Edition

1

CMS© SOFTWARE

Installation Guide and User Manual

CSP
CHEMICAL SECURITY
ENGAGEMENT PROGRAM

IBCTR
INTERNATIONAL BIOLOGICAL
and CHEMICAL THREAT REDUCTION

Installation Guide and User Manual

© Sandia Corporation
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Table of Contents

1 INTRODUCTION 5

1.1 Purpose and Benefits 5

1.1.1 Roles and Responsibilities 6

1.1.2 Implementation and Maintenance 7

2 SOFTWARE INSTALLATION & INVENTORY SETUP 8

2.1 System Requirements 8

2.1.1 Computer Requirements 8

2.1.2 Optional Equipment Requirements 9

2.2 Basic Installation 9

2.2.1 Software Installation 9

2.2.2 Launching CMS© Software 15

2.2.3 Equipment Installation 15

2.3 Software & Inventory Setup 16

2.3.1 Software Setup 16

2.3.2 Inventory Setup 18

2.3.3 SDS Folder Setup 26

2.3.4 User Access 28

2.3.5 Database Setup 30

3 BASIC FEATURES 34

3.1.1 Basic Functionality 35

3.2 "Inventory" Icon 38

3.2.1 Adding a New Chemical 38

3.2.2 Updating Items in the Inventory 46

3.2.3 Removing Items from the Inventory 48

3.2.4 Safety Data Sheets 49

3.2.5 Sorting the Inventory 49

3.3 "Search" Icon 50

3.3.1 Search for a Barcode 50

3.3.2 Search for a Chemical Name 51

3.3.3 Search Using Location 52

3.4 "Stock Check" Icon 54

3.4.1 Inventory Audit 54

4 ADVANCED FEATURES 58

4.1 "Reports" Icon 58

4.1.1 Activity Log 59

4.1.2 Inventory by Chemical 61

4.1.3 Inventory by Location 62

4.1.4 Stock Check 63

4.1.5 Users 64

4.2 Exporting 65

4.3 Networking 67

4.3.1 Multiple Computer Locations 67

4.3.2 Sharing the Database 67

4.4 Modification of Software **68**
4.5 Uninstalling CMS© **68**
4.5.1 Uninstalling CMS© from Microsoft® Windows® 7 68
4.5.2 Uninstalling CMS© from Microsoft® Windows® 10 68

5 APPENDIX **69**

5.1 I. Labeling Containers with Barcodes **69**
5.2 II. Definitions **70**
5.3 III. Acronyms **75**
5.4 IV. Troubleshooting **76**

6 INDEX **78**

Chapter

1

1 Introduction

This section will provide an overview of a CIMS, its purpose and benefits, associated roles and responsibilities, and approaches to implementation.

A Chemical Inventory Management System (CIMS) is a system or program that is used to track chemicals at a facility or institution. An effective CIMS begins tracking these chemicals at the point of procurement and continues through use and disposal. The management of chemicals throughout the life cycle (procurement to disposal) is a key concept for the secure management of chemicals at any institution.

The objective of this chapter is to provide an overview of one aspect of a CIMS, the CMS© inventory software including the purpose, goals, and limitations. The following chapters provide guidance on how this software can be used within your institution and how it relates to a CIMS.

1.1 Purpose and Benefits

The main purpose of this manual and the CMS© software is to promote a fundamental approach to managing chemicals in the laboratory with a focus on security and safety. The software provided with this manual is a simplified chemical inventory tool called CMS©. This CMS© tool is designed for a single central receiving/storage facility with only a limited number of CMS© authorized users. The software can be adapted for use at a facility with multiple points for chemical receiving and storage.

NOTE
This CMS© software provided is only one type of software that can be used. There are many other forms in varying complexity. We encourage further investigation into more advanced software as your management system matures and expands.

There are many benefits to implementing a CIMS including cost savings, increased efficiency, and increased security and safety. To obtain these benefits, it is important to understand the key topics to properly adopt and sustain a CIMS. Implementation of a CIMS and the CMS© software will require knowledge, training, and acceptance from all personnel at your institution.

1.1.1 Roles and Responsibilities

Proper implementation will involve many key personnel that have specific roles and responsibilities for implementing and ultimately maintaining a CIMS program and the CMS© software. The CMS© software provided is designed for a single chemical receiving area with a single inventory Administrator. The software has four pre-defined user access roles (listed as "Role" in the CMS© software): **Administrator**, **Manager**, **Auditor,** and **Viewer**. The information below is to describe the roles and responsibilities for each user type available in the software. For more information on the icons that are indicated, please see Chapter 2.

The **Administrator** is the default first user login and has full access privileges to all settings and icons. Access for Administrator privileges should only be assigned to a few qualified and trusted persons within your institution.

Administrator privileges include the ability to:

- Modify existing inventory items - add/remove inventory items
- Report inventory - report chemical quantities to department/ institution/government
- Audit inventory - check inventory for accuracy
- Control inventory access
- Print inventory list(s) (for laboratory/room/shelf/cabinet)
- Add new users and create new logins for them
- Import inventory from a previously created Excel® file

The **Manager** is the person responsible for managing daily inventory usage. The manager has similar access privileges and responsibilities as the Administrator, except that the Manager is not capable of adding new users in the "Manage Users" icon. An account for the Manager must be created by the Administrator.

Manager privileges include the ability to:

- Modify existing inventory items - add/remove inventory items
- Report inventory - report chemical quantities to department/ institution/government
- Audit inventory - check inventory for accuracy
- Control inventory access
- Print inventory list(s) (for laboratory/room/shelf/cabinet)

The **Auditor** is designed for institutions that have or use a designated person to audit or check inventory. For example, the Environmental Health and Safety (EH&S) office that checks inventory, lab safety, and security protocols but does not add chemicals to the inventory. This user has access to "Search," "Inventory," "Reports," and "Stock Check." The Auditor is responsible for laboratory inventory audits and checks printed inventory for accuracy. The Auditor is not capable of viewing all of the information in the "Settings" which prevents the Auditor from adding SDS folder locations, chemical storage locations, chemical storage groups and owners.

Auditor privileges include the ability to:

- Report inventory - report chemical quantities to department/ institution/government
- Audit inventory - check inventory for accuracy
- Print inventory list(s) (for laboratory/room/shelf/cabinet)

The **Viewer** is a general user who has access to view and search the inventory, such as technicians and laboratory students, but is not responsible for adding/removing inventory items. This user has access to the "Search," "Inventory" and "Reports" icons. This is the only user/role that can be generically assigned for access by multiple people.

Viewer responsibilities include the ability to:

- Notify Administrator of any inventory changes
- Print inventory list(s) (for laboratory/room/shelf/cabinet)

1.1.2 Implementation and Maintenance

A CIMS is a 'living system' which requires continual updates and maintenance. In order to maintain a proper CIMS, requirements include (1) documentation and record keeping, (2) assigning roles and responsibilities, (3) training new staff, and (4) reporting. A standard operating procedure (SOP) is highly recommended to properly document staff responsibilities, operations, and training requirements.

Your CIMS SOPs should address:

- Roles and responsibilities for all lab users and administrators, including: Laboratory Managers, Stockroom Managers, Laboratory Staff, and Technicians
- Requirements for access privileges, access controls, password protection, and protected sharing of inventory information
- Backing up data and information with security protections
- Procedure/requirements for purchasing, delivering (or distributing), adding to and removing/modifying inventory items
- Training requirements and training schedules for all the CMS© software users
- Reporting requirements and reporting schedule
- Inventory Audit schedule and procedures

Chapter

2

2 Software Installation & Inventory Setup

This section will provide an overview of the system requirements and the CMS© software installation and setup.

To properly use the CMS© software it is essential to follow the sections below that provide detailed instructions on system requirements, step-by-step instructions for proper installation, and setup of the CMS© software.

2.1 System Requirements

Below are the minimum system requirements recommended for using the provided CMS© software. Meeting the minimum requirements is necessary to properly use all the features of the CMS© software.

2.1.1 Computer Requirements

The software was designed to operate easily and integrate into a Windows® operating system (Windows® 7 or above).

Hardware Recommendation:

CPU	1.3GHz, 2MB cache
RAM	2GB DDR2, 800MHz
Display	13.3" XGA, LED-backlit, integrated graphics
Internet connectivity	802.11a/b/g Wi-Fi, Ethernet 10/100Mbps
Hard drive storage	120GB or more, 5400rpm or faster

Operating System: Windows® 7 (32-bit) (Minimum system requirements)

Software: Microsoft® Office 2007 (32-bit), Microsoft® .NET Framework 4.5 or newer, and Adobe Reader

2.1.2 Optional Equipment Requirements

2.1.2.1 Barcode Reader or Scanner

A barcode reader or scanner is not required for the CMS© software but it allows for quick input of barcode numbers and it is typically included in the CIMS training course. If you purchase or use a barcode reader the equipment requirements are outlined below.

NOTE
Information on the barcode reader provided in the CIMS training course can be found at the company website (https://www.zebra.com/us/en.html).

Barcode Reader or Scanner Requirements:

- Use a linear, or one dimensional (1D) scanner
- Choose a barcode scanner that has a built in decoder; this will allow the scanner to operate on multiple common scan codes
- Choose a scanner that uses a USB, Bluetooth, and/or wireless interface with your computer

Barcode (label) recommendations:

Material	Chemical Resistant
Adhesive	Chemical Resistant
Symbologies	Linear or one dimensional (1D), Code 39 or 128
Additional Features	Printed numerals (0,1,2,3,4,5,6,7,8,9)

See the Appendix for proper labeling of bottles and containers.

2.2 Basic Installation

Implementation of CMS© software requires knowledge, training, and acceptance from all CMS© users and administrators at the institution. Proper implementation will involve many key personnel having specific roles and responsibilities for implementing and maintaining the CMS©. Installation requires proper software installation and setup as described in this section.

