



STANDARD OPERATING PROCEDURES

SAFETY, HEALTH & SUSTAINABILITY

CHEMICAL INVENTORY – RSS CHEMICALS

Hazardous Materials

Implementation Date: 5/14/21

Revision Date: 7/6/22

Revised by: EK

1.0 AUTHORITY

Regulations and Guidelines:

- California Code of Regulations, Title 8, §5194. Hazard Communication
- California Code of Regulations, Title 8, §5191. Occupational Exposure to Hazardous Chemicals in Laboratories
- California Code of Regulations, Title 8, §5164. Storage of Hazardous Substances
- 49 Code of Federal Regulation, §171.101
- California State University San Marcos Chemical Hygiene Plan

2.0 SCOPE

This standard operating procedure (SOP) applies to all laboratories at CSUSM that contain hazardous materials and to all individuals involved in the inventory management of those hazardous materials.

3.0 PURPOSE

The purpose of this SOP is to outline the procedure for utilizing the Risk & Safety Solutions (RSS) application, “UC Chemicals”, for inventory management. Every laboratory is required to update their inventory whenever a new hazardous material will be stored there. At least once per year, SH&S will perform inventory reconciliation for all laboratories.

4.0 DEFINITIONS

- **Hazardous Material:** A substance or material that is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has been designated as hazardous under section 5103 of Federal hazardous materials transportation law (49 U.S.C. 5103). The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 CFR §172.101).
- **Globally Harmonized System (GHS):** An internationally agreed upon standard for hazard communication (hazcom) and labeling. Includes the nine red, white, and black pictograms.
- **Ignitable:** Liquids with a flash point below 140°F (60°C), non-liquids that cause fire through specific conditions, ignitable compressed gases, and oxidizers.
- **Corrosive:** Solutions with a pH less than or equal to 2, or a pH greater than or equal to 12.5.
- **Reactive:** Unstable under normal conditions, may react with air or water, may give off toxic gases, and may be capable of detonation or explosion under normal conditions or when heated.
- **Toxic:** Harmful when ingested or absorbed.
- **Safety Data Sheet (SDS):** A comprehensive information document about a chemical substance or mixture. Includes information such as: physical properties; physical, health, and environmental hazards; protective measures; safety precautions for handling, storing, and transporting; and proper disposal.

5.0 EQUIPMENT

Device with Internet Connection

RSS applications are accessible through any device with a web browser and connection to the internet. For desktop computers and laptops, go to riskandsafety.com. For mobile devices, download "UC Chemicals" from the app store. Sign in using campus credentials.

RFID Tags

Radio-frequency identification (RFID) tags shall be double-sided and laminated with solvent-resistant material. Each tag must have a QR code compatible with RSS software and display a unique ID printed on both sides. Once assigned to a chemical container or sublocation, a tag shall not be reused or recycled. SH&S shall provide RFID tags upon request.

RFID Reader

For inventory reconciliation, an RFID reader (a.k.a. RFID scanner) shall be used. Depending on the model, a separate app may need to be utilized to read/write/record the data and then uploaded into CHEMICALS. Refer to the reader's instruction manual for more information.

Personal Protective Equipment (PPE)

Appropriate PPE shall be worn at all times while in labs or whenever hazards are present. PPE includes but is not limited to: lab coats, nitrile gloves, eye protection, long pants, and closed-toe shoes.

6.0 PROCEDURE

Materials Required to be Inventoried

Any chemical container with a manufacturer's label that denotes physical or health hazards, or whose SDS denotes such hazards, are required to be inventoried.

- Pre-GHS containers with hazard warnings (even if outdated) should also be inventoried.
- Compressed gas cylinders should also be inventoried.

Materials Not Inventoried by SH&S


- Any material not classified as hazardous under GHS.
- Any material whose only hazards are "irritation" and/or environmental hazards.
 - This includes non-definitive hazard statements such as "May be harmful if swallowed" and "Suspected of causing cancer".
- Materials that are part of a kit; however, the kit itself may be inventoried under the kit name.
- Buffers and dyes whose pH are greater than 2 or less than 12.5.
- Commercial retail products such as: food, household cleaners, OTC drugs, cosmetics, etc.

Note: A lab manager or PI may add any material described above to their inventory for their own purposes, such as keeping track of quantity or expiration dates.



Materials Excluded from Inventory

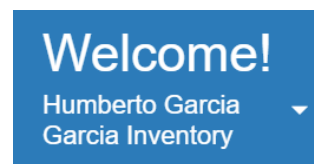
- Any material in a secondary or "in use" container (i.e., no longer in the manufacturer's bottle).
- Hazardous waste.
- Biological material such as: tissue, bacteria, fungi, etc.
- Supplies such as: soap, desiccant, etc.
- Water (e.g., deionized water).

