation” includes storage to take advantage of radioactive decay as well as storage awaiting disposal. “Disposal” includes direct discharge to the environment as well as transfer to another person for disposal.

**3a. Provide a brief overview of the radioactive waste that you are applying to receive, accumulate, treat and/or dispose of, indicating how it has been generated and its main radioactive and hazardous properties and how you intend to manage it (accumulate and dispose of it).**

It is essential that both you and SEPA have an overview of the process that will generate the radioactive waste. A flow diagram may be an easier method of providing this information.

Please note that this is a summary of the inputs and outputs, including decay storage, and more detail will be asked for in Sections 4, 5, 6, 7 and/or 8, as appropriate.

**3b. Indicate if you are applying to accumulate radioactive waste**

This is a quick reference tick box to verify what types of radioactive waste (solid - including sludge, liquid, gas) you intend to accumulate on site. If you intend to accumulate radioactive waste, you must also complete Section 4 of the modular application form.

**3c. Do you intend to dispose of low level waste to a Waste Permitted Person?**

Transfers of low level waste to a Waste Permitted Person will be included as standard in your authorisation. If at the time of application you know you will use this route you must provide full details of the intended Waste Permitted Person in this section. If you do not intend to use this route at present you must notify SEPA 28 days in advance of first use of the route in accordance with the authorisation condition.

**3d. Do you intend to receive and/or dispose of radioactive waste from other premises?**

This is a quick reference tick box to indicate if you intend to accept radioactive waste on to your site from another Authorised Premises. This does **not** include receiving radioactive waste from other buildings that form part of your intended Authorised Premises (e.g. campus-style authorisation). SEPA needs this information in order to specify that you are authorised under Section 13(3) of RSA93. If you do intend to accept radioactive waste, you must supply details on what type(s) of waste will be received including:

- frequency of receipt (e.g. daily, monthly, once a year, etc.);
- who produced the waste (i.e. name of organisation);
- what process gave rise to the waste (e.g. laboratory, hospital, etc.);
- physical form of the waste (solid, liquid, gaseous);
- radionuclide content and activity (in Bq or multiples thereof - kBq, MBq, GBq, etc.) of received waste;
- volume of the waste expected to be received;
- any non-radioactive hazardous properties that may affect the storage of the waste; and
- why you wish to receive the waste (e.g. to bulk up into a commercially viable load, for treatment prior to disposal).

**3e. Indicate the disposal routes that you are applying for.**

This is a quick reference tick box to indicate which disposal routes you are applying for, which will direct you to the appropriate sections of the modular application form that require to be completed in more detail. A version of this table will be reproduced in your authorisation, if granted.

Please note that disposal of low level waste to a Waste Permitted Person is included as standard in all authorisations and does not need to be applied for separately, however you must notify SEPA at least 28 days in advance of first use of the route in accordance with the authorisation condition.

## **Section 4: Accumulation and Treatment of Radioactive Waste**

You must complete this section if you are applying for:

- a new authorisation to accumulate and/or treat radioactive waste that is not exempt as defined in the Radioactive Substances Exemption (Scotland) Order 2011, on your premises; or
- a variation to an existing authorisation that involves the accumulation/treatment of radioactive waste with new radionuclides, a change in the way you accumulate existing radioactive wastes or a change in the way you treat existing radioactive wastes.

“Accumulation” includes storage to take advantage of radioactive decay (e.g. to minimise radioactivity disposed) as well as storage awaiting disposal.

“Treatment” does not appear in RSA93. For the purposes of this application, treatment shall mean any physical, chemical or biological activity that is subjected to the radioactive waste prior to its disposal, but **DOES NOT** include decay storage. Examples of treatment in this context are compaction of the waste to minimise its volume and the removal of radioactive contamination (e.g. by laundering, descaling, etc.) from items prior to disposal or returning the item to use.

### **4a. Please provide details in the table below of the radioactive waste to be accumulated**

Please provide a breakdown of the radioactive waste you intend to accumulate with the following information:

- radionuclide (or group of radionuclides) - state the full name of the element followed by the mass number of the isotope (e.g. ‘Carbon-14’);
- physical form of the waste (solid, sludge, liquid, gas);
- maximum activity of the waste to be accumulated in becquerels (Bq) or multiples thereof (e.g. kBq, MBq, GBq); and
- the maximum time the waste will be accumulated on your premises (hours/days/weeks/months).

SEPA will usually consider granting decay storage of waste containing radionuclides with a half-life of less than 100 days for a period of up to one year, provided that an appropriate case can be made for it. For longer periods, SEPA will require a more robust justification (e.g. no disposal route currently exists).

For variations, it is only necessary to complete the table if there is a change to any existing wastes (radionuclide content, physical form, maximum activity or accumulation time) or if there is a new radionuclide being applied for. In such cases,

all authorised accumulated radioactive wastes must be listed, including those already appearing on an existing Authorisation in order to avoid confusion on what is to be authorised. It may be necessary to provide additional information on a separate sheet and list it under 1i.

**4b. For each waste stream identified above; how will you store the accumulated radioactive waste until it is disposed of?**

Please provide details of how the radioactive waste will be stored with reference to the following:

- the physical security of the waste store;
- measures to prevent the loss or theft of the radioactive waste from the premises;
- measures to detect any loss or theft of the radioactive waste;
- measures to prevent access to the radioactive waste by unauthorised persons;
- measures to prevent damage to the radioactive waste from other substances with hazardous properties (e.g. flammable, corrosive, explosive);
- measures to prevent contamination of other substances by the accumulated radioactive waste; and
- measures to manage the volume of the radioactive waste being accumulated (e.g. frequency of disposals).

You will also be required to demonstrate that suitable arrangements are in place to account for radioactive waste, including procedures and arrangements for persons authorised to have access to the radioactive waste. Only a brief description of the measures should be provided here. The full arrangements, including procedures, will be examined when the premises are inspected.

