Penn EHRS
Environmental Health & Radiation Safety

BioRAFT ChemTracker Module

User's Guide

Prepared by BioRAFT Professional Services and University of Pennsylvania EHRS

Log-in to ChemTracker with your Pennkey at
https://penn.bioraft.com

Rev. 3/2025

Contents

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BioRAFT ChemTracker Module Introduction

The BioRAFT ChemTracker module provides a method for tracking chemical inventory with connection to a central database that provides easily accessible links to hazard data.

Contact the Chemical Inventory Team

EHRS Chemical Inventory Team
cheminv@ehrs.upenn.edu

EHRS Customer Service Links:

General Information about Penn's Chemical Inventory Program:
https://ehrs.upenn.edu/health-safety/lab-safety/chemical-inventory-program

Barcode Sticker Requests (Free):
https://ehrs.upenn.edu/health-safety/health-safety-forms/warning-sign-and-label-request-form

Problem Container Form (For chemicals not found in database):
https://ehrs.upenn.edu/policies-resources/chemical-inventory-problem-container-request-form

Request Changes to BioRAFT Lab Locations (Spaces)
https://ehrs.upenn.edu/health-safety/lab-safety/laboratory-inspection-program/request-changes-bioraft-lab-locations-spaces

Chemical Inventory Tip Sheets:
See Resources for ChemTracker Users
https://ehrs.upenn.edu/health-safety/lab-safety/chemical-inventory-program/resources-chemtracker-users

Request Search of Chemical Inventories on Campus (Borrow Chemicals):
https://ehrs.upenn.edu/health-safety/health-safety-forms/chemical-borrow-request

What Must Be Tracked in the Inventory?

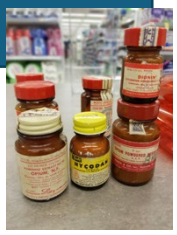
Hazardous Chemicals

You must track inventory of any research chemicals that are **physical, environmental, or health hazards.** This includes all solvents and other flammables, reactive substances, corrosives, irritants, toxics, etc.

Examples of the new GHS hazard pictograms and the older CHIP hazard pictograms are shown below.

If a manufacturer has labeled a chemical container with one or more of these symbols, the chemical must be tracked in your inventory.

Older chemical containers may not be labeled according to current standards. Some containers that do not have these hazard pictures are still hazardous and must be tracked in your inventory. If you're not sure, contact cheminv@ehrs.upenn.edu to ask!



For information about what these pictograms mean, see the chemical's SDS, or see https://www.osha.gov/sites/default/files/publications/OSHA3491QuickCardPictogram.pdf.

Tracking Hazardous Gases

ALL HAZARDOUS GASES must be tracked in your inventory.
See Reference Chart: Common Gas Cylinder Volumes/Weights (click here for link) for information about cylinder sizes.

Hazardous Gases Include any gas that is:

- Flammable
- Corrosive
- Toxic
- Oxidizing
- Or otherwise hazardous per the SDS

Common examples of hazardous gases include:

Ammonia	Fluorine	Oxygen (> 20%)
Boron trichloride	Hydrogen (≥ 5%)	Propane
Carbon monoxide	Hydrogen fluoride	Silane
Chlorine	Methane	Sulfur-dioxide
Dichlorosilane	Nitric oxide	

Inert (non-hazardous) gases do not need to be tracked.

Examples of inert gases include:

Argon
Carbon dioxide
Nitrogen
Helium

Exempt Chemicals

Below are some examples of containers that **do not** need to be tracked in the inventory system:

- Chemicals in small quantity (< 10 mL) that are sold as part of **a kit** and stored within the kit.
- **Stock solutions** and other mixtures of chemicals that were prepared in your lab and/or transferred into a new container (such as **wash bottles** of solvents).
- **Household products** such as Clorox, Windex, baking soda, paints, etc.
- Products with **no chemical hazards**, such as:

Growth media	Amino acids	Glass beads
Agar/Agarose	Sodium chloride	Glucose, sucrose, starch, etc.

These are just a few examples. If you're not sure whether a material is hazardous, check if the container has a hazard warning on the label. If you are still unsure, inquire at cheminv@ehrs.upenn.edu. **Remember: You are welcome to track non-hazardous materials in your inventory.**

Viewing and Editing Your Chemical Inventory

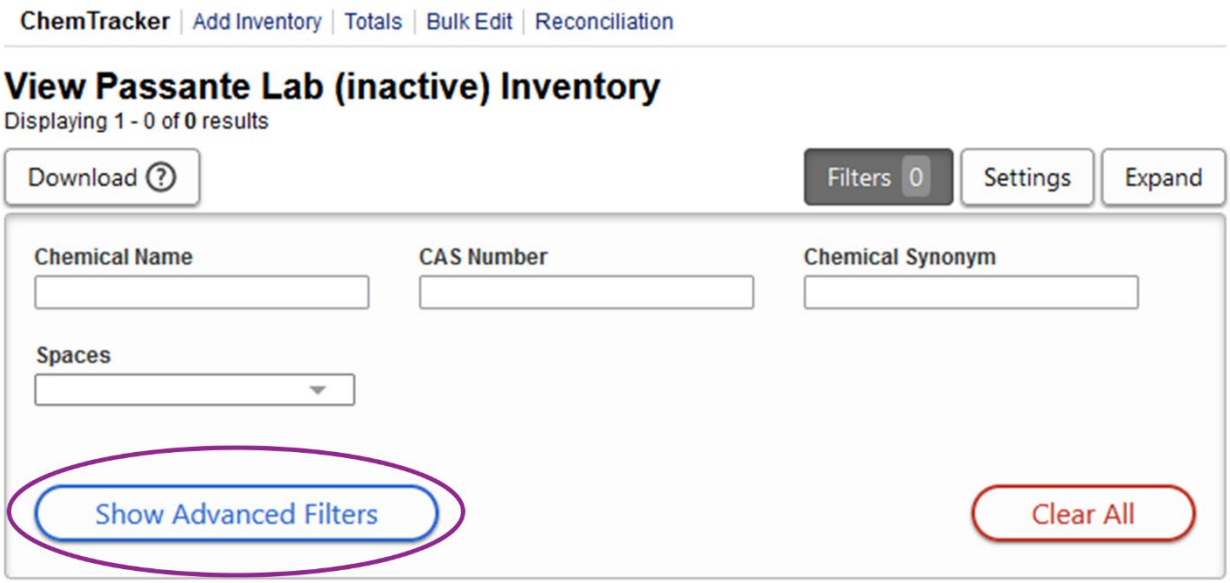
All containers

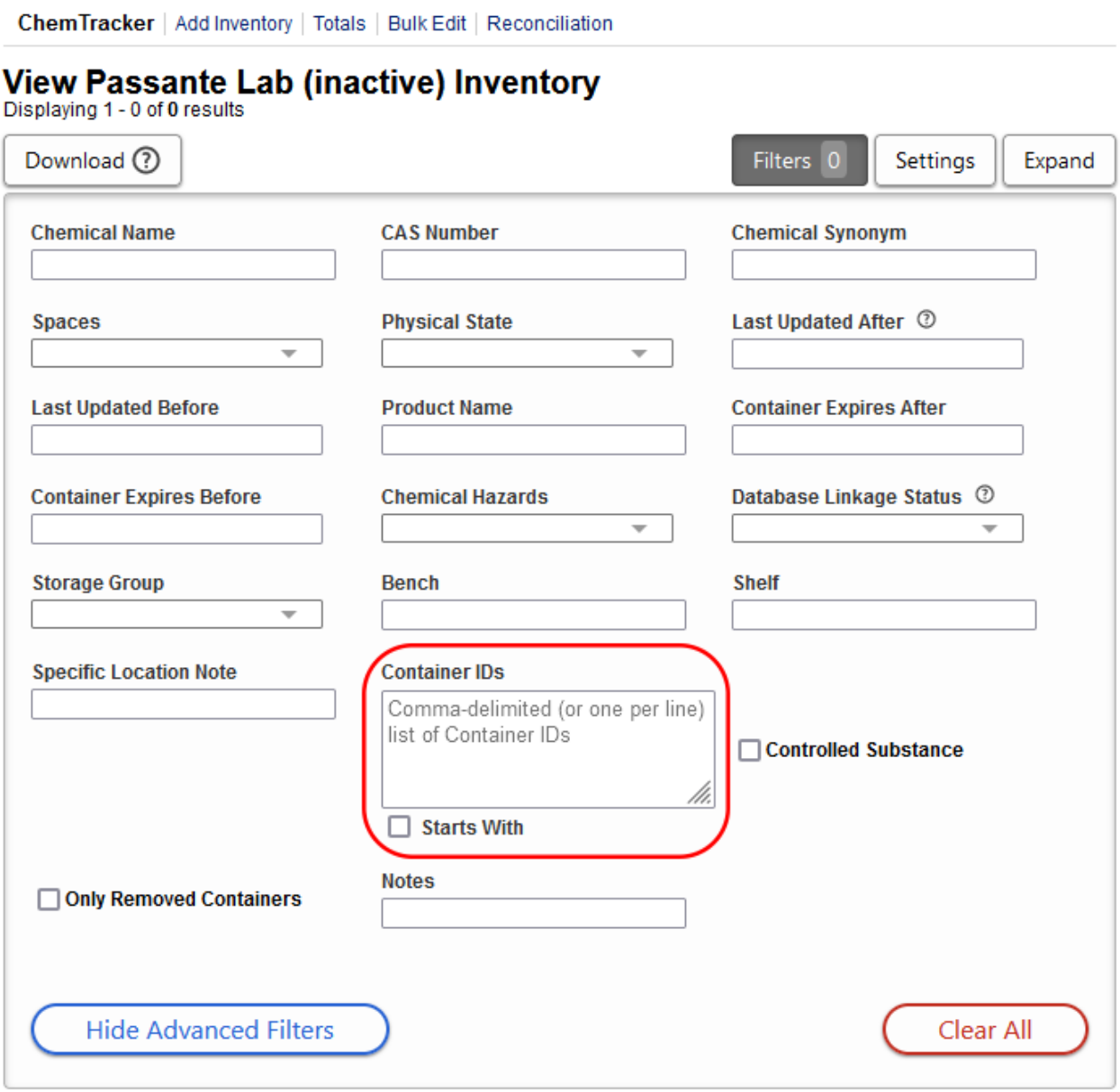
Follow these instructions using color-coded circles to access your chemical inventory.