Adding Sublocations


1. Go to riskandsafety.com and select **Chemicals**.
2. Select the appropriate inventory by using the dropdown menu under “Welcome!”.
3. Select **Inventory Summary**.
4. Click the *add* icon () in the **Sublocations** section. Fill out the required fields and select the appropriate pictograms.
5. Select **Save** once finished.

Adding to Inventory

1. Open the CHEMICALS application. Sign in using campus credentials.
 - a. If using a browser, go to riskandsafety.com and select **Chemicals**.
 - b. If using a mobile device, open the **UC Chemicals** app.
2. Select the appropriate inventory.
 - a. Browser: Use the dropdown menu under “Welcome!”.
 - b. Mobile: Go to **Settings** at the bottom of the screen and select **Switch Inventory**.
3. Select **Add to Inventory** if using a browser or **Add** at the bottom of the screen if using a mobile.
4. Search for the chemical.
 - a. Pro Tip: Use the product number for items from Fisher Scientific and Sigma-Aldrich.
5. Select the result that correctly matches the chemical. The CAS # and molecular formula on screen should match what is printed on the container.
6. Affix a new RFID tag to the manufacturer’s container.
 - a. Fold along the perforated edges to form a “T” shape so that the tag can be affixed like a flag.
 - b. Placement shall be to the left or right of the product name, whichever side is closest.
 - c. Avoid obscuring any information on the label.
 - d. For containers stored below ambient temperature, wipe surface down with a clean rag before affixing tag.
 - e. Particularly difficult containers may be placed inside plastic bags with tags affixed to the bags instead.
 - f. For very small containers, record the names and CAS # on a sheet of paper and affix the tag next to each name.
7. Click or tap the *add* icon () in the **Containers** section and fill out the required fields.
 - a. **Barcode**: If using a mobile, tap the *scan* icon ( Scan) to use the camera to scan the QR code on the RFID tag to automatically populate the field.
 - b. **Amount in Container** is optional but can be defaulted to the value in **Container Size**.
 - c. **Substance**: If the product name printed on the manufacturer’s container varies from the chemical name as it appears in CHEMICALS, select the option in this dropdown menu that most closely matches the printed name.
 - d. **Private Container** should be left as “No”.
 - e. **Concentration** should match what is printed on the bottle, if applicable.
 - f. **Received/Expiration/Opened Date** should be left blank unless specified by the PI or written/printed on the container.
8. Select **Save** once finished.




Removing from Inventory

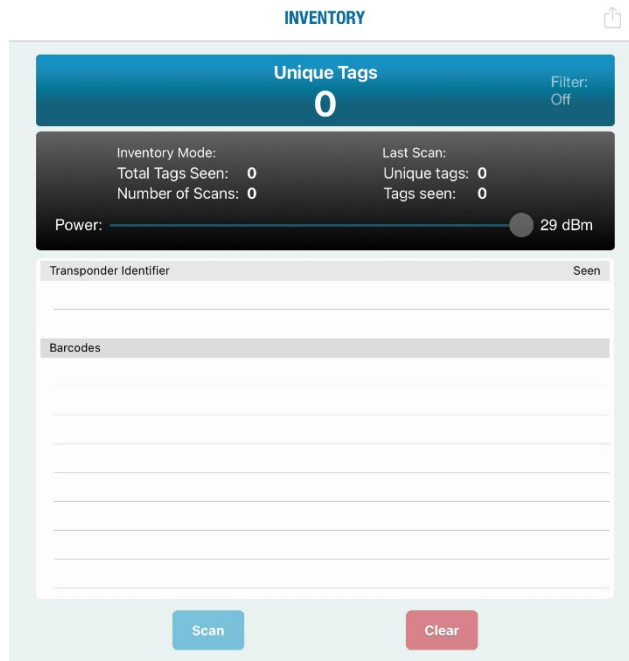
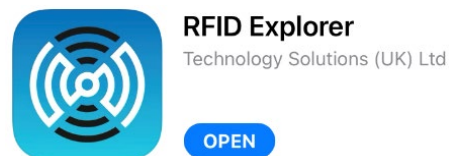
1. Open the CHEMICALS application. Sign in using campus credentials.
 - a. If using a browser, go to riskandsafety.com and select **Chemicals**.
 - b. If using a mobile device, open the **UC Chemicals** app.
2. Select the appropriate inventory.
 - a. Browser: Use the dropdown menu under “Welcome!”.
 - b. Mobile: Go to **Settings** at the bottom of the screen and select **Switch Inventory**.
3. Select **Search Chemicals** if using a browser or **Home** if using a mobile.
4. Search for and select the chemical.
 - a. If using a mobile, tap **Scan** in the top-right corner of the screen to use the camera to scan the QR code on the RFID tag to automatically locate the chemical.
5. In the **Containers** section, click or tap the *more* icon (), then select **Remove** and **Confirm**.

