

**RADIOACTIVE WASTE
MANAGEMENT**

AT


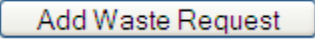


**THE OHIO STATE
UNIVERSITY**

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Web Navigation

For the purpose of this manual, the following notation will be used to navigate the appropriate web sites:

As it appears on-line	As it appears in these instructions
 Current Inventory	(·)Current Inventory or select “Current Inventory” list
	[Add Waste Request] or “Add Waste Request” button
Request Date <input type="text"/>	“Request Date” field
Lab / Location	Lab/Location or “Lab/Location” link
	?
	(i) or the i-dot
<input type="checkbox"/> Decay in Storage?	“Decay in Storage?” box

→ will be used to indicate a sequence of links; e.g. [A] → **B** → [C] would mean to click the “A” button which will take you to a page where you click the “B” link which will take you to a page where you click the “C” button which should take you to the page being referenced.

For managing waste and requesting pick-ups, you will use the Environmental Health & Safety Assistant (EHS Assist) account that has been assigned for your lab. It can be accessed at:

<http://www.ehs.osu.edu/RadSafety/default.aspx>



















Then click on the EHS Assist link down the left-hand side of the screen (second from the bottom).

This will take you to the logon screen. Fill in the “Username” field and the “Password” field with the user name and password that have been assigned to your lab’s account and click on [Login]. This ought to take you to a screen that looks like this:

EH&S Assistant

[Log Off](#)

PI: ANDIP1: Andip, Pyldi

 RAM  Inventory/Disposals  Waste Pickup  PI's Permit Limits  Training  Reports	 CHEM  Inventory  Waste Pickup  Reports  Inventory Annual Review Statement Last Inventory Review Date:	 BIO  Reports
 INSPECTIONS  Uncorrected Inspection Violations  Print Inspection Report	 OSHA  Accident Reporting	

For the purpose of this manual, this screen will always be referred to as **your EHS Assist home screen**.

★NOTE: These instructions are for radioactive waste only. Chemical and biohazard waste management are not currently handled through EHS Assist. There is a “Waste Pickup” link in the CHEM section of this page, but that function is still under development. Use the one under RAM for radioactive waste pickups, and use it only for radioactive waste pickups.

Obtaining Containers and Container Numbers

Radiation Safety provides 2 ft² boxes (with clear liners) and 2 gallon jugs for waste. Other acceptable containers will be discussed with the different types of waste; these are just the only types that we provide. There are two ways to request containers:

1) Contact EHS directly – Either tell your lab’s radiation inspector (usually this is only done when a new lab is set up) how many containers you need or call 292-1284 and tell us that you will need containers.

2) On-line – From **your EHS Assist home screen** take the following path:

Waste Pickup → [Add Waste Request] → at a minimum the “Request Date” field and the “Lab/Location” field have got to be filled in; then fill in the number of “Boxes” and/or “Carboys” in the fields located in the box titled “Empty Waste Containers Requested” → [Continue].

If there are no other waste related items then you can go back to **your EHS Assist home screen** or log off.

For every box requested a liner will be delivered. “Carboy” refers to a jug. If just liners or if extra liners are needed then mention it in the “Comments” field on the page where you would request the boxes and carboys.

Each container, whether provided by Radiation Safety or not, must have its own unique container number assigned to it. This is done through EHS Assist in one of two ways:

1) When updating your inventory, if you know that you are going to be putting waste into a new container then you can get a new number assigned while doing it.

From **your EHS Assist home screen** you will make the inventory update as usual, that is:

Inventory/Disposals → (·)Current Inventory → [Add Disposal] → fill in the required fields for the inventory transaction and by the “Container #” field click the i-dot.

A list of your current waste containers will appear. Selecting **+Add Container+** will take you to a screen with your new waste container number (7 digits long) and have fields for you to enter information about the container.

2) If you are setting up a container and want a number for it but are not making a transaction in your inventory at this time then from **your EHS Assist home screen**:

(·)Waste Inventory → **+Add Container+**.

In either case the following screen will appear:

Editing Container

Container #

Container Type ▼

Open Date

Decay in Storage?

Sealed Date

Estimated Disposal Date / /

Comments

Add PI: ▼

Share Container with the following PIs:

--	Researcher	Name
--		

1) Container Type – Some of the container types that appear in this drop down box are what we use to ship material off campus. Of the containers on the list, there are only 5 that are likely to be generated in lab:

- BOX – 2 cubic foot box (provided by Radiation Safety)
- LIQ – 2 gallon bottle (provided by Radiation Safety)
- OTH – other box (this would be used if a 2 cubic foot box is too large for your purposes)
- SH – sharps container (generally one of the red plastic biohazard containers)
- VB – vial box (for scintillation vials, preferably the packaging the empty vials came in)

2) Open Date – Either the date you set the box up or the date you started putting waste into it.

3) Decay in Storage? – You would edit your container and check this box if you are holding it for decay-in-storage after having already sealed it.

4) Sealed Date – You would edit your container and fill this in after sealing a box even if it is not being held for decay-in-storage.

5) Estimated Disposal Date – This should only be used for decay-in-storage waste. After entering a Sealed Date you can click [Calc] and it will give you an approximate ten half-life date for the container.

6) Comments – This can be used for anything you want – where the container is stored, what isotope, any special concerns (e.g. contains sharps, etc.)...

