TEMPLE UNIVERSITY CEMS
CHEMICAL ENVIRONMENTAL MANAGEMENT SYSTEM

CEMS Overview

What CEMS is: CEMS is the online chemical inventory system for Temple University and Temple University Health System. All chemical owners are responsible for keeping their inventory updated in CEMS. CEMS is administered by Temple Environmental Health & Radiation Safety (EHRS).

What needs to be in CEMS: All hazardous chemicals need to be listed in your CEMS inventory. To determine if a chemical is hazardous look at the Safety Data Sheet that came with the product. If you don't have the SDS you will need to obtain a copy from the manufacturer/supplier. If the SDS says that the product contains no hazardous properties then that item doesn't have to be in CEMS. If any hazardous properties are listed then you must list it in your inventory. Even if the product is not hazardous you must keep a copy of the SDS as proof in the event of an emergency or EHRS inspection.

> Drugs/Controlled Substances: Controlled substances should not be listed in CEMS. Controlled substances must be registered with EHRS but do not list them in your CEMS inventory. If you store drugs in the same state that are given to a patient/subject (pill, injectable, etc.), then you don't have to list them in CEMS. If you break down a drug into individual components or have components that, when combined, become a drug, then the components must be listed in CEMS.

Keeping your inventory updated: EHRS needs to know the maximum amount of the chemicals that you have. This means both the maximum number of containers of a chemical, as well as the maximum amount that can be held in the container. For example, let's say that you have five 25 ml bottles of isopropyl alcohol purchased from Fisher Scientific. Each of those five bottles needs to be listed in your CEMS inventory with a quantity of 25 ml. Here are a few scenarios regarding the updating of your chemical containers:

> Scenario 1: You use up two of those containers of isopropyl alcohol and order two replacements of the same size from the same manufacturer. In this case you don't have to do anything in CEMS since you will still have a total of five 25 ml containers of isopropyl alcohol from Fisher. **EHRS does not need you to update CEMS every time you use a bit of chemical – for example, if you start with 25 ml and use 5 ml for an experiment you do not need to change your quantity to 20 ml.**

Scenario 2: You use up or no longer need two containers and do not plan on replacing them. In this case you will need to mark two containers as empty in CEMS to reflect how much you currently have. Reminder: If you have chemicals that you no longer use or need you will need to complete a Hazardous Waste Pickup request and submit that to EHRS so the chemicals can be safely removed from your lab/chemical storage area.

Scenario 3: You decide that you need more than five containers of isopropyl alcohol. If you plan to add more than the current amount that is in your inventory you will need to add the additional containers to CEMS. If you originally had five containers and decide that you now need seven containers, then you would need to add the additional two containers to your inventory.
Exception: If you portion out your chemicals into smaller containers for use (for example, pouring 50 ml into five 10 ml containers) you only have to report the original container and volume of 50 ml.

How EHRS uses CEMS: EHRS, in the course of their usual inspection process, will check your CEMS inventory to make sure that it is accurate and matches your physical inventory. Any discrepancies can and will be counted as a violation. In the event of an emergency, EHRS will give your current inventory to first responders. If there is a chemical spill or release and/or lab personnel are exposed to a chemical, EHRS will check the inventory to make sure that it is listed in the inventory. If it is not, severe ramifications are possible.

Getting Access to CEMS

What kind of accounts are in CEMS – and how do I get one? Every chemical owner will have an account because the chemicals will be listed under their names – these are called "Owner" accounts in CEMS. After they (or their representative) attend training an account will be created and information sent to them via e-mail. If they require additional accounts for anyone else in their chemical storage area they can create an account by going to https://cems.unh.edu/temple/CEMS/CreateAccountForm. This type of account is known as an "Associate" account.

How do I log into CEMS? Once you have your account information you are ready to log into CEMS. To access Temple CEMS, go to https://www.temple.edu/ehrs/CEMS. Once there you need to enter the e-mail address associated with your account and the password you set. Click Submit and you will be logged into CEMS.

CEMS only works on Temple computers: You must be using a computer on the Temple network to access CEMS; CEMS cannot be accessed from home using your home internet provider. If you require CEMS access from home, you must submit your home computer's IP address to EHRS so it can be allowed access.