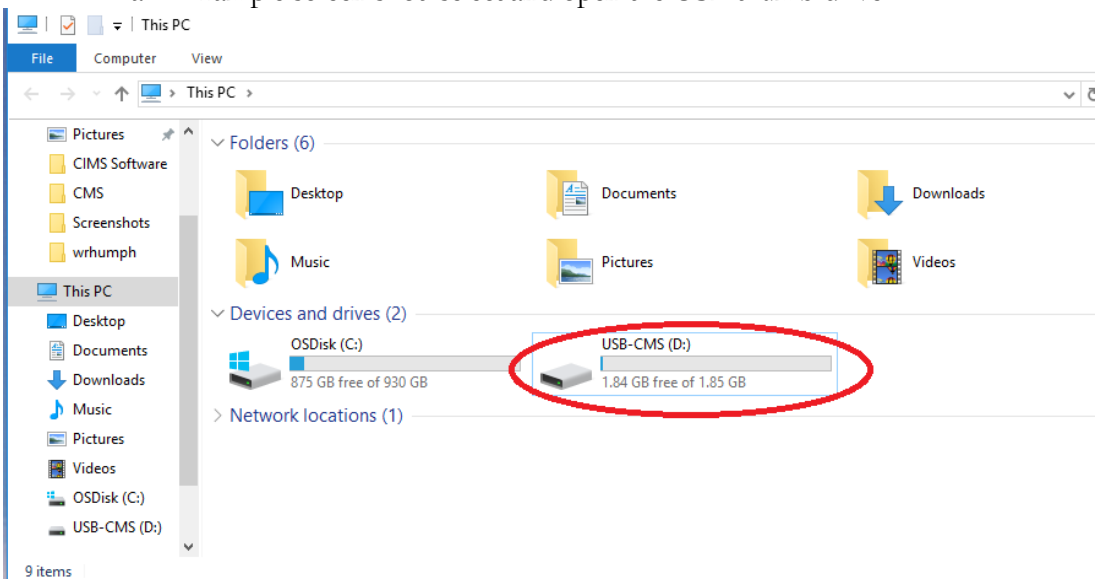
2.2.1 Software Installation

The CMS© software is available by either a downloaded zip file or a USB thumb-drive device. Your computer should contain a USB slot:

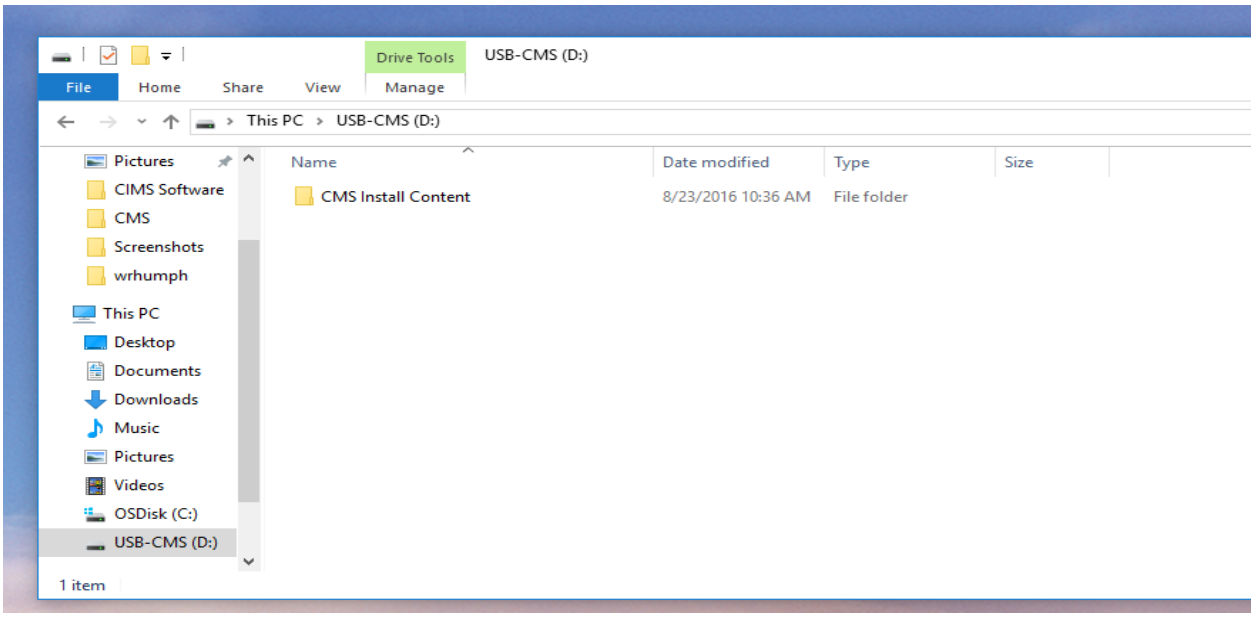
NOTE
The following instructions are intended for Windows® 7 or 10 users only. Users of other operating systems should consult the appropriate user manual for general software installation instructions.

1) Start your computer. Once it has fully booted, navigate to open the USB drive or open the zip file, depending on how you received your CMS© software.

   a. Example screen shot: select and open the USB thumb-drive

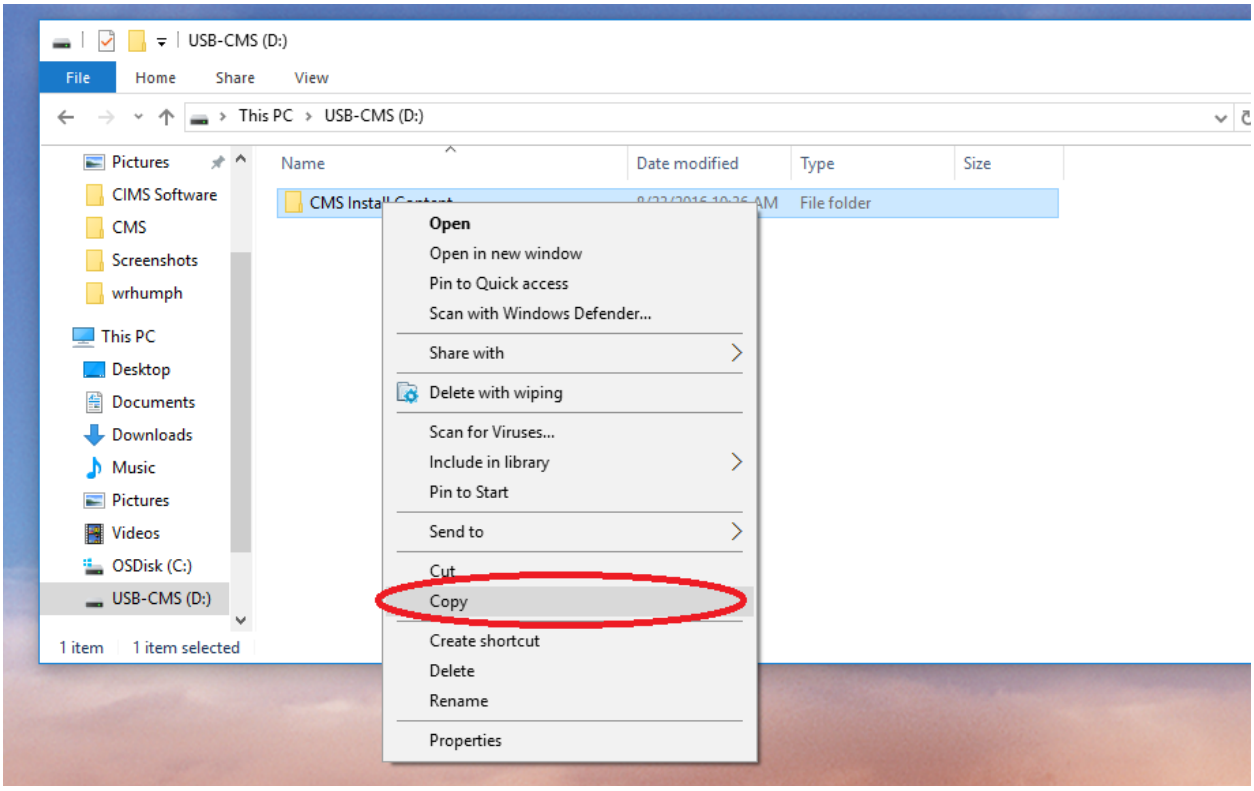


With the folder open (zip or USB thumb-drive), you should see this:



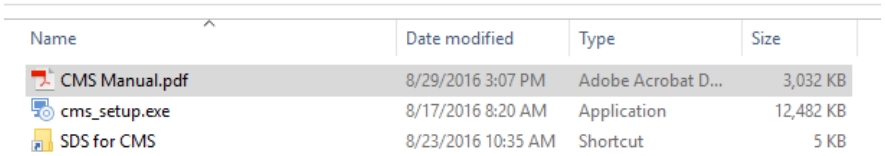
2) Copy the "**CMS Install Content**" Folder

a. Right click on the "**CMS Install Content**" folder. From the pop-up menu select "**Copy**."



b. Save the folder to either the "**Desktop**" or "**OSDisk (C:)**" locations by clicking to open the location and then right click on an open space. From the pop-up menu select "**Paste**."

3) Open "**CMS Install Content**" folder from you're the saved location.



Name	Date modified	Type	Size
CMS Manual.pdf	8/29/2016 3:07 PM	Adobe Acrobat D...	3,032 KB
cms_setup.exe	8/17/2016 8:20 AM	Application	12,482 KB
SDS for CMS	8/23/2016 10:35 AM	Shortcut	5 KB

Included in the CMS installation zip file or USB thumb-drive:

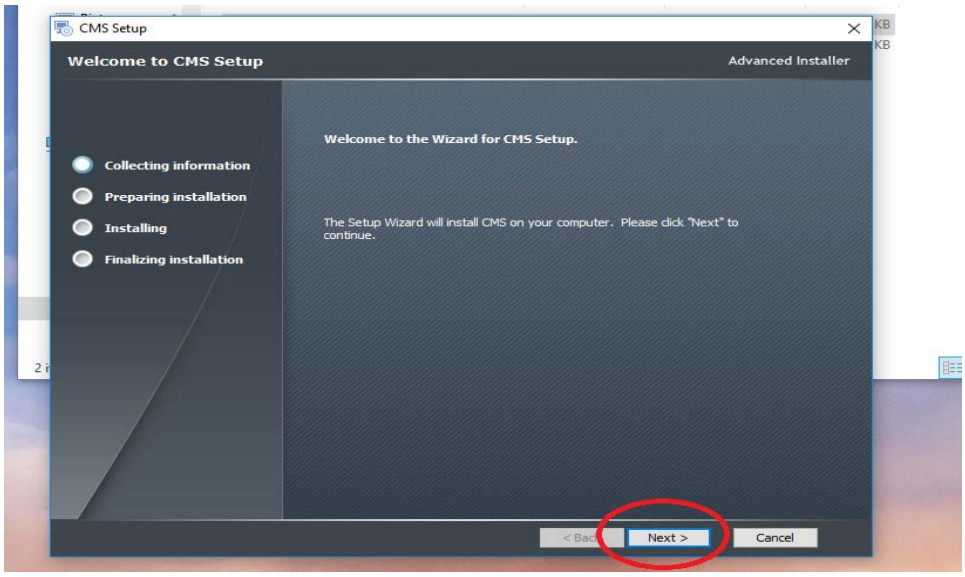
- **SDS for CMS (folder):** this includes Adobe Acrobat (.pdf) files containing a selection of Safety Data Sheets (SDS) for hazardous chemicals you may have in your inventory. For instructions on how to add additional SDS to this folder see Chapter 4.

NOTE
Material Safety Data Sheets (MSDS) and Safety Data Sheets (SDS) are the same. Recently, there has been a push for these documents to be standardized and are now referred to as SDS (see "Definitions" for more information).

