

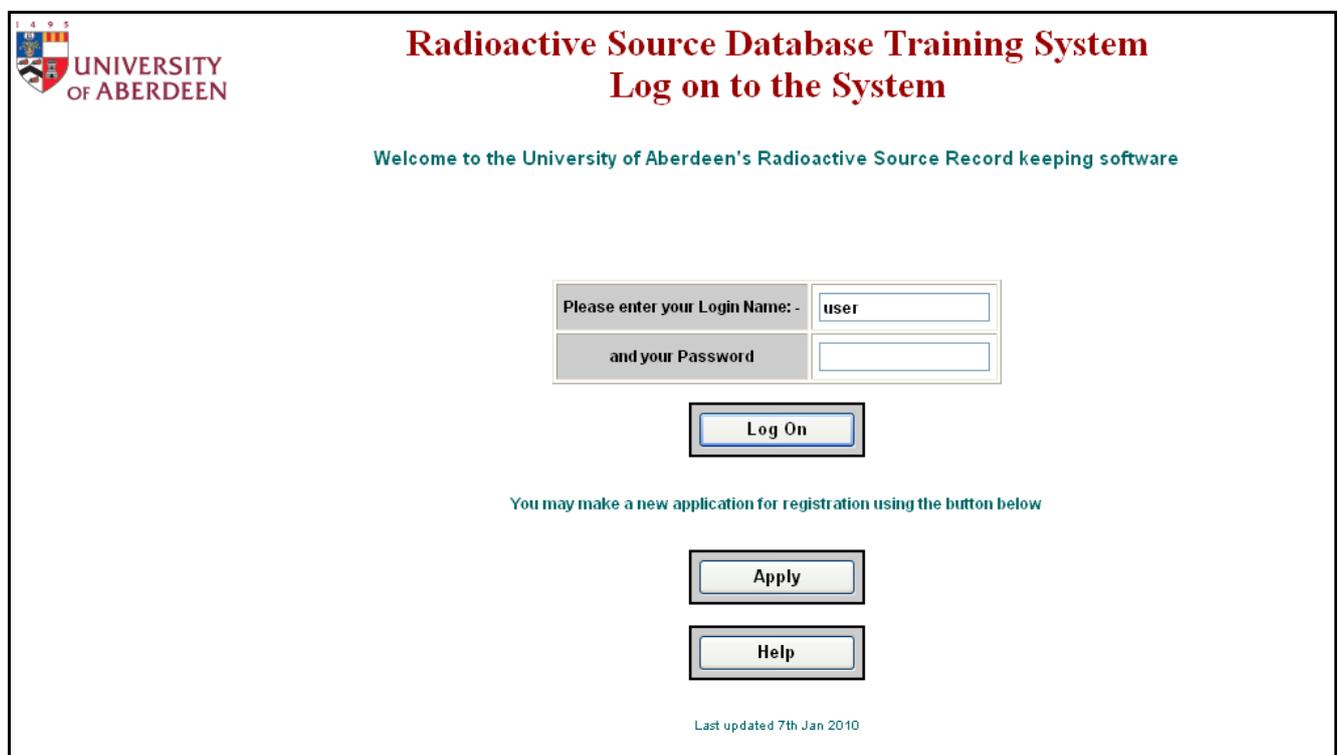
Instructions for using Iso-Inventory

November 2011

1. Iso-Inventory Overview

Iso-Inventory is an online database used to keep track of unsealed radioactive sources held by the university. Full documentation of the use of radioactive material is required under the legislation governing the use of radioactive materials, the Radioactive Substances Act 1993. The law is enforced by the Scottish Environmental Protection Agency (SEPA), who regularly carry out inspections of University sites.

The university holds licences issued by SEPA to keep and dispose of **limited** quantities of radioactive material only. An important function of Iso-Inventory is to indicate if orders or disposals will breach the university's limits, as this could result in large fines and suspension of work using radiation. As such, it is important that the system is kept up-to-date, and that details of all planned orders and disposals are entered into the system before being carried out.



The screenshot shows the login interface for the 'Radioactive Source Database Training System' at the University of Aberdeen. The page features the university's crest and name in the top left. The main heading is 'Radioactive Source Database Training System' in red, followed by 'Log on to the System' also in red. A teal-colored welcome message reads: 'Welcome to the University of Aberdeen's Radioactive Source Record keeping software'. The login section consists of two input fields: 'Please enter your Login Name: -' with the text 'user' entered, and 'and your Password'. Below these fields is a 'Log On' button. A teal link states: 'You may make a new application for registration using the button below'. Below this link are two buttons: 'Apply' and 'Help'. At the bottom of the page, it says 'Last updated 7th Jan 2010'.