For variations, it is only necessary to complete this box with regard to storage arrangements for new radioactive wastes or if the existing arrangements for accumulation are expected to change. In such cases, all authorised accumulated radioactive wastes must be listed, including those already appearing on an existing Authorisation in order to avoid confusion on what is to be authorised. It may be necessary to provide additional information on a separate sheet and list it under 1i.

**4c. Do you intend to treat the radioactive waste prior to disposal? If so, please provide details.**

If you intend to treat the waste in any way, please provide details. This does **not** include decay storage. The more complex the treatment is, the more detailed the information will require to be provided.

The type of information required includes but is not limited to the following:

- a description of the treatment process (e.g. laundering of radioactively contaminated clothing);
- the throughput or capacity of the plant used to treat the radioactive waste (e.g. 15 garments per hour);
- the proposed destination(s) of the treated waste (e.g. returned to service); and
- types of secondary waste(s) generated including:
  - its physical form (solid, sludge, liquid, gaseous);
  - its radionuclide content - the full name of the element followed by the mass number of the isotope (e.g. 'Carbon-14');
  - its activity in becquerels (Bq) or multiples thereof (e.g. kBq, MBq, GBq);
  - the volume produced per unit of time (e.g. 1000 litres of wash water per day);
  - any hazardous non-radioactive properties associated with the waste(s) (e.g. detergents, hydrocarbons, heavy metals); and
  - the proposed disposal route(s) for the secondary waste (e.g. disposal to sewer).

For applications that do not involve the treatment of radioactive waste, please mark this box "not applicable". For variations that do involve treatment, it is only necessary to complete this box for those new waste streams that are being applied for or if there is a change in the way an existing waste stream will be treated. In such cases, all authorised radioactive wastes that are to be treated must be listed, including those already appearing on an existing Authorisation in order to avoid confusion on what is to be authorised. It may be necessary to provide additional information on a separate sheet and list it under 1i.

## **Section 5: Liquid Radioactive Waste Disposals**

### **Additional Information – Liquid Discharges to the Environment**

You must complete this section if you are applying for:

- (i) a new authorisation in order to discharge non-exempt liquid radioactive waste directly to the environment or the public sewer; or
- (ii) a variation to add or change a liquid disposal route or a limit associated with a liquid disposal route in an existing authorisation.

#### **5a. Please indicate by which route you intend to discharge liquid radioactive waste to the environment**

Please indicate where your radioactive liquid effluent will be discharged:

- the public sewer, as defined in the Sewerage (Scotland) Act 1968;
- an inland water body (including rivers, estuaries, burns and lochs);
- by disposal to sea from a land-based facility;
- other (e.g. soakaway). If this option is chosen, please provide more details in the space below.

For variations, it is only necessary to indicate any new disposal routes being applied for.

In the case of offshore applications for authorisation, the disposal of radioactive waste directly to the sea or by means of re-injection should be entered in section 8.

#### **5b. Please provide the information requested in the table below**

Please provide a breakdown of the liquid waste to be discharged with the following information:

- radionuclide (or group of radionuclides) - state the full name of the element followed by the mass number of the isotope (e.g. 'Carbon-14');
- activity concentration of the waste to be disposed of in becquerels (Bq) or multiples thereof (kBq, MBq, GBq) per litre(Bq/l);
- what liquid limit you are applying for in becquerels (Bq) or multiples thereof (kBq, MBq, GBq) per unit of time (e.g. day, week, month, year); and

- name (or descriptor) of the discharge point(s), if it has one. If you have multiple discharge points that feed into a common drain (e.g. designated sinks), you are only required to name or describe the point that the common drain enters the watercourse or sewer.

For variations, it is only necessary to complete the table where you intend to dispose of new radionuclides or there are changes to an existing limit. In such cases, all authorised liquid disposals to the environment must be listed, including those already appearing on an existing Authorisation in order to avoid confusion on what is to be authorised. It may be necessary to provide additional information on a separate sheet and list it under 1i.

**5c. Please describe how the liquid limits being applied for were determined**

Please provide information on how the liquid limits for each radionuclide or group of radionuclides applied for were determined, including all assumptions made.

Example 1: one laboratory on a premises intends to carry out 2 experiments a week using tritium that results in 5 MBq of liquid waste per experiment being generated ( $2 \times 5\text{MBq} = 10\text{ MBq/week}$ ; assume 50 MBq/month). The activity has been empirically determined as the maximum activity generated per experiment. Another laboratory on the premises intends to carry out different experiments using tritium 2-3 times per month which has been calculated to result in a maximum activity of 8 MBq of liquid waste per experiment ( $3 \times 8\text{ MBq} = 24\text{ MBq/month}$ ). However, the second experiment will also result in aliquots being generated which will be retained for up to 3 months for QA purposes. Each aliquot has a maximum activity of 1 MBq, and there will be a maximum of 10 aliquots produced per experiment ( $3 \text{ experiments} \times 10 \text{ aliquots} \times 1 \text{ MBq} = 30 \text{ MBq/month}$ ). It is intended that these aliquots will be disposed of on a rolling basis at the end of the month after the 3 month retention period. Therefore, the applicant will require a minimum tritium limit of 104 MBq/month. Allowing for some headroom, a limit of 110 MBq/month for tritium has been applied for.

Example 2: a hospital intends to introduce a new procedure using Tc-99m that will produce liquid waste with an activity in excess of the hospital's current authorised limit. Each procedure is expected to require a nominal 600 MBq dose to the patient and it is anticipated that a maximum of 40 patients can be treated in the course of a month (4 patients/day  $\times$  2 clinics/week  $\times$  5 weeks/month). Using the IPEM Medical & Dental Guidance Notes and SEPA's RASPAN 2010-02, the liquid waste disposal factor for Tc-99m is 30%. Therefore, the hospital will need to be able to accommodate another 7.2 GBq in the liquid limit for Tc-99m ( $40 \text{ patients/month} \times 600 \text{ MBq/patient} \times 30\% \text{ disposal factor}$ ).

