

**First things first: No one will ever have to make another half-life decay correction to their inventory ever again!**

### **Inventory Control Instructions: Unsealed Radioactive Materials**

This is a mass balance system: When 1 mCi comes in then 1 mCi must go out. The material coming in part begins with your materials purchase request, which is something that you are already doing. The material going out part comes from the material decaying, you using it, disposing of it and/or transferring it. It's the "going out" processes that will be the focus of this training.

#### **Purchase order requests**

A quick review:

- Log on to the radiation safety section of our website at <http://ehs.berkeley.edu> and click on the "Radiation Safety Information Systems" link.
- Select the isotope limit that correlates to the material you wish to order.
- Enter the chemical form, physical form, amount, and any relevant comments.
- Click the "Add To Request" button at the top right of the page.

If your request is within RUA limits, you will receive an authorization e-mail. If your request exceeds your RUA limits, the system will alert you to that effect and no authorization number will be issued.

*But Jason, why did my request get denied when I only have half of what I'm allowed to in my stock inventory?*

In our new system, materials authorized for purchase but not yet received, your current stock on hand, materials awaiting transfer, as well as your radioactive waste are all counted against your inventory possession limits. The difference between the sum of all these and your millicurie/possession limit is the amount of radioactive materials you may still order.

#### **Use of the Online Inventory and Waste Tracking System (RSIS)**

Beginning May 11<sup>th</sup> 2009, you will begin to document the use and disposal of all of your radioactive materials using the online Radiation Safety Information System (RSIS). You will need to back enter any radioactive materials you currently have on hand (more on that later) before you can use the system. Any radioactive materials approved for receipt after May 11<sup>th</sup>, 2009, will automatically appear in your online inventory.

#### **The basics on how to use our system:**

The steps taken in this new system for a typical experiment would look like this:

- 1) From the list of materials available to you, select the stock vial that you want to use material from.
- 2) Update that inventory record to indicate how much material you plan to use.
- 3) After you complete your experiment you will need to update the inventory record to indicate the final disposition of the materials you have used (e.g., a

certain percentage of the radioactive material was disposed of to the sanitary sewer and the remainder ended up in a dry waste container).

- 4) Eventually, when it is time to dispose of the dry waste you have accumulated (to your building's CPU or by a scheduled pick up) you will need to update the inventory again.

The following is a step-by-step detailed review of how this is all done:

Choose which vial you wish to use material from by clicking the edit button next to the Material #. **The "Material #" should match the serial number on the vial itself.** This will take you to the "Item Details" page. This page displays the pertinent information about the stock material and is also where you document the various actions that can be taken in the course of using the material. After selecting the action you wish to perform you must then click the "Perform Action" button. The following is a list of the actions that can be performed and a description of each.

### **Use in a process**

"Use in a process" is the action which updates your inventory when you use material in an experiment. When this action is selected, you will be prompted to name your process and indicate the amount of material you plan to use. **This update must occur prior to the use of the material in order to prevent users from overdrawing from the available stock.** Assigning a name to your process is a useful tool to organize and identify your records. The record will already be tagged with your name and the date you put the material into process. You may wish to note the type experiment, its number in a series, or the location that you conducted the experiment. Regardless, there should be enough information in the process name for you to be able to distinguish this record from the other records that you create.

Once you have named your process and entered the amount of material you plan to use, click the "Use Item in a Process" button. This will create a new record that you will use to track this portion of your radioactive materials inventory until you dispose of it as radioactive waste.

Once you have completed your experiment and disposed of the materials, you will need to find your Materials in Process record (which was created when you put the materials into a process ) so that you can update it to reflect the various disposals (i.e. to drain or to dry waste etc.). To do this, go to the radioactive material inventory page. Here you will find your record under the heading "Materials in Process". Click on the edit button to update your record. You will then be taken to a page that will identify the volume of material that remains "in a process" and the corresponding remaining activity. Document how the remaining materials were disposed of (how to do that is described below) and what process was used.

### **Move to local waste**

Local waste describes specific waste containers located within your laboratory. This can be dry waste containers, liquid waste bottles, radioactive sharps containers, LSC vial waste containers, etc. You can transfer your stock vials and/or the waste generated from

your experiments to these local containers by using the "Move to Local Waste" action. When you select the "Move to Local Waste" action you will be prompted to select which container you have deposited the waste into and the amount you have deposited. This can be anything from the tiniest fraction of the original amount up to the total amount of the material in question. If you transfer only a fraction of the material in process to one of your local waste containers **then you will still need to account for the difference at some point in the future**. Remember: we need to account for every microcurie! The remaining balance of material that is "in process" will need to be transferred to a local waste container, and/or logged as having been drain disposed. It is possible to transfer the contents of one waste container into another. Such as when the contents of a smaller bench top waste container are emptied into a larger waste container.