2. Application process for new radiation workers

Before you can work with radioactive materials you must apply to become a radiation worker. On the Iso-Inventory home page, click the **Apply** button to be presented with the application form. Guidance is given below on filling in some parts of the form: most of the fields are self explanatory, however. Note that although you are free to select a Login Name and Password for the system, it's recommended that you use your normal university login details.

2.1 Personal Details

When completing the personal details section, it is vital that you select the correct department, group and supervisor as otherwise your application may be sent to the wrong person. You must also supply correct contact details in case of any problems with the application.

2.2 Sources

List all the radioisotopes you wish to use and give an approximate figure for the activity you will be using. Please state activity in Becquerels (kBq or MBq).

Sources (radioisotopes) Maximum activity worked with (usually activity of stock solutions). State if Sealed Source

2.3 Hazard Category

Most work in university laboratories takes place in supervised areas. If you will work in a fume cupboard in a supervised area, select "**work in supervised area with additional controls**". If you are working with higher activity levels then select "**controlled area**". If in doubt ask your RPS.

Hazard Category (view notes):	Select
Brief outline of proposed work	Work in Authorised radiation areas
	Work in Supervised areas
	Work in Supervised areas with additional controls
	Work in Controlled areas
	Select

2.4 Brief outline of proposed work

Tell us about the work you intend to do with the radioactive material. In particular, describe the handling operations which will be involved.

Brief outline of proposed work

2.5 Previous experience

Give us details of any previous experience you've had working in other institutions with radioactive materials.

Previous Experience - [Radioisotopes](#): Specify if Sealed Sources
Isotopes:

Places worked, number of years:

2.6 Training record

Your record of radiation safety training will be stored on the system. At the time of application you may not yet have completed all your training. If you have completed the on-line safety course, put the details in the first row under “**Basic Radiation Protection Course**”. Before you can start work, you must also be trained by your RPS or lab supervisor in local procedures specific to your work: you should add this in the next line. If you have attended a training course in another organisation, please give details: you may be asked for evidence of this.

Radiation protection training received:			
Basic Radiation Protection Course:		If outside course please forward certificates	
Course Title:	Where:	Who by:	When:
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Local training:		Please forward copies of any certificates to the RPA	
Description:	Where:	Who by:	When:
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
X-ray safety training:		If outside course please forward certificates	
Course Title:	Where:	Who by:	When:
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

2.7 Previous Dose Records

If you have been subject to personal dose monitoring (i.e. issued with a radiation badge) in another organisation, it's important to give us contact details so we can request your previous dose records.