Packaging

In this section, reference will be made to packaging being labeled as containing radioactive material. It is required by law that the outer container be labeled if the package contains radioactive material. De Minimis waste (covered in the next section) is not considered radioactive and does not need to be labeled once it has been confirmed that the material in the package is de minimis. Other than labeling requirements, packaging of de minimis waste should be done the same as packaging for radioactive waste.

Solid



As stated earlier, Radiation Safety provides 2 cubic foot boxes with liners on request. If for some reason these are too big for you then you can use any other sturdy cardboard box so long as it:

- 1 – has a liner (liners should be transparent or semi-transparent),
- 2 – can be sealed (liners should be taped shut as well as the box being sealed), and
- 3 – is labeled as containing radioactive material.

If applicable, a biohazard sharps container, labeled as containing radioactive material, may be used. Generally this will only be done if the lab generates a lot of sharps.

Restrictions

1 – Do not use containers larger than 2 cubic feet in volume. Biohazard burn boxes **should not** be used to pack radioactive waste. (Consider the likely weight of the full container when choosing one.)

2 – Liquid should not be put in the solid radioactive waste. If there is more liquid than solid in an individual vessel being disposed of then it is too much; empty the liquid into a liquid waste container and then dispose of the vessel. In other words, a stock vial that still has 5 μ l of material in it or a tube with a little liquid in the bottom may go into the solid waste, a half full Erlenmeyer flask may not.

3 – Scintillation vials containing cocktail in any amount should not be disposed of in solid waste.

4 – Lead should never be put in with radioactive waste material. If you have contaminated lead, call us.

5 – Sharps – Sharps should be boxed in a separate container (sealable and sturdy enough to keep the sharps contained) which is labeled as containing sharps. This may be an entire box dedicated solely to packaging sharps or a smaller box that is to be included in a larger waste box. Some labs pack their sharps waste in biohazard sharps containers.

What are sharps?

There is no official regulatory definition for what a sharp is. Some general guidelines to consider are:

- If you were to stumble and place your hand on the object as you catch yourself, is it likely to puncture the skin?
- Does it have a jagged edge?
- Was its original purpose for cutting?
- Does it come to a point and is it made of glass or metal?
- Is it made of glass and easily breakable?

Below are some common items which are definitely considered sharps; these are just examples and this list should not be considered to be a complete list. Also provided is a list of items which people have packaged as sharps in the past which did not have to be.

Sharps

Glass Pasteur pipettes
Razor blades
Broken glass
Easily breakable glass (glass plates or thin tubes)
Contaminated equipment (scissors, lancets, etc.)
Sharp pieces of wood

Non-Sharps*

Plastic pipette tips
Micro-centrifuge tubes

*The more generalized definition of sharps used for non-radioactive waste would include some items on the non-sharp list and is used to describe items that might tear a regular trash bag (e.g. a plastic pipette tip). For the purpose of this manual only objects that are likely to be a radiological hazard (i.e. puncture skin and cause internal exposure) are being referred to as sharps. If properly packaged, the requirements for more generalized sharps will also be met.

A smaller box containing sharps can be placed inside a larger box (outside the liner). It should still be marked as containing sharps and will have the same waste container number as the box it is in.



What's wrong with this picture?



While being filled up, the sharps box was the outer container for the sharps waste and therefore needed to be labeled as radioactive.

Vials



There are three acceptable ways to pack vials. For all three, it is required that the outer box be labeled as containing radioactive material unless the vials qualify as de minimis waste. The three methods are, listed from the most preferred to least preferred:

- 1) Save the same packaging (trays and box) that the empty unused vials came in and use them to package the used vials.
- 2) If the vial trays have been saved, but not the outer box then another box may be used. If the box used is large enough that the trays might slide around then pack material in (whatever works - newspaper, folded up cardboard, etc.) to keep them from doing so. Do not use a box so big that it will be too heavy to lift; the maximum that should be packed in one box is five or six vial trays..

★NOTE: There are two reasons why using vial trays is preferred – to keep the vials upright so that they are less likely to leak and to keep them from spilling when the waste is processed for final disposal. **DO NOT** put vial trays into a box sideways or you negate these benefits.

3) If there are no vial trays available, double line a box with plastic bags and put the vials in it. Again, do not use a box that is too big. Make sure that the liner is strong enough to hold the weight of the vials it contains if it were to be removed from the box. If you are holding vials for decay-in-storage then this is **not** a good method to use. You will have to count some of the vials again and if they are not stored in a manner that keeps them upright there is a good chance that scintillation cocktail will leak while they decay.

Bulk Liquid



As stated earlier, Radiation Safety provides plastic 2 gallon jugs on request. Smaller jugs may be used, but they **cannot** be glass. Transportation regulations require that the liquid be double contained with absorbent material in the outer container (a bench pad is provided with the bucket); Radiation Safety will bring a 5 gallon bucket to transport the jug in - if you use a liquid container other than one we have provided then we will not be able to take it if it will not fit in a 5 gallon bucket.

Radiation Safety provides stickers to label the jugs that we bring.

Do not mix aqueous and organic liquids.

Carcasses

Individual carcasses shall be triple wrapped in clear plastic (no aluminum foil) and sealed in cardboard boxes which are labeled as containing radioactive material (unless de minimis). Boxes should be 1 ft³ or less. Carcasses should be kept frozen until the time of pick up.

☆ Helpful Hint: For storage purposes, you may want to put the empty box in your freezer ahead of time so that you know you will have space to store it when it is full and waiting to be picked up.