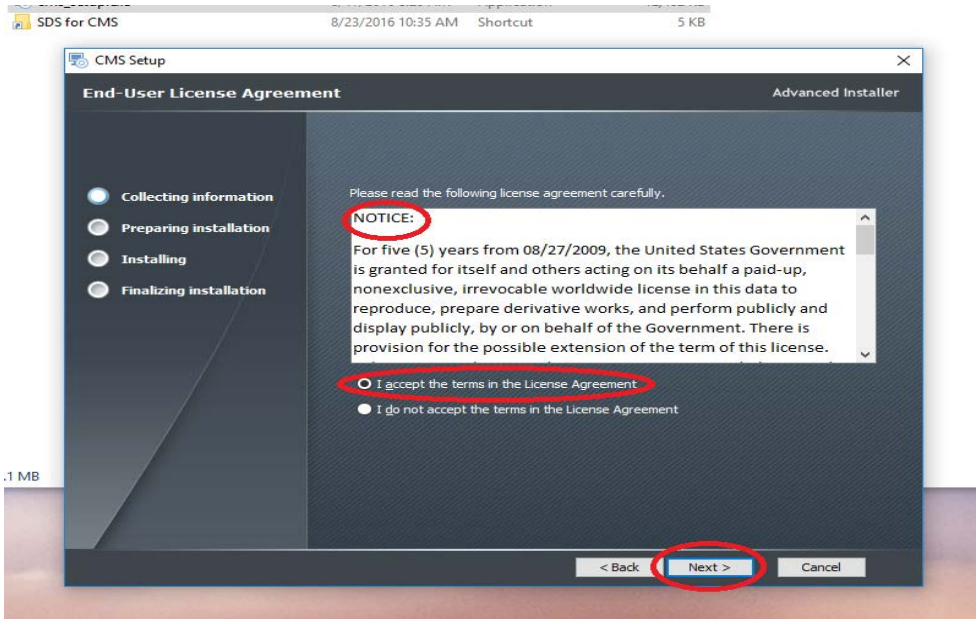
- **cms_setup_exe:** the CMS© software
- **CMS Manual:** this includes detailed information on how to use the program

4) Select "**cms_setup_exe**" to install the CMS© software.

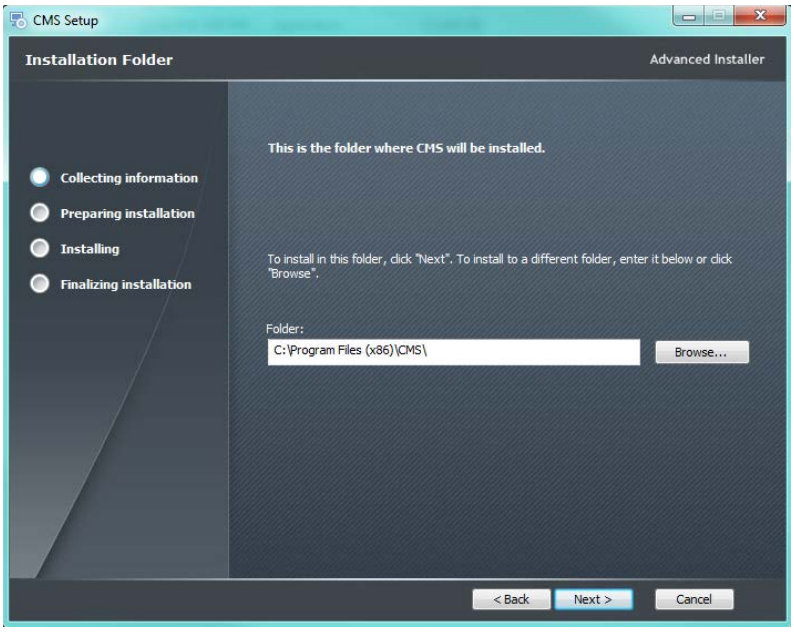
a. You will be prompted with the following window. To begin installation, click "**Next**".



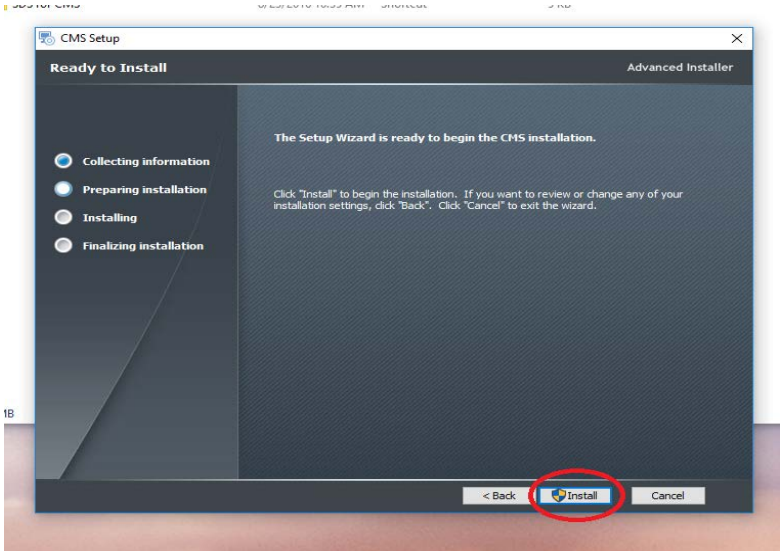
b. Read the License Agreement Notice, select "**I accept the terms in the license agreement**" if you agree to the terms and then click "**Next**" as shown below:



c. Click "**Next**" to save to the "program files" folder location.

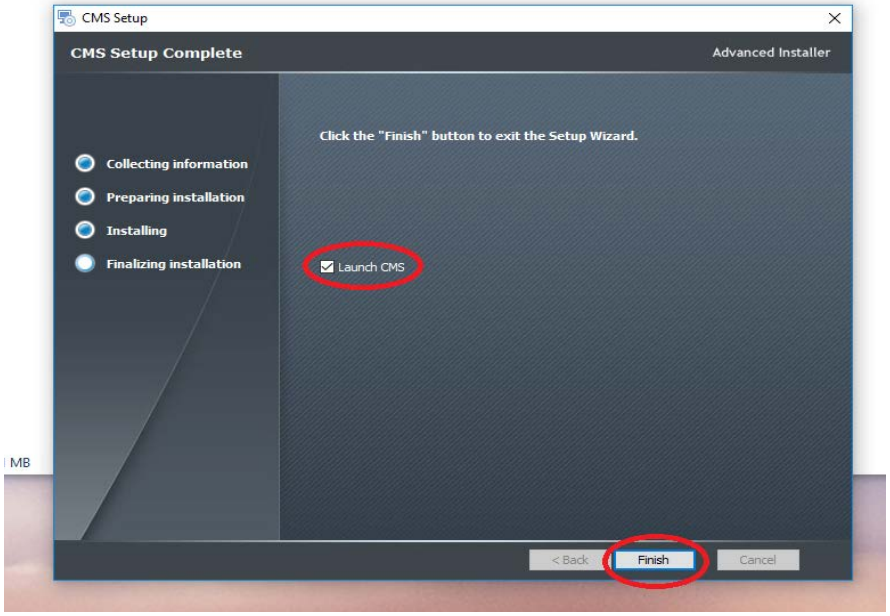


d. Click on "**Install**".



e. Click "**Yes**" to confirm the installation process.

f. Select "**Launch CMS**" and click "**Finish**".



5) You have now completed the installation of the CMS© software.

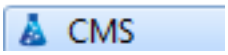
2.2.2 Launching CMS© Software

CMS© integrates into the Windows® environment similarly to other commercially available software. After installation you can access the CMS© Software from your computer directly following the instructions below.

Windows® 7:

1. Click on the Microsoft® Windows "Start Menu" icon from your Windows® 10 desktop (default settings place the "Start Menu" icon at the bottom left of the desktop).

2. Select "All Programs".

3. Click on the "CMS" icon to launch the software: 

    a. You can also right click on the "CMS" icon and select "Pin to Start" or "Pin to Taskbar" to have the "CMS" icon appear in the Windows® 7 "Start Menu" or on the "Taskbar".

4. A separate window will launch the program and ask for username and password.

Window® 10:

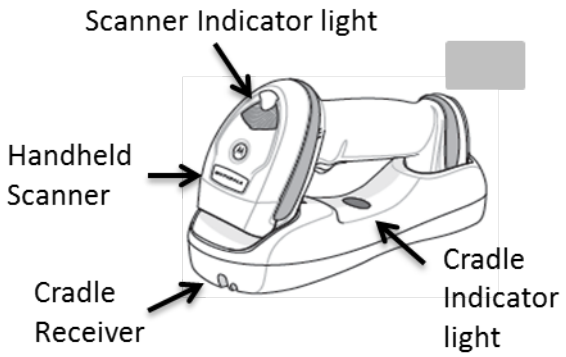
1) Click on the "Start Menu" icon from your Windows® 10 desktop (default settings place the "Start Menu" icon at the bottom left of the desktop).
2) Then, click "All Apps".
3) Click the icon titled, "CMS", and enter the appropriate login name and password.

    a. You can also right click on the "CMS" icon and select "Pin to Start" to have the "CMS" icon appear in the Windows® 10 "Start Menu".

    b. Or, left click, hold, and drag the "CMS" icon to the desktop to create a launch link to the program from the Windows® 10 desktop.

2.2.3 Equipment Installation

Barcode Scanner: Follow the installation and setup instructions provided by the manufacturer or on the manufacturers website. General instructions for the barcode scanners provided in the CIMS training course are included below (https://www.zebra.com/us/en/products/scanners/general-purpose-scanners/handheld/li4278.html).



1) Connect the cord to "Host Port" on the scanner cradle and the USB end to your computer's open USB port. Once this is completed the indicator light on the cradle will turn green, indicating that a connection has been made between the computer and the scanner. **Allow the scanner to fully charge in the cradle before operating (indicated by solid green light on the scanner).**

2) For optimal integration with the CMS© software some initial programing of the scanner may be required. You will need to check the programing of the scanner to be sure that it adds an [ENTER] following the barcode.
   a. Information on how to do this can be found in the manual or user guide of the barcode scanner or the manufacturers website.

3) To check that the scanner is working properly and to test the proper programming:
   a. Open a new Excel® sheet, a Word® document or any other program that allows you to type and edit text, and click on an empty field to scan.

   b. Scan a barcode. When the scan is successful you will hear a "tick" sound. A green light will flash on the scanner, indicating the scan was a success and you will see that your blank cell in Excel® has now been populated with the data from that barcode.

Barcode Labels: See the Appendix for detailed instructions on proper label attachment.

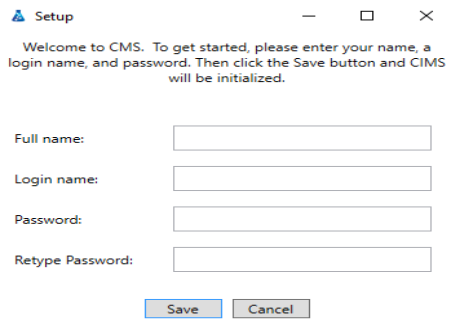
2.3 Software & Inventory Setup

The section below will guide the user through the entire CMS© software setup. The instructions are divided up into four sections: 1) Software setup 2) Inventory setup 3) User Access and 4) Database Setup.