From the BioRAFT homepage, expand the left side menu to view information relevant to your lab. Click the **"ChemTracker" dropdown menu** on the left side of the BioRAFT page to view your lab's chemical inventory.

This page displays every chemical container in your lab's inventory. Upon opening the page, you are brought to the "Filters" widget where search filters are displayed on screen.

You can search for a specific record by clicking in Container IDs field and scanning or typing a barcode number. To access this field, click on the "Show Advanced Filters" button.





You can also use the other filters on this page to view or search for a subset of your containers.

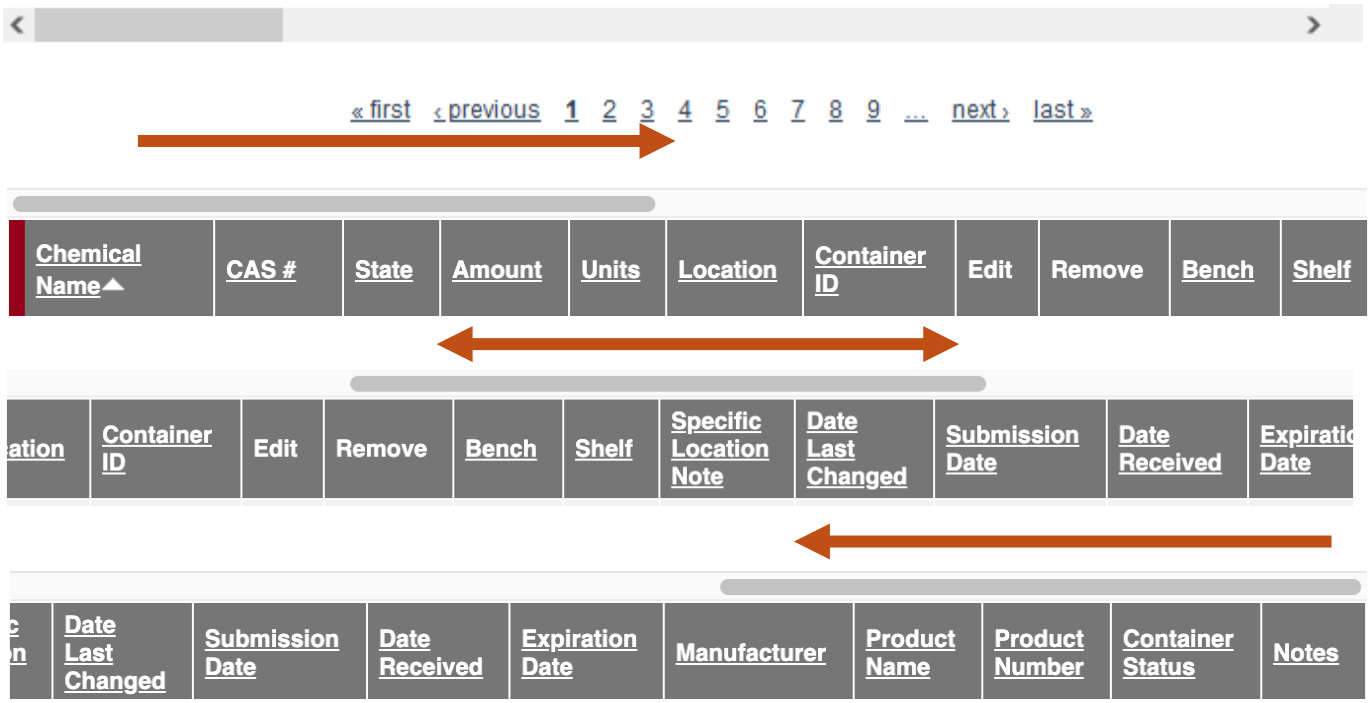
You can sort your inventory or filtered results by clicking on the arrows next to most of the column headings.

Chemical Name	CAS Number	State	Amount	Units
Methylglyoxal solution	78-98-8	Liquid	25	ml
"Bromoacetic acid" as BROMOACETIC ACID, solid	79-08-3	Solid	100	g
((4R,5R)-(+)-O-[1-BENZYL- 0.1G	880262-16-8	Solid	100	mg

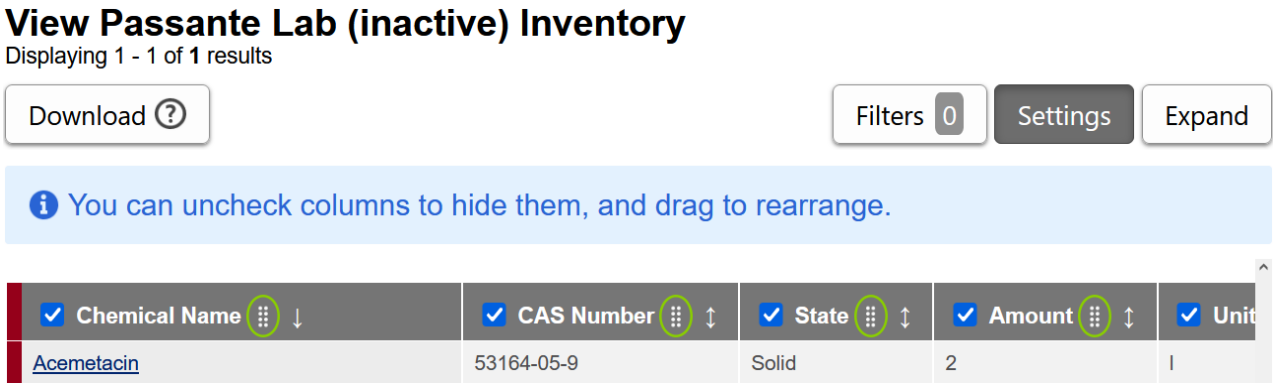
To edit a record, click on the "Edit" link:

Chemical Name	CAS Number	State	Amount	Units	Location	Container ID	Edit	Remove
Methylglyoxal solution	78-98-8	Liquid	25	ml	Smilow Center - TRC09-176A	183736	Edit	Remove

To find the "Edit" link, you will need to use the scrollbar at the bottom of the inventory table, near the page select numbers, to scroll to view additional headings.

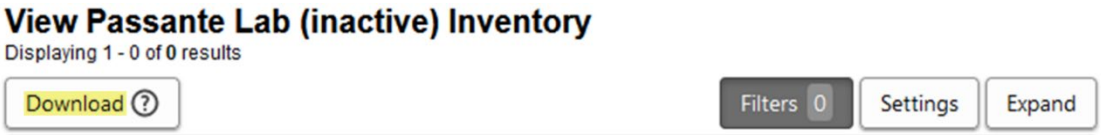


Clicking on the "Settings" widget at the top right of your inventory will **allow you to show/hide each column** by checking/unchecking the box to the left of the column header. You can also click and drag on the 8 dots to the right of the column header to **reorder the columns**. A "⃠" symbol will replace your cursor, but dragging will function as designed.



For a **full screen view** of your chemical inventory, click "Expand" at the top right of your inventory:

To **export** your data outside of the system, click "Download" at the top left of your inventory. Note that changes to inventory can only be made inside of ChemTracker and cannot be submitted via spreadsheet export/import unless explicitly prompted by the Chemical Inventory Team.



Searching for Chemicals Outside of Your Lab

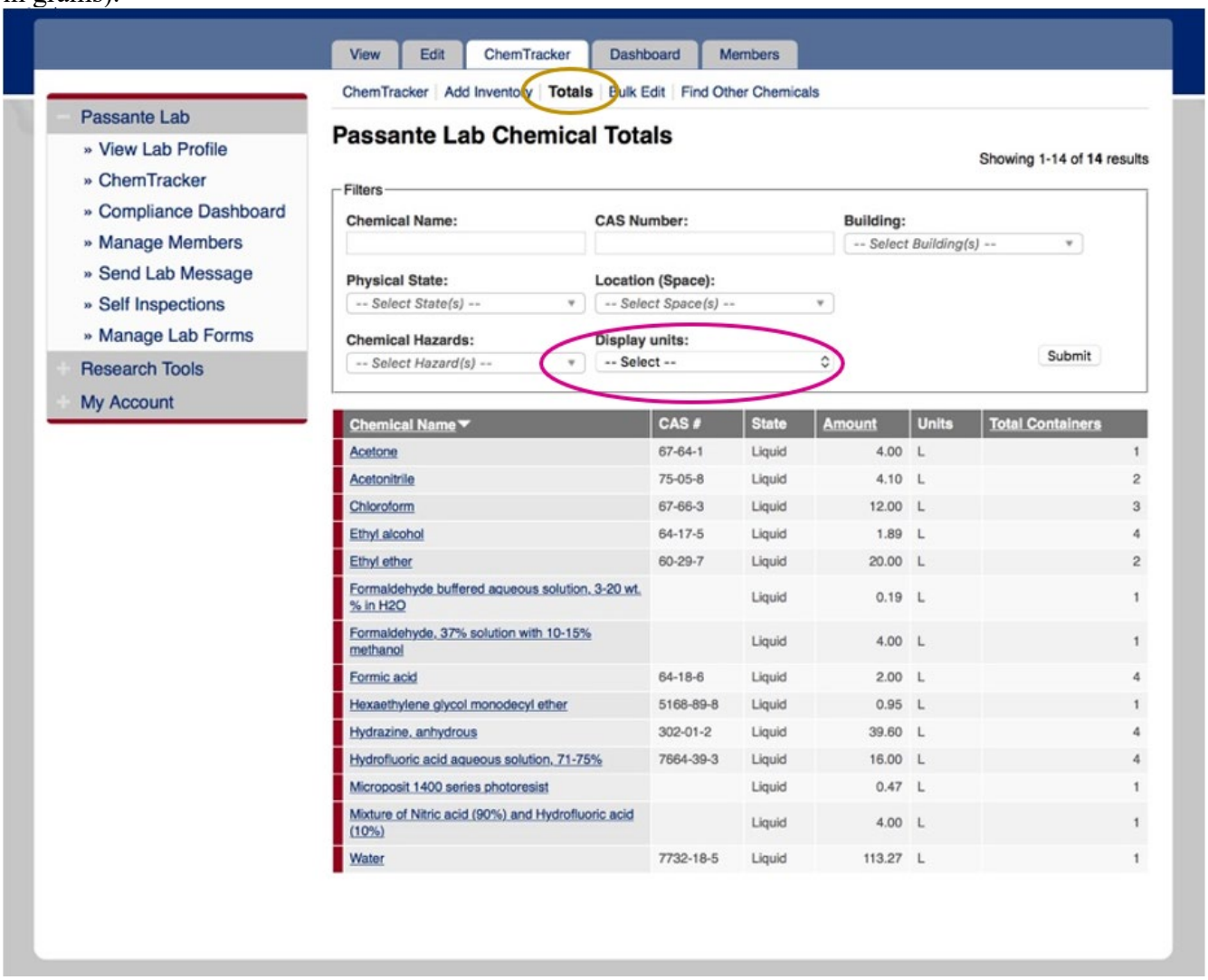
You will be able to see all chemical containers within **your lab's** inventory. You will not be able to search for chemicals in other labs' inventories. The EHRS Chemical Inventory Team can help you locate chemicals in other labs across campus.

