



RP COP012: The University's Organisation and Arrangements for Compliance with its authorisations under the Environmental Authorisations (Scotland) Regulations 2018

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1 Introduction

Any person or business carrying on, or intending to carry on, a radioactive substances activity in Scotland is subject to the Environmental Authorisations (Scotland) Regulations 2018 (“EASR”). The Scottish Environment Protection Agency (SEPA) is responsible for regulating radioactive substance activities across Scotland and does so within an authorisation framework which is designed to ensure that suitable controls are in place that are appropriate to the nature of the activity and any associated risk to human health and the environment.

As the level of complexity and risk associated with an activity increases, the type of authorisation required under EASR changes to reflect that complexity or risk. On that basis, there are four types of authorisation under EASR (shown below in increasing order of complexity/risk):

- General Binding Rules (GBRs);
- Notification;
- Registration; and
- Permit

Alongside the EASR, the SEPA have published an ‘Authorisation Guide’ to assist persons or businesses determine the level of authorisation they need to apply for. The table from the guide is largely copied in Table 1 below and includes a column indicating whether the radioactive substance activity is likely to be used by the University of Edinburgh.

In addition to the EASR and the Authorisation Guide, the SEPA have also published ‘Standard Conditions’; these are a set of rules and limits that apply to a particular activity. Note, these only apply to Registrations and Permits issued by the SEPA and the conditions are published on the SEPA website (along with a guidance note).

The SEPA website with links to the Authorisation Guide, the EASR regulations (including the GBRs) and the Standard Conditions can be found here:

<https://www.sepa.org.uk/regulations/how-we-regulate/environmental-authorisations-scotland-regulations-2018/>



Table 1: Authorisation Guide to radioactive substances activities

[Ref No. applies to the number given in the Authorisation Guide which can be accessed from the SEPA link above]

Ref No.	Radioactive Substances Activity	Type of Authorisation normally needed	Likely used by the University of Edinburgh?
1	The management (including disposal) of a category 5 sealed source ¹ that has an activity <i>not exceeding</i> 200kBq.	Follow GBRs	YES
2	The management of a smoke detector incorporating a sealed radioactive source that has an activity not exceeding 40 kBq.	Follow GBRs	YES
3	The management of a tritium source ² that has an activity not exceeding 20 GBq.	Follow GBRs	No
4	The management of a thorium alloy.	Follow GBRs	No
5	The management of less than 5 kg of a Uranium or Thorium compound.	Follow GBRs	YES
6	The management of a barium eluting source with an activity not exceeding 40 kBq.	Follow GBRs	No
7	The management of a medical or veterinary radioactive substance with an activity not exceeding 1GBq Tc-99m and up to 200 MBq of all other radionuclides.	Follow GBRs	No
8	The management (other than disposal) of a NORM containing substance less than the limits in Table1 of Schedule 9 of EASR.	Follow GBRs	No

¹ As defined by the IAEA Categorization of Radioactive Sources (RS-G-1.9).

² The definition of a 'Tritium Source' here is quite specific and doesn't include the normal H-3 sources used at the University. See Schedule 9 Part 2 of EASR for a definition.



Ref No.	Radioactive Substances Activity	Type of Authorisation normally needed	Likely used by the University of Edinburgh?
9	Any activity, not authorised by any other GBR, involving quantities of radioactive substances less than those specified in Table 2 of Schedule 9 of EASR.	Follow GBRs	YES
10	The disposal of gaseous radioactive waste that does not exceed 100 GBq which: (a) contains no radionuclides other than Krypton 85; and (b) arises from lamps containing Krypton 85.	Follow GBRs	No
11	The management (other than the disposal) of a category 5 sealed source that contains an activity exceeding 200 kBq.	Apply to SEPA for notification then follow GBRs	YES
12	The management (other than the disposal) of a tritium source that contains an activity exceeding 20 GBq.	Apply to SEPA for notification then follow GBRs	No
13	The management (other than the disposal) of an electrodeposited source.	Apply to SEPA for notification then follow GBRs	YES
14	The management of an orphan source.	Apply to SEPA for notification then follow GBRs	No



Ref No.	Radioactive Substances Activity	Type of Authorisation normally needed	Likely used by the University of Edinburgh?
15	The management of radioactive waste resulting from decontamination of people following an incident.	Apply to SEPA for notification then follow GBRs	No
16	The management of radioactive waste from firefighting activities following an incident.	Apply to SEPA for notification then follow GBRs	No
17	The management (other than the disposal) of sealed sources that are normally kept in the UK outwith Scotland and are kept in Scotland for less than four months at any one visit.	Registration	No
18	The management of unsealed radioactive substances that have an activity not exceeding 10 GBq Tc-99m and 20 MBq in total of all other radionuclides with no disposals other than those allowed by standard conditions G3 to G5.	Registration	No
19	The management of NORM from the production of oil and gas at offshore installations where the total quantity of solid waste discharged to the marine environment per year does not exceed 2 GBq each of Radium 226, Radium 228, Lead 210 and Polonium 210.	Registration	No
20	Any activity involving the management of radioactive material or radioactive waste not listed in rows 1 to 19 of this table.	Radioactive Permit	YES



1.1 General Binding Rules

General Binding Rules are a set of mandatory rules that cover specific low risk activities that are described in Schedule 9 of EASR; there are 11 GBRs although, as shown in table 1 above, not all will apply to University work. They essentially replace the old activities that were exempted (Exemption Order) under the old Radioactive Substances Act 1993. The intention of the SEPA is that, if you intend to carry on an activity that is covered by a GBR, then all the rules, information and limits you need to comply with, or be aware of, are listed alongside the relevant GBR in the table in Schedule 9 of EASR.

Further guidance is shown in Appendix 1 for the GBRs that are likely to apply to University work.

1.2 Notification

Notification applies to low risk activities where the SEPA do not need to grant permission for that activity to be carried out but, need to know it is happening and who is doing it.

Notifications are typically attached to GBRs in that, once you notify the SEPA that you are carrying on that activity, you simply need to follow the associated GBR for that activity.

Typical notifications related to University of Edinburgh work might be:

- a) The management (other than the disposal) of a category 5 sealed source that contains an activity exceeding 200kBq³;
- b) The management (other than the disposal) of an electrodeposited source;

Notification for an activity applies to the 'business' (i.e. the University) and at each location where that activity is carried on. Therefore, it is possible that a notification may be required for each building carrying out a notifiable activity. The University Radiation Protection Unit (RPU) will:

- a) Check whether a notification is required;

³ Note, if you have a Permit for Sealed Sources that are above IAEA Category 5, e.g. you also have an irradiator on Campus, then the Permit conditions apply to ALL sealed sources regardless of their activity.



- b) Check whether one is already in place for that activity and at that location;
- c) Fill out the Notification form on the SEPA website on behalf of the School/Institute; and,
- d) Ensure the school/institute is aware of the arrangements they need to take.

As the guidance from the SEPA is to follow the GBRs after notification, there is no further guidance needed. The University's management arrangements for notifiable activities (i.e. notifications) is covered in Appendix 1.

1.3 Registration

Registration is for a selected set of radioactive substance activities where a simple assessment or screening is sufficient for SEPA to determine whether or not to allow the proposed activity to be carried on. Instead of referring to the GBRs, they refer to the 'Standard Conditions' published on the SEPA website.

Registrations are applied for via the appropriate application form on the SEPA website. The RPU would lead on any application for a Registration but it is not expected that any of the radioactive substances activities carried on by the University would require registration with the SEPA. Registration is therefore not discussed further in this Code of Practice.

1.4 Radioactive Permits

Permits are used by SEPA to regulate the higher risk and/or non-standard radioactive substance activities. These require the person or business to apply to the SEPA for permission to carry out such an activity. Any activities that require assessment of financial provision (e.g. management of a High Activity Sealed Source) or bespoke conditions (e.g. disposal of significant quantities of radioactive waste to sewer) will require a permit.

The Permits contain references to the SEPA Standard Conditions as well as conditions that are bespoke to the University of Edinburgh (e.g. how much radioactive substances we are allowed to hold on a premises at any one time, or how much aqueous radioactive waste we are allowed to dispose of to the sewer).

As a significant user of radioactive material, the University has a number of radioactive permits covering its radioactive substance work across the estate.



New Permit applications and variations to existing Permits can take several months to be prepared and then several months to be processed by the SEPA. Any applications to the SEPA for new Permits or to vary existing Permits are led by the University Radiation Protection Unit.

2 Appointments

In order to implement the University's procedures for compliance with its radioactive Permits, the following appointments are made:

2.1 Radiation Protection Supervisors

The Radiation Protection Supervisors (RPSs), appointed under the Ionising Radiations Regulations 2017, also carry out functions to meet the conditions of the radioactive Permits. These are:

- To provide or arrange the provision of local instruction to those working with radioactive material;
- To ensure authorised holding limits are not exceeded or monitor local arrangements to ensure limits are not exceeded;
- To monitor the use and disposal of radioactive substances within their area;
- To complete or monitor the completion of the waste accumulation records;
- To prepare/generate monthly returns and to check their contents. This includes the submission of them to the Radiation Protection Unit (or other appointed person if required);
- To identify any necessary notifications and communicate them to the University Radiation Protection Adviser (URPA);
- To liaise with the appointed Radioactive Waste Adviser;
- Where appointed, to maintain the local radioactive waste store(s).

The names of the RPSs can be found in the Local Rules relevant to the research groups, as well as on the Health and Safety Department website. In large departments the RPSs are helped by Assistant or Deputy Radiation Protection Supervisors.

Further information on the duties of RPSs is given in Radiation Protection Code of Practice RP CoP001 "*Duties of the Radiation Protection Supervisor*".



2.2 Radioactive Waste Adviser & Radiation Protection Adviser

A Radioactive Waste Advisor (RWA) must be consulted for new Permit applications and variations to Permits. A member of the University RPU acts as the Radioactive Waste Advisor to the University and is consulted upon for all University Permit applications/variatioins. RWAs are assessed for their competence and a certificate to act as an RWA is granted by an assessing body.

The University also appoints a Radiation Protection Adviser (RPA) to advise them on other areas of radiation protection which may have an impact on environmental radiation protection arrangements.

3 Procedures to comply with authorisations

Radioactive substances are widely used at the University of Edinburgh and procedures to ensure compliance with the limits and conditions of the authorisation framework, including the limits and conditions within Permits, are covered by a suite of documents such as:

- The University Health and Safety Policy which is made up of:
 - The University H&S Policy document; and,
 - Framework: Organisation; and,
 - Framework: Arrangements
- Codes of Practice
- Guidance Notes and Information Sheets
- Local Rules
- Proposed Schemes of Work
- Template Forms and Checklists

In order to provide written procedures to demonstrate compliance with its authorisations, as required by Standard Condition A.3.1 for Permits, a compliance 'road-map' has been written. This is shown in Appendix 2.