Example 3: an operator intends to collect and accumulate liquid waste containing S-35 on his premises and discharge the waste via a non-radioactively permitted discharge pipe to the local burn once a week. The original intention had been to

apply for a monthly limit which was supported by the results of the dose assessment. However, the liquid waste also contained non-radioactive hazardous properties in the form of heavy metals that would have exceeded the existing permit's limits for that substance. Therefore, the applied for limits for S-35 were constrained by the heavy metal limits in the existing permit.

For variations, it is only necessary to provide information on new radionuclides or changes to an existing limit.

**5d. How do you intend to demonstrate compliance with the liquid limits being applied for?**

Please provide information on how you intend to demonstrate compliance with the limits applied for. For example, do you intend to directly measure the discharge or is it arrived at by calculation?

If you intend to directly measure or sample the discharge, please provide the following information:

- how you will carry out the measurement/sampling;
- who will carry out the measurement/sampling (including their training);
- the parameters to be analysed for (both radioactive and non-radioactive);
- the frequency of measurement/sampling; and
- the equipment to be used (including its calibration).

If you intend to demonstrate compliance by calculation, please explain why this method is preferable to direct measurement, what assumptions you have made in the calculations and how often you intend to review the method.

SEPA will inspect against the authorised limits and it is expected that robust methodology will be in place in order to ensure that any data supplied in support of compliance will be as accurate as reasonably practicable.

For variations, it is only necessary to provide information on new radionuclides or changes to an existing limit.

**5e. For each discharge route listed in table 5a provide of where your premises discharges liquid**

Please provide the following information, depending on where you intend to discharge liquid radioactive waste. If you intend to discharge liquid radioactive waste to more than one route, please provide the information for all applicable routes.

For discharges to the public sewer - the name of the sewage treatment works that receives the liquid radioactive waste discharge. If your premises discharge liquid radioactive waste to more than one sewerage treatment works, all sewage treatment works must be listed. In this case, it is also recommended that a site drawing is included to indicate which buildings/facilities discharge to which sewerage treatment works. If possible, this should be combined with the site plan.

For discharges to an inland water body or from onshore premises to the sea - the name of the water body (e.g. River Forth) and the 8 figure NGR for all relevant discharge points (e.g. SJ 1234 5678). If there is more than one discharge point for liquid radioactive waste, then the names and NGR's for all discharge points must be included. In this case, it is recommended that a site drawing is included to indicate which buildings/facilities discharge to which water body at which location. If possible, this can be combined with the site plan.

For variations, it is only necessary to provide information on new disposal routes or new discharge points to the water environment that are being applied for.

**5f. For each waste stream, please describe the means considered for:**

- (i) **minimising the volume and activity of radioactive waste disposed of**
- (ii) **minimising the impact to the environment of radioactive waste disposed.**

If an authorisation is granted by SEPA, it will require you to use Best Practicable Means (BPM) to prevent the generation of unnecessary radioactive waste requiring disposal as well as minimising the volume and activity of the waste that is disposed of. In addition, it is required that all disposals of radioactive waste will be conducted in such a manner and such a time as to minimise the impact to the environment.

In this section please provide details on how you will minimise the generation of liquid radioactive waste and optimise the accumulation and disposal of each liquid radioactive waste stream in order to minimise the impact on the environment. Give details in brief as full inspection of procedures will be undertaken during site inspection (pre-authorisation or otherwise).

For variations, it is only necessary to provide information on new waste streams or new radionuclides.

The use of the minimum amount of radioactivity necessary to accomplish your task (e.g. experiment, procedure, etc.) or the use of decay storage to reduce the activity of waste prior to discharge are examples that satisfy sub-section (i). An example that satisfies sub-section (ii) would be the discharge of liquid radioactive waste to estuarine or coastal waters during an ebb tide.

Please note that if you intend to treat the liquid waste other than decay storage prior to discharge, it may result in secondary wastes requiring disposal. In this case, you will need to complete section 5g. It is also recommended that consideration is given

to the service and maintenance of the discharge system which may periodically result in contaminated articles, such as traps and pipework, requiring disposal.

**5g. What do you intend to do with any residues which are left over as a consequence of any optimisation?**

Any efforts to filter or abate liquid discharges may result in secondary radioactive waste in a different form (e.g. filtered liquid waste may result in contaminated solid filters) which will also require disposal. You should also consider the consequences of any maintenance activities on the liquid discharge system that may result in contaminated articles, such as fittings, valves or traps that will also require disposal if they are replaced or when you come to seek revocation of the authorisation.

Please provide details of these wastes or refer to the appropriate section of the modular application form - sections 4, 5, 6, 7 and 8.

**5h. Please describe the contingency arrangements if your liquid discharge route(s) become unavailable.**

Please provide information on your contingency plans if the liquid disposal route becomes unavailable for any reason. This provides assurance that you have considered this possibility and have put in place suitable contingency plans.

For example, if the authorised disposal route to the public sewer were to become unavailable, the liquid radioactive waste will be disposed of by transfer to a contractor (Waste Permitted Person) until such time as the route is restored. Please note that this particular contingency plan is dependent on you either having applied for this disposal route or it already existing in your authorisation.

**5i. Have you carried out a dose assessment relating to the liquid discharge(s) and included it with the application?**

If you are applying for:

- (i) a new authorisation in order to discharge non-exempt liquid radioactive waste directly to the environment or the public sewer; or
- (ii) a variation to add a liquid disposal route or add or increase a limit associated with a liquid disposal route in an existing authorisation.

You must assess the dose to the most likely exposed individual(s) who are **NOT** involved in the work with the radioactive substances and provide a copy of the results as well as the calculations used and assumptions made.