De Minimis Waste

H-3 or C-14 that is either less than or equal to 0.05 $\mu\text{Ci/ml}$ in liquid scintillation cocktail or less than or equal to 0.05 $\mu\text{Ci/g}$ of animal tissue is classified as “de minimis” and may be treated as non-radioactive; however, Radiation Safety is still required to verify that the waste qualifies as de minimis. Therefore, Radiation Safety picks up de minimis waste and sees to the final disposal of it. Packaging requirements for de minimis waste are the same as for radioactive waste with the exception that the outer container does not need to be labeled as containing radioactive material.

Vials

The definition of de minimis for scintillation vials, $\leq 0.05 \mu\text{Ci/ml}$, calculates out to $\leq 111,000 \text{ dpm/ml}$. If you use 5 ml of cocktail per sample then any vial that is 555,000 dpm or less of H-3 or C-14 is considered to be de minimis. This is dpm, not cpm. If your scintillation counter does not do a cpm to dpm conversion then you will have to do one before assuming that a vial is de minimis.

For each box of de minimis vials an RS-16: De Minimis Verification – Liquid Scintillation Media (Vials Only) form will have to be completed. The cpm for the highest vial in the box will be needed to complete this form. If you do not have count results for your vials then a representative sample, at least 10%, of the vials will need to be rerun in order to get a highest cpm.



☆ Helpful Hint: To save the trouble of having to rerun vials, it is suggested that you write the highest counts on the outside of the vial tray you put them in when you finish a procedure and sort through the waste vials. This way you can set aside any vials that you know are above the de minimis limit in advance as well as have the highest counts for each box readily available when it comes time to complete the RS-16 and package your vials.

Bulk Liquid

For each bucket/jug combination of de minimis bulk liquid waste needs an RS-17: De Minimis Quantity Verification – Liquid Scintillation Media (No Vials) form completed. A sample of the waste will have to be rerun in order to get a cpm value to complete this form.

Carcasses

For each box of de minimis carcasses, an RS-18: De Minimis Quantity Verification – Animal Carcasses form must be completed. Collecting the data needed to complete this form is going to rely primarily on the procedures used for the animals. For the 0.05 $\mu\text{Ci/g}$ of H-3 or C-14 that is used to determine if a carcass is de minimis, the mass of the entire animal may be used.

The Forms

All three De Minimis Quantity Verification forms are available in PDF or Word format at the Environmental Health and Safety web site:

<http://www.ehs.osu.edu/RadSafety>

Then click on the “Radioactive Waste Disposal” link down the left-hand side of the screen. The forms can be found in a pdf format at the right side of the screen that this brings up.

The last thing asked for on these forms is whether there is any other hazard present. What this means is, if there was no H-3 or C-14 used with this waste and if you were to remove the scintillation cocktail and/or animal carcasses, would the remaining material (other substances used in the procedure) be regarded as hazardous waste under the biological or chemical waste program. If so, list the hazardous agents present.

Storing Waste

This section deals with storing waste both while the container is still in use and after it has been sealed. Due to the number of labs on campus and the varying resources available to each principle investigator, it would be near impossible to come up with a standard policy to cover all circumstances that may arise when it comes to waste storage. The four most prevalent issues are going to be looked at here.

1) ALARA

As always, keeping exposures As Low As Reasonably Achievable is one of the goals of Radiation Safety. There are four principles involved with the ALARA philosophy: time, distance, shielding, and containment.

Time – The active waste container for many labs is kept in or near the area where the procedures using radioactive material take place. Lab personnel should not rush through procedures in order to spend less time near the waste container. If the lab has the luxury of space then the active use area can be isolated from the rest of the lab to prevent people not working with radioactive material from having to spend time around it. In a more realistic universe, the application of time as a method of ALARA applies more to sealed containers when dealing with waste. If there is a section of the lab where personnel do not spend a lot of time then use it to store waste containers if practicable.

Distance – Distance as a method of ALARA is hampered by the same problem as time, that being the size of the lab. Again, using distance to cut down exposure will work better with waste in storage than it will with open containers. Being aware of how distance affects the source you are using is helpful. The strongest of the beta emitters commonly used on campus, P-32, emits a beta particle that can only travel about 1m in air. Radiation from gamma emitters can travel much further than this, but the number of emissions that will travel a certain distance will drop exponentially with distance. This is in addition to the inverse square law, which tells us that unshielded exposure will drop as the square of the distance increased from the source (i.e. double the distance and reduce the exposure to one-fourth).

Shielding – One of the things to consider about shielding is whether or not it is really needed. The beta particles emitted by H-3 can only travel about 1 inch in air. C-14, P-33 and S-35 emit beta particles weak enough that the packaging of the waste container will shield most of them. P-32 and I-125, if used in low enough quantities can be shielded by the non-radioactive material (gloves, bench pads, etc.) in the container. On the other hand, labs ordering 1 mCi or more of P-32 or I-125 at a time are probably going to have to shield their waste containers somehow. The best way to know if your waste needs to be shielded is to check it with a survey meter. The readings do not have to be background level at the container surface (reasonable shielding will not always lower the radiation level to background). Check at the surface of the container and at about one foot away and see how much the readings drop. Also take into consideration the amount of time people will spend in the area. If in doubt, call Radiation Safety and we will help you.