4 Further Information

Further information on EASR and other matters relating to ionising and non-ionising radiations can be obtained from the Radiation Protection Unit of the Health and Safety Department. Contact: radiation@ed.ac.uk



5 Appendix 1 – GBRs: Further Guidance

Table A1 below summaries the GBRs that apply to the University's work with radioactive substances and how the University demonstrates compliance or signposts to other parts of this CoP or existing procedures within the University's management system.

Note, the GBR number in Column 1 refers to the GBR number from Schedule 9 of EASR and is not the same reference number from the Authorisation Guide as shown in Table 1 above.

Table A1: General Binding Rules (GBRs) that apply to the University's work with radioactive substances

GBR No.	Radioactive Substances Activity	Further Guidance
1	<i>The management of a category 5 sealed source.</i>	A Category 5 Sealed Source is as defined by the IAEA Categorization of Radioactive Sources (RS-G-1.9). The University provides information and instruction to users of sealed sources through the Radiation Protection Code of Practice RP CoP020 " <i>Working with Sealed Radioactive Sources</i> ". Users are provided with training on work with Sealed Sources as part of the University's basic courses in radiation protection.
2	<i>The management of a smoke detector incorporating a sealed radioactive source that has an activity not exceeding 40kBq.</i>	The University's smoke detectors are managed by an external contractor. The University RPA has ensured that the external contractor is aware of the SEPA guidance and that an appropriate



GBR No.	Radioactive Substances Activity	Further Guidance
		<p>contractor is used for the disposal of multiple ionisation smoke detectors.</p> <p>Where the University requires to dispose of single redundant smoke detectors not covered by the main contract, these are done in accordance with RP CoP009 on the disposal of radioactive waste.</p>
4	<p><i>The management of an electrodeposited source containing Ni-63 or Fe-55 (note an Electron Capture Detector containing a Ni-63 source is not defined as a Sealed Source).</i></p>	<p>In accordance with the SEPA Authorisation Guide, the University has notified the SEPA about its premises which are managing electrodeposited sources containing Ni-63.</p> <p>The University provides information and instruction to users of sealed sources, including electrodeposited sources, through the Radiation Protection Code of Practice RP CoP020 "<i>Working with Sealed Radioactive Sources</i>".</p>
7	<p><i>The management of a Uranium or Thorium compound.</i></p>	<p>The University provides guidance to those working with Uranium, Thorium and their compounds in Radiation Protection Guidance Note RP GN011 "<i>Management of Uranium/Thorium and their compounds</i>".</p>
11	<p><i>Radioactive substance activities where the total activity does not exceed Schedule 9 table 2 column 3 values.</i></p>	<p>This GBR is essentially a replacement of the old 'Exempt' quantities in the RS Exemption Order. The University manages most of its radioactive substances under its Permits.</p> <p>Further guidance to those wishing to dispose of radioactive waste under this GBR is given in Radiation Protection Code of Practice RP CoP009 "<i>The Disposal of Radioactive Waste</i>".</p>



5.1 Radioactive Substances Common Rules

Each of the GBRs have their own specific conditions which are outlined in Schedule 9 of the EASR. However, Radioactive Substances 'common rules' apply to ALL of the GBRs and how the University complies with these 'common rules' is outlined in Table A2 below.

Table A2: Radioactive Substances Common Rules

No.	Radioactive Substances Common Rule	Further Guidance
a)	<i>A radioactive substance must be managed in a manner which prevents the reckless or accidental dispersal of radionuclides and, in the case of a sealed source, which prevents any dispersal of radionuclides.</i>	See B.4.1 in Table A3 of Appendix 2 for further guidance on compliance with this common rule.
b)	<i>A radioactive substance must be managed safely and securely to minimise the risk of:</i> <i>i. Unauthorised or accidental use;</i> <i>ii. Loss; and,</i> <i>iii. Theft.</i>	See B.4.3 in Table A3 of Appendix 2 for further guidance on compliance with this common rule.
c)	<i>Records of a radioactive substances must be kept:</i> <i>i. From receipt of a radioactive substance until at least 2 years after the date of its transfer or disposal;</i> <i>ii. Which include, as a minimum, a description of each source, article or radioactive substance, the location of where it is normally kept or used, details of any transfer and details of any disposal;</i>	See A.4 in Table A3 of Appendix 2 for further guidance on compliance with this common rule.



No.	Radioactive Substances Common Rule	Further Guidance
d)	<i>Where practicable, a radioactive substance must be marked or labelled as radioactive but any labelling or marking must be removed before it is disposed of in normal refuse.</i>	See B.4.5 in Table A3 of Appendix 2 for further guidance on compliance with this common rule.
e)	<i>[abridged version of common rule] SEPA must be promptly notified of a loss or theft (or a suspected loss or theft) of a radioactive substance where the amount lost exceeds the value that is ten times the value in Column 3 of Table 2 (of Schedule 9 in the EA(S)R regulations).</i>	See A.9.1 in Table A3 of Appendix 2 for further guidance on compliance with this common rule. The University RPA will decide, based on their knowledge of the incident, whether the loss/theft, or suspected loss/theft, of the radioactive substance is in excess of the values that require reporting to the SEPA under the Common Rule. The University RPA is responsible for notifying the SEPA in this regard.
f)	<i>A radioactive substance must not be transferred to a person who is not legally entitled to manage it.</i>	See C.1.1 in Table A3 of Appendix 2 for further guidance on compliance with this common rule.
g)	<i>A radioactive substance must be transferred or disposed of as soon as practicable after it becomes waste.</i>	See B.7.3 in Table A3 of Appendix 2 for further guidance on compliance with this common rule.



6 Appendix 2 – EASR Permit Compliance ‘road-map’

The University’s management arrangements for demonstrating compliance with its authorisations under EASR cover a number of documents, forms, templates etc. Table A4 below lists all the Standard Conditions and how the University specifically complies with each condition, or signposts to existing procedures, in a ‘compliance matrix’ style format.

Table A3: EASR Standard Conditions compliance matrix

Standard Condition Ref.	Standard Condition wording	How the University complies
A.	ALL AUTHORISED ACTIVITIES	
A.1	Resources	
A.1.1	<i>You must have adequate financial and human resources to ensure compliance with your authorisation.</i>	<p>Every year the University publishes its annual report and accounts. This usually occurs in the August of each calendar year and covers the period 1st August to 31st July. A copy of the annual accounts can be found at the link here: https://www.ed.ac.uk/finance/accounts</p> <p>The University Radiation Protection Unit provides guidance and advice to all staff and students on work with ionising and non-ionising radiation. The minimum staffing resource of the RPU to adequately manage its authorisations is:</p> <ul style="list-style-type: none"> • The University RPA (who also acts as the University Radioactive Waste Advisor) • One other member of RPU staff such as a deputy RPA, Assistant RPA or H&S Technician <p>The University is in a strong position to adequately manage its authorisations under EASR.</p>



Standard Condition Ref.	Standard Condition wording	How the University complies
		<p>In each school using ionising radiations, one or more Radiation Protection Supervisors (RPSs) are appointed to supervise the arrangements set out in the Local Rules. The RPSs manage the arrangements for compliance with the limits and conditions of any SEPA authorisations as they apply to their area.</p>
A.2	Management Arrangements	
A.2.1	<p><i>You must have and maintain a management system to ensure compliance with your authorisation.</i></p>	<p>The University Radiation Protection Unit (RPU) sits within the Health and Safety Department of the University. The University's Health and Safety Policy is issued upon the authority of the University Court and is published in two documents – the University Health and Safety Policy and a Framework document (which is further sub-divided into two parts – Organisation and Arrangements).</p> <p>The Policy documents refer out to various Codes of Practice which provide guidance to staff and students on the University's radiation protection arrangements. In addition, the Codes of Practice are supported by Guidance Notes, Information Sheets, template forms, Local Rules, Checklists, etc. to ensure compliance with the relevant legislation.</p>
A.2.2	<p><i>You must regularly carry out a review of your management system and its effectiveness in terms of achieving compliance with your authorisation.</i></p>	<p>Codes of Practice are regularly reviewed, every 2-3 years, to ensure they remain effective and current for the information to which they relate. Guidance Notes, Information Sheets, template forms, etc. are generally only reviewed where there is a significant change required.</p> <p>Local Rules, which generally contain local-level detail on the keeping, use and disposal of radioactive substances, are reviewed every 2-3 years by the RPS.</p>



Standard Condition Ref.	Standard Condition wording	How the University complies
A.3	Written Procedures	
A.3.1	<i>You must have, implement and maintain written procedures to ensure compliance with your authorisation.</i>	<p>This Code of Practice, RP CoP012 “<i>The University’s Organisation and Arrangements for Compliance with its authorisations under the Environmental Authorisations (Scotland) Regulations 2018</i>”, provides a summary of the University’s written procedures for ensuring compliance with its various authorisations.</p> <p>Appendix 2 serves as a compliance matrix/‘road-map’ to demonstrate how the University complies with the various Standard Conditions.</p>
A.4	Record keeping	
A.4.1	<i>You must make, as soon as reasonably practicable, true, accurate and legible records that ensure and demonstrate compliance with the requirements of your authorisation.</i>	<p>SEPA does not specify which records need to be kept just that ‘<i>all records that you need to be able to comply with your authorisation</i>’ must be kept. The list below outlines the records the University keeps to ensure compliance with its authorisations:</p> <ul style="list-style-type: none"> • Closed Source record sheets • Source accountancy record sheets • Usage and disposal sheets • RETAIN Online recording system • Monthly Returns • Personal and Area Contamination Monitoring records • Training records • Maintenance and annual survey records



Standard Condition Ref.	Standard Condition wording	How the University complies
		<ul style="list-style-type: none"> • Leak test records • Instrument test certificates • Transfers (to waste contractor or other persons) • Waste Disposal Log and Consignment Declaration • Confirmation of incineration/disposal records • Decommissioning certificates • HASS Record Forms • Audit reports <p>Compliance with this condition also ensures that the University complies with the relevant radioactive substance Common Rule 3(c) that applies to all radioactive substances.</p>
A.4.2	<p><i>You must keep sufficient records as long as necessary to ensure and demonstrate compliance with your authorisation.</i></p>	<p>Again, EASR and the SEPA do not set any restrictions on the length of time a particular record must be kept. In practice, departments kept records relating to certificates of registration and authorisation under the old Radioactive Substances Act 1993 (as amended) for a minimum of 5 years.</p> <p>The University does not see any need to deviate from this retention schedule and will therefore retain any records relating to A.4.1 for at least 5 years (exceptions below):</p> <ul style="list-style-type: none"> • Transfer records are kept for at least 2 years from the date of transfer; • Leak test records are kept for 2 years (i.e. until a new test is carried out); • Decommissioning certificates are kept indefinitely;