Inventory Reconciliation

Note: The following instructions are for use with the 1128 Bluetooth UHF RFID Reader by Technology Solutions and may not be applicable with different RFID reader models.

Part 1

1. On a mobile device, open the **RFID Explorer** application (available on the app store).
2. Select **Change Reader** in the left column, then select the “+” symbol at the top to search for nearby devices.
3. Turn on the Reader by pressing its trigger.
4. Wait for the Reader to be recognized by the app, then select it from the list in the “Select an Accessory” window.
5. Select **Inventory** in the left column.
6. Begin scanning a sublocation with the Reader by holding down the trigger and steadily waving the Reader over the containers. Keep waving the Reader until the number of **Unique Tags** stops counting.
 - a. Adjust the **Power** slider to avoid reading tags in other nearby sublocations.
 - b. Pro Tip: Before scanning, look up the number of Unique Tags (i.e., containers) that should be in the sublocation by bringing up the **Inventory Summary** in a browser on your mobile device.
7. Once finished scanning a sublocation, tap the *share* icon () in the top-right corner twice. Draft an email to the SH&S Chemical Inventory Program Manager with the Excel file attached. Indicate the inventory owner, building, room number, and sublocation in the subject line before sending.
8. Repeat for each sublocation per inventory.



Part 2

1. Go to riskandsafety.com and select **Chemicals**.
2. Select the appropriate inventory by using the dropdown menu under “Welcome!”.
3. Select **Inventory Summary**, then click on **Reconcile your inventory by room**.
4. Select the applicable **Rooms in scan** and upload the appropriate Excel report(s).
5. Select **Finish Uploading** and **Confirm**. Download the **Reconciliation Report**, then Select **Finish Reconciliation** and **Confirm**.
6. Review the **Status** column in the report.

Reconcile Garcia Inventory

Reconciliation with RFID will compare the RFID tags you scanned against the RFID tagged containers in your inventory. Identify the room(s) that you scanned and then upload your file with scanned RFID tags for the room(s). You can repeat this step as necessary for separately scanned rooms.

Rooms in scan

HazMat 1 (SCIENCE HALL 1)

HazMat 2 (SCIENCE HALL 2)

UPLOAD SCAN
(.csv, .xls or .xlsx)

- a. For tags that say **Location Mismatch**, select **Search Chemicals** from the Chemicals homepage. Search by the tag’s code and click the chemical name that appears. If there are multiples of this chemical in their inventory, find the container with matching code and click the *more* icon (⋮), then select **Move**. If more than one container needs to be moved to the same sublocation, you can repeat the process to add them to the queue. When ready, select **Move** in the queue column. Select the sublocation where they were scanned from the dropdown menu and click **Confirm**.
 - b. For tags that say **Unscanned**, record the tags and return to the lab. Look for the containers in the sublocation and physically check the RFID tags to see if you can find them. If found, no further action is required. If not found, contact the inventory owner to see if the tags/containers were discarded or managed as waste. Update the inventory appropriately.
 - c. For tags that say **New**, record the tags and return to the lab. Look for the containers in the sublocation and physically check the RFID tags to see if you can find them. If found, follow the steps in **Adding to Inventory**. If not found, contact the inventory owner for more information.
 - d. For tags that say **Accounted For**, select **Chemical Admin** from the Chemicals homepage and select **Search Inventory**. Search by the tag’s code, click the chemical name that appears, then select the inventory name. Find the container with matching code and click the *more* icon (⋮), then select **Transfer**. If more than one container needs to be transferred to the same inventory, you can repeat the process to add them to the queue. When ready, select **Transfer** in the queue column and enter the name of the inventory where this tag was scanned. Select **Confirm Transfer**. Navigate back to the Chemicals homepage and, if necessary, switch inventories to the one you transferred to. Click **Pending Transfers** and select the sublocation where the tag was scanned. Select **Accept Transfer** (it may take a few seconds to update).
7. Once all discrepancies have been resolved, if any, return to the **Inventory Summary**. Select **Recertify Inventory** (or **Certify Inventory** if it is the first time) and **Confirm**.