Previous dose records available from:
<input type="text"/>

2.8 User declaration

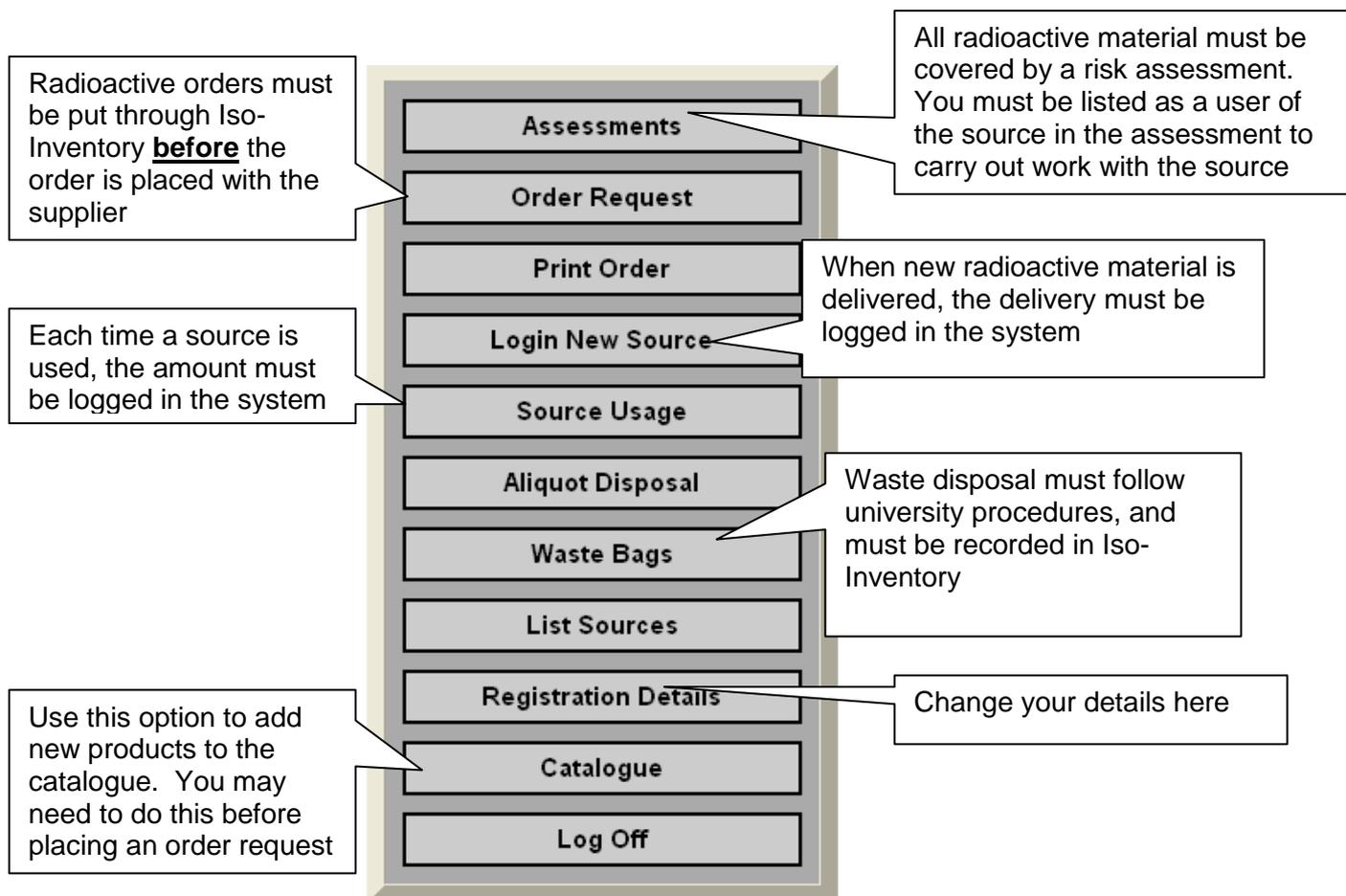
By ticking the first box you are acknowledging that you have read the university radiation safety arrangements, the local rules for the area you will be working in and will abide by rules described. **If you are in doubt about the contents of either document, contact your RPS for clarification.** Once you have filled in the form, click “**Send Data**”.

USER DECLARATION I agree to abide by the rules and conduct of work with ionising radiations, as laid down in the University Radiation safety arrangements and department local rules. Copies of both documents have been made available to me and I have read and understood them. Please tick <input type="checkbox"/>
Student Number: <input type="text"/>
A PERSON MUST NOT BEGIN WORK UNTIL PERMISSION HAS BEEN OBTAINED FROM THE RPA
I have checked all of the data entered <input type="checkbox"/>
<input type="button" value="Send Data"/>

An email will be sent to the RPS of the department you selected, who will decide if your application is accepted. You may not begin work until you receive a conformation email.

2.9 Using Iso-Inventory

Once you have been approved as a radiation worker, you will be able to log into the system, which will present you with the basic user menu. From this screen, the basic functions of the system are accessed.



3.1 Assessments

Before you may order or work with radioactive material, an assessment must be carried out. If you will be working on an existing study, you may pick the relevant assessment from the list and Edit it to add your name. Otherwise, click on "New Entry".

Assessment Data		Assessment List					
Select	Assessment Number	Nuclide	Compound	Completed By	Group	Last Revised	Approved
<input checked="" type="radio"/>	1	S-35	SJ1515- Methionine L-[35S]	Ms A User	Rad. Prot	27-01-2010	27-01-2010
<input type="radio"/>	2	S-35	SULPHUR35- Sulphur 35	Ms A User	Rad. Prot	10-12-2009	10-12-2009
<input type="radio"/>	3	S-35	SULPHUR35- Sulphur 35	Prof S Test	Biomed Physics B7	10-12-2009	10-12-2009
<input type="radio"/>	4	F-18	F-18 From Pet Ce- FDG	Prof S Test	Biomed Physics B7	11-12-2009	11-12-2009

If you are simply adding your name to an existing assessment, pick your name from the drop-down box. Ensure the "Add selected user" box is ticked, then scroll down and save the assessment

Current Users:

New User:

If you are completing a new assessment, you must complete all the parts of the form. The assessment must be approved by your RPS, and so they must have all the information required.