Standard Condition Ref.	Standard Condition wording	How the University complies
		Compliance with this condition also ensures that the University complies with the relevant radioactive substance Common Rule 3(c) that applies to all radioactive substances.
A.4.3	<p><i>Your records must include the required records specified in Schedule 1 of these standard conditions.</i></p>	<p><i>Registrations and Permits involving radioactive material in the form of sealed or unsealed sources:</i></p> <ul style="list-style-type: none"> • RP CoP005 “<i>Radioactive Source Accounting</i>” provides guidance on accounting for sealed/closed sources used at the University. This includes: <ul style="list-style-type: none"> ○ The ‘Closed Sources Record Form’ which ensures such information at the date of receipt, activity received, name and description of the radioactive substance is recorded. The form also allows for information relating to the transfer of the substance to be recorded; such as the date of transfer and the name and address of that person. ○ Guidance on source accounting to check the whereabouts of sources being stored in a particular area. This has the advantage of acting as an inventory record of all the sealed/closed sources stored in the area. • Logbooks are kept locally to ensure that sources being removed from their normal storage place are recorded as being ‘taken out’ and returned; i.e. recording their use. • For unsealed sources, an inventory record is kept: <ul style="list-style-type: none"> ○ In paper form on usage and disposal sheets in each laboratory using unsealed radioactive substances; OR ○ In electronic form via the RETAIN Online recording system



Standard Condition Ref.	Standard Condition wording	How the University complies
		<p><i>Registrations and Permits involving mobile radioactive sources:</i></p> <ul style="list-style-type: none"> • Not Applicable to the University's work. <p><i>Registrations and Permits involving the transfer of radioactive substances to another person:</i></p> <ul style="list-style-type: none"> • The University's Waste Disposal Log and Consignment Declaration is sent to the University's normal waste contractor ahead of any waste uplift. This contains all the information as required by Schedule 1. • For other transfers, for example one-off transfers, the University checks the person is legally entitled to manage the waste before sending them the required information. Usually this is on a standard template provided by the other waste company. The University RPA notifies the SEPA at least 28 days in advance of transferring waste to a person for the first time. <p><i>Permit involving a high-activity sealed source (HASS):</i></p> <ul style="list-style-type: none"> • Up to date HASS record forms are kept electronically by the University RPU and the University RPU is responsible for informing the SEPA of any changes as per Schedule 2.



Standard Condition Ref.	Standard Condition wording	How the University complies
A.5	Provision of training and information to staff	
A.5.1	<i>You must ensure that anyone carrying out duties that may affect compliance with your authorisation is suitably trained and experienced.</i>	The University RPU provides basic training on radiation safety, including radioactive substances, to all radiation workers. Radiation workers submit Proposed Schemes of Work before carrying out work with radiation or radioactive substances. RPSs signing those forms check that radiation workers have attended a basic radiation protection training course before approval.
A.5.2	<i>You must ensure that anyone carrying out duties that may affect compliance with your authorisation has access to a copy of your authorisation and all relevant procedures and records that are necessary to ensure compliance with your authorisation.</i>	The University places a copy of the University's Permits on a secure area of its website. This ensures all staff and students working with radioactive substances that carry out duties which could affect compliance with the Permits can refer to them. Where there are security concerns, for example for HASS sources, certain parts of the Permit may be redacted (for example the radionuclide and activity) before being placed on the web. It is assumed that the redacted information does not affect compliance with this condition.
A.6	Facilities and equipment	
A.6.1	<i>You must provide suitable facilities and equipment that are necessary to ensure compliance with your authorisation.</i>	Open sources of radioactive material are only used in laboratories and other areas that are suitable for such work. These laboratories and other areas are constructed and equipped in line with the requirements of RP CoP014 " <i>The Design of Radiochemical Laboratories</i> " which takes into account the construction of floors, ceilings, walls, benchtops, waste sinks, hand



Standard Condition Ref.	Standard Condition wording	How the University complies
		<p>basins, pipework, waste stores, etc. Areas may also follow 'best practice' guidance for the design of clinical areas.</p> <p>Those working with open sources of radioactive substances, such as aqueous based liquids, have access to one or more sinks that are designated for the disposal of waste. Each sink is marked to indicate its designation and drain pipes are marked, up to the point where they meet the main flow, to indicate the potential presence of radioactivity.</p>
A.6.2	<p><i>You must have and comply with appropriate arrangements for the acceptance into service of all facilities and equipment that are necessary to ensure compliance with your authorisation.</i></p>	<p>New or significantly refurbished radiation laboratories are signed off by the Estates Department of the University. The University RPU is normally contacted to carry out a visit of the area to ensure it is fit for purpose. Larger facilities, such as the Cyclotron facility, are subject to a critical examination by an external contractor with input from the University RPA.</p> <p>Contamination monitoring instruments, and other equipment containing closed-sources, are checked by the manufacturer prior to first use.</p>
A.6.3	<p><i>You must ensure that all facilities and equipment provided to ensure compliance with your authorisation are:</i></p> <p><i>a) Maintained in good repair;</i> <i>b) Regularly calibrated (where calibration is required);</i></p>	<p>The maintenance of laboratory facilities, stores, spill kits, closed-source equipment is the responsibility of the research group or school; i.e. at local level. Routine and breakdown maintenance is normally undertaken, the need being identified by the research group and normally carried out by the Estates Department on their behalf.</p> <p>Preventative maintenance is carried out by the Estates Department on fume cupboards and hoods by the use of annual air flow measurement; records are kept of these checks.</p>



Standard Condition Ref.	Standard Condition wording	How the University complies
	<p>c) <i>Checked to ensure they are serviceable and effective; and</i> d) <i>Being correctly used.</i></p>	<p>Preventative maintenance of closed source equipment, such as Liquid Scintillation Counters, Gas Chromatographs and Irradiators, is arranged by the research group, institute or School and normally involves the equipment manufacturer or approved service agent. In addition, the University RPU carries out an annual survey of irradiators to check, amongst other things, the function of any interlocks, external dose rates and equipment log book(s).</p> <p>Preventative maintenance of the Stack Monitor and associated equipment is arranged by the research group and involves an annual calibration by the equipment manufacturer or approved service agent.</p> <p>Security alarm systems, such as those required for high activity sealed sources, are checked regularly by Schools to ensure they remain effective and are subject to preventative maintenance by the installer as required.</p> <p>Portable radiation equipment is calibrated and subject to a periodic test by the RPU or, where this is not practicable, by an external tester (e.g. manufacturer or UKAS accredited test house). Tests are carried out in line with NPL GPG14 and test Certificates are issued to RPSs in charge of the area.</p>
A.7	Sampling, measurements, tests, surveys & calculations	
A.7.1	<i>You must take samples and conduct measurements, tests, surveys, analyses and calculations as</i>	Where possible, direct monitoring of surfaces and areas is carried out on a regular basis to ensure that contamination is not arising and being spread from areas using radioactive



Standard Condition Ref.	Standard Condition wording	How the University complies
	<p><i>necessary in order to determine compliance with your authorisation.</i></p>	<p>substances. Where direct monitoring is not possible, for example work with Tritium or high background areas, indirect monitoring is carried out.</p> <p>Further guidance on contamination monitoring and on working with unsealed radioactive material is given to staff and students in Codes of Practice RP CoP003 “<i>contamination monitoring</i>” and RP CoP006 “<i>working with unsealed radioactive material</i>”.</p> <p>Leak tests are carried out on the University’s closed and electrodeposited sources on a bi-annual basis in line with IRR17 28(3). In some cases, the leak tests are carried out as part of the manufacturer’s annual service/maintenance (e.g. irradiators).</p> <p>Surveys of the University’s irradiators are carried out, usually annually, to ensure the interlocks and alarms are working as expected and that no elevated radiation levels are present.</p> <p>The Stack Monitor at the University’s Edinburgh Imaging Facility measures the positrons being emitted from the facility as well as the flow rate to determine the gaseous radioactivity released from the facility. Other measurements, tests, samples etc. are discussed in the site’s Best Practicable Means (BPM) document which is reviewed regularly.</p> <p>Laboratories and other areas that have used radioactive substances are subject to a decommissioning protocol when they cease being used for radioactive purposes. Surveys, measurements and samples are taken to confirm that the area is free of contamination above the minimum detectable activities of the measuring instruments used. Further information on</p>



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		<p>the University's decommissioning protocol can be found in RP CoP002 "<i>Decommissioning of Laboratories used for unsealed radioactive work</i>".</p>
A.7.2	<p><i>You must use the best practicable means when taking samples or conducting measurements, tests, surveys and calculations.</i></p>	<p>In the vast majority of cases, the University carries out direct monitoring of surfaces, using suitable instrumentation, to check that contamination is not arising and being spread. Where this is not practicable, for example for Tritium work and where there are high backgrounds, indirect monitoring is carried out. This is a long-standing method of detecting contamination on surfaces and is considered BPM. Further details on contamination monitoring is provided to users in Radiation Protection Code of Practice RP CoP003 "<i>Contamination monitoring procedures in research laboratories</i>".</p> <p>Leak tests on sealed and closed sources follow the requirements of ISO9978:2020. Further information on the University's Leak Testing procedure is given in Radiation Protection Code of Practice RP CoP020 "<i>Working with Sealed Sources</i>".</p> <p>Those working with radioactive substances in experiments/procedures also carry out a waste fraction determination that relates to their experiment or procedure. This ensures that an assessment of the activity disposed to each waste route is carried out.</p> <p>Various samples, measurements, tests, etc. are carried out at the University's cyclotron facility to ensure compliance with the Permit is maintained and that BPM is adopted. Further information can be found in the site-specific BPM for the facility.</p>



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A.8	Provision of information and data returns	
A.8.1	<p><i>You must provide SEPA with the required information specified in Schedule 2 of these standard conditions within the specified timescales.</i></p>	<p><i>Permits involving a high activity sealed source (HASS):</i></p> <ul style="list-style-type: none"> • The University RPA leads on providing information to the SEPA for any changes to HASS, such as new acquisitions and transfers. • None of the University's HASS are likely to cease being HASS until after 2150. <p><i>Permits involving sealed sources other than HASS:</i></p> <ul style="list-style-type: none"> • RPSs who manage Permits involving Sealed Sources are sent a questionnaire in early January each year asking them to fill in a questionnaire on any Category 2, 3 or 4 sealed sources they may hold. • The University RPU collates the information and sends the SEPA an end of calendar year inventory using the SEPA template at the link below; this ensures the required information from Schedule 2 is included: • https://www.sepa.org.uk/environment/environmental-data/submit-data/ • The University RPA ensures this information is sent by the 28th February each year. <p><i>Permits for non-nuclear sites:</i></p> <ul style="list-style-type: none"> • The University RPU collates the University's monthly waste summaries and submits the gaseous waste disposals and sewer waste disposals for all sites via the Scottish Pollutant Release Inventory (SPRI) system; • Radioactive waste transfers are submitted to the SEPA via the SEPA template at the link below; this ensures the required information from Schedule 2 is included:



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		<ul style="list-style-type: none"> • https://www.sepa.org.uk/environment/environmental-data/submit-data/ • The University RPA ensures this information is sent by the 28th February each year.
A.9	Contraventions of your authorisation	
A.9.1	<p><i>If you believe that a requirement of your authorisation is being, has been, or might be contravened, you must inform SEPA by telephone without delay.</i></p>	<p>All use of radioactive substances are covered by Local Rules which include contingency arrangements that might occur and emergency contact details for the area RPS and also the University RPA (including mobile numbers).</p> <p>The University RPA, and other members of the RPU in their absence, are responsible for informing the SEPA of any contraventions, or potential contraventions, of authorisations issued to the University. The University RPA makes an initial assessment as to whether the incident is a contravention, or potential contravention, of any authorisation issued to the University and whether it is minor in nature. Where required, the University informs the relevant SEPA inspector for the site and/or SEPA's pollution hotline:</p> <p style="text-align: center;">Tel: 0800 80 70 60</p> <p>Compliance with this condition also ensures that the University complies with the relevant radioactive substance Common Rule 3(e) that applies to all radioactive substances.</p>



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A.9.2	<p><i>Where you have informed SEPA that you have contravened your authorisation, you must:</i></p> <p>a) <i>Confirm the information given in the telephone notification in writing by the next working day after the verbal notification;</i></p> <p>b) <i>Carry out an investigation into the circumstances to identify any necessary corrective measures to avoid such events in the future;</i></p> <p>c) <i>Record the results of your investigation;</i></p> <p>d) <i>Ensure that any corrective measures are carried out as soon as reasonably practicable; and</i></p> <p>e) <i>Send a summary of your investigation to SEPA as soon as reasonably practicable.</i></p>	<p>The University RPA, or deputy in his/her absence, is responsible for following up any verbal notifications to the SEPA; this will normally be via email to the email address below and copied to the SEPA inspector for the site:</p> <p>RSNotifications@sepa.org.uk</p> <p>The confirmation in writing will include:</p> <ul style="list-style-type: none"> • A summary of the investigation into the incident; • What corrective measures are required to reduce the likelihood of the event occurring in the future; • An indication of the length of time expected to implement the corrective measures; • The absence of personal details, if possible, to allow the report to be included on the public register if required; and, • Potential dose implications to members of the public or other critical groups.



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A.10	Ceasing your authorised activity and leaving the authorised place	
A.10.1	<p><i>You must inform SEPA of the following circumstances by providing the information set out in the relevant section of Schedule 3 of these standard conditions within the specified timescales:</i></p> <p>a) <i>If you vacate the authorised place, or in the case of mobile radioactive sources, vacate the place where they are normally kept; or</i></p> <p>b) <i>You cease to carry on the authorised activities.</i></p>	<p>The vacation of premises, or long-term cessation of use of waste stores, is notified to the RPU by the relevant building manager(s) or RPSs. The University RPA arranges any necessary notification to the SEPA.</p> <p>All laboratories that have been used for the storage or manipulation of open sources of radioactive material undergo a decommissioning procedure outlined in RP CoP002 “<i>Decommissioning of Laboratories used for unsealed radioactive work</i>”.</p> <p>Where it is expected that no further work with radioactive substances is to take place, a comprehensive contamination monitoring survey is undertaken or arranged by the RPU in accordance with a specific Decommissioning Plan prepared by the RPU. The Decommissioning Plan includes a check that no further radioactive material or waste is left on the premises. After the decommissioning survey, provided that no residual contamination or radioactive material is found, a Decommissioning Certificate is issued by the RPU which includes:</p> <ul style="list-style-type: none"> • When the site is being vacated or stopping radioactive work; and • What has been done with the radioactive substances used by the site.



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B.	ALL RADIOACTIVE SUBSTANCES AUTHORISED ACTIVITIES	
B.1	Overarching requirement	
B.1.1	<p><i>You must carry out the authorised radioactive substances activities in a manner that achieves and maintains an optimal level of protection of the environment and the public.</i></p>	<p>The amount of radioactive waste generated by the University is largely dependent on the nature of the research work being undertaken at any particular time. This is, in turn, dependent on a number of factors including funding, direction of academic research, number of researchers, etc.</p> <p>Staff are given information and instruction in their training on the application of Best Practicable Means (BPM) when working with radioactive substances. Primarily this is to:</p> <ul style="list-style-type: none"> • Ensure no unnecessary radioactive waste is generated as a result of their work; and • To minimise the volume of, and activity of, any waste requiring transfer/disposal to the environment. <p>A number of things are done by researchers to achieve BPM during their work and a non-exhaustive list is provided below:</p> <ul style="list-style-type: none"> • Encouraging the use of non-radioactive techniques and asking researchers to 'justify' why they need to use radioactive substances; • Encouraging the use of less hazardous radioactive substances where possible (e.g. use of P-33 instead of P-32 if possible); • Encouraging researchers to check quantities of radioactive substances already within their schools on RETAIN and to use existing material where possible;



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		<ul style="list-style-type: none"> • To only order the quantity of radioactive substances they need to carry out their work; • To only use radioactive substances in properly designated areas and encourage the use of local and secondary containment (e.g. spill trays, benchkote, etc); • Use of designated storage areas for radioactive wastes (e.g. not keeping wastes in laboratory working areas); • Regular discussions and inspections with the area radiation protection supervisor; • Regular monitoring of areas and personnel for contamination; • Decay storing wastes with half-lives of less than 90 days to take advantage of radioactive decay; • Containing of solid radioactive waste in sealed containers and the like and transferring to a waste contractor for incineration in line with the dilute and disperse model; • Immediate disposal of aqueous-based radioactive wastes to ensure liquid waste is not being stored that could cause contamination to arise and be spread from the area; • Monitoring of wastes/items leaving the working area. <p>Further guidance on working procedures to minimise the risk and extent of contamination is given to University users via Radiation Protection Code of Practice RP CoP006 "<i>Working with unsealed radioactive material</i>".</p> <p>In some areas, for example the work carried out at the Cyclotron Facility, a separate BPM document is provided to address specific BPM arrangements at a more local level.</p>



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B.2	Radioactive waste optimisation	
B.2.1	<i>You must use the best practicable means to ensure that no unnecessary radioactive waste is generated.</i>	See B.1.1 above.
B.2.2	<i>You must optimise your approach to the management of radioactive waste taking account of all waste streams and disposals expected from current and future operations.</i>	<p>The University's use of radioactive substances and sealed sources is fairly standard and typical for a large University establishment. Aqueous-based liquid wastes are disposed to sewer and solid wastes are transferred to a waste contractor prior to their incineration. Both methods follow the dilute and disperse model for radioactive waste disposal. The University RPA keeps up to date with sector best-practice and would take the lead on any changes to the University's waste management.</p> <p>In some cases, where radioactive and hazardous wastes are generated within in the same matrix, the radioactive and the hazardous elements of the waste are separated to allow them to be disposed of to the route they would have normally gone to (for example, depleted uranium mixed with mercury).</p> <p>A separate BPM for the cyclotron facility considers all the waste streams disposed of from the facility; including any wastes which might arise at the end of the facility's life.</p>



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B.3	Receipt of radioactive waste	
B.3.1	<i>You may only receive radioactive waste that is described in your authorisation.</i>	<p>The University is not authorised to receive radioactive waste under any of its Permits (except as where mentioned below).</p> <p>The University's Permit for its Easter Bush Campus permits the introduction of radioactive material into organisms; this includes the Scintigraphy of equine patients using Tc-99m and the Hyperthyroidism treatment of feline patients using I-131. In practice, only feline patients leave the authorised place with radioactive material still within them but this waste is not returned to the University (the waste disposed of off the site, at the clients premises, is included in the University's waste disposal calculations).</p>
B.4	Safe management of radioactive substances	
B.4.1	<i>You must manage radioactive substances in a manner that prevents the unauthorised or reckless dispersal of radionuclides and, in the case of a sealed source, which prevents any dispersal of radionuclides.</i>	<p>For unsealed sources this includes consideration of:</p> <ul style="list-style-type: none"> • It's physical state, e.g. solid, liquid or gas and how the substance is stored to minimise the risk of dispersal in an accident; • Other non-radioactive properties and how they might affect dispersal; • The immediate holder containing the substance; • Where the substances are held and consideration of anything hazardous being stored in the vicinity; • Signage and labelling to indicate its presence.



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		<p>The above considerations are not an exhaustive list and procedural measures to prevent reckless or accidental dispersal are normally covered in the Local Rules for the area.</p> <p>For sealed sources, the demonstration that the radionuclide(s) have not been dispersed is usually by way of a periodic wipe test. RPSs responsible for Sealed Sources ensure that leak tests for their sources are up to date and a leak test certificate is available.</p> <p>Compliance with this condition also ensures that the University complies with the relevant radioactive substance Common Rule 3(a) that applies to all radioactive substances.</p>
B.4.2	<p><i>Unless your authorisation allows otherwise, you must not release radioactive materials into the environment or introduce radioactive materials into organisms that will leave the authorised place whilst containing that substance.</i></p>	<p>Only the University's Permit at its Easter Bush Campus allows radioactive material to be introduced into organisms that leave the authorised place. This relates to the Tc-99m Scintigraphy and I-131 Hyperthyroidism services.</p> <p>In principle, the University's work with radioactive substances generates radioactive waste which require disposal to well-established waste routes. The only immediate releases to the environment are to air and to the sewer system. All of the University's Permits allow disposal to sewer and where gaseous disposals are expected, the University's Permits include an allowance for their release.</p>
B.4.3	<p><i>You must manage radioactive substances safely and securely to prevent unauthorised use, loss and theft.</i></p>	<p>The University takes measures to ensure radioactive substances are held safely and securely. When not in use, open sources of radioactive substances (other than waste) are kept in stores, refrigerators or freezers within secure laboratories or other rooms within secure buildings. Sealed or Closed Sources of radioactive material are kept, when not in use, in</p>



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		<p>robust and secure storage containers, or are used in-situ in secure equipment. These areas are marked to indicate to persons the presence of radioactive material.</p> <p>Physical security of rooms or labs where radioactive substance stores are kept is provided through a combination of key locks, digi-locks and swipe-card access which are only made available to authorised persons.</p> <p>In cases where high activity sealed sources are kept, there are electronic security measures to prevent access to unauthorised persons. These systems detect unauthorised entry and an alarm response is provided by the University's security team. High activity sealed sources are also subject to an annual CTSA visit to ensure the University is managing its HASS safely and securely to prevent unauthorised use, loss and theft.</p> <p>Arrangements for the receipt of radioactive material onto the premises are included in Local Rules along with any measures that persons need to take in the event of any loss/theft or suspected loss/theft.</p> <p>All staff who are expecting to work with radioactive substances are given training by the University. The course includes instruction on the requirements of EASR explaining the importance of the managing radioactive substances safely and securely.</p> <p>Compliance with this condition also ensures that the University complies with the relevant radioactive substance Common Rule 3(b) that applies to all radioactive substances.</p>