I'm a new CEMS owner – do I have to enter everything from scratch? If your lab or chemical storage area has never been in CEMS before you do not have to enter all of your inventory manually into CEMS. Once it has been identified that you are new to CEMS you will be sent a template in spreadsheet form that you can complete. Once your current inventory has been entered on it you can send it back to EHRS and it will be uploaded into the system. Two important things to remember when completing the spreadsheet:

1) Instructions will be sent along with the template spreadsheet. You must follow these directions when filling out the spreadsheet or your inventory cannot be uploaded.

2) When you compile your initial inventory on the spreadsheet you must perform a physical evaluation of your chemicals: this means physically looking at the container and confirming that the chemical is still in usable condition, it has not expired, is not chemical waste, and that peroxide has not formed inside the container. Once you've determined that the chemical is usable you can list it in your inventory.

Viewing and Updating Current Inventory

Viewing an inventory: If you are logged in as an Owner and you have inventory in the system, go to the **Chemical Inventory** section and look for the **My Container Locations** section. Every room where you own chemicals will show. Click on one of the locations on that list and you will be taken to the inventory for that room. If you want to see your entire inventory, click **Search Chemical Inventory** and enter your name in the Owner field. Click Next and you will be taken to your entire inventory. (If you are logged in as an Associate you will see a box called **My Colleagues**. Click on the link that says **chemical inventory**.)

Your active inventory: Your inventory (either by name or by room) should now be on the screen. The default setup will show a number of columns starting with Barcode. **This is not a real barcode** – EHRS does not require labs or chemical storage areas to affix specific barcode labels to their containers. For the system to work, each container must be listed individually with a unique identifying number. EHRS does not expect you to associate a specific barcode number in CEMS with a specific container in your chemical storage, as long as your physical inventory and your CEMS inventory matches (as explained above).

Many of the columns you will see are self-explanatory (Chemical Name, Manufacturer, etc.). By default, you will see a Hazards column. This lists particular hazards that may be associated with a chemical; such as if it is a reproductive toxin, select carcinogen, acutely toxic, peroxidizable (peroxide forming), and other hazards. CEMS will automatically populate this column based on the chemical information you provide.

> Please note: Just because the Hazards field is blank does not mean the chemical is not hazardous – it only means that the chemical does not fall into one of the particular categories listed above. Please refer to the chemical's SDS for complete hazard information.

You change the columns being displayed by clicking on the top of each column and selecting the category you want to view. You can filter out results by clicking on column you want to sort. For example, if I only want to view chemicals in my inventory with the word "hydroxide" I can click on the Chemical Name column, select Filter from the menu, and type hydroxide in the window that opens. After clicking the **OK** button CEMS will refresh and show only the chemicals with hydroxide in its name.

By default you will see only the first twenty-five containers in your inventory. You can adjust the view by going toward the bottom of the page where it says **View 25 results per page**. You can adjust the view by either clicking on the **Next** button (which will take you to the next 25 results) or by clicking the drop-down arrow and changing the number of results per page (up to **View All Results**).

Exporting/printing your inventory: If you want to print or save a copy of your inventory click on the **Floppy Disk/Tools** button in the upper right hand corner of the screen. A menu will open with some options for you: choosing CSV will export your inventory into a spreadsheet format that you can save on your computer. If you are not already viewing all of your containers you will see an option to Export All. Check this box or you will only get what is currently showing on the screen.

Last Evaluation Date: The last column you will see in the initial column layout is called Last Evaluation Date. **The Evaluation Dates for your entire inventory must be updated once per calendar year.**

> Physical evaluation required: Before updating your Evaluation Dates you must perform a physical evaluation of your chemicals: this means physically looking at every container and confirming that the chemical information (name, manufacturer, quantity) matches your CEMS inventory and that the chemical is still in usable condition, it has not expired, is

not chemical waste, and that peroxide has not formed inside the container. If the container passes this evaluation, then it can be updated for the current year.

To update all of your Evaluation Dates at once after you've performed your physical inspection, scroll to the bottom of your inventory screen and click on the **Update Records** button.

> If you have more than one room to update: If you have more than one location you must make sure that you are viewing everything under the owner's name before clicking the Update Records button (follow the procedure described under "Viewing an inventory"). If you have only selected one room then you will only update that one room. Doing it that way, you will have to repeat these steps for each room in your inventory.

Change the **Update Evaluation Date** answer to **Yes**. Scroll down and review your inventory to ensure that everything is listed and then click **Confirm**. CEMS will ask you if you are sure you want to do this; click Yes. The screen will again show everything that was updated with a message that says the inventory was updated successfully.