Search "Chemical Borrow Request" on the EHRS website to find our Chemical Borrow Request webform (also linked here) to submit your search request. Remember that all chemical sharing is voluntary and requires the permission of the lab that owns the chemical as well as the approval of the PI for the lab that wishes to borrow or adopt the chemical. If you adopt the chemical into your lab from another lab, be sure that they remove the chemical from their inventory and that you add the chemical to yours.

Totals

Click on the **"Totals" link** to view the aggregate amount of each chemical in your lab's inventory. Notice that the total number of containers of each chemical is shown on the right side.

Tip: The **"Display Units" dropdown** allows you to change the units for the table (i.e., display in grams).



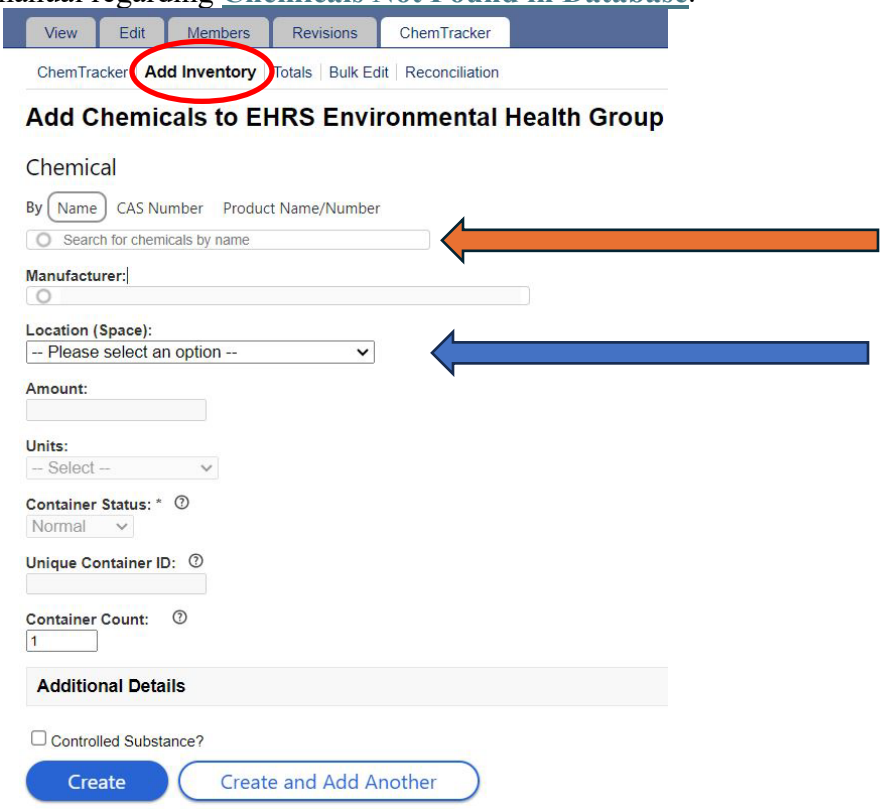
Adding New Inventory

Chemical Look-Up

To add new inventory, click **"Add Inventory"** from the ChemTracker page.

Chemical Name Best for When CAS or Product number is not available or is not found Tip As you continue to type, the list of options in the dropdown menu will change; keep an eye out for your chemical in the list as you type.	**CAS Number** Best for Pure substances (not mixtures, solutions, or specialty products) Tip Requires hyphens.	**Product Name/Number** Best for Mixtures, solutions, or specialty products Tip May or may not require punctuation (e.g. hyphens and commas), try both ways if needed.

Select your **search criteria** (Chemical Name, CAS Number, or Product Name/Number)
Start typing the chemical name, CAS Number or Product Name/Number of the chemical you are adding.
A list of options will appear based on your search. If there are no results, see the section of this manual regarding **Chemicals Not Found in Database**.



Select the chemical from the dropdown list.

Then select the room number (from the **"Location (space)" dropdown**) to specify where this container will be stored.

If the space you are looking for is not listed, please use the Request Changes to BioRAFT Lab Locations Webform to have it added.

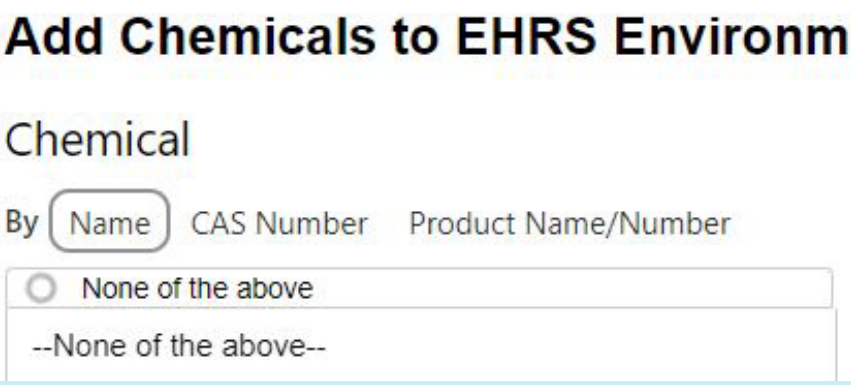
Note: Selections must be made with the mouse. Selecting a chemical with the Arrow keys and Enter/Return key does not open the Amount, Unit, etc. fields for editing.

Note: Sub-location information (bench, cabinet, FLSC, refrigerator, etc.) is added later. See Adding Additional Details for more information.

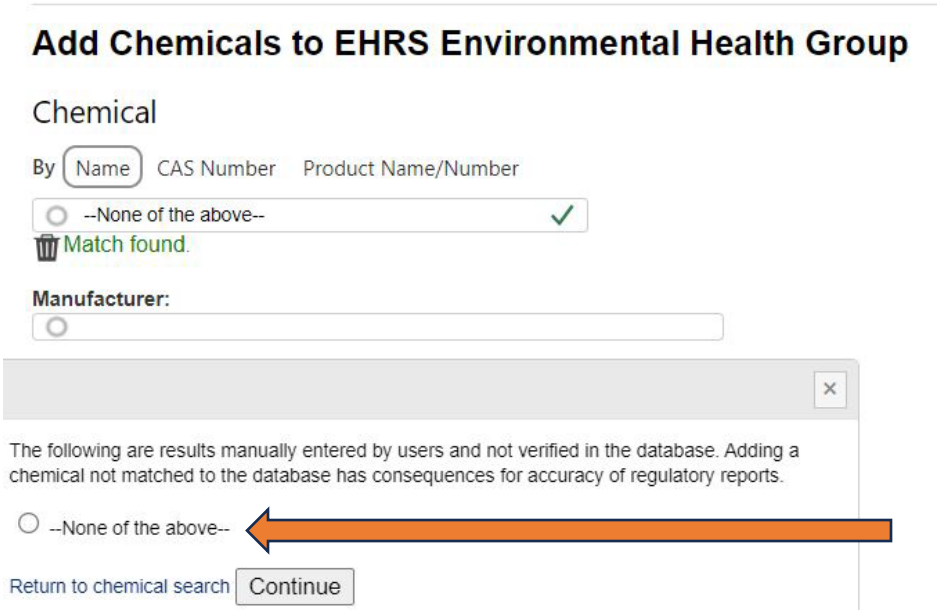
Chemicals Not Found in Database

If the database does not have the chemical you are searching for, the dropdown will show **"None of the above."**

Select "none of the above" only after you have searched by chemical name, CAS Number, and Product Name/Number, and you still do not see the correct chemical on the list.



When you choose "—none of the above—", ChemTracker **may suggest unlinked chemical records that match your search**. If one of these looks correct, select it and continue adding your container to your inventory.