Wood is a reasonably good shield against beta emitters; sometimes putting a waste container in a cabinet is all the shielding that it will require. The problem with wood is that it can absorb spilled contamination and then it has to be treated as radioactive until it decays.

An eighth to a quarter of an inch of plexiglass works for P-32. Again, this won't necessarily stop all of the radiation, but if you put a piece of plexiglass between your survey meter and a P-32 source you will see a fairly noticeable change in the reading. The thickness needed will depend on the activity of waste. Do not use lead to shield P-32 or stronger beta emitters.

Lead works best for gamma emitters. Radiation Safety can provide lead on request. About an eighth of an inch thickness is the most practical sheet lead. We have a limited number of lead bricks that can be used to build a shield, but you have to make arrangements to pick those up.

Containment – Containment, for ALARA purposes, is either containing yourself to keep contamination off of you (using personal protective equipment) or containing the material to keep contamination from spreading. For waste storage we are looking at the latter. A secondary storage container for liquid is an example of containment. For solid waste make sure that the waste goes into the liner and not between the liner and the box. Make sure that the liner is sealed properly when the box is sealed.

2) Secondary Containers

Occasionally people will ask a question like, “Can we keep a small box in our fume hood to put pipette tips in and then, when it is full, put that into our waste container?”

The answer is, yes. In fact, that is a good way to incorporate the time and distance principles of ALARA in your work area. There are a few things to remember if you do something like this:

- The box in the fume hood has to be labeled as containing radioactive material.
- In your on-line records, you will be using the waste container number of the larger box to do transactions. Make sure that all waste recorded as going into that container gets transferred to it before it is sealed.
- Similarly, make sure there is enough room in the main waste container to hold the waste in the secondary container.

3) Shared Storage Space

Some departments will assign a room for multiple labs to store their radioactive waste in. Again, this is helpful with the ALARA principles of time, distance and shielding (very few labs generate enough waste

to penetrate a wall). Again, there are a few things to remember if such an arrangement is made; each approved principle investigator is still responsible for the waste their lab generates. Therefore:

- Make sure that each container is clearly labeled with the principle investigator who generated it.
- The building coordinator is not responsible for any radioactive material stored in the room (unless he or she is also an approved supervisor). He or she should not have to contact Radiation Safety to have waste picked up or monitored. If other items are stored in the lab and space has to be made then the labs need to coordinate with the building coordinator and have lab personnel move the waste items.
- If a violation is found by Radiation Safety and 1) the inspector cannot determine who is responsible and 2) nobody steps forward and admits responsibility then the violation may be assigned to every supervisor who uses that room for storage.

★**NOTE:** The principle investigator is the person who submitted the protocol to use radioactive material to the URSC. It is not necessarily the lab manager or researcher who actually handled the radioactive material.

4) Container Integrity

Usually container integrity will be maintained from the time the container is set up until the time it is disposed of. There are two cases, both of which deal with cardboard boxes, where container integrity is most likely to be an issue:

1 – There is a leak and the box is left in standing water for longer than it should be or the box is stored in an area that is damp. If water has time to soak into cardboard, the cardboard can become brittle after it dries. A little moisture generally isn't a problem, but if there are sizable water stains on the outside of the box then it probably will become a problem eventually. If there is a leak in your lab and it is safe to do so, get cardboard waste containers off of the floor as soon as possible. If you notice that a box needs to be replaced then request a new one from Radiation Safety and transfer the liner from the old box to the new one; for decay-in-storage purposes, the seal date of the old box may be used for the new one.

2 – The floors in a lab are waxed and someone puts a box on the floor before the wax has had time to dry completely. The box gets stuck to the floor and a layer or two of corrugated paper gets peeled off the bottom when it is moved. Usually when this happens it is not discovered until it is time to dispose of the waste. The only real way to prevent this is to be thinking of it as a possibility at the time the floors are waxed. Again, if you check and notice that one of your boxes is stuck to the floor then you can contact Radiation Safety and get a replacement.

Decay-in-Storage

Under certain circumstances, Ohio State University is allowed to dispose of waste as non-radioactive after letting it decay. The qualifications for this are:

- 1 - The longest half-life present is 120 days or less.
- 2 - The container is sealed and the date it was sealed is on the outside of the container. Even though the sealed date can be entered on-line, it is still a regulatory requirement that it be on the outside of the container.
- 3 – The container has been sealed for at least 10 half lives.
- 4 – The container has been surveyed, Radiation Safety has reviewed the results and Radiation Safety has approved the waste for disposal as non-radioactive.

Storing Material

All containers used for decay-in-storage are required to be labeled as containing radioactive material until they have been checked and approved as non-radioactive by Radiation Safety. Containers should have been labeled when they were first set up for use, but if you notice that a container is not labeled when you seal it, label it.

Write the date the container was sealed on the outside of the container. Some labs write the date the container was originally opened on the container so they can track it in their usage records easier. Some labs write the 10-half life date (when it will be time to decay check their waste) on the container so they will know when to schedule a decay check. Either one of these is fine, but not necessary from a regulatory point of view. **The date the container was sealed has got to be on the container by regulatory mandate.**

To enter the sealed date on-line use the following path:

Your EHS Assist home screen → [Inventory/Disposals](#) → (·)Waste Inventory →

A list of your current waste containers should appear. Choose **Edit** next to the one you have just sealed. That will take you back to this screen.

Container # 5671170

Container Type -- None --

Open Date Today

Decay in Storage?