There are two exceptions to the usual annual evaluation:

1) If you are submitting a new inventory via spreadsheet, EHRS will upload the spreadsheet and you automatically be in compliance for the year. You should, however, review the inventory after the upload has been completed to make sure that the uploaded inventory is accurate. You are responsible for notifying EHRS of any discrepancies after an inventory is uploaded.

2) Peroxide-forming chemicals must be physically evaluated – and possibly disposed of -- on a more regular basis. A list of some peroxide-forming chemicals and their evaluation and/or disposal frequency can be obtained through EHRS. The list is not exhaustive – refer to the Safety Data Sheet (SDS) before use to determine if there is a possibility of peroxide formation and additional safety information.

Inside a CEMS container record: If you want to make changes to a particular container, click on its **Open Record** button (located at the far left hand side of the screen). A window will open up showing all of the information for that particular container. Anything that has a field next to it (owner, location, quantity) can be changed by the user. For example, if you decided to store this container somewhere else then you can click on the location menu and select its new storage place from the list.

A word about chemical locations: You don't have to report every time a chemical leaves a room throughout the day. You only need to update the location of a chemical if you decide to store that chemical container in a different location overnight. For example, if I have two rooms, 100 (chemical storage) and 101 (lab), I don't need to say I took this container from room 100 to use in room 101, as long as I return it to 100 when I am done using it at the end of the day or when the lab when will be unoccupied. If I decide to store (leave unattended overnight) some chemicals in 101, then I would need to update CEMS.

STOP! **Do not change the chemical name OR manufacturer from inside a container record.** If the chemical name is incorrect, do not change the chemical name; mark the container as empty and add a new container with the correct chemical information. If the manufacturer needs to be changed, mark the container as empty and add a new container with the correct manufacturer.

Any time you make a change to your chemical container, make sure you click the **Save** button.

Marking a container as empty: As explained earlier, you only have to remove a container from your inventory when it is no longer in your lab or chemical storage area and you do not plan on replacing it. To update CEMS in this situation, go to your inventory and click on the **Open Record** button for the container you no longer have. When the container record opens click on the **Mark Empty** button and then click **Save**. CEMS will refresh and you will see in the container record that the barcode has been marked empty (it will also disappear from your current inventory). You can't delete anything permanently from the system, so if you do accidentally mark a container as empty you can either click the **Activate Container** button right away or contact EHRS and we can get the container back for you.

Choosing the container to empty: If you have multiple containers with the same information (same chemical name, manufacturer, quantity) it doesn't matter which container you mark as empty as long as when you are done your CEMS inventory matches your physical inventory. For example, say we are still talking about the five 25 ml containers of isopropyl alcohol from Fisher from earlier. If I'm down to four containers and I want to mark one as empty, it doesn't matter which one I pick since in the end I will still have four 25 ml containers of this chemical from this manufacturer.

Updating multiple containers: You've already been shown how to update one container at a time. There is a way to make changes to multiple containers at once – for example, if you have more than one container you want to get rid of or you only need to update the Evaluation Dates for your

six containers of peroxide-forming chemicals. Click **Update Chemical Inventory** in the Quick Links box.

When this screen opens you will see a large box in the center of the screen. You will need to enter the CEMS barcodes for the chemicals you want to make changes to. You can either type them directly into the box or you can copy and paste them from an exported CSV file of your inventory. Once you have entered the barcodes in the box click on the **Next** button. You will see the containers you want to change listed.

Look at this page and select what you want to update. If you want to change the location of your chemicals, you would click on **Set Location** and select a new location from the list. If you want to mark multiple containers as empty, scroll down and change **Mark Empty** to Yes. Scroll down and review what will be updated. Click **Confirm** and then say Yes to complete the update. Those particular containers will be updated.

> Entering barcodes: When you enter barcodes you can either enter them one at time separated by space or on separate lines. You cannot separate them with a comma or by using a hyphen to enter a series of numbers.

Adding New Inventory

When to add new inventory: You need to add new inventory when the chemical has never been in your inventory before or you are adding a container in excess of what already was present. For example, if I have five containers of sodium hydroxide and bring a sixth into the lab, then I need to add that new container. If I only have six because one is almost empty but my replacement came in before it was completely used up then leave the inventory alone. What EHRS wants to avoid are labs or chemical storage areas underreporting their inventory – for example, reporting one container at 100 ml when they actually have five full 100 ml containers.