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B.4.4	<p><i>You must regularly verify that radioactive substances and, where relevant, the equipment or containers holding radioactive substances are still present and in good repair.</i></p>	<p>Each container of unsealed radioactive is assigned a unique identifier on arrival and either a paper 'usage and disposal' sheet is started for that container OR an entry is made into the University's online recording system, RETAIN. The Usage and disposal sheet is kept in the lab where the radioactive substances are held with the data for RETAIN being kept backed up on the University's servers.</p> <p>Open sources of radioactive material are 'consumable' such that verification of their continued presence varies over the life of its use. When an amount of radioactive material is used, details of activity, date and user are entered by the user on the relevant Usage and Disposal Sheet or on the RETAIN system. Any container containing useful parts of that material are identified by the user so that the appropriate original radioactive material is identifiable. If the material is manipulated to create new usable material, then the user allocates a new identifier and starts a new Usage and Disposal Sheet or makes a new record in RETAIN. A record is made in the initial (parent) Usage and Disposal Sheet or on RETAIN to cross-reference this new material (daughter).</p> <p>Radiation Protection Code of Practice RP CoP010 "<i>Accounting Procedures for Unsealed Radioactive Material</i>" provides further guidance to the University community.</p> <p>Similar to open sources, a record is kept of any closed or sealed sources arriving at the University with the details of the source, its unique identifier, arrival date, etc. In addition to this, the whereabouts of sealed/closed sources is checked at regular intervals. The frequency of checks depends upon the likely movement of the source, its potential for being displaced and its susceptibility to damage. For example, sealed sources used away from their storage</p>



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		<p>location (e.g. used in experiments) may be checked daily whereas sealed sources which are rarely used or difficult to move (such as HASS) may be checked monthly.</p> <p>It is not always possible to physically observe the radioactive source, and indeed would not be ALARP with higher activity sources. Low activity sources, such as test sources, are physically viewed, however this may not be possible for sources fixed within apparatus. Their presence is normally inferred by some indirect means, for example, a check that the equipment is working or a check using a radiation monitor to detect the source. Regular leak testing of the University's sealed sources ensures they remain in good repair.</p> <p>The University keeps records of its source verification checks to demonstrate compliance with this condition. Further details related to the University's accounting procedures for sealed/closed sources is given in RP CoP005 "<i>Radioactive Source Accounting</i>".</p>
B.4.5	<p><i>Where reasonably practicable, you must ensure that radioactive substances or their immediate containers are adequately and legibly marked or labelled to indicate their radioactive content.</i></p>	<p>All source containers containing radioactive substances are labelled to indicate the presence of radioactive material (trefoil) and marked, where practicable, with a unique identifier.</p> <p>In the case of open sources of radioactive material, the initial source container is allocated a unique identifier on arrival and marked to indicate the presence of radioactive material. Once the container is used, any new article/sample containing radioactive material is also labelled and marked. However, in certain cases this may not be practicable, for example due to the article/sample's physical size or shape, and the device/container holding the article/sample may be labelled and/or marked instead.</p>



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		<p>In the case of Controlled or Supervised Area laboratories where open sources of radioactive material are held, not every item/article that may be potentially contaminated is labelled or marked in the area. Instead, a sign on the door indicating the presence of radioactive material is shown.</p> <p>An article containing radioactive material, or the holder where there are several, is labelled to ensure that the material is uniquely identified and traceable to its original source container. In certain cases, the label may refer to many articles in the same holder, each containing the same type and amount of material.</p> <p>Compliance with this condition also ensures that the University complies with the relevant radioactive substance Common Rule 3(d) that applies to all radioactive substances.</p>
B.5	Contamination control and remediation	
B.5.1	<p><i>If you believe that a leak, spill or unauthorised dispersal of radioactive substances has occurred, you must immediately take all reasonably practicable measures to prevent or restrict any further dispersal.</i></p>	<p>In most cases, the University's work with radioactive substances involves radioactive material in small volumes. Working procedures for unsealed radioactive material ensures lab-based practices are carried out on spill trays designed to capture spills such that prevent further dispersal. As typical working volumes are low, not all areas have 'spill kits' as the 'spill' can often be cleaned up using a small absorbent wipe/cloth.</p> <p>Local Rules contain emergency arrangements and spill procedures to provide information to staff on the actions to be taken in the event of a spill or release.</p>



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		<p>The University's basic radiation protection courses provide information, instruction and training to users on what to do in the event of a spill or release.</p> <p>In some cases, for example at the Cyclotron Facility, there may be a greater risk to staff in the working area from a release of a radioactive gas if steps are taken to prevent or restrict further release (e.g. release via the stack). Arrangements for these scenarios are discussed further in the site-specific BPM for the Cyclotron Facility.</p>
B.5.2	<p><i>If there is a leak, spill or unauthorised dispersal of radioactive substances, you must:</i></p> <p>a) <i>Use the best practicable means to remediate any radioactive contamination arising either on or off the authorised place; and</i></p> <p>b) <i>Carry out the remediation as soon as reasonably practicable.</i></p>	<p>In most cases, the University's work with unsealed radioactive substances is in liquid form. Such spillages would be cleaned up with an absorbent cloth and disposed of, following a period of decay if required, to the University's normal radioactive waste contractor. This is generally accepted as being BPM for dealing with a liquid spillage of low-activity material.</p> <p>In some cases, for example at the Cyclotron Facility or at the Vet School, where short half-life radioactive substances are used, it is often safer to allow the material to decay before cleaning up the area.</p> <p>Specific guidance is given to users in the relevant Local Rules.</p>
B.6	Treatment of radioactive waste	
B.6.1	<p><i>You must only treat radioactive waste where this represents the best practicable means for the management of the waste.</i></p>	<p>The Majority of the University's waste is disposed of without treatment. In some cases, for example at the Cyclotron Facility, radioactive substances are filtered and passed through ion</p>



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		<p>exchange columns, however, the substances are material at this point and not waste. Further information is given in the Facility's BPM document.</p> <p>For Uranium and Thorium (U&Th) disposals, there may be some treatment applied depending on the form of the waste and whether there are other hazardous properties associated with the waste. If some U&Th waste contains other hazardous properties then the U&Th may be separated from the other hazardous material to allow the U&Th to be disposed of under the EASR GBR, and the hazardous material to be disposed of to the route it would normally go to had it not been radioactive.</p> <p>Laboratories using U&Th may also carry out simple treatment of waste containing entrained solids of U&Th to separate the solid waste from the liquid to prevent the U&Th having to be disposed of to the sewer. The University deems that solid disposal of U&Th represents better BPM than aqueous disposal (given the differences in the GBR limits for each route).</p>
B.6.2	<p><i>You must not deliberately dilute radioactive substances in order to release them from regulatory control unless:</i></p> <ul style="list-style-type: none"> <i>a) The dilution takes place in normal operations where radioactivity is not a consideration; or</i> <i>b) The dilution is a result of mixing radioactive waste with</i> 	<p>The University does not dilute any of its waste disposals to release them from regulatory control.</p>



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	<i>nonradioactive material for the purposes of re-use or recycling that is authorised by your authorisation.</i>	
B.7	Holdings of radioactive substances	
B.7.1	<i>You must only hold the minimum quantity of radioactive material that is necessary to carry out your activity.</i>	<p>The choice of radionuclide, quantities and, in the case of open radioactive material, waste routes are considered by the user before the project proceeds, including any potential generation of airborne activity, and summarised in a Proposed Scheme of Work (PSoW) form. The user signs the form to confirm that they consider both the use of radioactive material and the quantity is justified, and, in the case of open radioactive material, that waste fraction estimates are available. The local RPS then confirms that the proposed experiment will not result in any Permit limits being exceeded and signs on the PSoW form to that effect. Before a project can proceed, the form is countersigned by a member of the University RPU.</p> <p>In the clinical setting, the quantity of radioactive material ordered is determined by veterinary or medical specialists who calculate the quantity required to carry out the necessary procedure.</p>
B.7.2	<i>You must ensure that the quantity of radioactive substances you hold does not exceed any limits set out in your authorisation.</i>	The University uses a variety of systems for ensuring that the quantity of radioactive substances held on the premises does not exceed the limits set out in any of the



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		<p>authorisations that apply to the University. The system for controlling the acquisition of radioactive substances falls roughly into two categories:</p> <ul style="list-style-type: none"> • For smaller departments who order less frequently, proposed acquisition is referred to a nominated person or persons. This person(s) checks the total activity of radioactive substances on the premises and only approves the purchase if the extra amount will not cause a breach of the authorised limits or subdivision; or, • For larger departments who order frequently, acquisition is referred to a purchasing department or stores team. The stores team check the current activity held on the premises against any authorised limit and approve the purchase if the activity held is significantly less than the authorised limit. Where the amount held is above a certain value, for example 70% of the limit, the purchase is referred to a responsible person for checking; usually the RPS. <p>Which of these two systems is used is recorded in the Local Rules for the area.</p> <p>In some areas, where radioactive substances are used on a number of floors and by a number of different departments, the University controls the total amount of radioactive substances held on the premises by sub-dividing authorisation limits and allocating these lower limits to the individual areas. The RPSs, users and purchasing teams therefore worked to these lower limits and this ensures that even if a local sub-division limit is exceeded, that an overall Permit or other authorisation limit isn't.</p>



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B.7.3	<i>You must transfer or dispose of radioactive waste as soon as reasonably practicable after it becomes waste.</i>	<p>In practice, the University disposes of aqueous liquid radioactive waste as soon as practicable and without storage for decay. It is considered that storing aqueous radioactive liquid waste on site would increase the risk to staff. It would also increase the risk of spillage and therefore could generate more radioactive waste than is necessary.</p> <p>Solid and non-aqueous liquid radioactive waste, containing radionuclides with a half-life of less than 90 days, is generally stored for a period to take advantage of decay. This storage is typically up to 6 months but may be longer in some cases. Solid and non-aqueous liquid waste transfers to the University's waste contractor are arranged several times per year and the waste is generally transferred at the next available uplift (unless further decay is deemed to be BPM).</p> <p>Longer term storage of waste may occur, for example some of the wastes generated at the Cyclotron Facility, where there is an advantage to the environment from this longer storage. This longer storage of waste is included in the BPM for the facility.</p> <p>Compliance with this condition also ensures that the University complies with the relevant radioactive substance Common Rule 3(g) that applies to all radioactive substances.</p>
B.8	Waste management plan	
B.8.1	<i>You must prepare, maintain and implement a management plan for waste arising from your activities involving radioactive substances and</i>	Radiation Protection RP CoP009 describes the University's arrangements for the management of its radioactive waste arising from its activities and acts as the Waste Management Plan.