Sealed Date Today

Estimated Disposal Date / / Calc

Comments

Cancel Save

Add PI: -- No Selection --

Insert

Share Container with the following PTs:		
--	Researcher	Name

Check the “Decay in Storage?” box then either enter the date the box was sealed or click [Today] (if the entry is made the same date the box was sealed).

Clicking on [Calc] will give you an estimate of when ten half lives will have passed from the Sealed Date that you entered. It should be noted that EHS Assist rounds their half lives differently than some regulatory agencies, so the number given should be regarded as an estimate rather than a precise date.

Then click on [Save].

Requesting a Decay Check

This is similar to requesting a waste pick up and will be covered in a later section rather than repeating the same information.

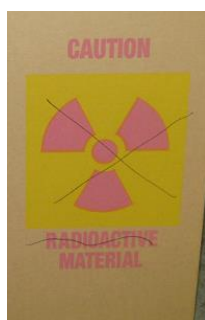
Solid Waste and Carcasses

The five restrictions on solid waste that were listed above (size of box, no liquids, no scintillation cocktail, no lead, and no loose sharps) apply to solid waste that is being held for decay-in-storage.

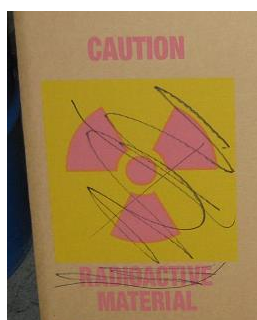
Solid waste and carcasses are monitored with a survey meter appropriate for the isotope(s) present, so at the time the decay check is requested make sure to mention what all isotopes are being checked.

When a solid container or carcasses are approved for disposal it is up to the lab to dispose of it. All radioactive markings inside the container must be defaced. When using material that can be legally decayed, it is easiest to keep a marker at the work station and cross out labels before throwing them into the waste container. As long as the outer container is labeled as containing radioactive material, the items going into it don't have to be labeled. If the material is biohazardous then it has to be repackaged as such – sealed in a red biohazard bag, sealed in a biohazard box, weighing no greater than 30 lbs.

If not being reused then the box needs to be defaced and disposed of as well.



Technically Legal



Better



Spray paint works best

Or tear the box up and put it in the biohazard box.

Bulk Liquid Waste

Liquid waste cannot be decay checked with a survey meter; the liquid can act as a shield. For liquid decay checks, the lab unseals the container, runs a 1 ml sample with a blank (a sample containing just counting cocktail used to establish a background) and has the printout ready. Radiation Safety will keep the printout with the record of the decay check, so run it separately from any experimental counting you would want to keep the results of.

Again, final disposal (down the drain, as a solvent, as organic, etc.) is the responsibility of the lab. Radiation Safety will come back for the empty containers if you are not going to reuse them.

Scintillation Vials

Like liquid waste, scintillation vials cannot be decay checked with a survey meter. The boxes will have to be unsealed and a representative sample (at least 10%) rerun. Repackage and reseal the container after counting the vials. If approved, Radiation Safety will take the vials and the printout.

Counting results for multiple containers – both liquid and vials – may be on the same printout, just make sure that which numbers go with which container is indicated in some way.

10 Half Lives

One thing that some labs have not understood in the past is that 10 half lives is not some magical time span that automatically makes radioactive material no longer radioactive. Mathematically speaking, there will be a little less than 0.1% of the original activity remaining after 10 half lives have passed, but whether or not that is considered radioactive will depend on the initial activity present. Labs that use a lot of activity in their experiments will have to wait longer than 10 half lives to dispose of decay-in-storage waste as non-radioactive.

If decay-in-storage waste is found to be still hot when it is monitored, just reseal it for another two or three half lives and schedule another check. The original seal date can be used for the future monitoring.

Other Waste

20

Lead

Radiation Safety will pick up empty lead pigs and lead shielding that is no longer needed. Lead should be smear tested for contamination prior to being boxed up. Larger pieces of sheet lead do not need to be boxed up. Boxes should not be over-filled with lead pigs; ten to twelve pigs per box is the maximum – as a general rule, if we can't lift it we don't take it.

Stock vials should be thrown into your solid waste and not left in the lead pigs. The outer plastic container that the lead comes in may be left on the pig.

If you have contaminated lead that cannot be decontaminated then contact Radiation Safety before treating it as waste, so we can help you determine how best to dispose of it.

If you have large quantities of lead – several sheets of sheet lead or lead bricks or the lead from a scintillation counter that was decommissioned – specifically state that that is the case; we will probably want to arrange a time to pick that up outside of our normal waste runs.

Clean Survey Vials

If you generate scintillation vials from your weekly contamination surveys for which no contamination was found we will pick them up for free. Box them up as vials ought to be packaged and when you put in a pickup request mention that you have clean survey vials and how many boxes you have.

Scheduling a Waste Pickup

The easiest way to schedule a waste pickup is on-line through your EHS Assist account. From **your EHS Assist home screen** select:

Waste Pickup → [Add Waste Request]

The following should appear.

PI

Request Date

Lab / Location ? Lab not found.

Contact ? Contact's Phone

Comments

Empty Waste Containers Requested

Boxes Carboys

The **Request Date** will be Thursday of the following week. The list is printed out Monday morning, so any requests made after that time will not be on that week's list. If Thursday is a holiday or there is some other reason why pickups cannot be done on Thursday, the labs will be contacted and notified of the pickup date for that week. Often, decay checks will be done before Thursday, but if nobody is present we will return and do them on Thursday.