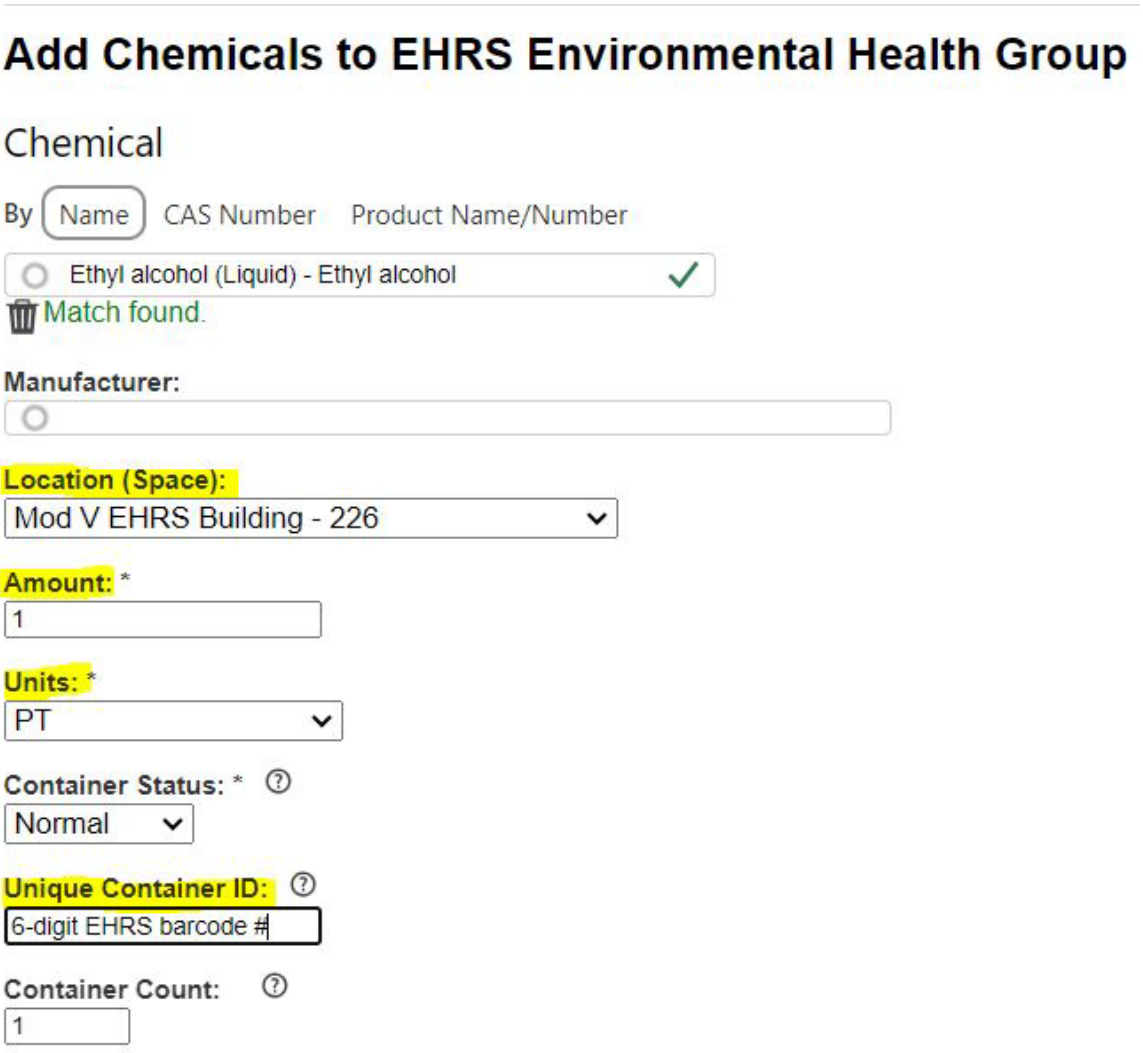
If you still do not see a match, this means that BioRAFT does not recognize the material and has no safety information as a result. Please contact the EHRS Chemical Inventory Team using the Problem-Container Form. EHRS will create the chemical record for you and manually add safety information.

Required Fields

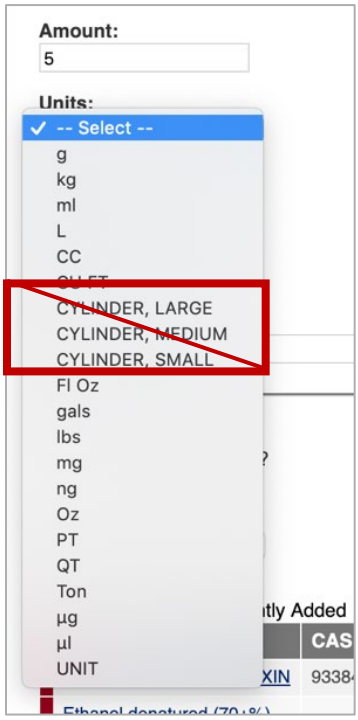
The following fields ***must*** be completed when entering new chemicals to your inventory:

- Location (space)
- Amount
- Units
- Unique Container ID (6-Digit EHRS Barcode Number)

Please be aware that ChemTracker does not require you to fill these fields before pressing submit. If you click submit without entering any one of these fields, it will display as blank in ChemTracker. Please avoid omitting this information to prevent the need for EHRS to address this missing information through routine audits and findings in lab inspections.



Specifying Container Size (Amount and Units)



The size of the container (amount and units) **must** be specified.

Enter the amount, then select the units from the dropdown.

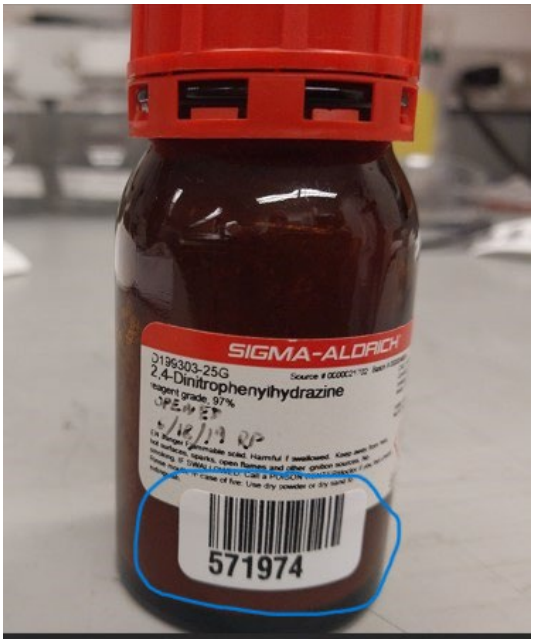
When adding a gas cylinder to your inventory, you must add the amount as a specific volume.

Do NOT use the unit designations *cylinder large, cylinder medium, cylinder small.*

Consult Reference Chart: Common Gas Cylinder Volumes/Weights (click here for link) for common gas cylinder volumes. If you do not see your cylinder in the Reference Chart, contact the Chemical Inventory Team to ask what amount and unit to use.

Unique Container ID (6-Digit EHRS Barcode Number)

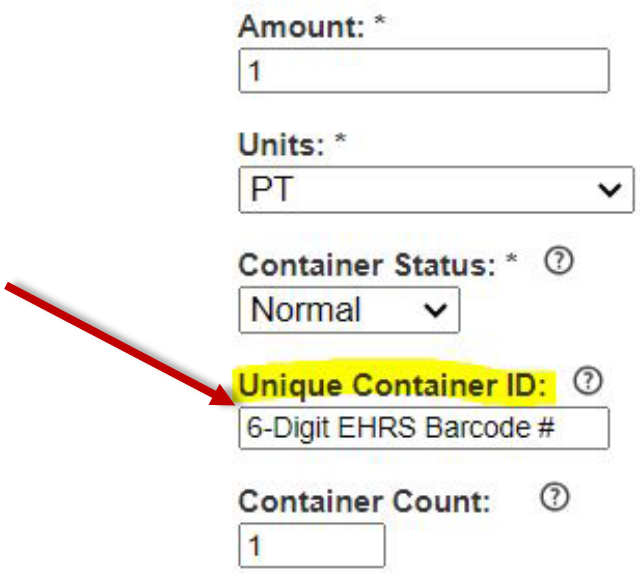
All containers of hazardous materials are required to be labeled with 6-digit EHRS-provided barcode labels; see example below.



To request additional quantities of barcode labels, use the form on the EHRS website:
Warning Sign and Label Request Form.
(Inventory Barcode requests are at the bottom of the form)

Using a Barcode Scanner

Click in the **"Unique Container ID"** field and either 1) **type** the 6-digit EHRS barcode number from the provided label, or 2) **scan** the barcode in using your **barcode scanner**:



If this field is left blank, the system auto-generates a unique ID number beginning with "*C-*" which will not correspond to the barcode label on the container and will make it difficult to identify the container in the future. If you notice this has occurred, you can edit the barcode number after the container is created. See Section 3: Viewing and Editing your Chemical Inventory for instructions on how to do this (click here for link).

Look out for this!

Some barcode scanners are programmed to immediately "enter" after they scan. If yours does this, your container will be automatically submitted to the inventory when you scan the barcode. You'll know this happens if the screen jumps to the "Chemical Inventory Recently Added" table at the bottom of the page.

If you still want to add additional details such as location specifics, expiration dates, or notes, just click the "**edit**" link and continue editing the container record.

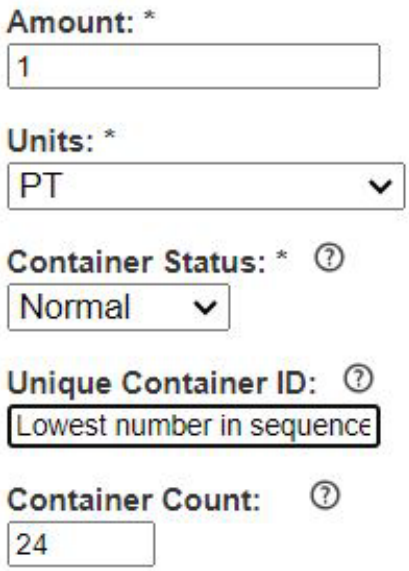
If you do not need to enter additional details, your container entry is complete.

Chemical Inventory Recently Added

Chemical Name	CAS #	State	Amount	Location	Container ID	Edit	Remove
Acetone 99%	67-64-1	Liquid	4 l	Annenberg Center - 001	23456789	Edit	Remove

Creating Multiple New Containers

If you have more than 1 identical container, select the appropriate **"Container Count."** You will only need to scan the *first* EHRS-provided barcode. The system will automatically generate the rest of the sequential **"Container IDs."** You must still affix the corresponding labels to each container.