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	<i>the decommissioning of associated facilities and equipment.</i>	RP CoP009 also discusses the likely waste that may arise from the decommissioning of the University's activities. Note, the Cyclotron Facility BPM discusses specific decommissioning arrangements for that facility.
B.9	Lost and stolen radioactive substances	
B.9.1	<p><i>If you believe that any radioactive substances have been lost or stolen, you must:</i></p> <ul style="list-style-type: none"> <i>a) Immediately verify if this is the case;</i> <i>b) Take all reasonably practicable measures to recover them; and</i> <i>c) Inform the relevant police force and SEPA by telephone without delay.</i> 	<p>All of the Local Rules covering the University's use of radioactive substances includes contingency measures for what to do in the event of a loss/theft, or suspected loss/theft, of a radioactive substance.</p> <p>Any loss/theft of a radioactive substance, including waste, is likely to initially be identified by the radiation users. Users are instructed to inform the RPS and the RPU without delay. The University RPA, or deputy in his/her absence, arranges any necessary notification to the SEPA and to the Police. Arrangements to contact the Police are done through the University's Security Department.</p>
B.10	Radioactive Waste Advisers	
B.10.1	<i>Except where your authorisation only relates to sealed sources, you must appoint, retain and consult with suitable Radioactive Waste Advisers to advise on compliance with your</i>	A member of the University Radiation Unit, usually the University RPA, acts as the appointed Radioactive Waste Advisor (RWA). A written letter of appointment from the Director of Health and Safety is held electronically on the RPU document management system.



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	<p><i>authorisation, including but not limited to:</i></p> <ul style="list-style-type: none"> <i>a) Achieving and maintaining an optimal level of protection of the environment and the population;</i> <i>b) Accepting into service adequate equipment and procedures for measuring or assessing exposure of members of the public and radioactive contamination of the environment;</i> <i>c) Checking the effectiveness and maintenance of equipment for measuring or assessing exposure of members of the public and radioactive contamination of the environment; and</i> <i>d) Ensuring the regular calibration of measuring instruments.</i> 	<p>This letter of appointment includes the measures mentioned in a) to d) in B.10.1 and includes other such duties as required.</p>
B.10.2	<p><i>You must appoint the Radioactive Waste Adviser in writing and include the scope of advice they are required to give.</i></p>	<p>See B.10.1 above.</p>



Standard Condition Ref.	Standard Condition wording	How the University complies
C.	TRANSFERS OF RADIOACTIVE SUBSTANCES	
C.1	Duty of care	
C.1.1	<i>You must only transfer radioactive substances to a person who is legally entitled to manage them.</i>	<p>The University's main transfer of radioactive substances is solid and non-aqueous liquid radioactive waste for disposal by incineration to its radioactive waste contractor. A contract between the University and the waste contractor is in place and the University has been sent a copy of their Environmental Permit (as issued by the Environment Agency). This ensures the contractor is legally entitled to receive the waste.</p> <p>For ad-hoc disposals, for example sealed sources to specialist waste contractors, the University ensures that the waste is fully described in any pre-contract information supplied to the specialist waste contractor. This allows them, and the University, to check that they are legally entitled to manage to the radioactive waste which the University is proposing to send them.</p> <p>Compliance with this condition also ensures that the University complies with the relevant radioactive substance Common Rule 3(f) that applies to all radioactive substances.</p>
C.2	Transfer procedure	
C.2.1	<i>Before transferring any radioactive substances to another person, you must:</i>	<p>The University's main transfer of radioactive substances is solid and non-aqueous liquid radioactive waste for disposal by incineration to its radioactive waste contractor. Waste uplift dates are arranged in advance with the waste contractor and they are provided with the following information at least 48 hours before the uplift:</p>



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	<p>a) <i>Give to that person a true and accurate description of that substance, and</i></p> <p>b) <i>Confirm that that person agrees to receive them.</i></p>	<ul style="list-style-type: none"> • A description of the waste (e.g. physical form); • Activity in the waste; • Radionuclides in the waste; • Volume of the waste. <p>The University RPU sends the information to the contractor by email and receives a confirmation that this has been received and that they have agreed to accept the waste as described.</p> <p>Other transfers may be made to other waste contractors, for example samples for analysis or transfers of other wastes. In these cases, the University RPU leads on any consultation with the proposed waste contractor to ensure that the waste to be transferred is fully described and that the contractor confirms they are happy to receive the waste/samples.</p>
C.2.2	<p><i>You must ensure that you receive a receipt from the person removing the radioactive substances from the authorised place.</i></p>	<p>The University's main transfer of radioactive substances is solid and non-aqueous liquid radioactive waste for disposal by incineration to its radioactive waste contractor. A Waste Consignment Note is prepared by the University RPU ahead of the uplift and completed during the waste collection. The waste consignment note is signed at the point of waste collection by the waste contractor and a copy is provided to the University as evidence of the waste being removed from the premises.</p>



Standard Condition Ref.	Standard Condition wording	How the University complies
		Ad-hoc waste transfers, for example sealed sources to specialist waste contractors, are normally arranged through the RPU. The University RPA therefore ensures that a receipt is received from the waste contractor when the waste is removed from the premises.
C.2.3	<i>As soon as reasonably practicable following transfer, you must obtain written confirmation from the person that the radioactive substances have been received.</i>	<p>The University's main transfer of radioactive substances is solid and non-aqueous liquid radioactive waste for disposal by incineration to its radioactive waste contractor. A confirmation of incineration is provided by the waste contractor which serves as evidence the waste has been received.</p> <p>Ad-hoc waste transfers, for example sealed sources to specialist waste contractors, are normally arranged through the RPU. The University RPA therefore ensures that confirmation of receipt and/or disposal is received from the waste contractor to provide evidence that the waste has been received.</p>
C.2.4	<p><i>Following transfer, you must ensure that the radioactive substances will be returned without delay to the authorised place if:</i></p> <ul style="list-style-type: none"> <i>a) They are not in accordance with the description that you have provided; or</i> <i>b) Cannot be delivered for any reason.</i> 	The University RPU has a good working relationship with the University's main radioactive waste contractor. The waste contractor has mobile, email and landline contact details for the University RPA should there be any issues with any radioactive substances transferred by the University. A member of the University RPU accompanies the waste contractor during scheduled uplifts to ensure that waste is consigned in accordance with the applicable transport legislation.



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		Ad-hoc transfers of radioactive substances normally involve the University RPA. In these cases, the contractor will have contact details of the University RPA to facilitate the return of any waste in the event of it not being accurately described or if it is unable to be delivered.
C.3	Transfer of radioactive waste	
C.3.1	<i>You must not transfer radioactive waste to any person unless the transfer represents the best practicable means for the management of that type of waste.</i>	<p>The University's main transfer of radioactive substances is solid and non-aqueous liquid radioactive waste for disposal by incineration to its radioactive waste contractor. Where possible, Solid and non-aqueous Liquid Waste is stored for decay on the University's premises to reduce the activity of the waste being transferred. Incineration of radioactive waste follows the dilute and disperse model for disposal of radioactive waste and is deemed to be BPM for this type of low activity waste.</p> <p>The University may also transfer disused HASS sources back to the manufacturer. In this case, the sources can be re-used and recycled by the manufacturer and this obviously represents the BPM for the environment.</p>
C.3.2	<i>You must inform SEPA in advance if you intend to transfer radioactive waste to a person to whom you have not previously sent radioactive waste by providing the information within the specified timescales set out in the</i>	<p>The University's main radioactive waste contractor has been in place since 2015 and notice was given to SEPA at this time prior to the first disposal. The University regularly updates its contracts for waste disposal and the University RPA ensures that the following information is sent to the SEPA at least 28 days prior to the first disposal:</p> <ul style="list-style-type: none"> • Name and address of person receiving the waste; • Type of waste to be transferred; • Evidence that the person is willing to accept the waste; and



Standard Condition Ref.	Standard Condition wording	How the University complies
	<p><i>relevant section of Schedule 3 of these standard conditions.</i></p>	<ul style="list-style-type: none"> Evidence that the person is legally entitled to accept the waste (e.g. that they have an environmental Permit issued by the relevant Environment Agency for the area). <p>Ad-hoc transfers for disposal may also be arranged by the University. In these cases, the University RPA is responsible for checking whether a notification is required to the SEPA or not. If a notification is required, the University RPA takes the lead on this.</p>
C.4	Transfer of radioactive waste outside of the United Kingdom	
C.4.1	<p><i>Except for sealed sources, you must not transfer radioactive waste to a person outside of the United Kingdom unless:</i></p> <p>a) <i>The transfer is carried out in accordance with an authorisation granted under the Transfrontier Shipment of Radioactive Waste Regulations;</i></p> <p>b) <i>The purposes of the transfer is treatment of the radioactive waste; and</i></p>	<p>The University does not expect to transfer radioactive waste, other than sealed sources, to persons outside of the UK for treatment or disposal.</p>



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	c) <i>Any waste following treatment is returned in accordance with Government Policy.</i>	
C.5	Transfer of intermediate level radioactive waste to other parts of the United Kingdom	
C.5.1	<p><i>You must not transfer intermediate level radioactive waste to a person in the UK outside Scotland unless:</i></p> <p>a) <i>The purpose of the transfer is treatment of the radioactive waste; and</i></p> <p>b) <i>Any intermediate level waste remaining following treatment is returned in accordance with Government Policy.</i></p>	The University does not have any wastes classed as Intermediate Level Wastes (ILW).
C.6	Return of radioactive waste	
C.6.1	<p>You must ensure that any waste that is required to be returned by your authorisation is:</p> <p>a) Returned to the authorised place; or</p>	None of the University's authorisations require any waste to be returned to the authorised place.



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	b) In the case of low level radioactive waste, taken to another person in the United Kingdom who is legally entitled to receive and manage that waste, or c) In the case of intermediate level radioactive waste, taken to another person in Scotland who is legally entitled to receive and manage that waste.	
C.6.2	<i>You must ensure that before any radioactive waste is returned, the radionuclide content and activities have been determined.</i>	Not Applicable to the University's authorisations.
C.6.3	<i>You must ensure that any radioactive waste returned:</i> a) <i>Only contains the radionuclides that were present at the time of transfer from the authorised place (except for those present as a result of radioactive decay); and</i>	Not Applicable to the University's authorisations.