3.1.1 Justification

Justification for Use of Radioactive Material:

The entry in the Justification box must contain enough information for the RPS to see that you definitely need to use

radioactive material. As such, a brief description of the project and reasons for using radioactive material should be provided.

3.1.2 Catalogue Reference

If you cannot find the catalogue reference you need, you should make a new entry in the radionuclide catalogue, which can be accessed from the main menu.

3.1.3 Experiment Details

Removing activity from stock vial		Experiment Step 1		Experiment Step 2	
Stock Activity: <input type="text" value="0"/> MBq	Activity in source container: <input type="text" value="0"/> MBq	Activity in source container: <input type="text" value="0"/> MBq	Activity in source container: <input type="text" value="0"/> MBq	Activity in source container: <input type="text" value="0"/> MBq	Activity in source container: <input type="text" value="0"/> MBq
Stock Volume: <input type="text" value="0"/> ml	Volume in source container: <input type="text" value="0"/> ml	Volume in source container: <input type="text" value="0"/> ml	Volume in source container: <input type="text" value="0"/> ml	Volume in source container: <input type="text" value="0"/> ml	Volume in source container: <input type="text" value="0"/> ml
Dispency method: <input type="text" value="Select"/>	Impliment used: <input type="text" value="Select"/>	Impliment used: <input type="text" value="Select"/>	Impliment used: <input type="text" value="Select"/>	Impliment used: <input type="text" value="Select"/>	Impliment used: <input type="text" value="Select"/>
Finger dose Coefficient A: <input type="text" value="0"/>	Finger dose Coefficient A: <input type="text" value="0"/>	Finger dose Coefficient A: <input type="text" value="0"/>	Finger dose Coefficient A: <input type="text" value="0"/>	Finger dose Coefficient A: <input type="text" value="0"/>	Finger dose Coefficient A: <input type="text" value="0"/>
Finger dose Coefficient B: <input type="text" value="0"/>	Finger dose Coefficient B: <input type="text" value="0"/>	Finger dose Coefficient B: <input type="text" value="0"/>	Finger dose Coefficient B: <input type="text" value="0"/>	Finger dose Coefficient B: <input type="text" value="0"/>	Finger dose Coefficient B: <input type="text" value="0"/>
Dispensing time: <input type="text" value="0"/> mins	Sample handling time: <input type="text" value="0"/> mins	Sample handling time: <input type="text" value="0"/> mins	Sample handling time: <input type="text" value="0"/> mins	Sample handling time: <input type="text" value="0"/> mins	Sample handling time: <input type="text" value="0"/> mins
Times per Year: <input type="text" value="0"/>	Times per Year: <input type="text" value="0"/>	Times per Year: <input type="text" value="0"/>	Times per Year: <input type="text" value="0"/>	Times per Year: <input type="text" value="0"/>	Times per Year: <input type="text" value="0"/>
ALI: <input type="text" value="0"/> Bq	Comment: <input type="text"/>				

The fields in this section must be completed carefully, as they are used to determine the level of radiation hazard involved in the proposed work. The experiment is broken down into three radioactive handling steps; the system is not interested in manipulations which do not involve radioactivity.

If there are less than three radioactive steps in your work, only fill in the steps you require. If there are more steps, include the details for those with the highest activities, longest handling times or which involve the hands closest to the source. An example might be an experiment where activity is drawn from a stock vial, then subdivided twice: these would be the three experimental steps detailed in the assessment.

In the fields for each experimental step, record the 'worst-case' scenarios: the highest activity / volume you might work with, the longest time you might take, etc. When picking a Dispensing Method, pick the implement(s) which will most closely resemble those you will use.

3.1.4 Description of Work & Waste Routes

The description of work should give a brief overview of the experiments. It is important that each individual step involving radioactive material is highlighted.

You must also describe as fully as possible the waste routes which will be used for radioactive materials, including an estimation of the quantities of material being disposed of to each route and details of how you made the estimate i.e. by measurement or calculation etc.

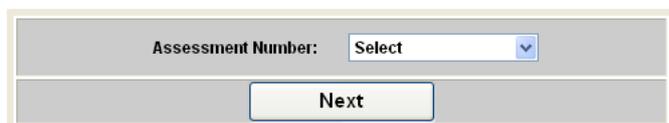
3.1.5 Summary of Control Measures

This section summarises the recommended control measures for the experiment. You must ensure that these measures are available and in place in the lab where you will be carrying out the work.