For example, if you are adding 24 containers of "Ethanol 200 Proof" with barcode IDs 600001-600024, enter 24 into the "Container Count" field and 600001 into the "Unique Container ID" field before submitting. ChemTracker will add 24 of these containers and increment the barcode ID as it does.

Assigning location within room (sub-location)

More detailed location information (refrigerators, benches, shelves, etc.) can be added in the "**Additional Details**" section, accessed by clicking the associated dropdown menu (see below).

Adding Additional Details

The "**Bench**" location field is only *required* for Flammable Liquids Storage Cabinets (FLSCs) and Acid Cabinets (ACs) in the high-rise biomedical buildings:

Stellar-Chance
John Morgan
Anat-Chem
CRB

Johnson
BRB
Smilow

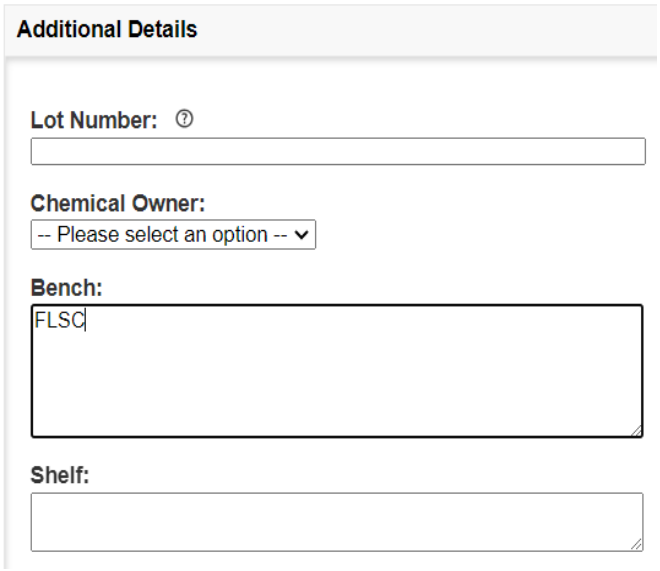
South Tower

Perelman Center for Advanced Medicine

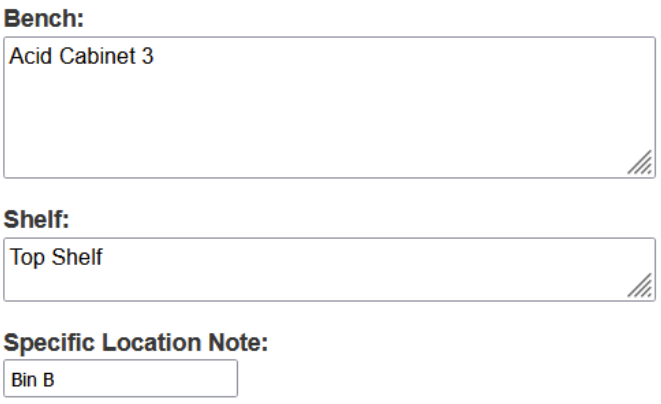
In all other locations, this field is optional.

If you *want* to specify sub-locations take note:

Additional location information should be added first to the "**Bench**" section, then the "**Shelf**" section, then the "**Specific Location Note**" section, getting more specific in that order**.**



For example, if you have a container in Bin B, on the Top Shelf of Acid Cabinet 3, fill in the **Bench**, **Shelf**, and **Specific Location Note** fields as:



Look out for this!

The "Bench" field is free-form text; therefore, if the name of a location is entered differently for the same location, it will create a new sub-location name.

There is no alert to tell you whether you are entering a new sub-location name, and no option to select from existing sub-locations within the room.

Inconsistencies in sub-location names can lead to difficulties in locating containers and in EHRS reporting.

To help avoid errors, common sub-location names have been standardized by EHRS. Use these abbreviations for chemical storage cabinets:

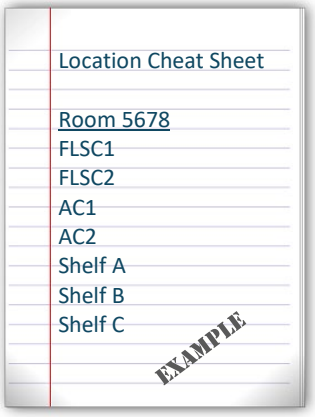
Flammable Cabinet → FLSC

Acid Cabinet → AC

Base Cabinet → BC

Tip: If your lab has multiple chemical storage cabinets of the same type or any sub-location names that are more specific or complex, you should create a "**cheat sheet**" for lab members to reference when entering container information.

Don't forget to label your cabinets and shelves with the names, too!



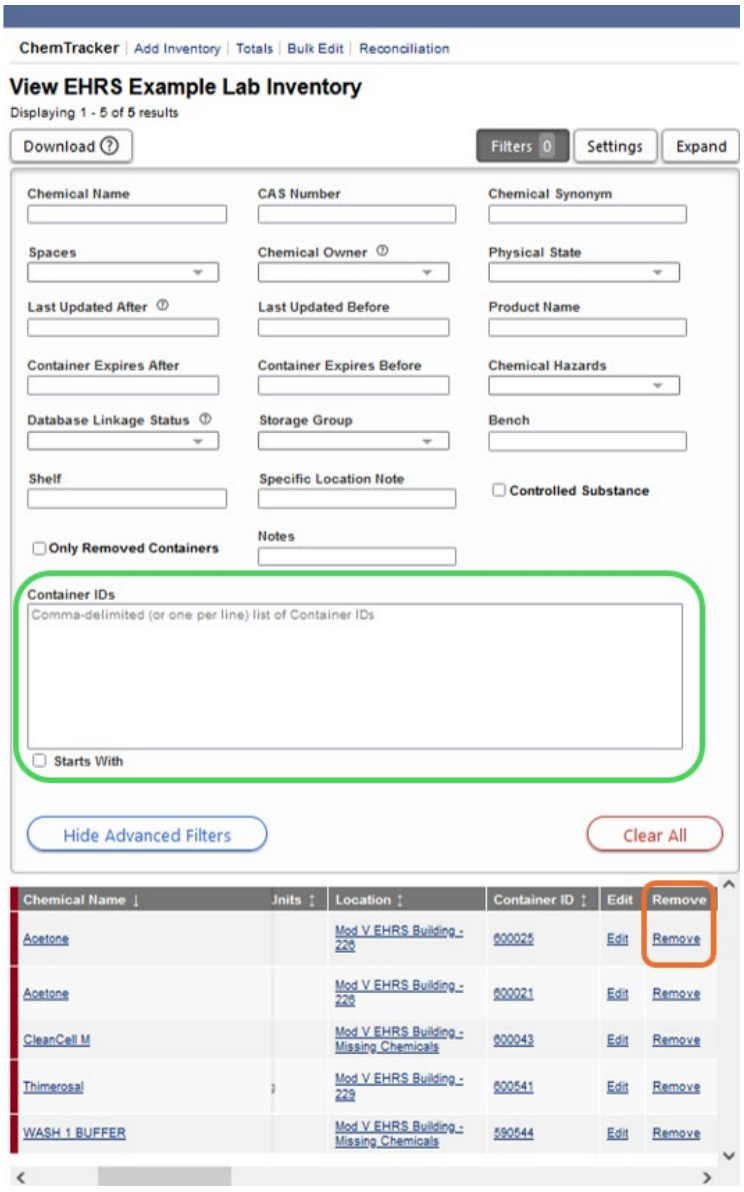
Disposing of Chemical Inventory

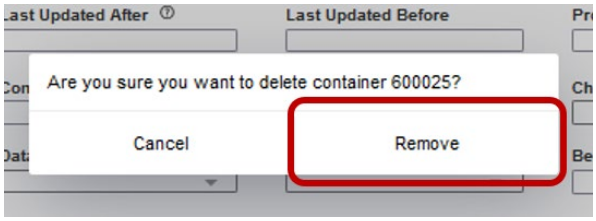
Disposing of a Single Container

First, access your lab's chemical inventory viewing screen. See "Viewing and Editing your Lab's Chemical Inventory" (click here for link) for detailed instructions.

From here, either scroll through your inventory or use filters to find the container you are looking for. Entering the **Container ID** is recommended for quick lookup of one chemical container.

Click "**Remove**" and then click "**Remove**" again in the following pop-up window to confirm.

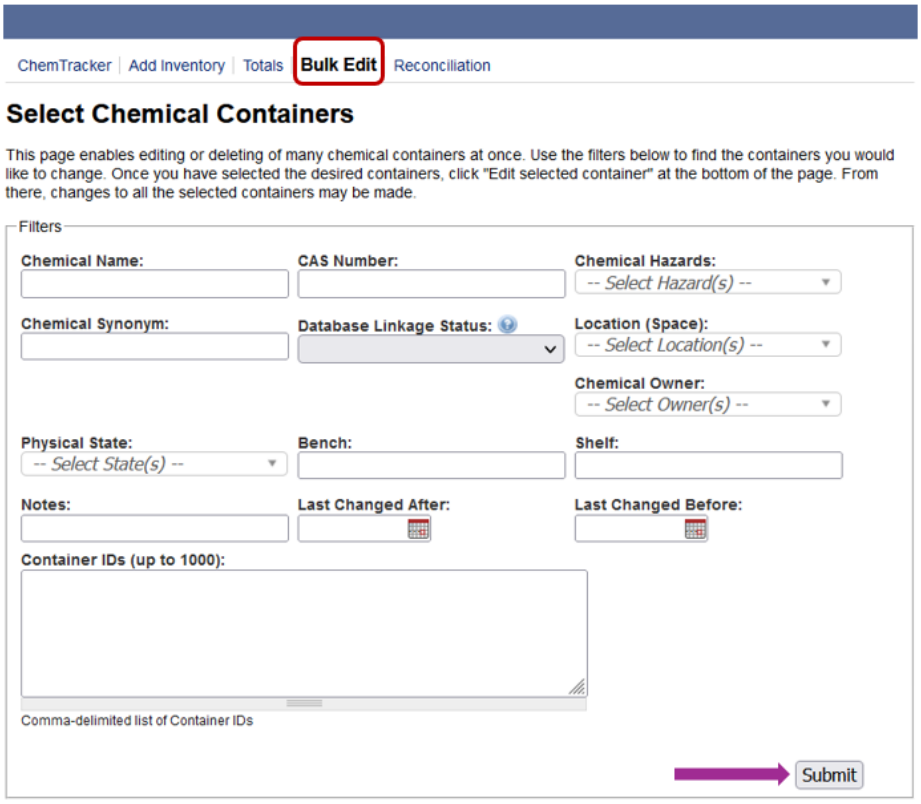




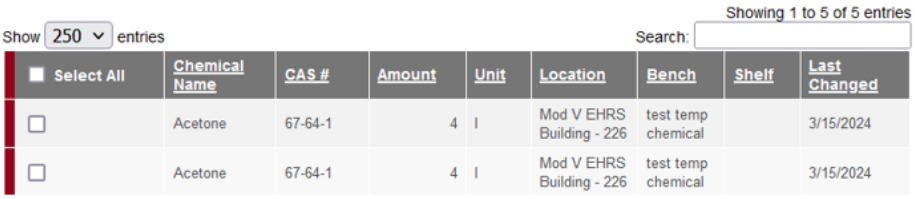
Disposing of Multiple Containers (and Bulk Edit)