Lab / Location is where the waste is stored.

Contact is someone who can answer questions about the waste if we have any, most likely the person who packaged it and put in the request.

The "**Comments**" field is for any other information you have for us. Do you need extra liners? Do you have lead to be picked up? Do we have to go somewhere else to gain access to the room where the waste is stored? A limited amount of characters can be entered in this field, but if your request is so long that it fills the field then it is probably something that requires special attention and you should call to ask how to handle it rather than just rely on a waste pickup request.

Empty Waste Containers Requested is the number of empty boxes and/or jugs (called "Carbouys" here) you would like for us to deliver. It is **not** the number of containers to be picked up.

When all of this information is entered click on [Continue] and the following screen will appear.

You have scheduled the waste pickup, but still need to tell us the details about what needs to be picked up.

The **+ Add + SOLID WASTE** and **+ Add + LIQUID WASTE** are relics from a bygone era. They are still used to enter containers to be picked up, but it doesn't matter which you use for what type of waste. Clicking on either of them will take you to a screen that looks similar to this:

Container # lets you select a waste container from your waste inventory. Clicking on the **?** will allow you to select from a list. It will only allow you select containers that have been edited as having been sealed.

Container Type is the type you designated when you set the container up – BOX, LIQ, OTH, SH, or VB.

Isotope is the isotope in the container. If there are more than one isotope present then list the one that there is more activity of and make a note in the comment field of the request if there is room.

Activity is the activity in mCi.

Chemical Compound is a list of the most common chemicals used. Groupings can be used (NTP's if the you have ATP, GTP and CTP in the same container). If any compound is considered a chemical or biological hazard then list it first, otherwise list the ones most often used first. (There is a limited amount of space in the field, so we want the hazards listed first.)

Smear Results – All containers to be picked up must have a contamination swipe taken on the outside (containers should be sealed prior to requesting the pickup). The swipe is supposed to cover at least 300 cm² of the outside of the container. Run your swipe, convert cpm to dpm and divide by 300 cm² in order to get a dpm/cm² result to fill in this field.

★NOTE: If we are taking a package of radioactive or de minimis waste out of your lab then all of these fields ought to have been filled in when the request was made. For decay-in-storage waste we at least need to know the container number, the isotope and the physical form (container type will give us the last of these).

Clicking [Save] will take you to the previous page where you can add more containers as necessary.

Decay Checks

If you don't have too many containers to be decay checked then you can enter the container numbers, isotope and physical form into the "Comment" field on the request page. If there are too many containers to fit them in here then it is probably best to enter the containers separately as if they were a pickup and mention that they are (or that a number of them are if you have waste to be picked up as well) for decay check.

★NOTE

After the pick up or decay check has been completed, Radiation Safety will transfer the waste container record out of your EHS Assist account. Do not delete container records on line. If a container is still in your inventory a day or two after the pickup, contact us and we will take care of it.

Problems and Violations

There are several reasons that waste will not be picked up. Usually, when this occurs we just roll the pickup request to the following week. If we have to roll over a pickup three times and it is still not ready then we will delete the request from our system and the lab can reschedule when the problems are corrected. Waste will not be picked up for the following reasons:

- *Billing not complete* – All billing is now done on-line (see next section). If there is billable waste to be picked up and the billing is not at least approved by your department on the morning of the pickup we will not even come to the lab. Billing does not have to be complete on the Friday prior to the requested pickup date, but ought to at least be started then.
- *The room was locked* – We try not to get to labs earlier than 9:00. If the location we were given where the waste is stored is locked and there is no note telling us where to find someone with the key, we will leave a note on the door saying that we were unable to pick up your waste.
- *Pickup items could not be identified* – If the person who scheduled the pickup isn't present and the rest of the lab personnel are unaware of what needs to be taken then sometimes we can't take it. Generally, having the waste container numbers on the container will prevent this so long as the other people in the lab can show us where the waste is stored.
- *Improperly packaged waste* – Packages need to be sealed and ready to go at the time of the pickup. If you have questions about how to package something, call and someone from Radiation Safety will come and look at it; do not request a pickup and then ask a question about unpackaged waste when we come to take it away
- *De Minimis forms not complete* – If a De Minimis Quantity Verification Form has not been prepared for each container of de minimis waste or if the forms are filled out incorrectly then de minimis waste will not be picked up.
- *Too much lead in one box* – As a general rule, if we can't lift it we don't take it. If the box looks like it will break under the weight of the lead we don't take it. We will take several small boxes of lead, but will not wait for you to repackage a larger box.

The following may result in a warning or a violation. If we are holding waste for decay that we picked up earlier then the violation may be issued retroactively when the violation is discovered:

- *Labs unsecured and unattended and radioactive material is present* – Normal security policies apply.
- *Sharps not segregated from waste* – Sharps should be packaged as explained earlier.

- *Lead in radioactive waste* – Lead should not be disposed of in radioactive waste containers.
- *Stock vials in lead* – If you leave a stock vial in a lead pig and there is detectable activity in it then you will get a violation for improper disposal of radioactive material.
- *Aqueous and organic liquids in the same container* – This is self explanatory.
- *Liquid or scintillation fluid in solid waste* – This is self explanatory.
- *Improperly labeled waste* – This includes but is not limited to not having waste labeled as radioactive, having isotopes other than H-3 or C-14 in a box labeled as de minimis and not labeling sharps containers.