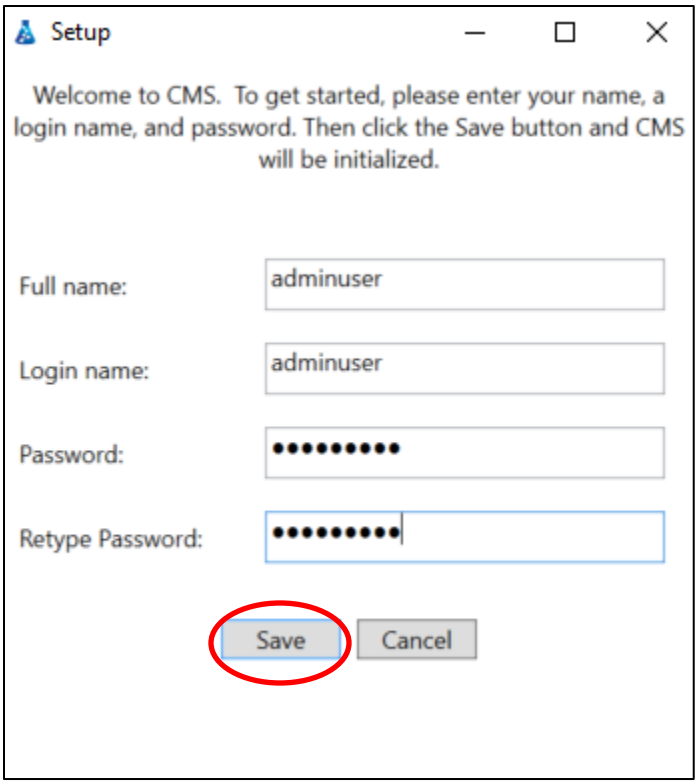
2.3.1 Software Setup

Once the software has been installed on the computer, the designated CMS© administrator will need to properly setup the software. To setup the software:

1) Double click the "**CMS**" file with your mouse to launch the CMS© software. You will be prompted with the following window:



2) Enter your Full Name, Login Name, Password (Retype Password as well), and then click "**Save**"



3) Once you have clicked "**Save**," you are now logged in as an "Administrator" and have access to the full features of the software.

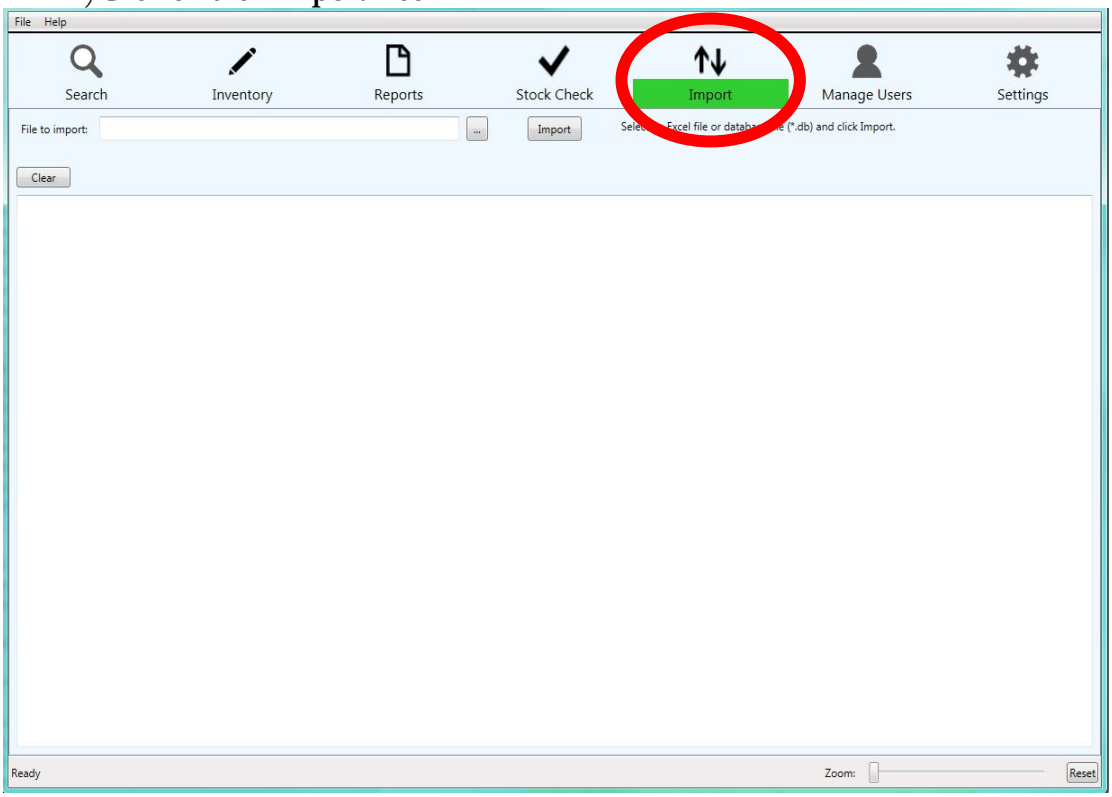
2.3.2 Inventory Setup

Once the administrator is logged into the software the users can either manually setup the inventory or import an existing inventory from a previous CIMS Excel® file. Only the Administrator can import from previous versions on the CIMS Excel® file. The instructions below are divided in two sections: 1) importing inventory from previous CIMS Excel® file and 2) setting up a new inventory.

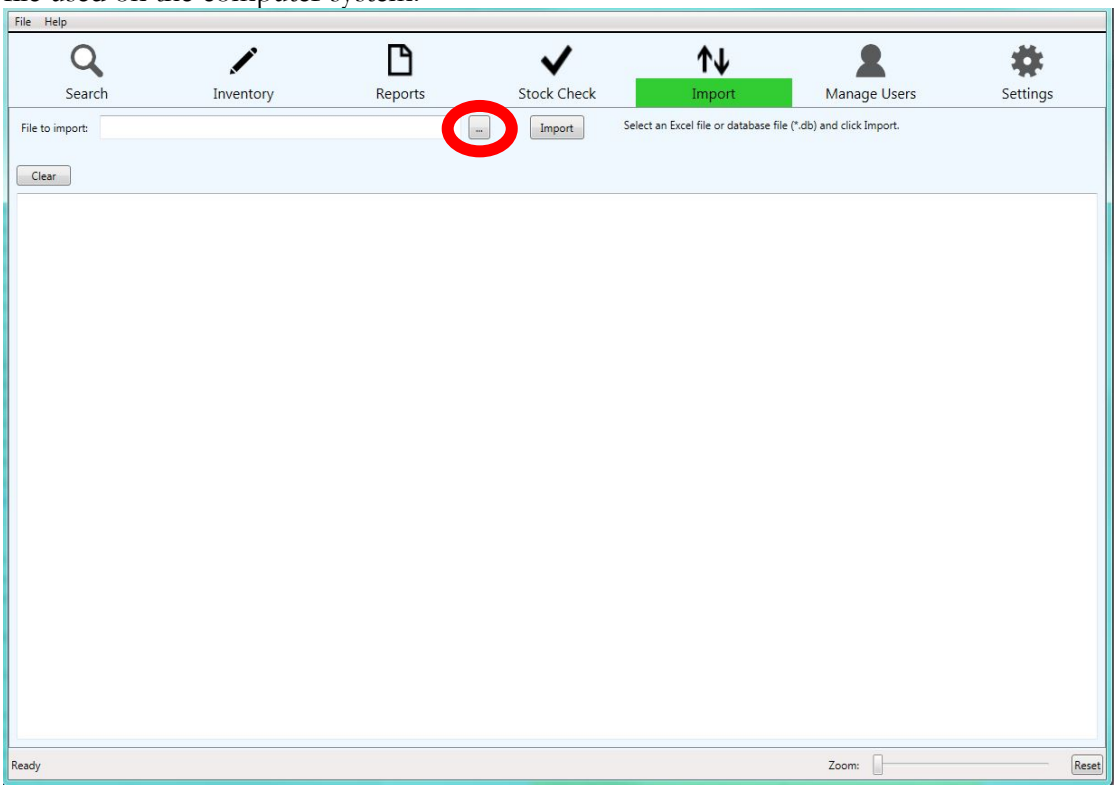
2.3.2.1 Importing Inventory

The designated CMS© Administrator is the only user with privileges to import a chemical inventory. To import an inventory:

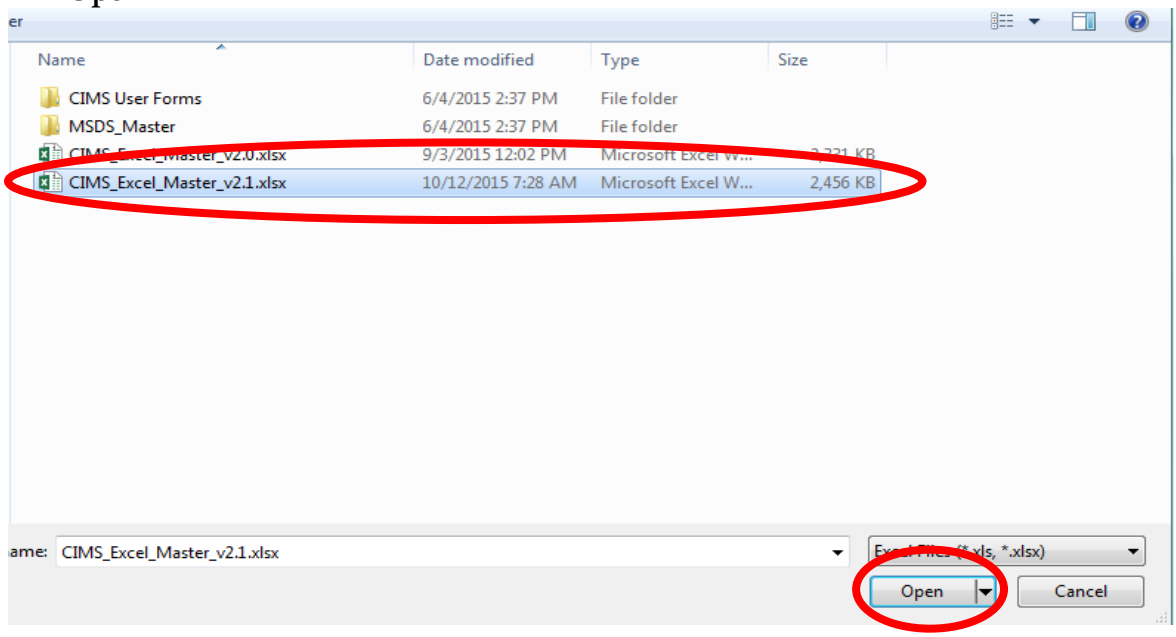
1) Click on the "**Import**" icon.



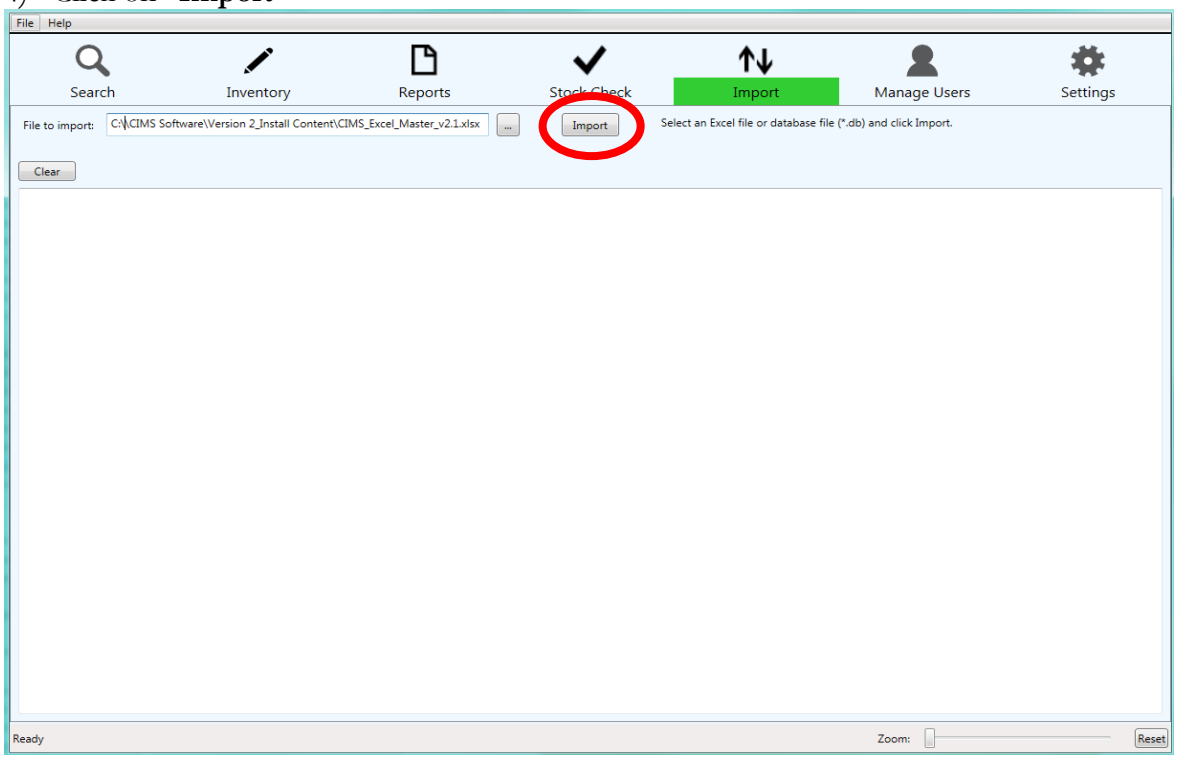
2) Click on the "**…**" button. A popup window will appear to browse the current CIMS Excel® file used on the computer system.