SEPA does not recommend any particular model for carrying out dose assessments. However, whatever model is used, it is imperative that all assumptions used and

calculations made are clear and the outcome can be replicated. SEPA will use its own confirmatory modelling to ensure that the outcome submitted is reasonable.

Please note if application is being made for multi-media discharge authorisation, the dose assessment must consider the dose from all possible routes for the most exposed individual; i.e. dose from solid + liquid + gaseous disposals must be less than the dose constraint of 300 micro Sieverts/year and preferably beneath the threshold for optimisation of 20 micro Sieverts/year. SEPA will typically not seek to secure further reductions in the exposure of members of the public below this level provided it is satisfied that the applicant intends to use Best Practicable Means (BPM) to limit discharges.

**5j. Please give details of any non-radioactive properties of the waste and confirmation that the chosen disposal route is suitable for radioactive and non-radioactive properties**

It is your responsibility to ensure that any liquid radioactive discharges do not contain any non-radioactive properties (i.e. heavy metals, solvents, hydrocarbons, etc.) that may render it unsuitable for discharge to the chosen route (e.g. radioactive solvents discharged to the public sewer that might affect the receiving sewage treatment works' biological treatment ability). In order to demonstrate that these non-radioactive properties have been considered, and to determine whether SEPA requires setting appropriate limits or conditions in any permit issued, the information below is required.

- Name and/or chemical composition of each non-radioactive substances;
- Concentration of each non-radioactive substance in the waste to be discharged; and
- Measures taken to minimise the non-radioactive substances in the waste to be discharged.

For variations, it is only necessary to provide information on new waste streams, new radionuclides and any non-radioactive properties that have not been considered in an existing authorisation.

For discharges to public sewer - any restrictions will usually be contained in the Trade Effluent Licence issued by Scottish Water. If you hold a Trade Effluent Licence, a copy must be included in the application to demonstrate that Scottish Water is content to accept the non-radioactive properties of the liquid radioactive waste. If the discharge is small enough to not require a Trade Effluent Licence, a copy of the letter confirming this from Scottish Water should be provided. In addition, you must also characterise all the non-radioactive properties in all liquid waste streams, explain the controls in place and where this is covered by the Trade Effluent Licence, reference to the appropriate section.

For discharges to an inland water body or to the sea from land-based facilities - SEPA is the competent authority for regulating non-radioactive discharges to the water environment under the Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended (CAR). Under CAR, an authorisation under RSA93 is a “relevant licence” and may contain limits and conditions relating to the non-radioactive properties.

For existing discharges where an existing CAR licence is in effect, please provide the reference number of all relevant licences, registrations or permits the front page of the application form.

## **Section 6: Gaseous Radioactive Waste Disposals**

### **Additional Information – Gaseous Discharges to the Environment**

You must complete this section if you are applying for:

- (i) a new authorisation in order to discharge non-exempt gaseous radioactive waste directly to the environment; or
- (ii) a variation to add or change a gaseous disposal route or a limit associated with a gaseous disposal route in an existing authorisation.

Gaseous radioactive waste means radioactive waste in the form of gases and associated mists and particulate matter.

#### **6a. Please provide the information requested in the table below**

Please provide a breakdown of the gaseous waste to be discharged with the following information:

- radionuclide (or group of radionuclides) - state the full name of the element followed by the mass number of the isotope (e.g. 'Carbon-14');
- activity concentration of the waste to be disposed of in becquerels (Bq) or multiples thereof (kBq, MBq, GBq) per cubic metre (in Bq/m<sup>3</sup>);
- time period over which the waste will be discharged (e.g. per hour/day/week/month/etc.);
- what gaseous limit you are applying for in becquerels (Bq) or multiples thereof (kBq, MBq, GBq) per unit of time (e.g. day, week, month, etc.); and
- name (or descriptor) of the gaseous discharge point(s).

For variations, it is only necessary to complete the table where you intend to dispose of new radionuclides or there are changes to an existing limit. In such cases, all authorised gaseous disposals to the environment must be listed, including those already appearing on an existing Authorisation in order to avoid confusion on what is to be authorised. It may be necessary to provide additional information on a separate sheet and list it under 1i.

#### **6b. Please describe how the gaseous limits being applied for were determined**

Please provide information on how the gaseous limits for each radionuclide or group of radionuclides applied for were determined, including all assumptions made.

Example 1: a laboratory wishes to carry out work with I-125 which will result in approximately 2.5 MBq per experiment being vented to atmosphere via a fume cupboard. Only 3 such experiments can be carried out per month due to staff time restrictions. Therefore, the applicant will need approximately 7.5 MBq per month to accommodate the planned work. Allowing some headroom for the variability of the activity released, a limit of 8 MBq has been applied for.

Example 2: a facility intending to carry out the removal of NORM scale from offshore components plans to install an extraction system to remove any airborne particulate from the area where the components are cleaned. The facility's RWA has calculated that the maximum activity that could be discharged per month if the facility were running at full capacity would be 1 MBq of alpha-emitting radionuclides. The dose assessment for the discharge indicates that this amount of activity would have negligible environmental consequences. Although the operator intends to install HEPA filters as part of the extraction system, which would significantly reduce the activity discharged, a limit of 1 MBq has been applied for.

For variations, it is only necessary to provide information on new radionuclides or changes to an existing limit.

**6c. What do you intend to do with any residues which are left over as a consequence of any actions taken to minimise discharges?**

Any efforts to filter or abate gaseous discharges may result in secondary radioactive waste in a different form (e.g. filtered gaseous waste may result in filters contaminated with solid waste) which will also require disposal. You should also consider the consequences of any maintenance activities on the gaseous discharge system that may result in contaminated articles, such as fittings, fans or ductwork that will also require disposal if they are replaced or when you come to seek revocation of the authorisation.

Please provide details of these wastes or refer to the appropriate section of the modular application form - sections 4, 5, 6, 7 and 8.