Billing

Scheduling

Billing for waste pickups is done on-line on the following path:

<http://fod.osu.edu/fodnet/index.htm> → eRequest (from list at left of screen)

The screenshot shows the FODnet website interface. The left navigation menu includes: Ask Lynn, Staff Engagement, Logins & Databases, The Work We Do, **eRequest** (circled in red), eTime • eLeave, and Longaberger House Flood. The central content area features logos for ePayroll, Microsoft Outlook, and WorkForce Software, along with news items about November recognition and thank-you box lunch events. The right sidebar lists various services such as Building Plans & Archives, Communications, Contracts, Diversity Program, Employee Relations, Human Resources, Info Technology, Keys, Cards & Locks, Learning Center, Lost & Found, Medical, Meeting Resources, NetLink, Performance Mgmt, Phones, Print & Post, Project Delivery, Public Records, Purchasing, Recognition, Repair & Renovation, Safety, Stationery, Student Workers, Surplus, Sustainability, and Timekeeping & Payroll. The browser's address bar and status bar are also visible.

This will take you to a screen that asks for your OSU username (usually last name and number) and password. After entering this information and clicking on **[Login]** you will be taken to the following page:

The screenshot shows a Windows Internet Explorer browser window displaying the eRequest Home page. The address bar shows the URL: <https://erequest.osu.edu/finreq/home.jsf?cid=558486>. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The Favorites bar shows 'eRequest Home'. The page header features 'The Ohio State University' logo and 'Office of the Chief Information Officer' text, along with navigation links for Help, Buckeye Link, Map, Find People, and Webmail. A search box for 'Search Ohio State' is present. Below the header, there are tabs for Home, Worklist, Preferences, and Help, and a user profile for 'Andip, Pyldi' with a 'Log Out' button. The main content area is titled 'eRequest Home' and contains an 'Actions' section with two buttons: 'New' (labeled 'Create a new eRequest.') and 'Search' (labeled 'Search for existing eRequests.'). The footer includes the Ohio State University logo, copyright information for 2009, and contact details for the Office of the Chief Information Officer, including phone and email addresses. A note specifies that eRequest emails are sent to the user's osu.edu address, with a special instruction for Medical Center employees to use their osumc.edu address.

Clicking on **[New]** will start a new billing request; clicking on **[Search]** will let you locate, edit and complete a request you had previously started.

The screen that this takes you to is long and will be split up into three component parts to better fit the pages.

eRequest - Windows Internet Explorer

https://erequest.osu.edu/finreq/purchase.jsf?id=

File Edit View Favorites Tools Help

Google Search

mythland

Home Worklist Preferences Help

The Ohio State University Office of the Chief Information Officer

Help Buckeye Link Map Find People Webmail Search Ohio State Go

Andip, Pyldi Log Out

eRequest

PR Number TBD Request Status NEW * Denotes Required Field

Contact Information

Name Andip, Pyldi Requested For Andip, Pyldi

Email

Phone

Purchasing/Payment Option

Buy Something	Pay Someone
<input type="radio"/> Standard Purchasing Request <input type="radio"/> Purchasing Card Preferred <input checked="" type="radio"/> Internal Order <input type="radio"/> Blanket Order Release	<input type="radio"/> Reimbursement To Employee <input type="radio"/> Payment <input type="radio"/> Refund <input type="radio"/> Reimbursement To Non-Employee


Quote ID

At the top, under **Contact Information**, the requester's name, e-mail address and phone number should appear. The e-mail and phone number can be edited if necessary.

Under **Purchasing Payment** Option choose (•) **Internal Order** in the **Buy Something** box.

Scrolling down brings you to:

Vendor/Payee and Item Details

Shop at eStores


* Description	UOM	* Quantity	* Estimated Amount	Total Estimated Amount
<input type="text"/>	<input type="text"/>	1 X <input type="text"/>	<input type="text"/>	= \$0.00

Internal Vendor (Enter Freeform Text, Type To Search or [View All](#))

TOTAL Request Amount \$0.00

General Request Information

* Ship To (e.g. Building Name, N/A) Additional Info (e.g. Web Address, Shipping Cost, Special Instructions)

254 characters remaining 254 characters remaining

* Business Purpose for the Item(s) Above
 For Meal Reimbursements - Please Be Specific: what business related issues were discussed, list of attendees, name of place meal took place

254 characters remaining

Attachments

★ **Description** can be something generic like, “Radioactive Waste Disposal.”

Unit of Measure (**UOM**) will be either cubic feet or gallons.

★ **Quantity** will generally be 2. – We use 2 cubic-foot boxes and 2 gallon jugs, so if the container is full then it will be 2.

★ **Estimated Amount** will be the unit cost as listed on page 31.

★ **NOTE:** If the wrong **Quantity** and/or **Estimated Amount** are entered Radiation Safety will either 1) expect lab personnel to sign a statement stating what was requested and what was actually picked up, and then edit the billing before final processing or 2) not pick up the material.

Use [**Add Another Item**] if you have multiple categories of waste (waste with different charge rates) for pick up and [**Remove This Item**] to correct mistakes.

The Internal Vendor box will only appear if you had correctly clicked on **(-) Internal Order** earlier. Clicking on [View All](#) will open a window with a list of OSU internal vendors. Select “FOD - Environmental Health & Safety” from this list.

★ **Ship To** – “Not Applicable”

★ **Business Purpose for the Item(s) Above** can be something generic like, “Radioactive Waste Disposal.”