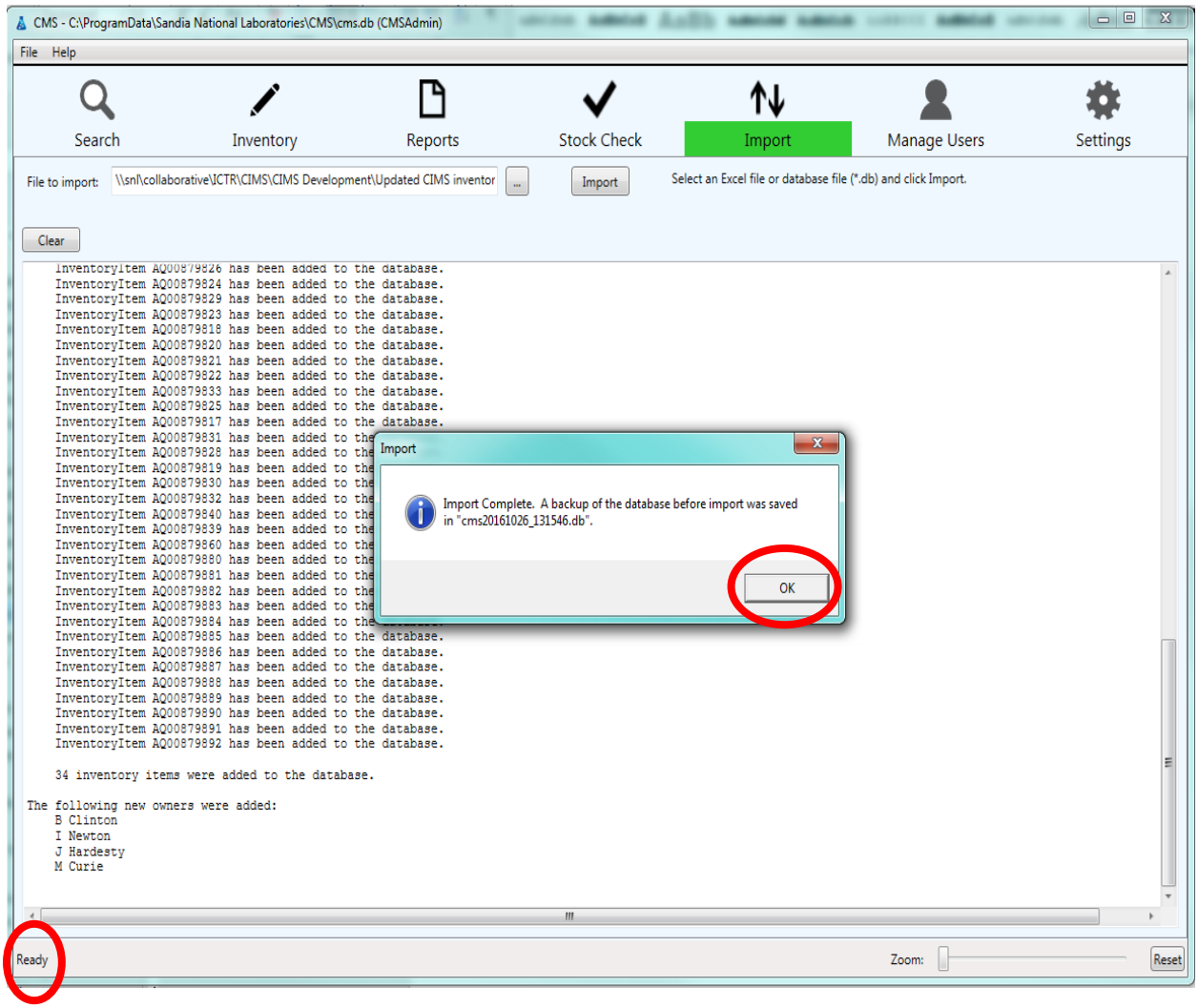
3) Find the most up-to-date version of the CIMS Excel® file used for your inventory and click "**Open**"



4) Click on "**Import**"

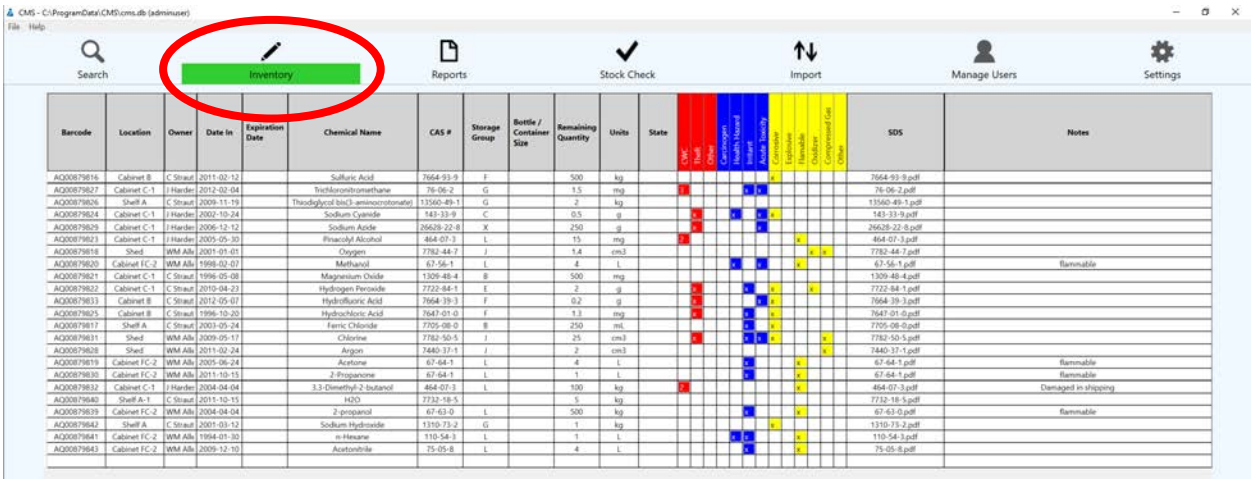


5) When the import is complete you will see a popup window and "**Ready**" in the bottom left corner (see picture below). Click "**OK**"



6) Click on the "**Inventory**" icon to review the imported data and fill in any missing information that was not imported. It is important to review and verify that the information imported is correct and complete.

NOTE
Older versions of the CIMS file may not include all of the same features, information, and columns that the new CMS© software has.



Barcode	Location	Owner	Date In	Expiration Date	Chemical Name	CAS #	Storage Group	Bottle / Container Size	Remaining Quantity	Units	State	CMC	Toxic	Other	Carcinogen	Health Hazard	Acute	Toxicity	Corrosive	Explosive	Flammable	Oxidizer	Compressed Gas	Other	SDS	Notes
AQ00879816	Cabinet B	C Straut	2011-02-12		Sulfuric Acid	7664-93-9	F		500	kg									x						7664-93-9.pdf	
AQ00879827	Cabinet C-1	J Harder	2012-02-04		Trichloronitromethane	76-06-2	G		1.5	mg		x					x	x							76-06-2.pdf	
AQ00879826	Shelf A	C Straut	2009-11-19		Thiodiglycol bis(3-aminocrotonate)	13560-49-1	G		2	kg															13560-49-1.pdf	
AQ00879824	Cabinet C-1	J Harder	2002-10-24		Sodium Cyanide	143-33-9	C		0.5	g			x			x		x	x						143-33-9.pdf	
AQ00879829	Cabinet C-1	J Harder	2006-12-12		Sodium Azide	26628-22-8	X		250	g			x					x							26628-22-8.pdf	
AQ00879823	Cabinet C-1	J Harder	2005-05-30		Pinacolyl Alcohol	464-07-3	L		15	mg		x									x				464-07-3.pdf	
AQ00879818	Shed	WM Alle	2001-01-01		Oxygen	7782-44-7	J		1.4	cm3												x	x		7782-44-7.pdf	
AQ00879820	Cabinet FC-2	WM Alle	1998-02-07		Methanol	67-56-1	L		4	L						x		x			x				67-56-1.pdf	flammable
AQ00879821	Cabinet C-1	C Straut	1996-05-08		Magnesium Oxide	1309-48-4	B		500	mg															1309-48-4.pdf	
AQ00879822	Cabinet C-1	C Straut	2010-04-23		Hydrogen Peroxide	7722-84-1	E		2	g			x				x		x			x			7722-84-1.pdf	
AQ00879833	Cabinet B	C Straut	2012-05-07		Hydrofluoric Acid	7664-39-3	F		0.2	g			x					x	x						7664-39-3.pdf	
AQ00879825	Cabinet B	C Straut	1996-10-20		Hydrochloric Acid	7647-01-0	F		1.3	mg			x					x	x						7647-01-0.pdf	
AQ00879817	Shelf A	C Straut	2003-05-24		Ferric Chloride	7705-08-0	B		250	mL								x	x						7705-08-0.pdf	
AQ00879831	Shed	WM Alle	2009-05-17		Chlorine	7782-50-5	J		25	cm3			x				x	x	x				x		7782-50-5.pdf	
AQ00879828	Shed	WM Alle	2011-02-24		Argon	7440-37-1	J		2	cm3													x		7440-37-1.pdf	
AQ00879819	Cabinet FC-2	WM Alle	2005-06-24		Acetone	67-64-1	L		4	L								x			x				67-64-1.pdf	flammable
AQ00879830	Cabinet FC-2	WM Alle	2011-10-15		2-Propanone	67-64-1	L		1	L								x			x				67-64-1.pdf	flammable
AQ00879832	Cabinet C-1	J Harder	2004-04-04		3,3-Dimethyl-2-butanol	464-07-3	L		100	kg		x									x				464-07-3.pdf	Damaged in shipping
AQ00879840	Shelf A-1	C Straut	2011-10-15		H2O	7732-18-5			5	kg															7732-18-5.pdf	
AQ00879839	Cabinet FC-2	WM Alle	2004-04-04		2-propanol	67-63-0	L		500	kg								x			x				67-63-0.pdf	flammable
AQ00879842	Shelf A	C Straut	2001-03-12		Sodium Hydroxide	1310-73-2	G		1	kg									x						1310-73-2.pdf	
AQ00879841	Cabinet FC-2	WM Alle	1994-01-30		n-Hexane	110-54-3	L		1	L						x		x			x				110-54-3.pdf	
AQ00879843	Cabinet FC-2	WM Alle	2009-12-10		Acetonitrile	75-05-8	L		4	L								x			x				75-05-8.pdf	

