

Use of the Computerised Radiation Management Programme

Access to the programme is via the **Current Staff** link, then go to **Safety and Wellbeing** list and then open the **Radiation** link. In the Documents section of the Radiation Safety page is a link entitled:

[Computer programme for the management of the use and disposal of radiation](https://portal.st-andrews.ac.uk/radprot/open/)

Which has the link URL address as:

<https://portal.st-andrews.ac.uk/radprot/open/>

There are then two buttons

1. **Live** programme where data entered will be classed as the legal record for the University
2. **Training** - Which allows people to practice putting data into the system but does not store legally binding data for SEPA

These are the same programmes (though the training version is an older version and thus there maybe some differences to the Live programme).

Access

Access to the Live programme is via your e-mail username and e-mail password

Access to the Training programme is with the following usernames and password

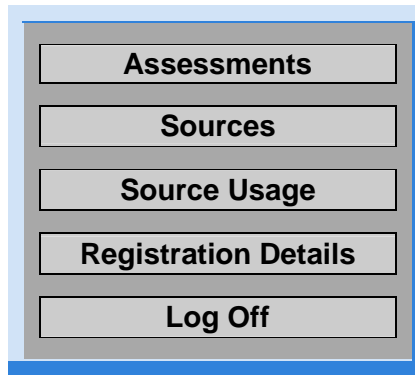
Username= user Password=user

Basis for the Programme

The new Single Site Certificates of Registration and Authorisation means that SEPA will demand specific 'Cradle to Grave' records of the Use of Radioactivity. They have accepted records locally where the Certificates are for a building, but with a University wide Certificates they will require central records. I am not able to do this by myself and thus the need for a central record keeping system

Access and use for Users

When you open the system you will see the following buttons



It should be noted that you do not have to be approved to open up the system - Only have a valid University of St Andrews e-mail username and password.

Registration Details

A list of users has been pre-loaded onto the programme. Your details should show up on this page. If your name does not show up then you should fill in the attached form as much as practicable. When completed, you press the 'Save' button. You should then e-mail the Administrator - Dr Paul Szawlowski (e-mail: pwss) so that I can check the application and approve the application.

A new user should fill in the new users form which is:

<u>L</u> ogin Name	<input type="text"/>			<u>T</u> itle	Select <input type="button" value="v"/>
<u>S</u> urname	<input type="text"/>	<u>F</u> irstname	<input type="text"/>	Female <input type="radio"/>	Male <input checked="" type="radio"/>
<u>D</u> ate of Birth	<input type="text"/>			<u>C</u> ategory	Select <input type="button" value="v"/>
<u>D</u> epartment	Select (page will reload when changed)	RPS	<input type="text"/>	<u>G</u> roup	Select <input type="button" value="v"/> (page will reload when changed)
<u>T</u> el. Extension	<input type="text"/>	<u>E</u> mail	<input type="text" value="@st-andrews.ac.uk"/>		
<u>E</u> xpected Start Date	<input type="text"/>	Initial Registration <input checked="" type="radio"/>	Or, Re-registration <input type="radio"/>		
Sources (radioisotopes) Maximum activity worked with (usually activity of stock solutions). State if Sealed Source		Radiation Generators (X-ray generating equipment, Accelerators etc.)			
<input type="text"/>					

Hazard Category (view

notes):

Comments:

Previous Experience - Radioisotopes: Specify if Sealed Sources
Isotopes:

Previous experience - Radiation Generators: Give details of places and number of years worked.
X-ray optics:

Places worked, number of years:

Radiation protection training received:

Basic Radiation Protection Course:

Please forward copies of any certificates to Env. Health and Safety

When:

Where:

Previous dose records available from:

Please append any further information which you feel may be of relevance to your radiation safety:

Is a Supervisor
Application/Update

Is a DRPS

Is Administration

Approved
Application/Update

Rejected
User

Inactive

Left

reason for refusal if applicable

USER DECLARATION I agree to abide by the rules and conduct of work involving ionizing radiations, as laid down in the Code of Practice and Departmental Local Rules. I have received a copy of each and

I have read and understood them. Please tick box.