Barcodes before you begin: As explained earlier, every container in CEMS has a barcode assigned to it within the system. If you need to add new containers to your inventory you must request barcodes from EHRS. To do this, send an e-mail to cems@temple.edu and tell us how many barcodes you need. You can ask for as many as you want: EHRS doesn't expect you to send an e-mail every time you need one barcode – if you want to ask for 10, 25, 100 barcodes at one time, that is up to you. The important thing is that you only use the barcodes that we assign to you; if you run out of barcodes you must send another e-mail request. **Please do not make up your own barcode numbers or reuse barcodes for different chemicals.**

<u>Adding inventory:</u> To add new inventory, click on the **Add Inventory** link on the home screen. If you see any Options from a previous action showing, click the **X** to clear them. Start at the barcode field and enter the barcodes you want to assign to your new chemicals. If you have multiple chemicals you can enter the first number you want to use, then a hyphen, then the last number. So, if I have three containers to add, I can enter 117283-117285 to add three containers at one time.

Continue to fill in the fields on this screen. At this time, not all **Product Barcodes (UPC)** or **Product Numbers** will be in CEMS by default. You can try to use those but the safest option will be to enter the **Chemical Name** in the field. Start typing your chemical in the Chemical Name field. Anything that contains what you are typing should appear in the menu; select the listing that matches your chemical and then click **Next**. If the menu doesn't show any matches click **Next**. This means that you are the first lab to use that chemical and you will need to provide some information on the next screen.

The next screen shows you all of the chemical and container information you can enter. A lot of information may already be populated (particularly NFPA and CAS information). If not already provided, you must complete the **Chemical Name, Manufacturer, NFPA rating, and CAS number**. For most fields you can start typing information in the box and matching data will populate. For example, start typing Fisher in the Manufacturer field and everything that has Fisher will pop-up in a menu; click the most accurate option to choose it for your chemical. If you have a Safety Data Sheet for the chemical, you can click on the **Safety Data Sheet upload** button and upload it into the system.

You use the **Container Information** column to set the information specific to your container. You must enter information for **Barcode, Owner, Location, Quantity, Container Type, Date Acquired, and Expiration Date.** If the chemical **Owner** does not already appear in the Owner field, start typing their name; click it when you see it on the menu. This will populate the **Location** field with all of the locations where an owner has at least one chemical. If you have more than one location, click on the drop-down and select the correct location. If the location does not appear there, please contact EHRS and they will add the new location to CEMS. There is also a field called **Optional Sublocation**. This is if you have a specific place in the lab or chemical storage area where you are keeping the chemical (cabinet, freezer, etc.).

Fill in the quantity (you need to list the size of the container, not the number of containers you have) and the unit of measurement for the container. You also need to enter the Date Acquired and Expiration Date of the chemical and the Container Type. Expiration Date must in the format YYYY-MM-DD. If there is no manufacturer-provided Expiration Date, please enter a future date (ten years

would be acceptable). Click **Save** once you have entered all of your data. CEMS will show you a message that the barcodes have been added.

SDS Information

SDS requirements for chemical users: Every lab or chemical storage area must have a complete library of Safety Data Sheets in CEMS available in case of emergency or inspection. CEMS users can upload SDS into the system by viewing their inventory and looking at the SDS column. A red icon appears in the column for any existing SDS. Click on the icon to open the SDS and check to make sure it is accurate and applies to your chemical.

If you need to upload a new SDS or update an old SDS, you should check with the manufacturer or supplier of the chemical. Many companies have SDS available on their websites; you can find it on the website and save it to your computer. Once you have your SDS downloaded you can add it to CEMS. If you cannot find it on their website you must contact them to obtain a copy.

To upload new or updated SDS, open your inventory. Click on the barcode for the chemical you want to add or update. When the chemical record opens, go to the **Safety Data Sheet** section and click the **Upload** button. A file window will open; find the SDS you want to add, click on it, and then the Open button. The SDS will be added to CEMS. Click the **Save** button for the container record. **If you have multiple containers of the same chemical, the new SDS will cover all of them.**

CEMS SDS archive: CEMS has a way to search for SDS within the system. To access the CEMS SDS archive when you are logged into the system, click on the **Search SDS** link on Home screen. When the search screen opens you can enter your search information in the appropriate box and then click Search. SDS matching your search criteria will appear; click on the **View** button to see the SDS. Once it opens you can print or save the document.