**6d. How do you intend to demonstrate compliance with the gaseous limits being applied for?**

Please provide information on how you intend to demonstrate compliance with the limits applied for. For example, do you intend to directly measure the discharge or is it arrived at by calculation?

If you intend to directly measure or sample the discharge, please provide the following information:

- o how you will carry out the measurement/sampling;

- who will carry out the measurement/sampling (including their training);
- the parameters to be analysed for (both radioactive and non-radioactive);
- the frequency of measurement/sampling; and
- the equipment to be used (including its calibration).

If you intend to demonstrate compliance by calculation, please explain why this method is preferable to direct measurement, what assumptions you have made in the calculations and how often you intend to review the method.

SEPA will inspect against the authorised limits and it is expected that robust methodology will be in place in order to ensure that any data supplied in support of compliance will be as accurate as reasonably practicable.

For variations, it is only necessary to provide information on new radionuclides or changes to an existing limit.

**6e. Please give a full description of all outlets proposed to discharge radioactive gaseous waste to the environment, including the national grid reference of each outlet.**

“Discharge point” may be anywhere gaseous waste is released from. This may be a stack, fume hood discharge point or exhaust vent from a piece of plant/lab equipment used for handling radioactive substances.

For every proposed discharge point you are applying for, please provide the information below:

- The name (or descriptor) of each discharge point. This should correlate with 6a;
- The height of each discharge point above ground level;
- The height of each discharge point above the highest part of the nearest building;
- The distance between each discharge point and the nearest building or place to which the public has access;
- The nature and purpose of the nearest adjacent building or place;
- The discharge efflux velocity of each discharge point in metres per second (m/s); and
- Any filtration/abatement on the discharge system.

For variations, it is only necessary to provide information on new discharge point(s) that are being applied for.

In addition, a plan of the premises showing the discharge point(s) and adjacent buildings or places must be provided. This plan should be combined with the site plan, provided there is sufficient detail to identify all the discharge points.

**6f. For each gaseous waste stream, please describe the means considered for:**

- (i) minimising the volume and activity of radioactive waste disposed of
- (ii) minimising the impact to the environment of radioactive waste disposed.

If an authorisation is granted by SEPA, it will require you to use Best Practicable Means (BPM) to prevent the generation of unnecessary radioactive waste requiring disposal as well as minimising the volume and activity of the waste that is disposed of. In addition, it is required that all disposals of radioactive waste will be conducted in such a manner and at such a time as to minimise the impact to the environment.

Please provide details on how you will minimise the generation of gaseous radioactive waste and optimised the disposal of each gaseous radioactive waste stream in order to minimise the impact on the environment. Give details in brief as full inspection of procedures will be undertaken during site inspection (pre-authorisation or otherwise).

For variations, it is only necessary to provide information on new waste streams or new radionuclides.

The use of the minimum amount of radioactivity necessary to accomplish your task (e.g. experiment, procedure, etc.) or the use of filtration systems (e.g. HEPA or ion exchange filters) to reduce the activity of waste prior to discharge are examples that satisfy sub-section (i). An example that satisfies sub-section (ii) would be the discharge of gaseous radioactive waste from a discharge point that is sufficiently high above ground level to ensure good mixing and dilution.

Please note that if you intend to treat the gaseous waste prior to discharge (e.g. use of filters); it may result in secondary wastes requiring disposal. In this case, you will need to complete section 6c. It is also recommended that consideration is given to the service and maintenance of the discharge system which may periodically result in contaminated articles, such as fans and ductwork, requiring disposal.

**6g. Please describe the contingency arrangements if your gaseous discharge route(s) become unavailable.**

Please provide information on your contingency plans if the gaseous disposal route becomes unavailable for any reason. This provides assurance that you have considered this possibility and have put in place suitable contingency plans.

For example, if the route becomes unavailable, the work generating the gaseous waste will cease until such time as the route is restored.

**6h. Have you carried out a dose assessment relating to the gaseous discharge and included it with the application?**

If you are applying for:

- (i) a new authorisation in order to discharge non-exempt gaseous radioactive waste directly to the environment; or
- (ii) a variation to add a gaseous disposal route or add or increase a limit associated with a gaseous disposal route in an existing authorisation

You must consider the dose to the most likely exposed individual(s) who are **NOT** involved in the work with the radioactive substances. Please provide a copy of the results as well as the calculations used and any assumption made.

SEPA does not recommend any particular model for carrying out dose assessments. However, whatever model is used, it is imperative that all assumptions used and calculations made are clear and the outcome can be replicated. SEPA will use its own confirmatory modelling to ensure that the outcome submitted is reasonable.

Please note if application is being made for multi-media discharge authorisation, the dose assessment must consider the dose from all possible routes for the most exposed individual; i.e. dose from solid + liquid + gaseous disposals must be less than the dose constraint of 300 micro Sieverts/year and preferably beneath the threshold for optimisation of 20 micro Sieverts/year. SEPA will typically not seek to secure further reductions in the exposure of members of the public below this level provided it is satisfied that the applicant intends to use Best Practicable Means (BPM) to limit discharges.

**6i. Please give details of any non-radioactive properties of the waste and confirmation that the chosen disposal route is suitable for radioactive and non-radioactive properties**

It is your responsibility to ensure that any gaseous radioactive discharges do not contain any non-radioactive properties (i.e. heavy metals, solvents, hydrocarbons, etc.) that may render it unsuitable for discharge to the environment. In order to demonstrate that these non-radioactive properties have been considered, and to determine whether SEPA requires setting appropriate limits or conditions in any permit issued, the information below is required.

- o Name and/or chemical composition of each non-radioactive substances;

- Concentration of each non-radioactive substance in the waste to be discharged; and
- Measures taken to minimise the non-radioactive substances in the waste to be discharged.

For variations, it is only necessary to provide information on new waste streams, new radionuclides and any non-radioactive properties that have not been considered in an existing authorisation.