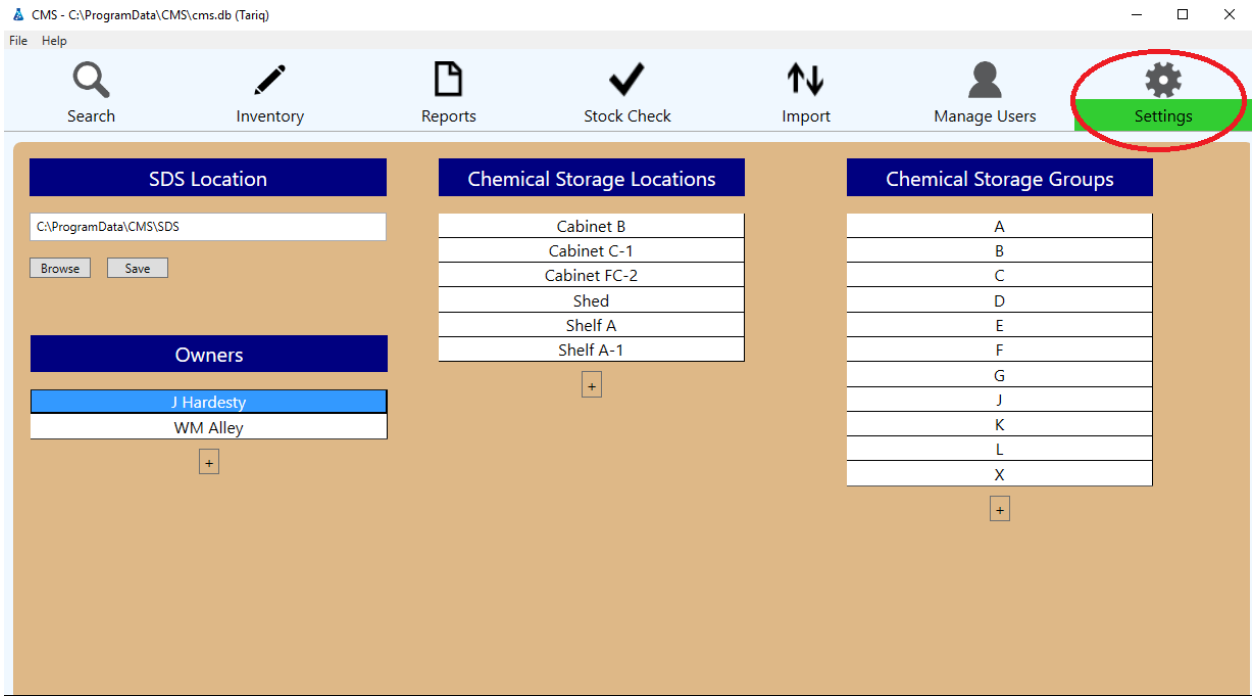
7) Click on the "**Settings**" icon to review the imported data and fill in any missing information (locations, owners etc.) that was not imported.
8) It is important to review and verify that the information imported is correct and complete.
9) Be sure to transfer any SDS that was added to the older CIMS "MSDS_Master_Folder" to the new CMS© SDS location (See Chapter 3 on adding additional SDS).
10) The next step to setup the CMS© software is to designate users and assign passwords (see the "User Access" section below).

2.3.2.2 New Inventory Setup

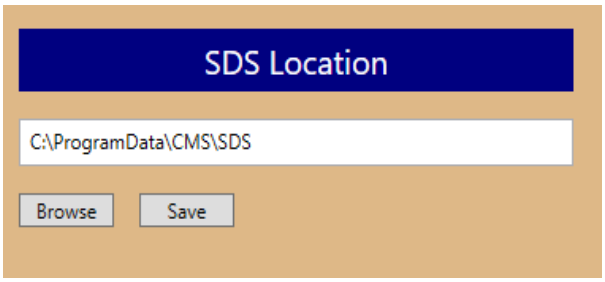
The designated CMS© administrator will need to properly setup the inventory with all the chemical storage locations, owners, assigned storage groups, and SDS location. To setup a new inventory:

1) Click on the "**Settings**" icon:

2) You will see "**SDS Location**," "**Owners**," **"Chemical Storage Locations**," and "**Chemical Storage Groups**." For information of these categories please see the information below or the "Definitions" section in the Appendix.



3) During the software installation the SDS folder is automatically installed in the CMS© program folder. The folder location will be listed in the "**SDS Location**" as C:\ProgramData\CMS\SDS). Since the SDS link is generated from this location, be sure to check that this folder is the correct location. Further information on setting up the SDS folder is in the "SDS Setup" section.

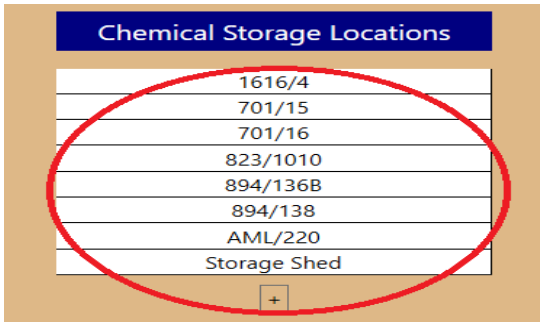


4) To setup the "**Chemical Storage Locations**" for your institution:

a. Input all possible chemical storage locations at your facility/institution in the fields under the "**Chemical Storage Locations**:" You add more locations by pressing the "**+**" sign.

b. Guidance for Storage Locations should be in a CIMS SOP so that consistency between the various users is maintained. It is suggested to include details such as building number/laboratory room/shelf/cabinet, as appropriate. You can add more locations by pressing the "**+**" sign.

Example:

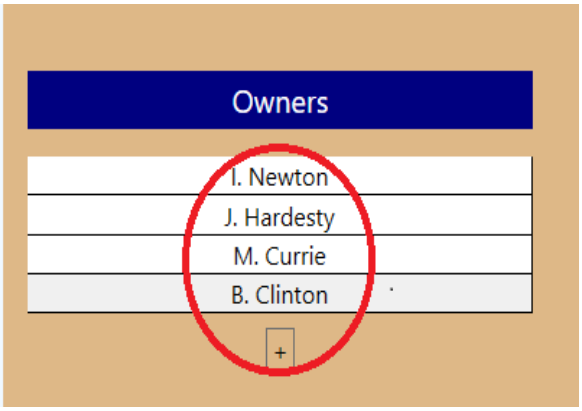


5) To setup the "**Owners**" for your institution:

a. "**Owners**" are defined as persons who are responsible for knowledge of the chemicals use and location. This does not designate a "**User**" for the CMS© software.

b. To input all possible chemical or laboratory owners at your facility enter the names in the fields under "**Owners**." You add more owners by pressing the "**+**" sign.

Example:

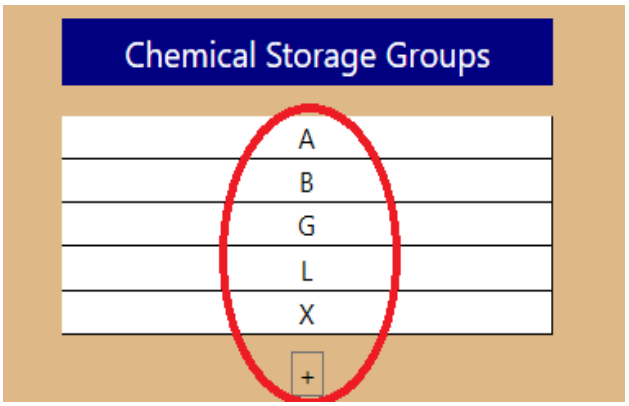


6) To setup the "**Chemical Storage Groups**" for your institution:

   a. The "**Chemical Storage Groups**" section is an option section that can be used to check for storage compatibility in the inventory. Guidance for this section should be in a CIMS SOP so that consistency between the various users is maintained. It is suggested to use the chemical storage classification guidance from Stanford University's ChemTracker Storage System.

   b. To input all possible chemical storage groups at your facility, enter each storage group classification in the fields under "**Chemical Storage Groups.**" Use the "**+**" sign to add more storage groups.

      Example: Using the chemical storage classification guidance from Stanford University's ChemTracker Storage System.



NOTE
It is important to determine the storage classifications your facility will use. Information about the chemical storage classification guidance from Stanford University's ChemTracker Storage System can be found at this website: https://www.stanford.edu/dept/EHS/prod/researchlab/chem/Chemicals_by_Storage_Group.pdf

7) To add chemicals to the inventory, click on the "**Inventory**" icon and follow the detailed steps in Chapter 3 for detailed instructions.

8) The next step to setup the CMS software is to designate users and assign passwords (see the "User Access" section below).

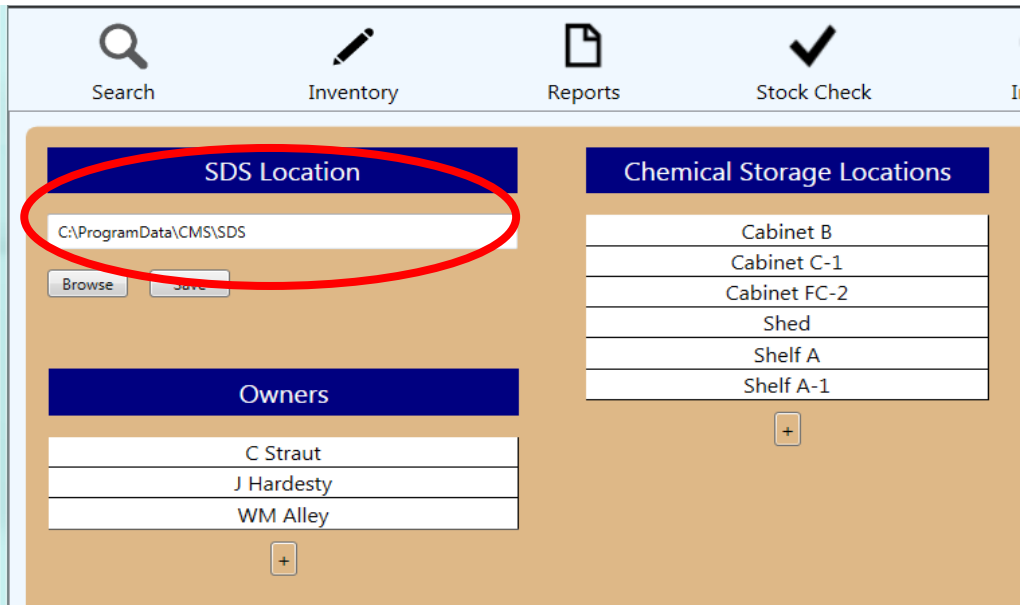
2.3.3 SDS Folder Setup

Safety data sheets (SDS) are automatically linked to each chemical based on the CAS number of the chemical. This link is created during the software installation and the location is listed in the "Settings" icon under the "SDS Location" as C:\ProgramData\CMS\SDS. Since the SDS link is generated from this location, be sure to check that this folder is the correct location. The SDS folder included with the CMS© software only include a small number of common chemicals. It is important to establish an SOP on how to add, edit, and update the SDS for each chemical. The instructions below include how to add or remove an SDS from the SDS folder location.