RPS DECLARATION I have provided adequate instruction in the safe handling of radioactive materials to and will ensure that they are assisted by an experienced radiation worker until I am satisfied that they

can operate safely and in full compliance with the Local Rules. Please tick box.

Film:

TLD:

Work Registration No.:

Designation Status:

Review Date:

National Insurance

No:

**A PERSON MUST NOT BEGIN WORK UNTIL PERMISSION HAS BEEN OBTAINED FROM THE
RPO**

Assessments

Before you can undertake any work with radioactivity your name has to be on an approved risk assessment. These have been pre-populated when the system was started. If you are new then you will have to complete a new risk assessment form or add your name to a pre-existing risk assessment. To do this you should press the ‘**Assessments**’ button.

The risk assessments with your name on it will be shown.

Select	Assessment Number	Nuclide/s	Completed By	Group Supervisor	Department	Last Revised	Approved	Inactive
	7	35S	Dr J Parish	Dr J Parish	Medicine	27-Nov-08	27-Nov-08	No
	8	32P	Dr J Parish	Dr J Parish	Medicine	27-Nov-08	27-Nov-08	No
	9	35S 125I	Dr S Powis	Dr S Powis	Medicine	27-Nov-08	27-Nov-08	No
	10	125I 32P	Dr G Cramb	Dr G Cramb	Bute	27-Nov-08	27-Nov-08	No
	11	125I 35S 32P 86Rb	Dr G Cramb	Dr G Cramb	Bute	27-Nov-08	27-Nov-08	No

When a new risk assessment needs to be made, press the ‘**New Entry**’ button. The following form will appear:

New Risk Assessment
Assessment List

School/Unit:	<input type="text" value="Biology - Biomolecular Sciences Building"/>	Group Supervisor:	<input type="text" value="Select"/>
Assessor:	<input type="text" value="Select"/>		
Old Project Number:	<input type="text"/>		
Justification for Use of Radioactive Material:	<div style="border: 1px solid black; height: 40px; width: 100%;"></div>		

New Nuclide if Required

Experimental Procedure	Radionuclide	Amount of Radionuclide (MBq)	Frequency of Procedure

New User:
 Add Selected User/s:

Usage Room: **Storage Room:**

Description of Work:

Risk Assessment:

Internal Hazard: **External Hazard:**

<u>Nature of internal hazard</u>		<u>External radiation hazard</u>	
Ingestion	<input type="checkbox"/>	Alpha	<input type="checkbox"/>
Inhalation	<input type="checkbox"/>	Beta	<input type="checkbox"/>
Absorption through intact skin	<input type="checkbox"/>	Gamma	<input type="checkbox"/>
Other	<input type="text"/>	Xray	<input type="checkbox"/>
		Neutron	<input type="checkbox"/>

Monitoring Equipment to be Used:

Part B - Methodology Used for Waste Estimation - (Using Counts per Second (CPS))

Monitor or Scintillation Counter	Probe	Approx. Total Experimental CPS	CPS in Solid Waste	OR CPS in Aqueous waste	OR CPS in Organic Liquid Waste	Derived Estimation of % Waste Produced from Counts Per Second (CPS)			
						Solid	Aqueous	Organic	Gaseous
Select	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	0	0	0	0

Date Approved: **Approved By:** **Assessment Is**
 Inactive:

Save

Back
to
Main
Menu

This form should be completed as much as possible. You can only add one radionuclide in the first round. This form should then be saved. If further radionuclides need to be added, then the form should be reopened and a new box for a radionuclide will then appear. The form should then be resaved.

Once the form has been completed then can the people who saved the form notify me via e-mail. The form will not be valid until I approve the form. I will receive a message on my computer but extra e-mails will mean that it is more likely to get done!

NOTE - It is vital that the building parameters are set up before anybody tries to do a risk assessment as the assessment form needs these in place as it uses the parameters in drop down menus

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Once the owners and users and building details are in place the system will then allow you to use isotope. The system will block you if these parameters are not set or if you try to order more than the limit for the building.