In certain circumstances, you may already hold or be required to hold a permit under the Pollution Prevention and Control (Scotland) Regulations 2000, as amended, issued by SEPA in order to control some or all of these non-radioactive substances in your gaseous emissions. If so, please provide the reference of the permit on the front sheet of this form. If you are unsure whether you should hold such a permit, please contact SEPA.

## **Section 7: Radioactive Waste Disposals by Transfer to Another Person**

### **Radioactive Waste Disposals by Transfer to Another Person**

You are required to complete this section if you are applying for a new authorisation to dispose of intermediate level radioactive waste by transferring it to another person for further treatment or final disposal, or to dispose of any radioactive waste outwith the UK. Disposal of low level waste to a waste permitted person is included as standard in all authorisations and does not need to be applied for however you must notify SEPA 28 days in advance of first use of the route in accordance with the authorisation conditions.

Please note that radioactive waste may be in gaseous, liquid or solid physical form. In this section, a “person” is a legal term used to describe both an individual (e.g. sole trader) as well as an organisation (e.g. company, public body, etc.).

Please note that if you already have been granted an authorisation that allows you to dispose of low level radioactive waste to a Waste Permitted Person, there is no need to apply to add, replace or remove Waste Permitted Persons to your authorisation; however, you must still notify SEPA 28 days in advance of first use of the new route in accordance with the authorisation conditions.

#### **7a Please indicate by which route you intend to dispose of radioactive waste by transfer to another person**

Please indicate to which type of person you intend to dispose of radioactive waste by ticking the applicable box.

Intermediate Level Waste to a Person in UK- this is a person, based in the UK, who is suitably authorised under the Radioactive Substances Act 1993 or permitted under the Environmental Permitting (England and Wales) Regulations 2016 to allow them to dispose of or accumulate the type(s) of radioactive waste you wish to dispose of.

To a Person outwith the UK requiring a Transfrontier Shipment of Radioactive Waste and Spent Fuel Authorisation – This is to a person outwith the UK where the shipment requires a Transfrontier Shipment of Radioactive Waste and Spent Fuel Authorisation. You must also complete Standard Document 2008/312/Euratom.

To a Person Outwith the UK not requiring a Transfrontier Shipment of Radioactive Waste and Spent Fuel Authorisation - - this is to a person outwith the UK where the shipment does not require a Transfrontier Shipment of Radioactive Waste and Spent Fuel Authorisation.

To another person - it is not envisaged that this category will be used often and has been included for those situations that are not catered for with the above categories. This category does **NOT** include disposal of exempt radioactive wastes along with non-radioactive waste (i.e. bin disposals). Exempt waste disposals do not need to be detailed

within the application. If you wish to dispose of your radioactive waste to such a person, please give further details of this person in the space provided.

**7b Please provide the information requested in the table below**

Please provide a breakdown of the radioactive waste to be disposed of with the following information:

- physical form of the waste (e.g. solid, sludge, liquid, gas);
- radionuclide (or group of radionuclides) - state the full name of the element followed by the mass number of the isotope (e.g. 'Carbon-14');
- maximum annual mass, in kilograms (kg), to be disposed of;
- maximum annual volume of radioactive waste to be disposed of in cubic metres (m<sup>3</sup>);
- maximum activity of radioactive waste to be disposed of in becquerels (Bq) or multiples thereof (kBq, MBq, GBq); and
- maximum concentration of each radionuclide in becquerels per gram (Bq/g).

For variations, it is only necessary to complete the table where you intend to dispose of radioactive waste containing new radionuclides or there are changes to an existing limit. In such cases, all authorised disposals containing limits must be listed, including those already appearing on an existing Authorisation in order to avoid confusion on what is to be authorised. It may be necessary to provide additional information on a separate sheet and list it under 1i.

**7c. What are the contact details and address of the person who will receive the waste?**

Please provide information on the person(s) to whom your radioactive waste will be disposed of. This includes the following information:

- Official name of the each person to which radioactive waste will be disposed of;
- Official Address of each person – for corporate bodies the address as it appears on Companies House, for other types of person the principal place of business;
- Site Name and Address (if different to above) of each person to which radioactive waste will be disposed of;
- Site Permit Number (if applicable) of each site where radioactive waste will be disposed of. If required, additional contact details can be submitted on separate sheets with the application form.

Disposal of low level waste to a Waste Permitted Person is issued as standard and does not need to be applied for, however you must notify SEPA 28 days in advance of first use of the route in accordance with the authorisation conditions.

**7d. Please give details of any non-radioactive properties of the waste and confirmation that the chosen disposal route is suitable for its non-radioactive properties.**

It is your responsibility to ensure that any radioactive wastes do not contain any non-radioactive properties (i.e. heavy metals, solvents, hydrocarbons, etc.) that may render it unsuitable for acceptance at the chosen site. In order to demonstrate that these non-radioactive properties have been considered, and to determine whether SEPA requires setting appropriate limits or conditions in any permit issued, the information below is required:

- Name and/or chemical composition of each non-radioactive substances in the radioactive waste to be disposed of;
- Concentration of each non-radioactive substance in the waste to be disposed of; and
- Measures taken to minimise the non-radioactive substances in the waste to be disposed of.

For variations, it is only necessary to provide information on new waste streams, new radionuclides and any non-radioactive properties that have not been considered in an existing authorisation.

**7e. Please justify why this disposal route is optimised (BPM)**

If an authorisation is granted by SEPA it will require you to demonstrate that the chosen disposal route is optimised and represents Best Practicable Means (BPM). You are required to evaluate all practicable options for the disposal of the waste and when evaluating the options to consider a range of attributes to ensure that the proposed disposal route represents BPM for the disposal of that waste. These attributes are set down in the authorisation and include (where relevant) the following:

- Economic costs
- Social benefits
- Radiological exposures to the public
- Occupational radiological exposures
- Radiological impact on the environment
- Conventional safety

- Consistency with the Waste Hierarchy
- Impact from the non-radioactive properties of the radioactive waste, including climate change emissions
- Applicable Government policy.