### **Dispose in Drain**

Your sanitary sewer disposals will now be logged online in the RSIS tracking system. This feature has the added benefit of checking your proposed discharge against your disposal limit and the sum of the previous discharges made within the calendar quarter. When it comes time to log a sanitary sewer discharge, select the particular process that generated the liquid waste that needs to be disposed of. Select the "Dispose in drain" action and click the perform action button. You will be prompted to enter the amount of radioactivity that you plan to discharge to the sanitary sewer (this may be entered by units of volume or activity), and to which sink you plan to make the discharge. You must also enter the total volume of all the liquid you plan to release. Click on the "dispose to drain" button to make your request. If your discharge request is within your discharge limits you will receive a message confirming this and advising you that you can now make your discharge. If your discharge request exceeds your discharge limit or you are trying to discharge an isotope that is not allowed to go down the drain, you will receive a message advising you not to make the discharge.

In our new system, everyone's discharge limit has been reset to 1.3 mCi/quarter for all isotopes combined. Contact Radiation Safety if you find that this limit is too low to meet your research needs.

### **Dispose in Central Pickup**

When your local waste container is full and ready to be closed and transferred to the CPU (Central Pickup facility), you will need to find that container in your list of "local waste containers" and click the edit button for that container. Select "Dispose in Central Pickup" from the list of available actions and click the perform action button. *You will then be prompted to print out a waste label. **Print this label*** and place it between the double clear plastic bags that your waste is in, facing outward so that the label is visible. No additional waste should be added to that container once the "Dispose in Central Pickup" action has been selected and the label has been printed out. The running total for that local waste container will be zeroed out in our system and the local waste container is now ready to have new wastes added to it (re-line the container with double clear plastic bags!). You should be aware that until EH&S picks your waste up from the CPU and adds it to their RUA inventory, the material will still count against your RUA possession limits.

### **Request an EH&S pickup**

This is an interim waste disposal step that must be used for laboratories in buildings that don't have CPUs (Central Pick Up locations), or for waste that cannot be deposited in a CPU (e.g. a mixed liquid waste) and must be picked up from the lab. *When applied to a stock vial, the system will generate a waste label for the pickup at that time.* Place the stock vial in double clear plastic bags and place the waste label between the bags so that it is facing outward and the label is visible. Nothing else should be added to the waste bags once the label has been printed. "Requesting an EH&S pickup" is an action that can also be applied to a local waste container. Once you have requested an EH&S pickup you will be prompted to print out a waste label that will summarize all of the contents in that container. No additional waste should be added to that container once the EH&S pickup request has been made and the label has been printed out. The running total for that local waste container will be zeroed out and is now ready to have new wastes added to it (re-line the container with double clear plastic bags!). You should be aware that until EH&S picks your waste up from your lab and adds it to their RUA inventory, that the material will still count against your RUA possession limits.

### **Change location**

One of the first things you will need to do when you receive materials in the lab is update the "location" of the material in the database. This is done by performing the "Change Location" action on the item details page. The "name" that you select for the location should be descriptive enough so that someone not familiar with your lab operations could easily locate the material (e.g. top shelf of the -80 freezer in room 517)

### **Create a new stock vial**

This feature is used when you wish to create a new stock material to draw from. Users would do this when they are creating a working solution that they plan to draw from for an extended period of time (more than a few weeks) and/or they change the specific activity (i.e. activity per unit volume) or combine multiple isotopes into one working solution. This new stock vial will appear in your Radioactive Material list and not in your In-Process list. Once you create a new stock vial, the vial will be issued a new serial number (this can be seen under the heading "Material #". For tracking purposes you will need to label the new stock vial with this serial number.

### **Transfer to another RUA**

On occasion you may need to transfer radioactive materials to another RUA. This can be easily accomplished in our new system. Select which vial of materials you wish to transfer and select "transfer to another RUA" from the actions list. Select the amount of material you wish to transfer, and the RUA you wish to transfer the materials to and hit continue. Your transfer request will be checked within our system to ensure that the RUA you wish transfer the material to is authorized to receive it. If they are in fact authorized to receive the material it will be transferred to a location in your inventory called "Radioactive Materials Pending Transfer from your inventory", where it will remain until the other lab logs on to their inventory and agrees to accept the transfer. Until the other lab accepts this material, it will still count against your inventory totals.

### **Accept material pending transferring to your lab**

Select which vial of materials you wish to accept and select "Accept Material" from the actions list. Select the RUA limit that you intend the material to be counted against. The system will then check on whether acceptance of the material will cause you to exceed your RUA limits. If not, the system will place the material under your possession and the material will count against your inventory totals. If accepting of the materials would exceed your RUA limits, then the transfer will not be authorized.