Order Source

When you are ready to order a source, you will need to get the DRPS or their Depute(s) to complete an Source Order form (see below)

Every source must have an owner. Where sources are shared then there must be an owner (usually the person who pays for the source up front).

Then the relevant risk assessment for the work to be used with that source must be added. For example

Source Owner:	<input type="text" value="Dr A DRPS"/>
Assessment Number:	<input type="text" value="1 - 35S 33P 32P"/>
Nuclide:	<input type="text" value="35S"/>
Activity Required:	<input type="text" value="37 MBq"/> (e.g. 3.7 MBq)
Budget Code:	<input type="text"/> (if known)
Order Number:	<input type="text" value="1"/>
To be Delivered On:	<input type="text" value="01-Feb-10"/> (e.g. 1-4-08 or 1-apr-08)
Notes: (e.g. Material labelled)	<div style="border: 1px solid black; height: 50px; width: 100%;"></div>

You should put in the budget code and complete the Notes section (with details of what the source is (e.g. 35S Translation mix containing 35S-Methionine and 35S-Cysteine).

Once the DRPS for the Building has completed this - the form should be signed by the DRPS and attached to a purchase order before being sent to the supplier.

Order Receipt

When the source arrives, it has to be receipted by the DRPS. The **order receipt** form should be completed by the DRPS. This includes the reference date as the programme automatically decays the radionuclide from that reference date. It is very important that the correct reference date is put into this form as the system will determine the actual amount of radioactivity based on half life decaying. Thus if the reference date is well in advance the system will believe there is a lot more radioactivity present than is really present.

Source ID 12 - 259MBq of 35S	
Risk Assessment Number 7 - 35S 32P	
Owner:	Prof R Randall
Volume Delivered:	0 Select Units
Activity Ordered:	259MBq
Delivery Date:	07-May-08
Reference Date:	
Usage Room:	Select
Storage Room:	Select
Notes: (e.g. Material labelled)	

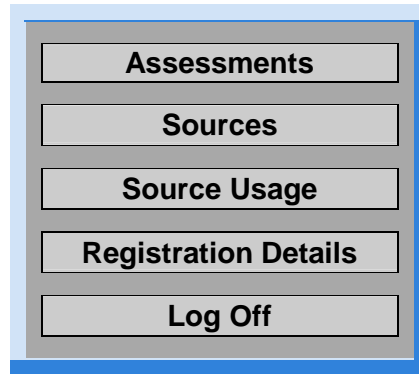
The programme will then allocate a specific ID number for that source

The ID number is given in the section entitled **Source Data** on the form. For example:

Select	Source ID	Nuclide	Reference Activity	Current Activity	Current Volume	Assmnt Number	Dept.	Group Supervisor	Owner	Status	Notes	Order Date	Expected Delivery Date	View Stock Card
	3	3H	37MBq	15.84 MBq	240 ul	2	BMS	Prof R Randall	Dr N User	Current	A test Tritium source	21-Feb-08	22-Feb-08	

Sources

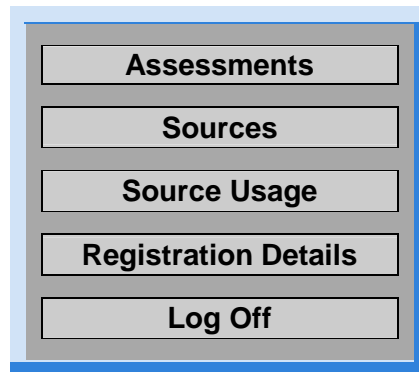
The Sources button allows you to see what sources are available for your use.



Source Usage

When the source has arrived and been receipted, then it is ready for use.