Once you have completed and **saved** the form, it must be approved by the RPS. Once this is done, you will be notified by email and may then proceed to work with radioactive materials.

3.2 Order Request

This section must be completed **before** new radioactive material is ordered from a supplier. This is necessary to ensure the university does not exceed its limits on the amount of radioactive material it may hold.

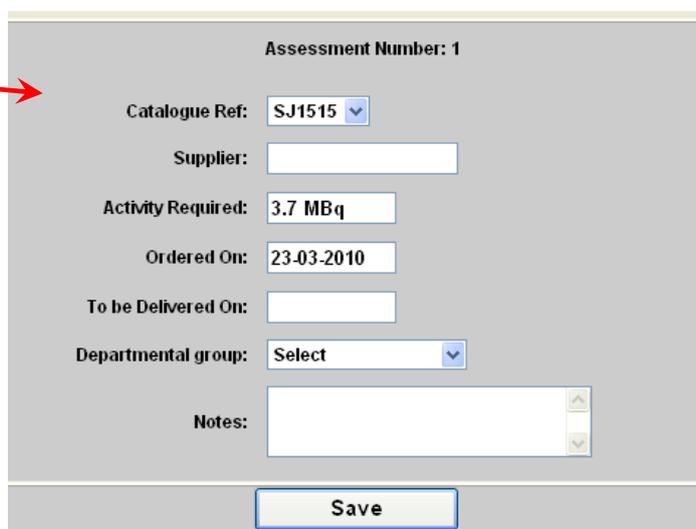


A screenshot of a web form. At the top, it says 'Assessment Number:' followed by a dropdown menu with 'Select' and a downward arrow. Below this is a 'Next' button.

The first step is to select the Assessment to which the order will relate. If an assessment has not been completed for the radionuclide with your name on it, you will not be able to place an order.

The next step is to enter the order details on the form.

Note that you will not be able to order items not covered by the Assessment you have selected: this includes different radionuclides and higher activities than those specified.



A screenshot of a web form titled 'Assessment Number: 1'. It contains several input fields: 'Catalogue Ref:' with a dropdown menu showing 'SJ1515'; 'Supplier:' with an empty text box; 'Activity Required:' with a text box containing '3.7 MBq'; 'Ordered On:' with a text box containing '23-03-2010'; 'To be Delivered On:' with an empty text box; 'Departmental group:' with a dropdown menu showing 'Select'; and 'Notes:' with a large text area. At the bottom is a 'Save' button. A red arrow points from the text 'The next step is to enter the order details on the form.' to the 'Supplier:' field.

3.3 Print Order

If you wish to print off a confirmation of the order, this can be accessed from the main menu.

3.4 Login new source

When new radioactive material is delivered, it must immediately be logged into the Iso-Inventory system. Firstly, pick the relevant source from the list. On the next screen, check the details and make changes or additions as needed. It is extremely important that the volume, activity and reference date are all correct, as these are used to track the usage of the source.

The system will then allow you to print off a usage sheet, which may be useful for keeping track of source usage prior to entering the details into Iso-Inventory, as detailed in the next section.

3.5 Source Usage

One of the most important aspects of using radioactive materials is ensuring that the usage is fully tracked, as the university is legally required to account for all the radioactive material it takes possession of. This means that each time radioactive material is used, Iso-Inventory must be updated, by selecting "Source Usage" from the main menu.

Select	Source ID	Item_Code	Nuclide	Delivery Date	Volume			
<input checked="" type="radio"/>	S/N 1966	CFA328	C-14	21-09-2005	0 ml			
<input type="radio"/>	S/N 2062	TRK706	H-3	17-04-2006	0.97 ml			
<input type="radio"/>	S/N 2469	TRK372	H-3	27-11-2008	0.935 ml			
<input type="radio"/>	S/N 2501	F09-10	F-18	09-09-2009	25 ul	0	N	C
<input type="radio"/>	S/N 2510	18F-3	F-18	09-09-2009	10 ul	0	N	
<input type="radio"/>	S/N 2523	TC1	Tc-99m	11-03-2009	0 ml	0	Y	
<input type="radio"/>	S/N 2570	Tc5	Tc-99m	12-03-2009	0 ml	0	Y	
<input type="radio"/>	S/N 2677	F-0904	F-18	21-10-2009	0 ml	0	Y	
<input type="radio"/>	BP26	SJ1515	S-35	09-12-2009	10 ul	1.649	N	
<input type="radio"/>	BP27	SULPHUR35	S-35	10-12-2009	2.996 ml	0.01315	N	
<input type="radio"/>	BP28	SULPHUR35	H-3	01-01-2010	1.461 ml	0.5338	N	C
<input type="radio"/>	BP29	F-18 From Pet Ce	F-18	11-12-2009	0 ml	0	Y	C
<input type="radio"/>	BP32	F-18 From Pet Ce	F-18	11-12-2009	0 ml	0	N	C