Additional Info is optional. Most of the information we need should be on the pick-up request that was made on EHS Assist. Probably, specific billing issues are the only thing that would be entered here.

The “**Attachments**” field is also optional. If you had waste which did not have a standard billing rate (e.g. mixed waste) then you might want to attach the price quote we received from our broker so that the people approving the funding know how the charges are being determined.

Further scrolling will take you to the final section of the screen:

Funding Source

★ Org Number

Organization Name Your Department

Research Project Number

Special Funding Instructions

 254 characters remaining

Approvers For Org

Moneyman, Guy

Actions

★ Denotes Required Field

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★ **Org Number** is something you would get from your department.

Then click [Enter Chartfields (optional)]. This will give you the following option:

Split chartfield by Percentage Amount

BU GL	Org	Fund	Account	Project	Program	User Defined	Percent	Estimated Amt	Split Funding
Choose ▾	52000 Lookup	 Lookup	63671 Lookup	 Lookup	 Lookup	 Lookup	100	\$0.00	<input type="button" value="+"/> <input type="button" value="-"/>

Make sure that the Org is 52000 and the Account is 63671, as in the above example.

Clicking **[Save For Later]** will allow you to save an incomplete request and complete it later. **[Continue]** will take you to a page summarizing your request.

When you have chosen **[Continue]** then you will be given the options of **[Go Back And Edit]** which allows you to make additions or changes if the summary is unsatisfactory and **[Submit For Approval]** if the summary is accurate.

Billable Waste

The following waste is considered to be billable (prices listed as of July 2015):

Short Lived Solid Waste (Non-Hazardous) – Solid waste with a half life less than or equal to 120 days.

UOM – cubic foot

Estimated Amount - \$130.05

Long Lived Solid Waste (Non-Hazardous) – Solid waste with a half life greater than 120 days.

UOM – cubic foot

Estimated Amount - \$298.60

“Hot” Carcasses (Non-Hazardous, Short-Lived) – Carcasses that cannot be disposed of as de minimis with a half-life less than or equal to 120 days.

UOM – cubic foot

Estimated Amount - \$130.05

“Hot” Scintillation Vials (Short Lived) – Scintillation vials for isotopes with a half life of 120 days or less.

UOM – cubic foot

Estimated Amount - \$130.05

The following four categories are all charged according to quotes given to us by an outside broker. Depending on the nature of what is being picked up. In some cases, they can only give us a final price after they have processed the material for final disposal, in which case the billing will be held until they return their price to us.

Mixed Waste – This is any waste that contains any hazard other than just radiation as defined at:

<http://www.epa.gov/osw/hazwaste.htm>

Mixed waste can be in any physical form.

Organic Liquids – Organic waste is defined at the same site (<http://www.epa.gov/osw/hazwaste.htm>) as hazardous waste.

“Hot” Carcasses (Non-Hazardous, Long-Lived) – Carcasses that cannot be disposed of as de minimis with a half-life greater than 120 days.

“Hot” Scintillation Vials (Long Lived) – Scintillation vials with a half life greater than 120 days which do not qualify as de minimis.

Free Pickups

Aside from decay checks performed in your lab, the following items we will pick up for free during radioactive waste pickups.

De Minimis Waste

Aqueous Liquid Waste

Clean Survey Vials

Uncontaminated Lead

Empty Containers – We only take containers that were provided by Radiation Safety and designated for use with radioactive waste.

Small Volumes of Solid Waste – This option is only available to labs that are closing out and need to dispose of less than $\frac{1}{2}$ ft³ of material – e.g. they have a few stock vials in storage and no other waste.

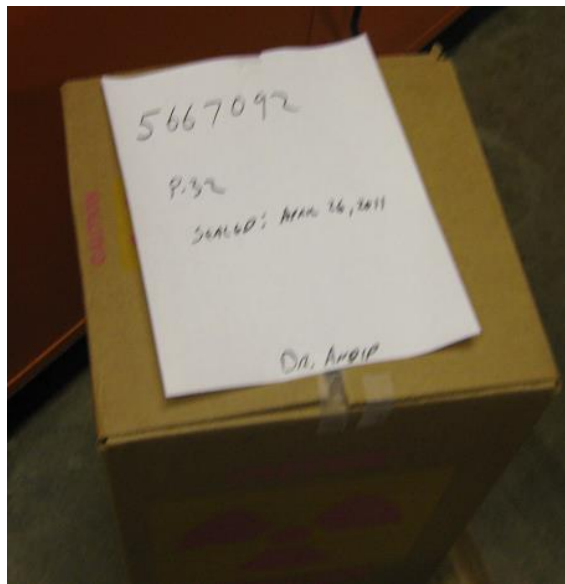
Going Green

OSU does try to recycle where possible. It is not mandatory that labs do the following procedures, but it is helpful towards this goal.

Reusing boxes for decay-in-storage waste

Most boxes can be used three or four times before they start to show signs of wear. Information written on the outside of the box can be crossed out or that information can be written on a paper taped to the outside of the box.

A new liner should still be requested if a lab is going to reuse an old box.



Using liquid waste tags

Instead of writing on the outside of the jug that is provided for liquid waste, use the tag that is provided. This way the jug can be reused by another lab without them having to work around the notes that a previous lab wrote on it.

Radiation Safety surveys and cleans all liquid containers before delivering them to other labs for reuse.