Anyone with internet access can access the CEMS SDS Archive. This is beneficial to labs or chemical storage areas where not everyone has login access to CEMS. To get to the SDS archive, go to this website: https://www.temple.edu/ehrs/SDS.

EHRS Contact/CEMS Support Information

CEMS Administrator:
Ryan Kohler
Compliance and Systems Manager
Environmental Health & Radiation Safety
Phone: 2-9282 Fax: 2-1600
E-mail: kohlerr@temple.edu

CEMS General Information & Barcode Request:
E-mail: cems@temple.edu

Environmental Health & Radiation Safety Office:
Phone: 2-2520 Fax: 2-1600

Technical Information

Environmental Health & Radiation Safety administers and is responsible for CEMS. If you have any questions or concerns, please contact EHRS at 2-2520. The EHRS CEMS Administrator is Ryan Kohler; however, all EHRS staff members will be trained on and be familiar with CEMS and can be contacted with questions, as well. You can also send CEMS questions, comments and concerns to cems@temple.edu.

CEMS is not housed on Temple servers. You connect to it as you connect to any website hosted outside of the Temple network. If you can connect to other websites outside of Temple but cannot connect to CEMS, please notify EHRS so that they can inform the administrators of the CEMS servers.

Quick Reference Guides

Requesting a CEMS Account

1.) Point your web browser to https://cems.unh.edu/temple/CEMS/Login

2.) Click on Create Account if you do not have CEMS access.

3.) Complete form with required information.

4.) Request will be submitted to EHRS for approval.

Adding Chemical Inventory

1) Request barcodes by sending e-mail to cems@temple.edu. Include name of Owner, building/room number and number of barcodes needed. (You can ask for more than you need on first request.)

2) From the Home screen/tab, click Add Inventory in the Quick Links box.

3) In the Barcode field, enter the barcodes you want to assign. If you have more than one chemical you can enter a range: entering 117273-117275 will add three individual containers.

4) You will need to enter data in at least one of the next three fields (Product Barcode, Product Number, Chemical Name). Enter your information and click Next.

5) You must enter the Manufacturer, Owner, Location, Quantity, and Expiration Date on the next screen. Please feel in any other missing information (some things like NFPA rating and CAS may already be filled in).

6) Click Save when information has been added.

7) You will be taken back to Add/Update Inventory screen. You should see banner across top of screen that lists the barcodes you added. Feel free to add more containers or quit CEMS.

Updating Your Inventory

Make Changes to a Particular Container:

1.) Access your inventory in CEMS.

2.) Once inventory screen is open, modify the number of results displayed by clicking on drop-down menus at the bottom of the page.

3.) Once inventory screen is open click on Open Record (far left column) button to look at container record.

4.) If the physical container is empty or disposed of and will not be replaced click Mark Empty.

5.) Update the required information. **DO NOT update Chemical Name or Manufacturer; if necessary, mark the container as empty and add a new container.**

6.) After making any record alteration (including Mark Empty) click Save to finish.

Updating the Evaluation Date of Chemicals:

For Peroxide-Forming Chemicals (every three-to-six months):
1.) Physically evaluate container to make sure peroxide has not formed.
2.) In CEMS, click Update Inventory.
3.) Enter the barcodes of the containers you need to update and click Next.
4.) Make the Update Evaluation Date answer Yes.
5.) Scroll down to review your inventory and then click Confirm and then verify your action.

For All Other Chemicals (once a calendar year):
1.) Perform physical evaluation of every chemical container.
2.) In CEMS, access your inventory.
3.) Once you are certain it is accurate, click on the "Update Records" button at the bottom of the screen.
5) Change the answer to Set Evaluation Date to Yes.
6) Scroll down to review your inventory and then click Confirm and then verify your action.

Updating Small Number of Containers At Once:
1.) In CEMS, click Update Inventory.
2.) Enter the barcodes of the containers you need to update and click Next.
3.) Change the fields (Owner, Location, Mark Empty, etc.) to match what you want to do.
4.) Scroll down to review your inventory and then click Confirm and then verify your action.

Updating the Entire Inventory of Laboratory and/or Owner:
1.) In CEMS, access your inventory.
2.) Click on the "Update Records" button at the bottom of the screen.
3.) Change the fields (Owner, Location, Mark Empty, etc.) to match what you want to do.
4.) Scroll down to review your inventory and then click Confirm and then verify your action.