For further guidance on BPM, please refer to “Satisfying the ALARA requirements and the role of Best Practicable Means”, available on SEPA’s [website](#).

For disposals of Intermediate Level Waste (ILW), either within or outside of the UK, it is also necessary to demonstrate how the proposed disposal aligns with Scotland’s Higher Activity Waste Policy. Essentially, the policy does not permit the disposal of ILW except where it is for the purpose of treatment that results in the recovery of reusable materials or that it will make the subsequent storage of the waste more manageable.

Scotland’s Higher Activity Waste Policy can be obtained from the Scottish Government’s [website](#).

In all cases where radioactive waste is sent abroad and the treated waste and any secondary waste/residue resulting from the treatment would add materially to the radioactive wastes needing to be disposed of in the country where the treatment was undertaken, the presumption is that all radioactive wastes will be returned to Scotland.

**7f. Have you included documentation confirming that the person you intend to use is willing, in principle, to accept the waste?**

It is required that you include a copy of a letter from each person intended to receive the radioactive waste for disposal showing the official name, official address, site name, site address and environmental permit reference (if applicable) and indicating their willingness, in principle, to accept the radioactive waste in question.

**7g. Please describe contingency arrangements if your planned transfer route(s) become unavailable.**

Please provide information on your contingency plans if the disposal route(s) becomes unavailable for any reason. This provides assurance that you have considered this possibility and have put in place suitable contingency plans.

For example, if the disposal route becomes unavailable, the radioactive waste will be accumulated on your site until other disposal arrangements can be made, such as disposing of the waste to a Waste Permitted Person within the UK. This contingency is dependent on you having sufficient storage space on your site.

**7h. Have you submitted, or do you intend to submit, an application under the Transfrontier Shipment of Radioactive Waste and Spent Fuel Regulations 2008 (SI 3087) or a notification under the Transfrontier Shipment of Waste Regulations 2007 (SI 1711)?”**

Transfers of radioactive waste outwith the UK may require an authorisation under the Transfrontier Shipment of Radioactive Waste and Spent Fuel Regulations 2008.

The Waste Shipment Regulations 1013/2006 may apply to radioactive waste which contains NORM. Please see *Guidance on the Shipment of Wastes which contains Naturally Occurring Radioactive Material* on the SEPA website for more information.

Please indicate if you have applied or if you intend to apply for either of these. Please supplement your answer with information on the application form, e.g. date submitted to SEPA or timescale for intended application. If you do not think either of these is applicable please explain why.

## **Section 8: Radioactive Waste Disposals to the Offshore Environment**

### **Additional Information – Offshore disposals of radioactive waste to the environment**

You must complete this section if you are applying for:

- (i) a new authorisation in order to discharge radioactive waste directly to the sea or by reinjection into the reservoir from an offshore installation; or
- (ii) a variation to add or change a disposal route to the sea or by reinjection or a limit associated with a disposal route to the sea or by reinjection in an existing authorisation from an offshore installation.

In this section, radioactive waste refers to wastes in both liquid and solid form. Liquid waste including produced water and any liquids used for flushing or any liquids generated by the draining of vessels and/or systems during decontamination or cleaning operations. For disposals of radioactive wastes associated with the offshore industry, you may also need to complete the following sections:

- for transferring waste onshore or offshore to another installation for disposal - see section 7; and
- for introducing radioactive material into organisms or the environment - see section 2

#### **8a. Please indicate by which route you intend to discharge radioactive waste to the environment**

Please indicate where you intend to dispose of your radioactive waste:

- To the sea;
- Offshore reinjection; or
- Other. If this option is chosen, please provide further details in the space below.

For variations, it is only necessary to indicate any new disposal routes being applied for.

#### **8b. Please provide the information requested in the table below**

Please provide a breakdown of the radioactive waste to be discharged to sea or re-injected with the following information:

- radionuclide - SEPA is looking for specific radionuclides (Ra-226, Ra-228, Pb-210, and Po-210) and these have been pre-populated on the form. Any other radionuclides can be added below these specified radionuclides. For these

unspecified radionuclides, state the full name of the element followed by the mass number of the isotope (e.g. 'Uranium-238);

- activity concentration of the waste to be disposed of in becquerels (Bq) or multiples thereof (e.g. kBq, MBq, GBq) per gram (Bq/g); and
- what limit you are applying for in becquerels (Bq) or multiples thereof (e.g. kBq, MBq, GBq) per year.

For variations, it is only necessary to complete the table where you intend to dispose of new radionuclides or where there are changes to an existing limit. In such cases, all authorised radioactive disposals to the environment must be listed, including those already appearing on an existing Authorisation in order to avoid confusion on what is to be authorised. It may be necessary to provide additional information on a separate sheet and list it under 1i.

#### **8c. Please provide the information requested on Produced Water in the tables below**

In the first table please provide a breakdown of the produced water that the installation disposes of to the marine environment with the following information:

- radionuclide - SEPA is looking for specific radionuclides (Ra-226, Ra-228, Pb-210, and Po-210) and these have been pre-populated on the form. Any other radionuclides can be added below these specified radionuclides. For these unspecified radionuclides, state the full name of the element followed by the mass number of the isotope (e.g. 'Uranium-238);
- activity concentration of the waste to be disposed of in becquerels (Bq) or multiples thereof (e.g. kBq, MBq, GBq) per gram (Bq/g).

In the second table please provide information on the volume of produced water that the installation disposes of to the marine environment in a year.

It is not SEPA's intention to set limits on the disposal of produced water; however, this information is necessary in assessing the dose consequences of all radioactive disposals from the installation.

#### **8d. Please describe how the waste activity limits being applied for were determined**

Please provide information on how the limits for each radionuclide or group of radionuclides applied for were determined, including all assumptions made.