If you wish to remove an aliquot from the stock solution, select the relevant stock and click on "Take Aliquot".
If you are using the entire stock, you must also record this using this button

If you wish to dispose of material from a radioactive source, click on this button.
All actions reducing the amount of radioactive material on site must be recorded, whether the material is put down the drain, into a waste bag or any other disposal.

If you wish to view the usage record for a source, click here

Take Aliquot Make Disposal Stock Card

Back to Main Menu

3.5.1 Taking an aliquot

If you have selected "Take Aliquot", you will be presented with the screen below to complete.

Enter **either** the quantity or activity used in the aliquot, then press the appropriate "Calculate" button

Quantity Used (ml) <--- OR ---> Activity Required MBq

Calculate Activity Calculate Quantity

Use All of this Source for this Aliquot Source is Finished

Aliquot Taken: 24-Mar-10 15:05 Initials: AU Details:

Sample Usage Location: B6 Sample Storage Location: Freezer

Daughter Stock Details if Required

New Usage Location: B6 New Storage Location: Freezer

Create a Daughter Stock - Total Volume after dilution - 0 ml

Daughter Stock Notes - Daughter of S-35 Source ID BP27

Send Data Back to Sources

Use this button if appropriate to auto-complete the volume &

Use this section only if you intend to create a daughter stock of the radionuclide

For ALL data entered, ensure that you click this button

3.5.2 Making a Disposal

The university has limits on the amount of radioactive materials it may dispose of, so disposals should be logged in Iso-Inventory **BEFORE** the disposal actually takes place. This gives the system a chance to prevent the university breaching the limits.

You can log a disposal of radioactive material through either the Source Usage menu, or by selecting "Aliquot Disposal" from the main menu. In either case, you will be prompted to select the aliquot from which the disposal will be made, and then presented with the screen below to complete.

Firstly, enter the volume, activity or percentage disposed of in the column for the relevant waste route(s). Note that waste to drain must be filed under "**Liquid Waste to Drain**" and not "liquid accumulation". If the option to dispose to drain is needed but not present, contact your RPS.

Disposal Type:- Scint Accumulation Solid Accumulation Liquid Accumulation VLLW

Quantity Disposed (ml):-

OR

Activity Disposed (MBq):-

OR

Percentage Disposed:-

Bag Used:- No bag allocated for Scint Accumulation in B6 Bag S/N 2 - Solid - B6 No bag allocated for Liquid Accumulation in B6 No bag allocated for VLLW in B6

OR

The Work is being carried out in: B6 Initials: AU

Secondly, check the waste bag ID. For a new bag, click the button and confirm at the top of the screen for a new bag ID

Be sure to send the data

3.6 Waste Bags

It is a legal requirement for the university to keep track of any radioactive waste, so Iso-Inventory must be kept up-to-date with waste bag locations.

When you move a waste bag to your departmental waste collection area, you should access the Waste Bags option from the main menu, select the relevant bag, then use the buttons to seal it and change its location.

Select	List Bag Contents	Bag ID	Waste Type	Room	Days In Use	Number of Items	Sealed
<input type="checkbox"/>	<input type="text"/>	Bag S/N 1 - Scint - B6	Scint	B6	106	2	14-12-2009
<input type="checkbox"/>	<input type="text"/>	Bag S/N 2 - Solid - B6	Solid	B6	Not Used	0	No
<input type="checkbox"/>	<input type="text"/>	Bag S/N 3 - Solid - B6	Solid	Waste container	109	1	No
<input type="checkbox"/>	<input type="text"/>	Bag S/N 4 - Solid - Hot Lab	Solid	Hot Lab	106	1	10-12-2009
<input type="checkbox"/>	<input type="text"/>	Bag S/N 13 - Scint - B6	Scint	B6	Not Used	0	No

 Search by: All All

Transfer Selected Bag's to the Department Waste Collection Area