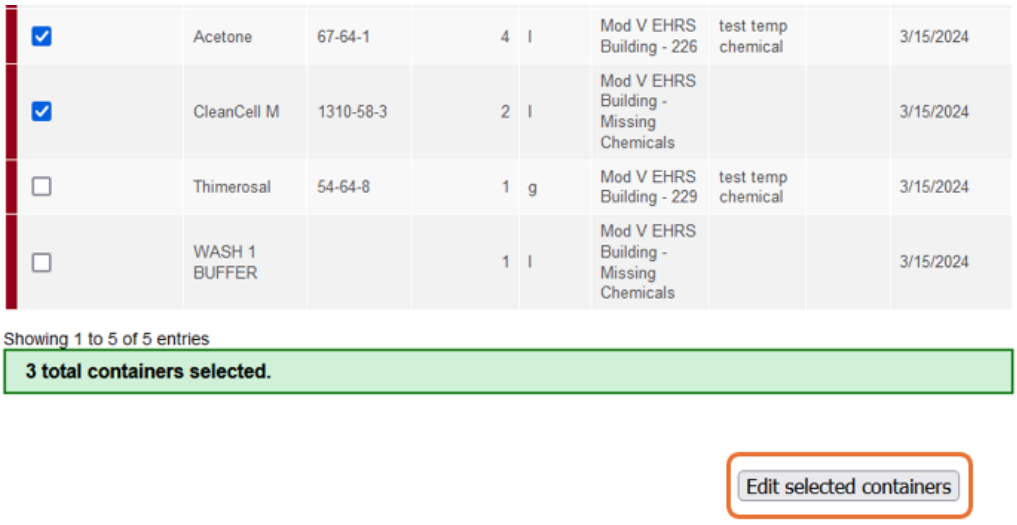
The bulk edit function is valuable for editing or deleting many records all together. Click **"Bulk Edit"** from your lab's ChemTracker menu.

You can scan multiple barcodes into the Container ID box (one per line) or use the filters to search for the containers you want to remove or edit. Unlike on the main inventory viewing page, you must click on the "**Submit**" button in the Filters section to apply filters.



Select the containers of interest (a "Select All" checkbox is also available), then click "**Edit selected containers**" in the bottom right corner. From there, indicate the changes you would like to make.





To **dispose** of the containers, click "**Remove all selected**".

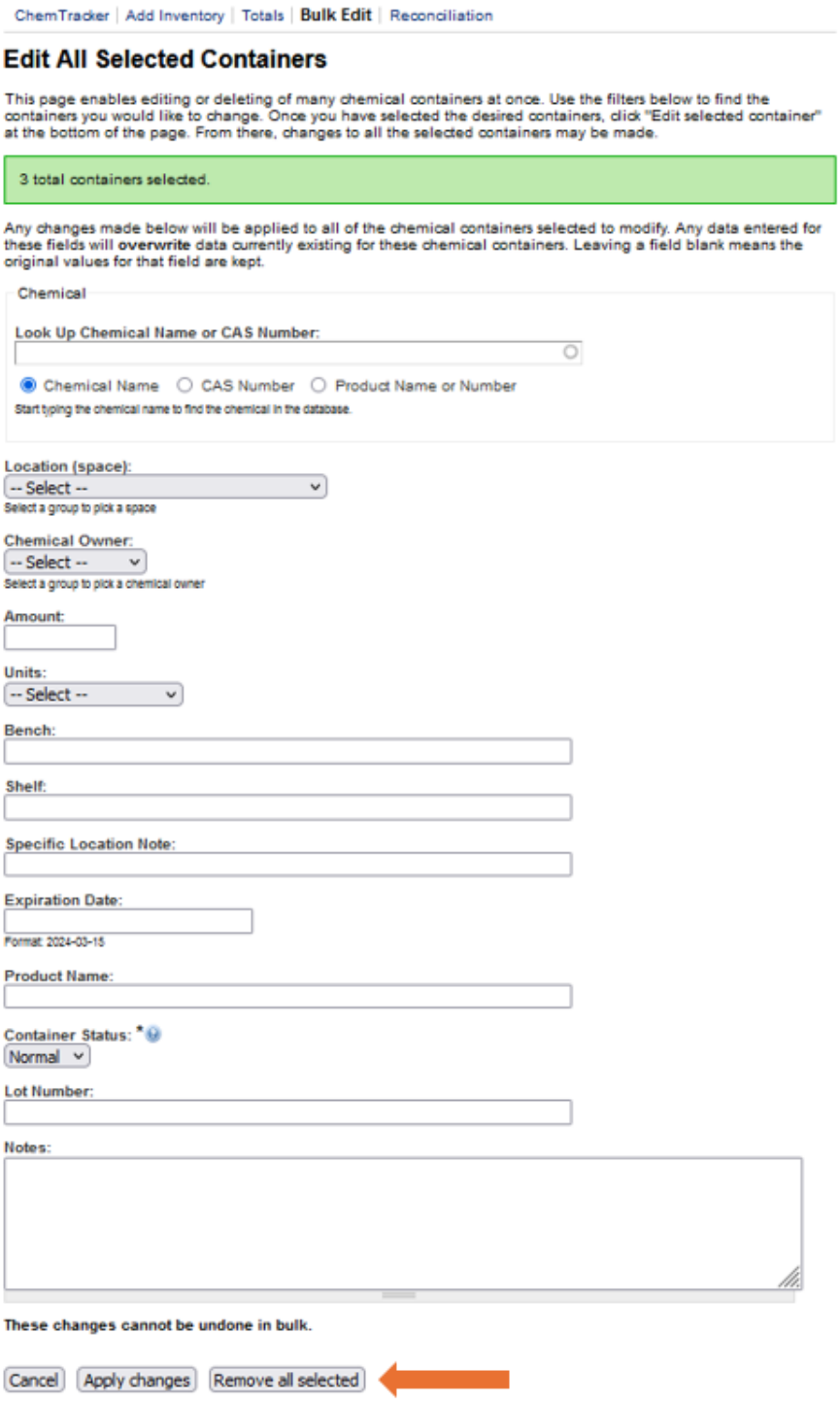
Once a container is disposed of, the barcode is also disposed of and cannot be used again.

Bulk edits to **Location (space)**, **Amounts**, **Units** and **Bench** can also be made in ***Bulk Edit***.

Once the changes are complete, click "Apply changes" and follow the prompts to complete.

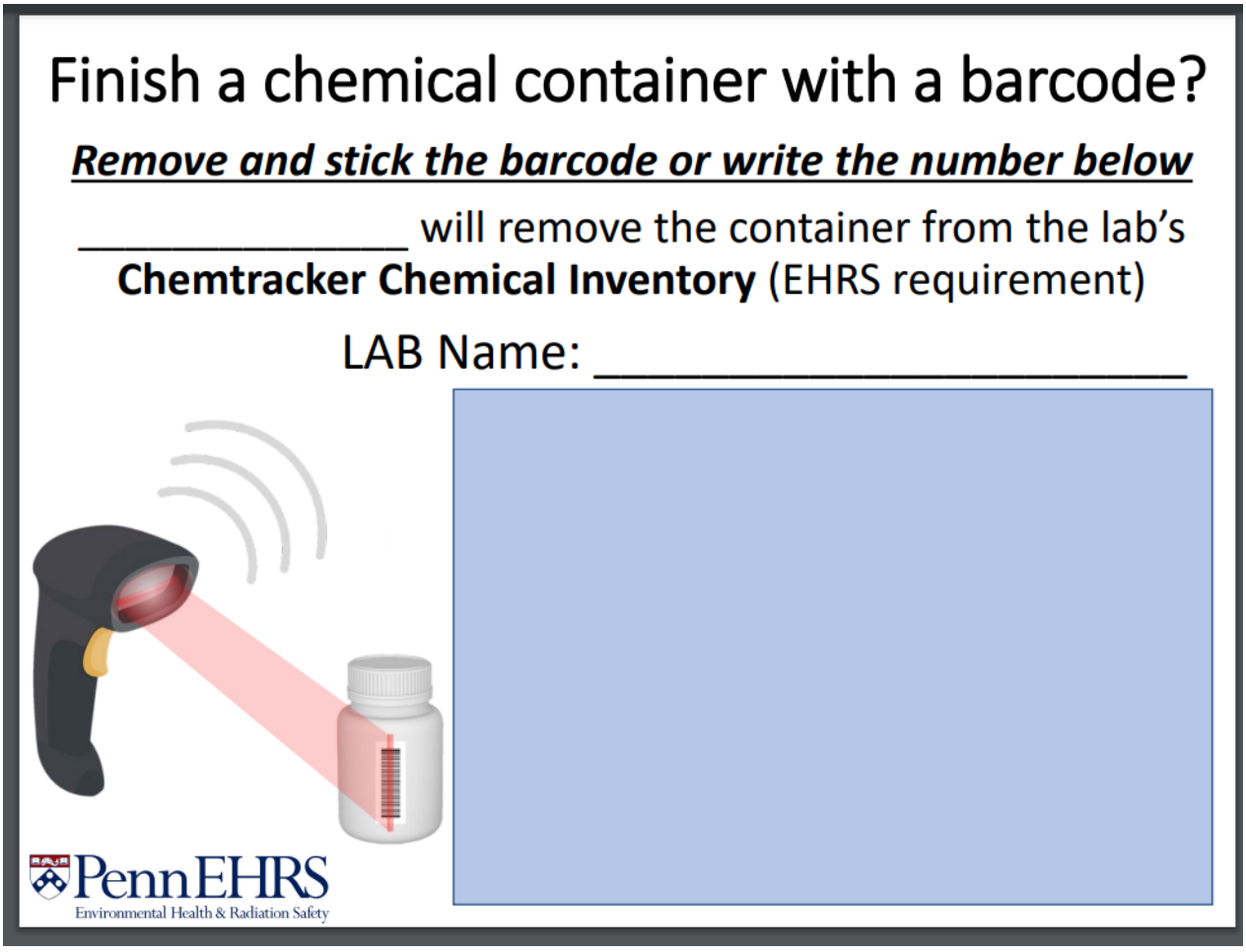
Any changes made here will be applied to all the containers and overwrite existing data for those containers (such as replacing the existing notes). These changes cannot be bulk undone. However, single container records can be edited individually.