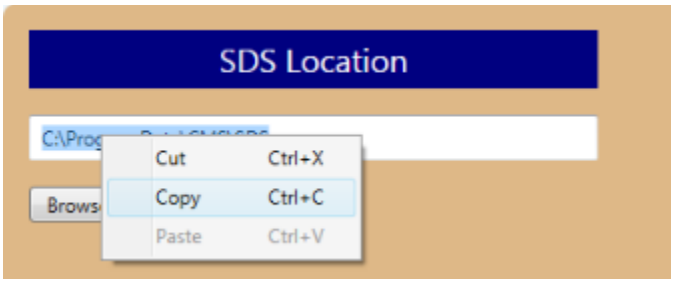
NOTE
To help maintain consistent SDS and CAS entries for chemicals in your inventory, make it a part of the SOPs. Create a protocol regarding new chemical inventory entries to check the SDS folder for the most current SDS for each chemical.

To add an SDS to the CMS© software, follow the instructions below.

1. Obtain a .pdf version of the SDS.
2. Save the SDS with the CAS# of the chemical identified on your computer (CAS#.pdf).
3. The SDS folder in the CMS program folder is listed in the "**Settings**" Icon under "**SDS Location**" (example C:\ProgramData\CMS\SDS).

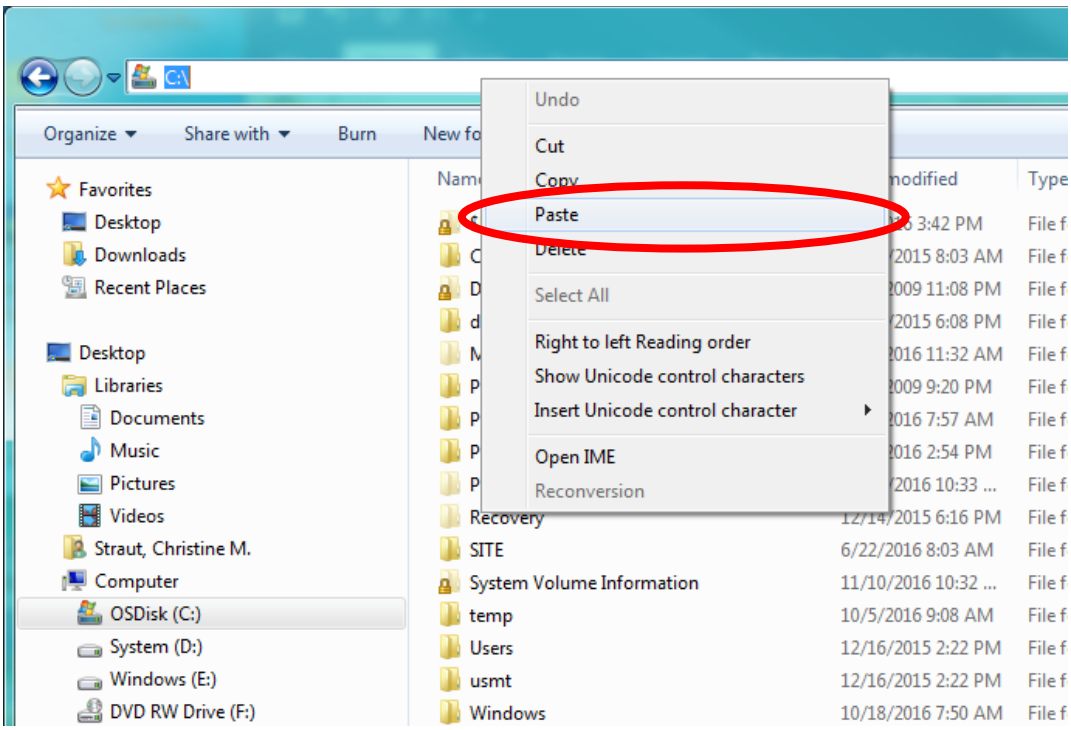


4. Copy the folder location (highlight the entire line, right click and select "**Copy**").



5. Click on the "folder" icon on your computer. A new window will appear.

6. Right click to highlight in the menu bar and select "**Paste**"



7. The SDS folder for the CMS© Software will now be open.

8. Save the new CAS#.pdf SDS created in step 2 in the folder.

To remove or replace an SDS to the CMS© software, follow the instructions below.

1) Open the SDS folder location listed in the "**Settings**" icon under "**SDS Location**" (example C:\ProgramData\CMS\SDS).

2) Find the CAS#.pdf that you wish to remove, right click and select "**Delete**".

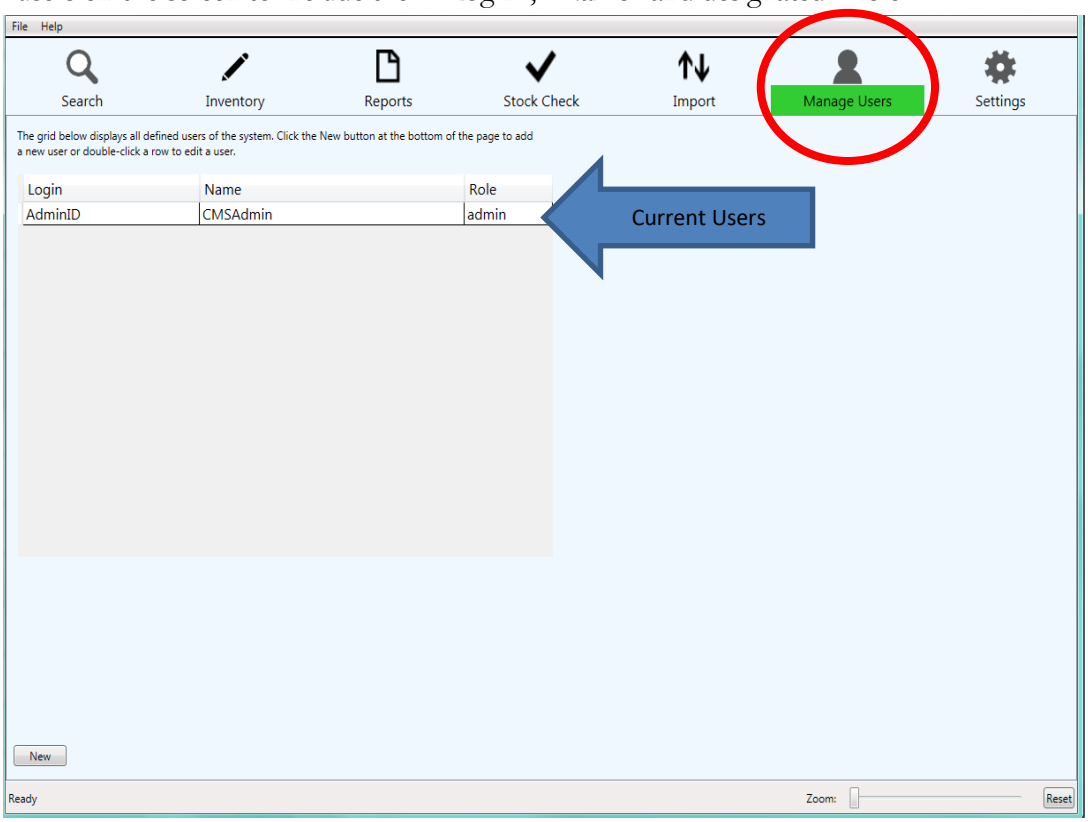
3) Once removed you can now save the new or updated CAS.pdf file to the folder.

2.3.4 User Access

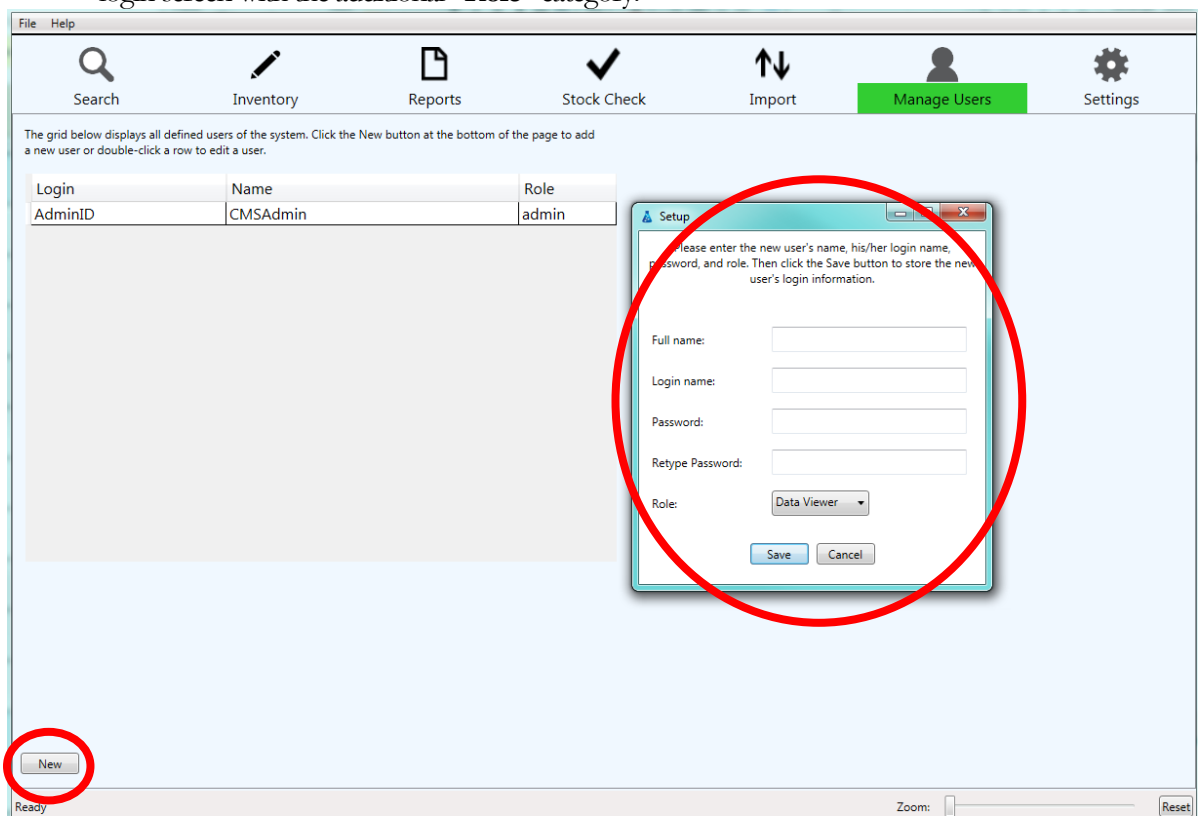
CMS© Access Control:

The Administrator must be the first person to download and install the program. Creating an account, as shown earlier, will log you in as an Administrator. The Administrator has access to all the features of the software. To prevent other users from having full access to the program and all its features, the Administrator must create new "Users" and "Roles" for each user of the software. There is no limit to the number of users you can add from the four different "Roles" available. It is stronger encouraged that each user has their own login and password, the "Viewer" role can be used as a general user login for each individual laboratory. The Administrator is the **only** person capable of creating new "Users" to access CMS©. There are four categories ("Roles"). Each category has different privileges and responsibilities, as discussed in Chapter 1.