### **Transfer to another institution**

If you have radioactive materials that you need to transfer off campus to another institution, you would use this action. Select which vial of materials you wish to transfer and select the edit button. From the Item Details page select "Transfer to Another Institution" from the actions list. Enter the name of the institution you wish to ship to and hit continue. Your transfer request will be sent to an EH&S specialist who will contact you right away for additional details on the shipment. Don't forget, radioactive material shipping can be a complicated time-consuming process. Please give us as much advance notice for off-campus shipments as possible. At a minimum, you should call us at least five business days in advance. Don't forget, until the material is actually shipped off campus it will still count against your inventory totals.

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That covers a specific actions that you can take within our system. Most of these actions result in new records being created. Those records will then appear under various headings on the front inventory page. Here is a brief description of each of those headings.

### **Radioactive Material (non-sealed sources)**

This heading will only appear if you have unsealed radioactive materials in your inventory. The materials listed under this heading will consist of all the stock vials in your lab's possession.

### **Materials in Process**

Materials in process are the radioactive materials that you have drawn from a stock vial and have used in an experiment. There will be a separate line entry for every use of radioactive materials.

### **Local Waste Containers**

This heading lists all of the local waste containers that you have created for your lab. You can see the total activity in each container on the front.

### **Radioactive Material List (Sealed Sources)**

This heading will only appear if you have sealed sources in your inventory. If you have sealed sources in your inventory, they will all be listed under this heading.

### **Radioactive Materials Pending Transfer from your lab**

When materials are being transferred from your inventory list they will appear here until the transfer of the materials is completed. This occurs when you request an EH&S pickup of your waste, when you transfer your waste to a CPU, when you request a transfer of material to another RUA, or you request a transfer of material to an off-campus location.

### **Radioactive Materials Pending Transfer to your lab**

When another RUA is proposing a transfer of radioactive materials to your RUA the transfer request will appear under this heading until you agree to accept the transfer.

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### **Actions required to begin using the new system**

You have two things to do. You must back load all radioactive materials into our system by May 25<sup>th</sup>, 2009 and create all of the necessary local waste containers in your lab.

**Although you have two weeks to do all of this, these actions must be done prior to any radioactive materials work being conducted on or after May 11<sup>th</sup>, 2009.**

### **Back loading Materials into the Inventory**

This is the process whereby you will update the online inventory with all of the materials currently in your lab that are not in the system. This can be done by selecting "Backload Materials" from the "Actions" list on the top right corner of the front inventory page. This will take you to the radioactive material back load page. What you will see here looks much like the radioactive material requested page. Each item that you wish to backload into the system must be correlated with appropriate RUA limit. Select the appropriate limit (note: if you appear under multiple RUA's, be sure to select a limit under the appropriate RUA). Enter the chemical form, physical form, date, activity, and volume (for solutions). Make sure that the activity you enter relates accurately to the date that you have entered. For example, you can enter today's date, so long as the activity has been corrected for decay to that date. The system will assign a serial number to each item system at this time. You should label your materials with these serial numbers. This can be done with a sharpie for materials that you expect to use and/or dispose of in the immediate future. Materials that you expect to store for long periods of time should be temporarily labeled with a sharpie but should also have an official EH&S label applied to them at some point. These labels will be provided to you by Radiation Safety by request.

### **Creating Local Waste Containers**

Before you can transfer any materials to a local waste container you will need to create that container within our system. You will need to create and correlate a "local" waste container in our system for every waste container in your lab. This can be done by selecting "Create New Local Waste Container" from the "Actions" list on the top right corner of the front inventory page. You must then name the container. If your name appears under more than one RUA then you'll need to also select the RUA that should be associated with this container. You can name your waste containers whatever you'd like,

but the name should be descriptive enough and unique to prevent confusing it with other waste containers in your laboratory.

*Do I need to create "local waste container" even for the small bench top containers that I use?*

Yes and no. If you use these small bench top waste containers for temporary storage during your experiment but always empty them into a larger waste container immediately following your experiment, and you know the larger waste container will not be transferred to a CPU before you can add your waste, then you can forgo creating a local waste container within our system for those containers. If you store the waste in one of these small bench top waste containers for more than a day then they should have a local waste container created for them in our system. You will have the capability of transferring the contents of one local waste container into another (e.g. taking the contents from a smaller waste container and placing them into a larger waste container).

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Don't forget, your possession limit now has a lot of things counting against it which may cause you to be unable to order additional materials. If this is the case, there are two simple remedies. Dispose of your radioactive waste more frequently and/or request an increase in your possession limit.

mCi/Possession limit on your RUA minus the sum of the following:

- mCi on hand
- mCi in local waste
- mCi of waste pending EH&S pickup from the lab
- mCi of waste pending EH&S pickup from a CPU
- mCi pending transfer to another RUA
- mCi pending transfer to another institution

Equals mCi you're currently allowed to order