If a field is left blank on the edit page, the existing information in that field will be preserved for all records being edited.



ChemTracker Barcode Scanout Sign

Lab members can remove barcode stickers off empty containers and place them on the sign pictured below. The individual(s) in charge of keeping ChemTracker up to date would then have all the empty barcodes right in one place to bulk delete them from the system. The scanout sign can be printed from our "Resources for ChemTracker Users" page.

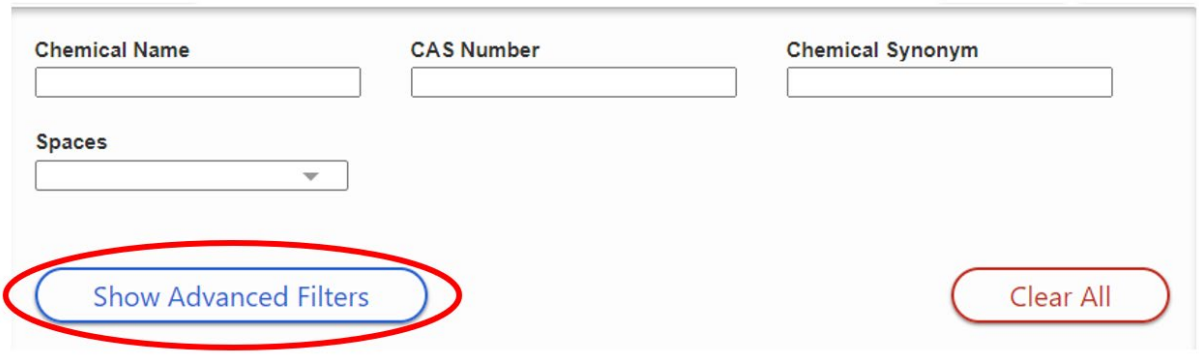


Reactivating Deleted Records

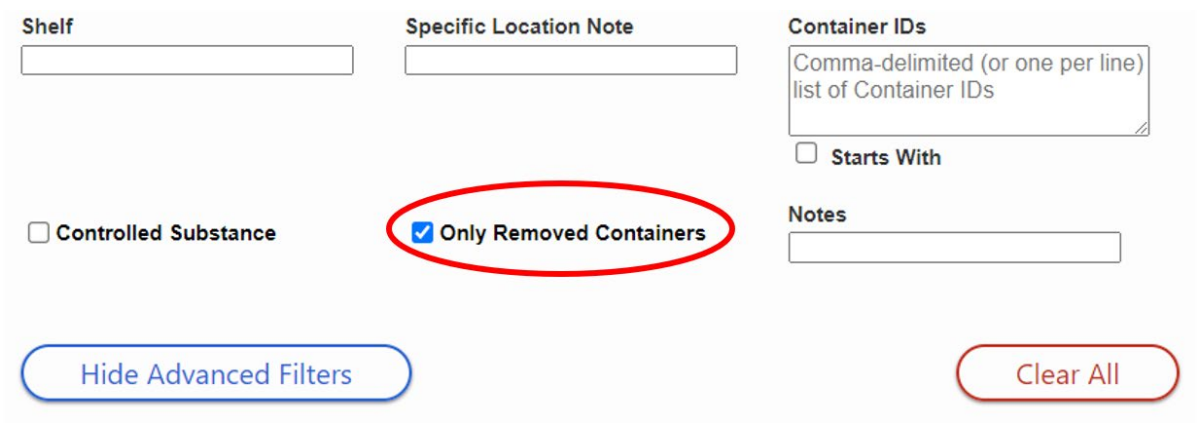
If you accidentally remove a record from ChemTracker, you may reactivate the container by performing the following steps:

Navigate to your lab's chemical inventory viewing screen. If on the Bulk Edit or Add Inventory screen, click the "ChemTracker" tab at the top. See Section 3: "Viewing and Editing you Lab's Chemical Inventory" (click here for link) for detailed instructions from other locations in BioRAFT.

- Click on "Show Advanced Filters."



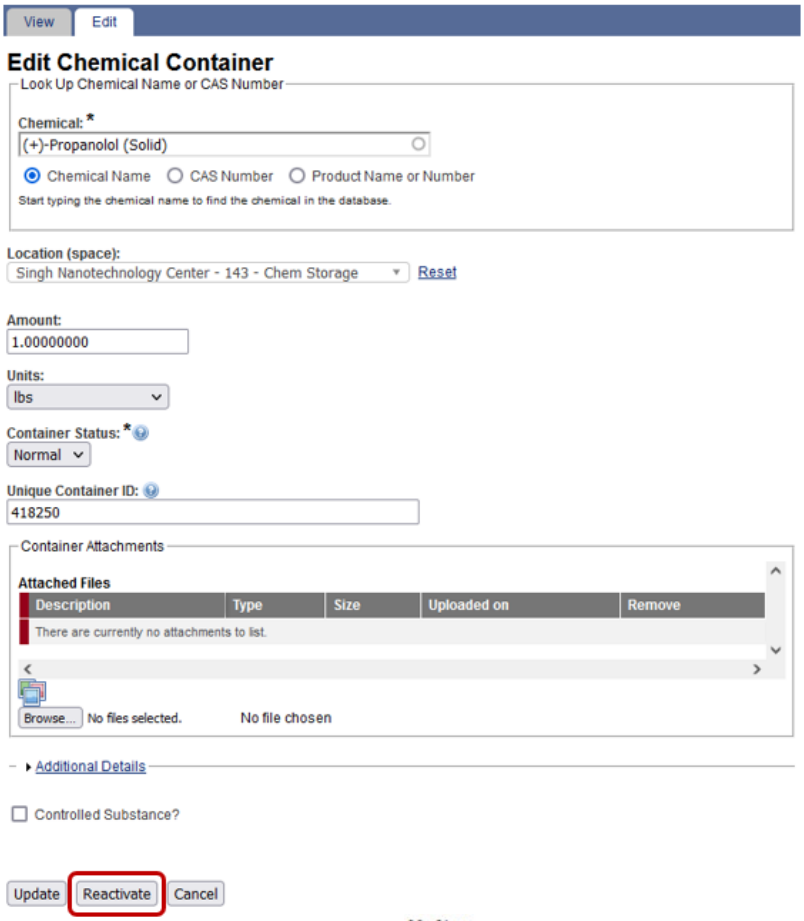
- Then select "Only Removed Containers."



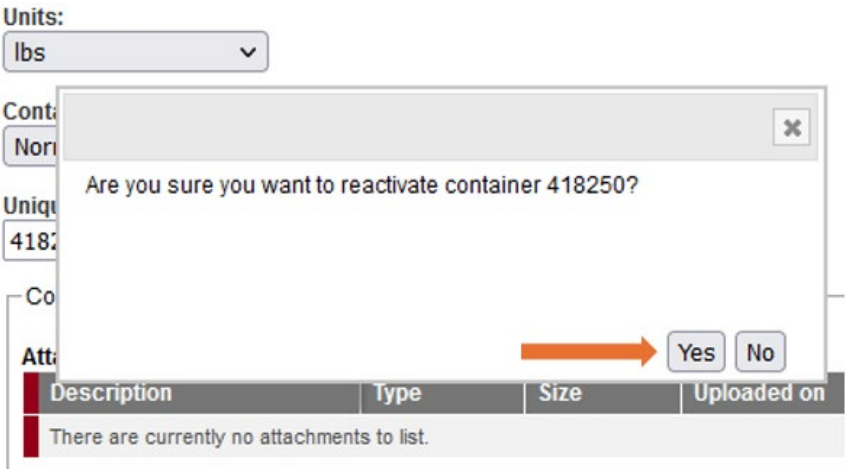
- Click on the Container ID link for the record you'd like to reactivate:

- Click "Edit" to access the reactivation feature:

- Click "Reactivate" at the bottom of the screen:



Click "Yes" on the pop-up window that appears:



Managing High-Turnover Containers (not available in all buildings)

THIS METHOD MAY NOT BE USED FOR FLAMMABLE LIQUIDS IN HIGH-RISE BIOMEDICAL LABORATORY BUILDINGS (*Smilow (including Perelman Center for Advanced Medicine and South Tower), BRB, Johnson, CRB, JMB, Anatomy-Chemistry, and Stellar Chance*). Those buildings are required to track individual containers of all flammable liquids!