To use a source you should press the Source Usage Button:



To register taking an aliquot of radioactivity you should press the **Source Usage** button. A list of usable sources is then identified - For example:

Select	Source ID	Nuclide	Reference Activity	Current Activity	Notes	Finished
	20	35S	259MBq	23.14 MBq	35S methionine cysteine	N
	20/1	35S	3.92 MBq	0.187 MBq	Daughter of 35S Source ID 20, 35S methionine cysteine	N
	21	35S	37MBq	0.85 MBq	Stock35S metionine	N

Take Aliquot Make Disposal Stock Card

You then need to identify which source you are going to take the aliquot from - For example - Stock number 21:

Source ID	Initial Quantity	Current Quantity
21 - 35S	100 ul	16 ul
Original Activity	Current Activity	Reference Date
37 MBq	0.85 MBq	08-MAY-09

Procedure -	Aliquoting of stock methionine
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Quantity Used (ul)	<---- OR ---->	Activity Required (MBq)
<input type="text" value="0"/>		<input type="text" value="0"/>
Calculate Activity		Calculate Quantity

Use All of this Source for this Aliquot	Source is Finished <input type="checkbox"/>
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New Usage Location	New Storage Location
<input type="text" value="3.24"/>	<input type="text" value="3.24"/>

Create a Daughter Stock <input type="checkbox"/>	Total Volume after dilution - <input type="text" value="0"/> ul
--	---

Daughter Stock Notes (e.g. Material labelled):	<input type="text"/>
--	----------------------

<input type="button" value="Send Data"/>	<input type="button" value="Back to Sources"/>
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The drop down menu for the procedure will be based on the risk assessment for the stock of radioactivity when it was ordered. This cannot be changed.

The quantity of radioactivity used can be **EITHER** the volume used or the activity used. The button which states - **Calculate Activity** - will work out the other number

If you use all the radioactivity you must tick the **Source Finished** button so that other users are aware there is no more radioactivity in this source.

Where a source is shared among other users - you will need to generate another stock by ticking the **'Create a Daughter Stock'**. Thus this form should look like:

Source ID	Initial Quantity	Current Quantity
21 - 35S	100 ul	6 ul
Original Activity	Current Activity	Reference Date
37 MBq	0.318 MBq	08-MAY-09

Procedure - Aliquoting of stock methionine

Quantity Used (ul)	<--- OR --->	Activity Required (MBq)
5 Calculate Activity		0.2657 Calculate Quantity

Use All of this Source for this Aliquot

Source is Finished

New Usage Location	New Storage Location
2.06	2.06

Create a Daughter Stock -

Total Volume after dilution - 100 ul

Daughter Stock Notes (e.g. Material labelled):

Daughter of 35S Source ID 21, Stock35S metionine

[Send Data](#)

[Back to Sources](#)

If you do create a Daughter Stock the ID number will change to for example 21 goes to 21/1. The stock card will give the details of the new stock:

Radionuclide Stock Card

Fri 08 Jan 2010 11:24:14

Aliquots from 35S Source 20/1

Source ID	Responsible Person	Department		Usage Location
20/1	Dr B Precious	Biology - Biomolecular Sciences Building		2.06
Activity (MBq)	Activity Date	Quantity	Nuclide	Storage Location
3.92	18-MAR-09	10 ul	35S	2.06
Comment	Daughter of 35S Source ID 20, 35S methionine cysteine			

Date	Sample ID	Volume Removed (ul)	Volume Remaining (ul)	Volume Disposed (ul)	Aliquot Remaining (ul)	Disposal ID	Disposed MBq		Route				Name	Initials	Container Used	
							Not Decay Corrected	Decay Corrected	Drain	Air	Organic	Solid				
Initial Volume: -			10													
14-MAY-09	20/1-1	5	5												Mis A User	

Disposal of Radioactivity

When the radioactivity has been used in an experiment there will be waste generated. The disposal of this waste has to be recorded on this programme:

To do this go to the 'Source Usage' button and then identify the source that the waste has been generated from and then press the 'Make Disposal' button. The following will then appear:

	Date of Usage	Volume Not Disposed	Current Activity
	20-FEB-08	7.5 ul	0 MBq
Disposal Type:	To Drain	Organic Accumulation	Solid Accumulation
Quantity Disposed (ul):	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
OR			
Activity Disposed (<input type="text" value="MBq"/>)	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
OR			
Percentage Disposed:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Container Number Used:		<input type="text" value="2"/>	<input type="text" value="3"/>
Biomolecular Sciences Building - 3.09		<input type="button" value="Next Container Number"/>	<input type="button" value="Next Bag Number"/>
		<input type="button" value="Print Container Label"/>	<input type="button" value="Print Bag Label"/>
Scint Volume (ml):		<input type="text" value="0"/>	
<input type="button" value="Record Disposal"/>	<input type="button" value="Back to Aliquots"/>	<input type="button" value="Back to Sources"/>	

Again you can record volume disposed or the activity disposed (once one is done the other will be calculated by the programme).

You must then identify the bag that the waste is going into. When this bag is full you should print off the bag label and post it onto the bag - It will then identify what is in that bag e.g.

Contents of Solid Waste Bag 102

Date	Nuclide	Activity in MBq	Name	From Sample	Disposal ID	Activity at Disposal in MBq	Activity Now in MBq
------	---------	-----------------	------	-------------	-------------	-----------------------------	---------------------

21-FEB-08	32P	0.888	Dr N User	1/1-3	4	0.884	0
02-JUN-08	32P	0.0805	Mr J Nicholson	1-1	39	0.00157	0

Nuclide	Total Activity
32P	0

Thus it will show what isotope has been used from what stock and when it was disposed and where it was disposed.

This can also be found if you press the 'Waste' button.

NOTE: The system interlinks stocks aliquots used and waste disposed. Thus if you take an aliquot but do not dispose of the waste, then the system will believe the aliquot is still in use. Thus if you have been using a large amount of radioactivity without disposing of the radioactivity, then the system may believe you are getting close to your Building limit and block any further purchase of radioactivity.

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DRPS Monitoring

The system allows the DRPS to monitor what is happening within their Building. It will show who has used the different aliquots of a stock bottle e.g.

Select	Aliquot ID	Source ID	Nuclide	Date	User
	19-1	19	3H	04-MAR-09	Dr A DRPS
	20-1	20	35S	18-MAR-09	Miss A User
	Daughter Stock ID20/1	20	35S	18-MAR-09	Miss A User
	18/1-2	18/1	35S	15-APR-09	Miss A User
	18/1-3	18/1	35S	15-APR-09	Miss A User
	18/1-4	18/1	35S	15-APR-09	Miss A User
	21-1	21	35S	08-MAY-09	Dr B Precious

Aliquot Searches

Aliquot ID:	<input type="text" value="18/1-"/>	Source ID:	<input type="text" value="18/1"/>	Date Taken:	<input type="text" value="13-JAN-0"/>
Volume Taken:	<input type="text" value="10"/>	Current Volume of Aliquot:	<input type="text" value="0"/>	Volume of Source Remaining:	<input type="text" value="60"/>
Usage Room:	<input type="text" value="2.02"/>	Storage Room:	<input type="text" value="2.02"/>	<input type="button" value="Save"/>	
Daughter Source ID:	<input type="text"/>				

The DRPS can also see where all the isotope is being held e.g.

Biomolecular Sciences Building

Room	3H	14C	22N a	32P	33P	35S	36 Cl	42 K	45Ca	51Cr	86Rb	125I	147S M
2.02	40.78					273.4							
2.06	34.94					27.19							
3.09	205.9					1.497							
3.24						2.121							
Environmental Studies													
Room 2.10						1.337							
Totals MBq	281.7					305.5							
Registration Limit	1500 M Bq	160 M Bq	N/A	1500 M Bq	200 M Bq	1500 M Bq	N/A	N/A	50 M Bq	370 M Bq	50 M Bq	500 M Bq	N/A
Amount of Limit Used	18.7%					20.3%							

Manual Written by Paul Szawlowski, Deputy Director of Environmental, Health and Safety Services