Standard Condition Ref.	Standard Condition wording	How the University complies
	b) <i>Has an activity no greater than that at the time of transfer from the authorised place.</i>	
C.7	Transfer of samples	
C.7.1	<i>You must not transfer samples of radioactive substances unless the quantity sent is the minimum practicable necessary to carry out the planned tests.</i>	<p>In general, the University doesn't routinely transfer samples off of the authorised premises for radioactive analysis. If this is required, the University RPA is involved and ensures that only the minimum quantity necessary is sent.</p> <p>Some users working with Uranium and Thorium may transfer samples of radioactive substances to facilities outside the UK as part of their research. The mass of the sample, and therefore the quantity of U or Th in the sample, is assumed to be the minimum necessary to carry out the required research. A record of the transfer is recorded to ensure compliance with the UKs Nuclear Safeguards obligations.</p>
C.7.2	<i>On completion of testing, any remaining samples and waste arisings may be returned to the authorised place.</i>	<p>In the vast majority of cases, any samples sent for analysis are returned to the University for disposal. If this is not the case, the University RPA ensures that the SEPA are informed, at least 28 days ahead, of the intention to transfer radioactive waste to a person for the first time.</p> <p>Samples of U&Th used in facilities outside the UK are returned when the research is finished.</p>



Standard Condition Ref.	Standard Condition wording	How the University complies
D.	SEALED SOURCES	
D.1	Holdings of sealed sources	
D.1.1	<i>Unless your authorisation allows otherwise, you must ensure that the aggregate activity of all sealed sources that you hold, excluding any HASS, does not exceed IAEA category 3.</i>	<p>Schools and Colleges holding sealed sources keep their own inventories. In all cases, sealed sources held by the University, excluding HASS, are categorised by their A/D value as none of the 'practices' listed in the IAEA document are relevant to the University's use of sealed sources.</p> <p>The University RPU requests copies of individual schools and colleges sealed source inventories on an annual basis and checks that the aggregate sum of the A/D values does not exceed 1 (i.e. all sources are IAEA Category 4 or 5 unless HASS).</p>
D.2	Security requirements for sealed sources	
D.2.1	<i>You must have and implement security measures in accordance with the document "Security Requirements for Radioactive Sources", dated 2011.</i>	<p>The National Counter Terrorism Security Office (NaCTSO) "<i>Security Requirements for Radioactive Sources</i>" document only applies to sealed sources in IAEA Categories 1-4. The University's unsealed sources therefore do not apply.</p> <p>The majority of the University's sealed sources are IAEA Category 5 sealed sources and therefore also do not apply. The University follows the security requirements as laid out in IRR17 for its IAEA Category 5 Sealed Sources; as shown in D.2.2 below.</p> <p>The University's sealed sources covered by the NaCTSO document are therefore its IAEA Category 1 Irradiators and a few IAEA Category 4 sources for instrument testing. These are</p>



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		subject to an annual visit by the CTSA who ensure the security measures required for the relevant security level relating to the source are adhered to.
D.2.2	<i>You must implement, maintain and review a security plan.</i>	<p>The Guidance to the Standard Conditions issued by SEPA suggests that sealed sources in categories 1-4 will generally require higher security measures. The Security arrangements for the University's HASS, and other sources in IAEA Categories 1-4, are outlined in Security Plans prepared and managed by the University's Security Operations Manager.</p> <p>The University's sealed source arrangements are regularly inspected by the relevant Counter Terrorism Security Adviser (CTSA).</p> <p>The vast majority of the University's sealed sources fall under IAEA Category 5 and therefore are not subject to higher security measures or a specific Security Plan. The University still takes measures to ensure these sources are held securely, for example:</p> <ul style="list-style-type: none"> • When not in use, sealed sources are kept in suitable receptacles in accordance with the requirements set out in IRR17 Regulation 30(1); • When not in use, sealed sources are kept in separate stores that provide physical security and meet the requirements of a suitable store as defined in IRR17 Regulation 30(1); • Storage areas containing radioactive substances are marked to indicate the presence of radioactive material; • Physical security of rooms or labs where radioactive substance stores are kept are through a combination of key locks, digi-locks and swipe-card access which are only made available to authorised persons;



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		<ul style="list-style-type: none"> Regular checks on the whereabouts of sealed sources minimises the risk sources being lost or stolen; sources used frequently are subject to more regular checks.
D.2.3	<p><i>In the event that there are any significant changes to your security plan, you must send a revised copy to the relevant police as soon as reasonably practicable.</i></p>	<p>Security Plans are regularly reviewed by the University's Security Operations Manager in conjunction with the University RPA.</p> <p>The University RPA and the University Security Operations Manager decide, at the time of the review, whether any changes are significant and whether the CTSA/Police must be sent a revised copy.</p>
E.	HIGH ACTIVITY SEALED SOURCES (HASS)	
E.1	Financial provision	
E.1.1	<p><i>You must ensure that you have made and maintain adequate, valid and useable financial provision for the management of each HASS including when they become waste.</i></p>	<p>The University has an escrow account, managed by Sheppard and Wedderburn on behalf of the SEPA and the corporate finance department, which has £500k in place for the safe management of disused HASS sources should the University go out of business.</p> <p>Note, HASS are managed by individual Schools and Colleges and they take responsibility for the cost of disposal of HASS at School or College level. The 'Financial Provision' held by Sheppard and Wedderburn is to provide the SEPA with sufficient funds to dispose of the HASS on behalf of the University in the event of the University going out of business.</p> <p>The level of Financial Provision is currently being reviewed (Sept. 2020).</p>



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E.2	HASS information and marking requirements	
E.2.1	<p><i>You must ensure that each HASS is accompanied at all times by:</i></p> <p>a) <i>Written information which confirms that each HASS is identified and marked with a unique number; and</i></p> <p>b) <i>Photographs of the HASS, source container, transport packaging, device and equipment as appropriate.</i></p>	<p>The University RPU keeps and maintains a central file of HASS records on behalf of the University's HASS holders.</p> <p>This file contains all the necessary information to enable positive identification of the HASS including photographs of the source(s) from the manufacturer, special form certificates and serial numbers of the sources. Other information, such as identifying details of the equipment the source(s) are in, is also kept in the central file.</p> <p>An electronic file, which includes the information kept as hard copies, is kept securely held on the University's shared drive which is regularly backed up.</p>
F.	MOBILE RADIOACTIVE SOURCES	
F.1.1	<i>When not in storage or in transit, you must ensure the mobile radioactive sources are under continuous supervision by a suitably trained and experienced person.</i>	Not Applicable to the University's authorisations.
F.1.2	<i>You must inform SEPA of the following circumstances by providing the information within the specified timescales set out in the relevant</i>	Not Applicable to the University's authorisations.



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	<p><i>section of Schedule 3 of these standard conditions:</i></p> <p>a) <i>If you change the location where mobile radioactive sources are normally kept;</i></p> <p>b) <i>If you intend to keep mobile radioactive sources at a place other than where they are normally kept for a period exceeding four months;</i></p> <p>c) <i>If you intend to bring a mobile radioactive source normally kept outside Scotland into Scotland.</i></p>	
G.	DISPOSAL OF RADIOACTIVE WASTE	
G.1	Generic disposal requirements	
G.1.1	<p><i>You must not dispose of any radioactive waste that is not described in your authorisation.</i></p>	<p>Radiation Protection Code of Practice RP CoP009 outlines the University's arrangements regarding the disposal and transfer of radioactive waste and what wastes can and cannot be disposed of from University premises.</p> <p>Due to the University's work with open sources of liquid radioactive substances, the main route of disposal for the University's liquid radioactive waste is to the sewer. The disposal of</p>



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		<p>liquid waste to the sewer is described in all of the University's authorisations where open sources of radioactive substances are used.</p> <p>The disposal of gaseous waste is described in some, but not all, of the University's Permits. The University RPU and the local RPSs ensure that where gaseous waste is generated, that its disposal is covered by a suitable authorisation where required.</p> <p>Solid and non-aqueous liquid wastes, which cannot be disposed of to normal refuse, are transferred to the University's radioactive waste contractor for disposal via incineration. The University ensures that the waste contractor is legally entitled to accept the waste (i.e. they have a Permit) before any waste is transferred.</p> <p>Where there is any doubt as to whether any waste can be disposed of in line with an authorisation, the University RPA is contacted.</p>
G.1.2	<i>You must ensure that any radioactive waste you dispose of is only disposed of in the manner described in your authorisation.</i>	See G.1.1.
G.1.3	<i>You must ensure that the quantity of radioactive waste you dispose of does not exceed any limits set out in your authorisation.</i>	In practice, with several laboratories in an area working with and disposing of radioactive waste, is it difficult to <i>control</i> , at the point of disposal, the quantity of radioactive waste disposed to the sewer.



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		<p>To ensure compliance with this condition, the University <i>monitors</i> disposals to the drain, and to other routes, on a monthly basis. Waste disposals to the sewer are often significantly less than the authorised limit and are often relatively consistent throughout the year (for example, the number of patients treated at the Edinburgh Imaging Facility determines the activity disposed to the environment. This disposal isn't <i>controlled</i>, but is <i>monitored</i> to ensure disposals remain around 80% of the Permit limit).</p>
G.1.4	<p><i>You must use the best practicable means to minimise the quantity of radionuclides that are discharged.</i></p>	<p>The University uses a variety of methods/techniques to reduce the activity and volume of radioactive waste discharged to the environment. Some of these techniques are covered in B.1.1. and further guidance on working procedures to minimise the risk and extent of contamination is given to University users via Radiation Protection Code of Practice RP CoP006 "<i>Working with unsealed radioactive material</i>".</p> <p>Further information on decay prior to disposal, for Solid and non-aqueous liquid wastes, is given in Radiation Protection Code of Practice RP CoP009 "<i>The disposal of radioactive Waste</i>".</p>
G.1.5	<p><i>You must use the best practicable means to dispose of radioactive waste in a manner that minimises public exposure and impact on the environment.</i></p>	<p>The two main routes used by the University to dispose of radioactive waste are:</p> <ul style="list-style-type: none"> • Disposal of radioactive aqueous liquid waste to the sewer • Transfer of Solid and non-aqueous Liquid <p>All of the University's Permits covering unsealed radioactive sources allow the disposal of radioactive aqueous liquid to sewer. As part of the Permit application process, and the</p>



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		<p>Certificate of Authorisation process before EASR, a dose assessment is done for each site. These assessments use generally accepted assumptions and assess doses to the critical group(s) at the Permit limits. In most cases, these assessments calculate doses to members of the public below the threshold for optimisation (20 microsieverts per year).</p> <p>Solid and non-aqueous liquid wastes are transferred to the University's radioactive waste contractor prior to disposal via incineration. It is assumed that this continues to be a BPM practice for the disposal of solid and non-aqueous liquid waste and ensures that the energy generated from incineration is used.</p>
G.2	Evaluation of releases	
G.2.1	<p><i>You must evaluate the quantity of radionuclides discharged into the environment.</i></p>	<p>The activity of the majority of radioactive waste disposed of by the University is assessed by estimation. None of the normal solid and aqueous liquid radioactive waste generated by the University lends itself to activity assessment by direct radiation measurement, due to the types of radiation emitted, radiation self-absorption and the heterogeneity of the material. Unless undertaking an experiment for which these values are already known, the user estimates the activities using the protocol set out in Radiation Protection Code of Practice RP CoP004. These estimates are recorded and stored either in the relevant laboratory or with the individual user.</p> <p>With the exception of the Clinical Research Imaging Centre, approximate estimates are made about the extent of discharge of radioactive gases at the time of applying for the relevant Permit. All routine discharges are assumed to be in line with these estimates. The discharge</p>



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		of gamma-emitting gaseous waste from the Clinical Research Imaging Centre is measured at the discharge stack.
G.3	Disposal in normal refuse	
G.3.1	<p><i>You are authorised to dispose of solid radioactive waste in normal refuse provided that:</i></p> <ul style="list-style-type: none"> <i>a) No single item has an activity exceeding 400 kBq for tritium and C-14 or 40 kBq for all other radionuclides;</i> <i>b) The total activity in 0.1m³ of normal refuse does not exceed 4 MBq for tritium and C-14 or 400 kBq for all other radionuclides;</i> <i>c) The total activity disposed of in a year does not exceed 2 GBq for tritium and C-14 and 200 MBq for all other radionuclides; and</i> <i>d) Where practicable, any marking or labelling that indicates the waste is radioactive is removed prior to disposal.</i> 	Radiation Protection Code of Practice RP CoP009 outlines the University's arrangements regarding the disposal and transfer of radioactive waste. RP CoP009 includes information and instruction to users wishing to utilise the 'normal waste' disposal route and how they can ensure compliance with it.