Some labs have a high turnover of certain commodity chemicals, especially solvents. If you keep a stock of these chemicals—and the quantity is consistent—you may wish to have a *representative* inventory of those containers.

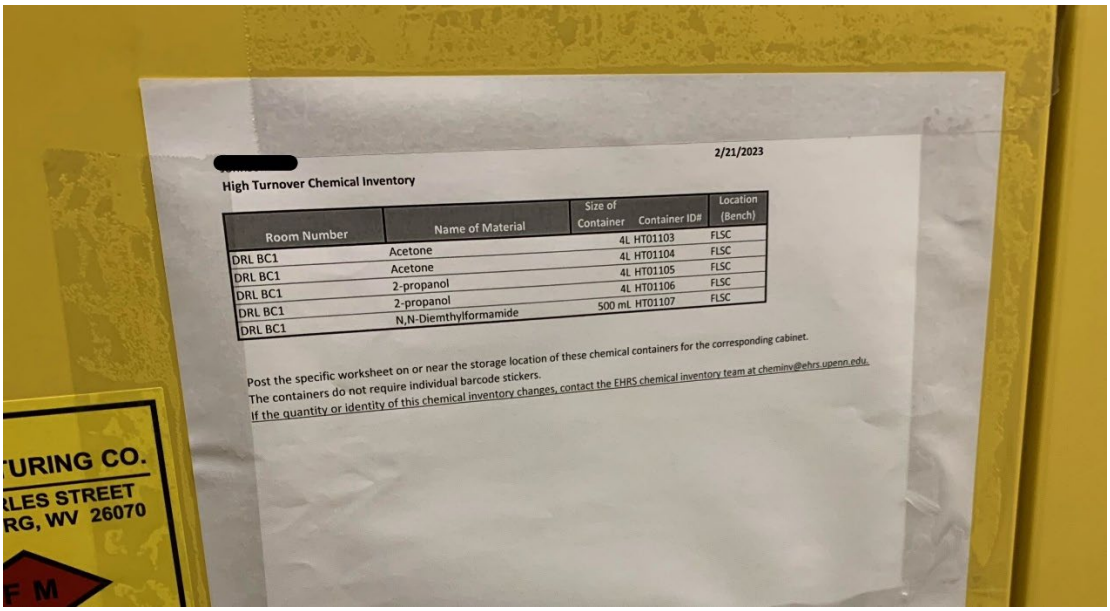
Example: At any time, you have a maximum of two 4-liter bottles of 2-propanol and two 4-liter bottles of acetone in your flammable liquids storage cabinet. You empty these at a rate of 1 bottle every week or two, and you don't want to keep entering them into ChemTracker and then marking them as disposed.

Rather than adding each container to your inventory as you receive it and removing when empty:

- EHRS would create four *representative* containers in your ChemTracker inventory, starting with the letters "HT."

Chemical Name	CAS Number	State	Amount	Units	Location	Container ID	Edit	Remove	Bench
2-Propanol	67-63-0	Liquid	4	l	David Rittenhouse Laboratory - BC1	HT01105	Edit	Remove	FLSC
2-Propanol	67-63-0	Liquid	4	l	David Rittenhouse Laboratory - BC1	HT01106	Edit	Remove	FLSC
Acetone	67-64-1	Liquid	4	l	David Rittenhouse Laboratory - BC1	HT01104	Edit	Remove	FLSC
Acetone	67-64-1	Liquid	4	l	David Rittenhouse Laboratory - BC1	HT01103	Edit	Remove	FLSC

- The information and high-turnover barcodes would be on a *sheet of paper* instead of on the bottles.
- The paper is attached to the cabinet where the bottles are stored; see example below.



Contact the Chemical Inventory Team (cheminv@ehrs.upenn.edu) to create container records for these materials.

Include the following information when contacting the Chemical Inventory Team about High-Turnover containers:

1. The name of the material
2. The volume/amount of *a single container*
3. The number of containers of the above stated size
4. Any additional label information you would like included (for example: grade, vendor, etc.)
5. The location where these materials will be stored (room number AND cabinet name, such as FLSC1, FLSC2, etc.).

Contact EHRS if you need us to make any changes to your high-turnover inventory.

High-turnover inventories will be checked by Chemical Inventory Team members periodically to ensure accuracy.

Lab Moves/Reconciling Your ChemTracker Inventory

If a lab is discarding any containers as part of their lab move/relocation, they are responsible for scanning them out/removing them from their ChemTracker records.

Labs must notify the chemical inventory team (cheminv@ehrs.upenn.edu) prior to giving away containers to other labs. The chemical inventory team will provide guidance on how the involved labs can add/remove ChemTracker records, or they can complete the electronic transfer on the labs' behalf.

The chemical inventory team offers a service called "reconciliation" which helps labs to "true-up" inventory records that are believed to be out-of-date due to poor record keeping, poor training, relocation, etc. Contact us at cheminv@ehrs.upenn.edu for more information.

If your lab recently moved, the first step would be to submit a Request Changes to BioRAFT Lab Locations (spaces) webform.

Next, the chemical inventory team will electronically bulk edit your inventory and send you an export of your inventory on a spreadsheet. You will then annotate on the spreadsheet what has been disposed of and the new locations for your other chemicals. You will then send the spreadsheet back to the chemical inventory team for them to apply the updates you noted.

Another option for labs that have moved or with out-of-date inventories would be for your lab to scan the chemicals that remain in your lab and ask the chemical inventory team to reconcile it remotely for you. Instructions for this are included below:

1. Decide the room(s) where your chemicals will be stored.
2. Create a text document (e.g. in MS Word) or Excel file.
    a. Type in the name of a storage location to function as a header. Describe a sub-location (e.g. "Fridge A") as part of this header if required or desired. Remember to use names that are consistent with those you are already using in ChemTracker.
    b. Under the location header, list all the barcode numbers for the container records that you want "moved" to that location. **One barcode number per line.**
        i. You can easily do this by using your barcode scanner. Just put the cursor where you want the barcode number to go and scan the EHRS inventory barcode sticker that's on the container. The scanner should "type" the

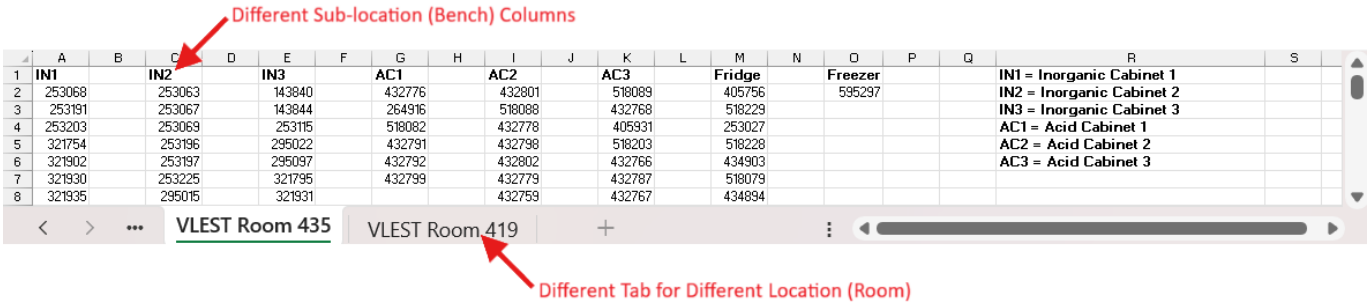
number into the document for you. Some will also press "Enter" to move to the next line automatically.

c. Repeat this process for each of the locations/sub-locations your chemicals are located in.*

d. Email the chemical inventory team (cheminv@ehrs.upenn.edu) your document as an attachment.

3. The chemical inventory team will then process your request and let you know when it's complete.

*An example of what your document should look like:



Reference Chart: Common Gas Cylinder Volumes/Weight

Gas	Cylinder Description	Cylinder Size	Amount	Units
Oxygen Gas (greater than 21%)		Cylinder size 10	340	L
Oxygen Gas (greater than 21%)		Cylinder Size E	660	L
Oxygen Gas (greater than 21%)	7 inch x 33 inch	Cylinder Size 80	2407	L
Oxygen Gas (greater than 21%)	9 inch x 51 inch	Cylinder Size 200	7107	L
Oxygen Gas (greater than 21%)	9 inch x 55 inch	Cylinder size 300	9543	L
Hydrogen Gas (greater than 5%)	7 inch x 19 inch	Cylinder Size 35	878	L
Hydrogen Gas (greater than 5%)	7 inch x 33 inch	Cylinder Size 80	2095	L
Hydrogen Gas (greater than 5%)	9 inch x 51 inch	Cylinder Size 200	5578	L
Hydrogen Gas (greater than 5%)	9 inch x 55 inch	Cylinder Size 300	7391	L
Carbon Monoxide		Cylinder Size 150A	400	L
Carbon Monoxide	6 inch x 23 inch	Cylinder Size 10	850	L
Carbon Monoxide	7 inch x 33 inch	Cylinder Size 80	2000	L
Carbon Monoxide	9 inch x 51 inch	Cylinder Size 200	5100	L
Carbon Monoxide	9 inch x 55 inch	Cylinder size 300	6800	L
Methane	7 inch x 19 inch	Cylinder Size 35	1132	L
Methane	7 inch x 33 inch	Cylinder Size 80	2831	L
Methane	9 inch x 51 inch	Cylinder Size 200	7400	L
Methane	9 inch x 55 inch	Cylinder size 300	10100	L
Nitric Oxide		Cylinder Size 35	226	L
Ammonia		lecture bottle	283	L
Ammonia	9 inch x 51 inch	Cylinder Size 200	5578	L
Propane Gas	Single use Fatboy tank with standard torch fitting		16.92	oz
Propane Gas	Liquefied Gas		100	G
Propane Gas	Liquefied Gas		300	G

Reference the following table to enter the volumes (in liters) or weights of your hazardous gases.

If you do not see the specifications for the gas cylinder you are trying to enter, contact the Chemical Inventory Team, cheminv@ehrs.upenn.edu.