Example: using the 'best result' (i.e. not accounting for sampling/analytical errors), take the worst case sample analysis for the measured activity of the waste and multiply by the proposed waste volume to be generated.

For projection of the maximum activity to be disposed, taking the worst case analysis is acceptable; however, when reporting annual waste disposals taking an average activity over a number of analysed samples may be justified.

Where the waste volume to be generated is unknown (i.e. no NORM wastes have been detected or analysed from the installation), a standard activity of 2GBq for each of the radionuclides, Radium-226, Radium-228, Lead-210 and Polonium-210 may be applied for in respect of the combined total of solid and liquid wastes from decontamination or cleaning operations.

For variations, it is only necessary to provide information on new radionuclides or changes to an existing limit.

**8e. How do you intend to demonstrate compliance with the radioactive waste activity limits being applied for?**

Please provide information on how you intend to demonstrate compliance with the limits applied for. For example, do you intend to directly measure the discharge or is it arrived at by calculation?

If you intend to directly measure or sample the discharge, please provide the following information:

- how you will carry out the measurement/sampling;
- who will carry out the measurement/sampling (including their training);
- the parameters to be analysed for (both radioactive and non-radioactive);
- the frequency of measurement/sampling; and
- the equipment to be used (including its calibration).

If you intend to demonstrate compliance by calculation, please explain why this method is preferable to direct measurement, what assumptions you have made in the calculations and how often you intend to review or retrospectively validate the calculations.

SEPA will inspect against the authorised limits and it is expected that robust methodology will be in place in order to ensure that any data supplied in support of compliance will be as accurate as reasonably practicable.

For variations, it is only necessary to provide information on new radionuclides or changes to an existing limit.

**8f. For each waste stream, please describe the means considered for:**

- (i) minimising the volume and activity of radioactive waste disposed of
- (ii) minimising the impact to the environment of radioactive waste disposed.

If an authorisation is granted by SEPA, it will require you to use Best Practicable Means (BPM) to prevent the generation of unnecessary radioactive waste requiring disposal as well as minimising the volume and activity of the waste that is disposed of. In addition, it is required that all disposals of radioactive waste will be conducted in such a manner and at such a time as to minimise the impact to the environment.

Please provide details on how you will minimise the generation of radioactive waste and optimise the disposal of each radioactive waste stream to the sea or by reinjection in order to minimise the impact on the environment. Give details in brief as full inspection of procedures will be undertaken during site inspection (pre-authorisation or otherwise).

For variations, it is only necessary to provide information on new waste streams or new radionuclides.

For example, consideration may be given to the addition of de-scaling chemicals or avoidance of processes known to encourage plating out of radioactive scales, such as sea water re-injection, to reduce the activity of waste produced. An example that satisfies sub-section (ii) might include the maceration of solid waste and discharge of all radioactive waste from a discharge point that is in an appropriate location to ensure good mixing and dilution.

Please note that if you intend to accumulate or treat the waste prior to discharge, it may result in secondary wastes requiring disposal. In this case, you will need to complete sections 3, 4 and 7, as appropriate. It is also recommended that consideration is given to wastes generated by any offshore de-scaling process including those generated by offshore decontamination of equipment, such as hoses, pumps and valves.

**8g. What do you intend to do with any residues which are left over as a consequence of any actions taken to minimise discharges?**

Any efforts to minimise discharges to sea or by reinjection may result in secondary radioactive waste in a different form (e.g. contaminated articles) which will also require disposal. You should also consider the consequences of any maintenance activities on the discharge or reinjection system that may result in contaminated articles, such as pumps, valves or pipework that will also require disposal if they are replaced or when you come to seek revocation of the authorisation.

Please provide details of these wastes or refer to the appropriate section of the modular application form - sections 3, 4, 5, 6, and 7.

**8h. Please describe the contingency arrangements if your waste discharge route(s) become unavailable.**

Please provide information on your contingency plans if the disposal route to sea or by reinjection becomes unavailable for any reason. This provides assurance that you have considered this possibility and have put in place suitable contingency plans.

For example, if the authorised disposal route to the sea or by reinjection were to become unavailable, the radioactive waste will be disposed of by transfer to a contractor (Waste Permitted Person) until such time as the route is restored. Please note that this particular contingency plan is dependent on you either having applied for this disposal route or it already existing in your authorisation.

**8i. Have you carried out a dose assessment relating to the discharge(s) and included it with the application?**

If you are applying for:

- (i) a new authorisation in order to discharge radioactive waste directly to the marine environment; or
- (ii) a variation to add a disposal route to the environment or add or increase a limit associated with a disposal route to the environment in an existing authorisation.

You must assess the dose to the most likely exposed individual(s) who are **NOT** involved in the work with the radioactive substances and provide a copy of the results as well as the calculations used and assumptions made. If both liquid and solid waste disposals are expected, then the doses are additive if to the same exposed individuals.

SEPA does not recommend any particular model for carrying out dose assessments. However, whatever model is used, it is imperative that all assumptions used and calculations made are clear and the outcome can be replicated. SEPA will use its own confirmatory modelling to ensure that the outcome submitted is reasonable.

Please note, if an application is being made for multi-media discharge authorisation, the dose assessment must consider the dose from all possible routes for the most exposed individual, including doses from operational liquid produced water disposals as well as the solid and liquid disposals resulting from decontamination and cleaning operations. Calculations must assume the worst case and that all work activities are occurring and therefore available for uptake of dose from that activity at the same time.

The dose from all solid + liquid + gaseous disposals from the installation to the environment must be less than the dose constraint of 300 micro Sieverts/year and preferably beneath the threshold for optimisation of 20 micro Sieverts/year. SEPA will typically not seek to secure further reductions in the exposure of members of the public below 20 micro Sieverts

provided it is satisfied that the applicant intends to use Best Practicable Means (BPM) to limit discharges.