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G.4	Radioactive aqueous liquid disposals – small quantities	
G.4.1	<p><i>You are authorised to dispose of radioactive aqueous liquid waste to a relevant sewer, relevant river or the sea provided that:</i></p> <p><i>a) The radionuclide concentration does not exceed 100 Bq/ml; and</i></p> <p><i>b) The total activity disposed of in 1 year does not exceed:</i></p> <p><i>(i) 100 MBq for the sum of the following radio-nuclides: H-3, C-11, C-14, F-18, P-32, P-33, S-35, Ca-45, Cr-51, Fe-55, Ga-67, Sr-89, Y-90, Tc-99m, In-111, I-123, I-125, I-131, Sm-153, Tl-201; or</i></p> <p><i>(ii) 1 MBq for the sum of all other radionuclides.</i></p>	<p>Due to the University's work with open sources of liquid radioactive substances, the disposal of liquid waste to the sewer is described in all of the University's authorisations where open sources of radioactive substances are used. The University does therefore not currently dispose of waste to sewer using this standard condition.</p>



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G.5	Radioactive gaseous releases – small quantities	
G.5.1	<p><i>You are authorised to dispose of radioactive gaseous waste provided that:</i></p> <p>a) <i>It consists only of fugitive releases from a container; and</i></p> <p>b) <i>It is dispersed from a building in such a way that it does not enter or re-enter a building.</i></p>	<p>Where solutions are deliberately heated, or gaseous waste is known to be released, the University has included a gaseous limit in its authorisation.</p> <p>In some cases, for example work with iodine compounds, it is known that there may be a small release of gas or vapour when these compounds are opened that cannot be avoided. These cases are identified in the Proposed Scheme of Work for the task and the University RPA advises that these containers are opened within fume hoods/cupboards. This ensures that any gas or vapour that is released is exhausted from the building in such a way as to ensure it does not re-enter.</p>
H.	FURTHER CONDITIONS FOR PERMITS WITH BESPOKE DISPOSAL CONDITIONS	
H.1	Assessment of public exposure and the environment	
H.1.1	<p><i>You must carry out and maintain an assessment of public exposure and the impact on the environment resulting from your disposals.</i></p>	<p>As part of the application process for each Permit, the University submits an assessment of the potential public exposure from disposals to the environment from its gaseous and liquid to sewer disposals. These assessments are held on file by the Radiation Protection Unit for all Permits.</p> <p>A review of these assessments is carried out if any conditions change or if there are changes in legislation that might affect them.</p>



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H.2	Radioactive gaseous discharges outwith authorised outlets	
H.2.1	<p><i>You must discharge radioactive gaseous waste from an authorised gaseous outlet unless you can:</i></p> <p>a) <i>Demonstrate that directing the discharge to an authorised gaseous outlet is not the best practicable means; and</i></p> <p>b) <i>Ensure that you will not exceed any relevant gaseous discharge limit.</i></p>	<p>Where gaseous wastes are expected to occur from the University's work with radioactive substances, a discharge limit has been applied for in the Permit. In some cases, the authorised gaseous outlet is explicitly stated, for example, the stacks on the top of the Queens Medical Research Institute (QMRI). However, in some cases, the authorised outlet is not specified; i.e. the waste is discharged via fume cupboard extracts on the authorised premises.</p> <p>It is unlikely that the University will need to discharge gaseous waste from an unauthorised gaseous outlet that is not described on its Permit. Apart from the gaseous waste generated by the Cyclotron Facility, users carry out waste fraction estimates to the various disposal routes as part of their work. For gaseous waste, the activity likely to be disposed of can be estimated prior to the work taking place and be compared with the relevant disposal limits.</p>
I.	INTRODUCTION OF RADIOACTIVE MATERIAL INTO ORGANISMS	
I.1.1	<i>You are authorised to introduce radioactive material into organisms that will leave the authorised place whilst containing that substance.</i>	Only the University's Permit at its Easter Bush Campus permits radioactive material to be introduced into organisms that leave the authorised place. This relates to the Tc-99m Scintigraphy and I-131 Hyperthyroidism services.
I.1.2	<i>You must carry out and maintain an assessment of public exposure that will result as a consequence of</i>	Both the Tc-99m and I-131 services are specified practices which require consent under the Ionising Radiations Regulations 2017.



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	<i>allowing organisms to which radioactive substances have been administered leave the authorised place.</i>	As part of their Radiation Risk Assessments, carried out under Regulation 8 of IRR17, an estimate of the dose to a member of the public is made from the radioactive substances still remaining within patients that leave the authorised place. These risk assessments are regularly reviewed and kept up to date to ensure they remain valid.
I.1.3	<i>You must ensure that public exposure and any impact on the environment resulting from the introduction of radioactive material into organisms is minimised.</i>	<p>The decision on the amount of radioactive substances to be administered to patients is made by Veterinary Specialists and based on a number of factors related to the patients' health. Patients are only administered with radioactive substances when there is an identified clinical need and therefore it is assumed that the generation of radioactive waste is minimised in this regard.</p> <p>The following wastes are produced from the University's introduction of radioactive material to organisms:</p> <ul style="list-style-type: none"> • Patient excreta • Solid Waste <p><i>Patient Excreta:</i></p> <p>Patient excreta (urine and faeces) from the iodine-131 service is disposed of to the sewer without a period of decay. The storing of contaminated excreta on the premises presents an additional, unnecessary, risk to staff and other persons. The immediate disposal of patient excreta therefore ensures the waste is discharged to the environment in a dilute and disperse form without increasing the risk to staff and other persons. Dose estimates carried out as part</p>



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		<p>of the Permit application process show that public exposures from immediate disposal of the patient excreta are not significant.</p> <p>Patients also leave the authorised place whilst still containing radioactive substances. The duration of the patient's stay on the authorised premises doesn't change how the waste is disposed of; and therefore doesn't impact on the environment. Owners are given information and instruction by the University on how to dispose of the patient excreta safely. The University includes these disposals in its disposal records for the waste disposed from the premises.</p> <p>Patient excreta from the Tc-99m service is, in the vast majority of cases, able to be decayed on the premises until it becomes out of scope. In some cases however, the patient excreta may have to be disposed of to the sewer immediately without decay storage.</p> <p><i>Solid waste:</i></p> <p>Solid waste from the I-131 service, for example consumables, syringes, non-flushable cat litter, empty stock vials, etc is placed into waste receptacles and stored for a period of decay prior to uplift by the University's waste contractor. The period of decay is not fixed but, generally, at least one month decay occurs reducing the waste activity to around 7% of its original value.</p> <p>Solid Waste from the Tc-99m service is able to be decayed on the premises until it becomes out of scope which reduces the impact of any disposal on the environment.</p>



Standard Condition Ref.	Standard Condition wording	How the University complies
I.1.4	<i>You are authorised to receive radioactive wastes that have been generated beyond the authorised place which are the result of your introduction of radioactive material into organisms.</i>	In some exceptional cases, the University may receive radioactive waste back at the authorised premises as a result of its I-131 service. In the case of a deceased patient, this is stored for a period of decay in line with the instructions in the Local Rules before being released back to the owner as out of scope. In the case of patient excreta, this is disposed of in the same way it would have been disposed of if the excretion had happened on the University's premises.
J.	ENVIRONMENTAL MONITORING PROGRAMME	
J.1.1	<i>You must develop, implement, maintain and review an environmental monitoring programme to monitor the levels of radioactivity in the environment and food caused by your radioactive waste disposals.</i>	Not Applicable to the University's authorisations.
J.1.2	<i>You must take appropriate samples and conduct appropriate measurements, tests, surveys, analyses and calculation to periodically assess the effectiveness of the measures you have taken to minimise the radiological effects of your radioactive waste disposals.</i>	Not Applicable to the University's authorisations.



Standard Condition Ref.	Standard Condition wording	How the University complies
J.1.3	<i>You must inform SEPA within the specified timescales of any intended change in the environmental monitoring programme in accordance with Schedule 3 of these standard conditions.</i>	Not Applicable to the University's authorisations.
K.	CONDITIONS APPLICABLE TO OFFSHORE INSTALLATION REGISTRATIONS	
K.1.1	<i>You are authorised to dispose of radioactive waste arising from the production of oil and gas, excluding any waste that has been sent to an offshore installation from land.</i>	Not Applicable to the University's authorisations.
K.1.2	<i>The specified disposal route for radioactive waste is the system that you have provided for this purpose.</i>	Not Applicable to the University's authorisations.
K.1.3	<i>You must not discharge radioactive waste at any place other than the authorised place.</i>	Not Applicable to the University's authorisations.
K.1.4	<i>If you have any reason to believe that the concentration of Ra-226 in produced water has exceeded 0.1 Bq/g of produced water, you must</i>	Not Applicable to the University's authorisations.



Standard Condition Ref.	Standard Condition wording	How the University complies										
	<i>inform SEPA without delay in accordance with Schedule 3 of these standard conditions.</i>											
K.1.5	<p><i>You must not in any year discharge radioactive waste arising from decontamination or cleaning operations in which the activity of any radionuclide exceeds the relevant limit set out in Table K-1.</i></p> <p><i>Table K-1:</i></p> <table border="1" data-bbox="358 820 844 1141"> <thead> <tr> <th>Radionuclide</th> <th>Annual limit (GBq)</th> </tr> </thead> <tbody> <tr> <td>Radium-226</td> <td>2</td> </tr> <tr> <td>Radium-228</td> <td>2</td> </tr> <tr> <td>Lead-210</td> <td>2</td> </tr> <tr> <td>Polonium-210</td> <td>2</td> </tr> </tbody> </table>	Radionuclide	Annual limit (GBq)	Radium-226	2	Radium-228	2	Lead-210	2	Polonium-210	2	Not Applicable to the University's authorisations.
Radionuclide	Annual limit (GBq)											
Radium-226	2											
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