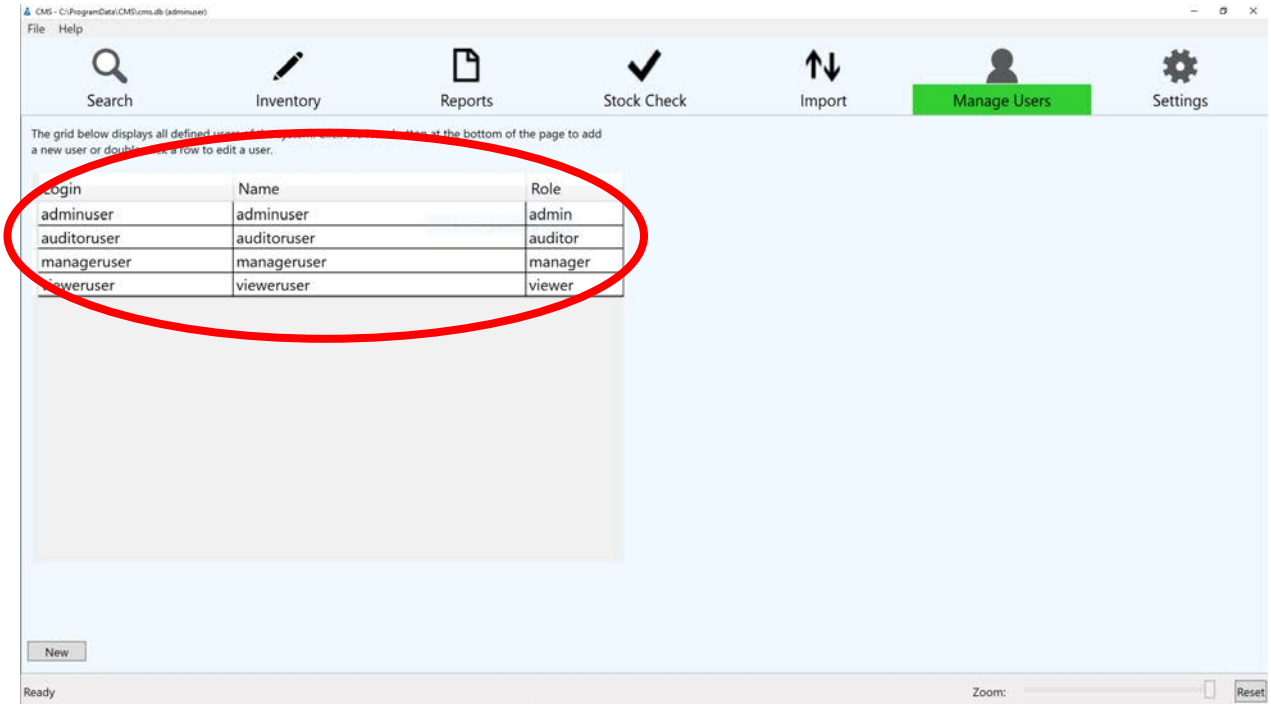
1) To add new users, click on "**Manage Users**" (as shown below). You will see a list of current users on the screen to include their "Login", "Name" and designated "Role"



2) Click "**New**" in the bottom left corner to add a new user. A popup window will appear, similar to the login screen with the additional "**Role**" category.



3) Fill in the new user information with their assigned "**Role**" and click "**Save**".
4) The new user will appear in the table to include the Login, Full Name, and Role.



a. There is no limit to the number of users you can add from the four different "**Roles**" available.

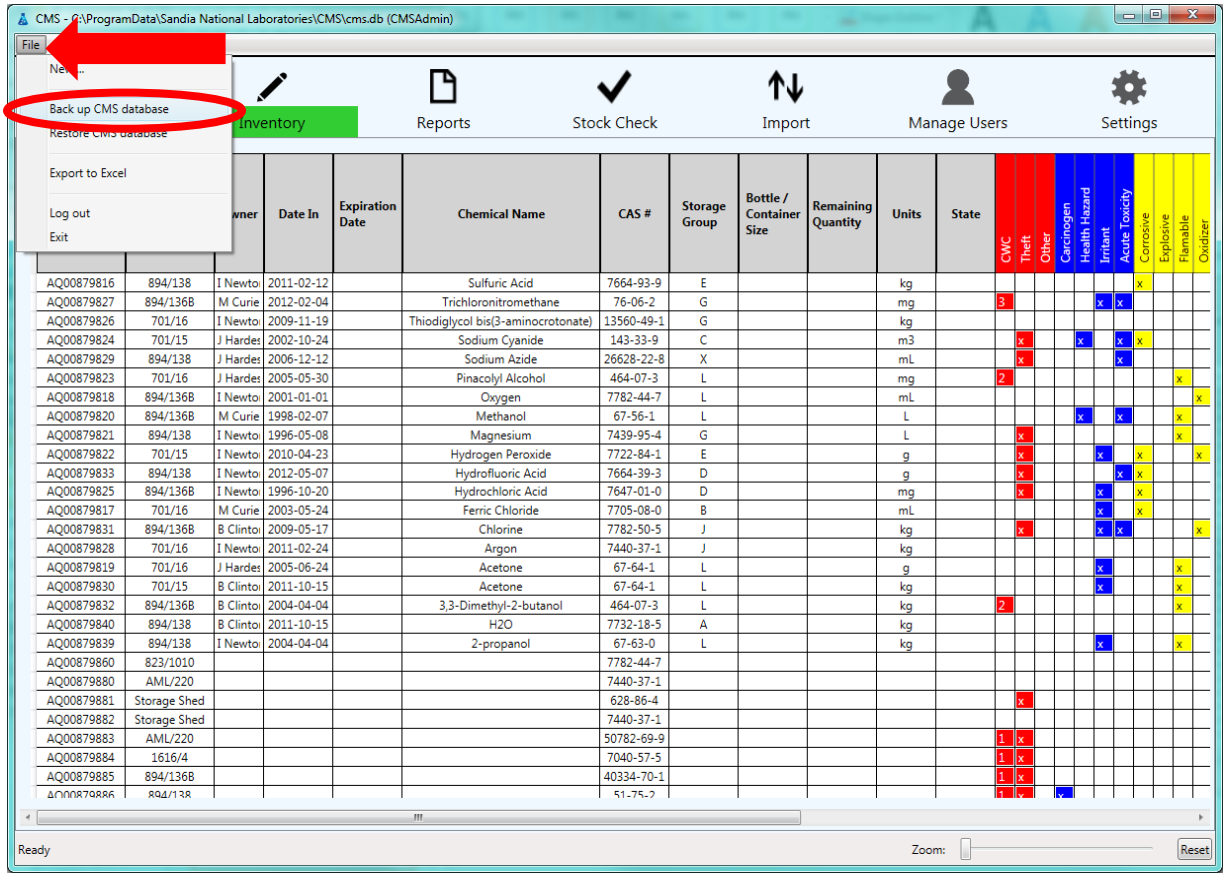
5) The final step for inventory setup is the database (see "Database Setup" below).

2.3.5 Database Setup

The inventory database is auto generated when the software is installed. It is important to begin creating your "Backup" files in order to a) track changes to the inventory database and b) have a "Restore" or recent file to revert back to if errors were made in editing inventory items.

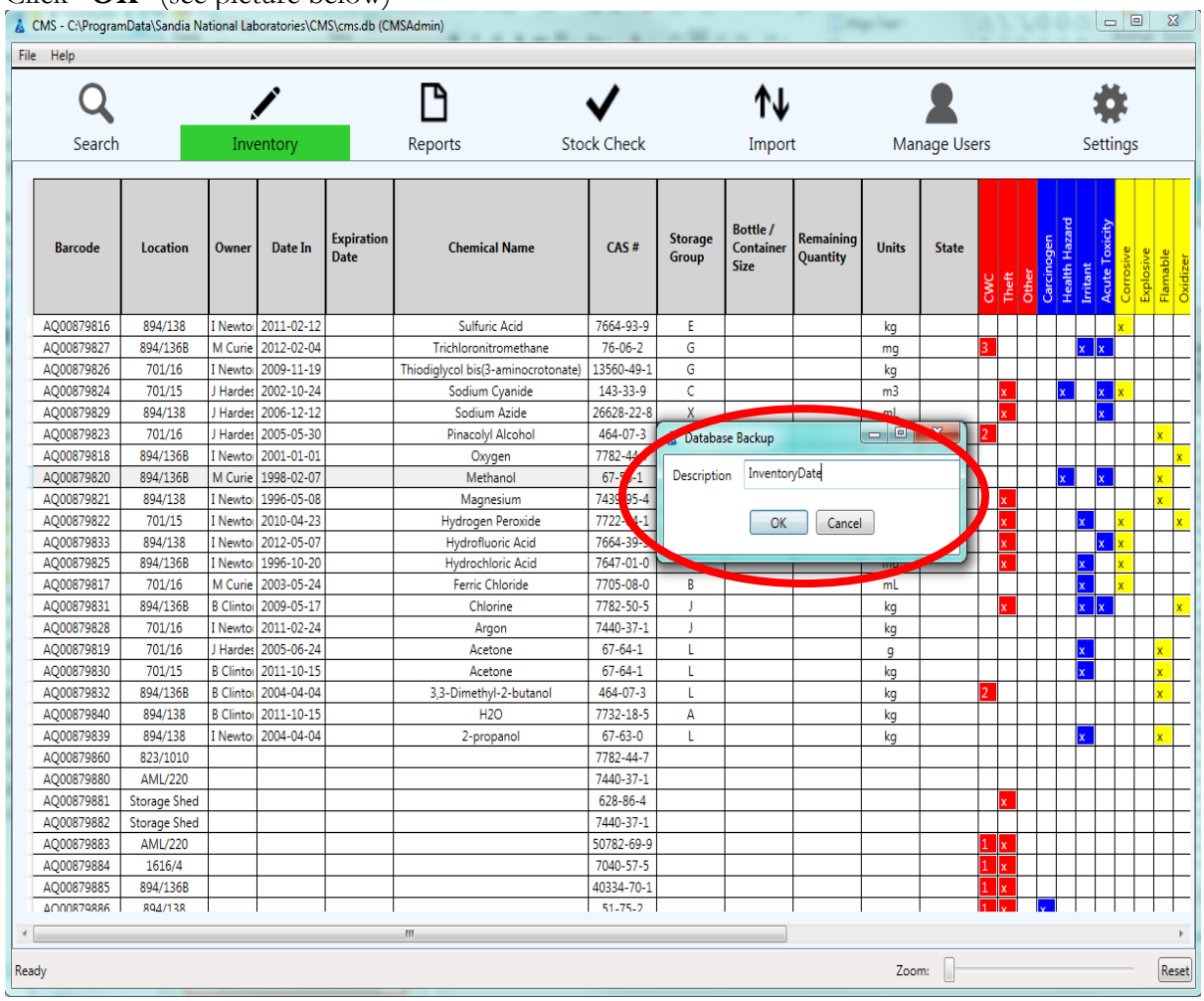
2.3.5.1 Backup

1) To save the inventory database click on "**File**" from the menu bar and select "**Back up CMS database**".

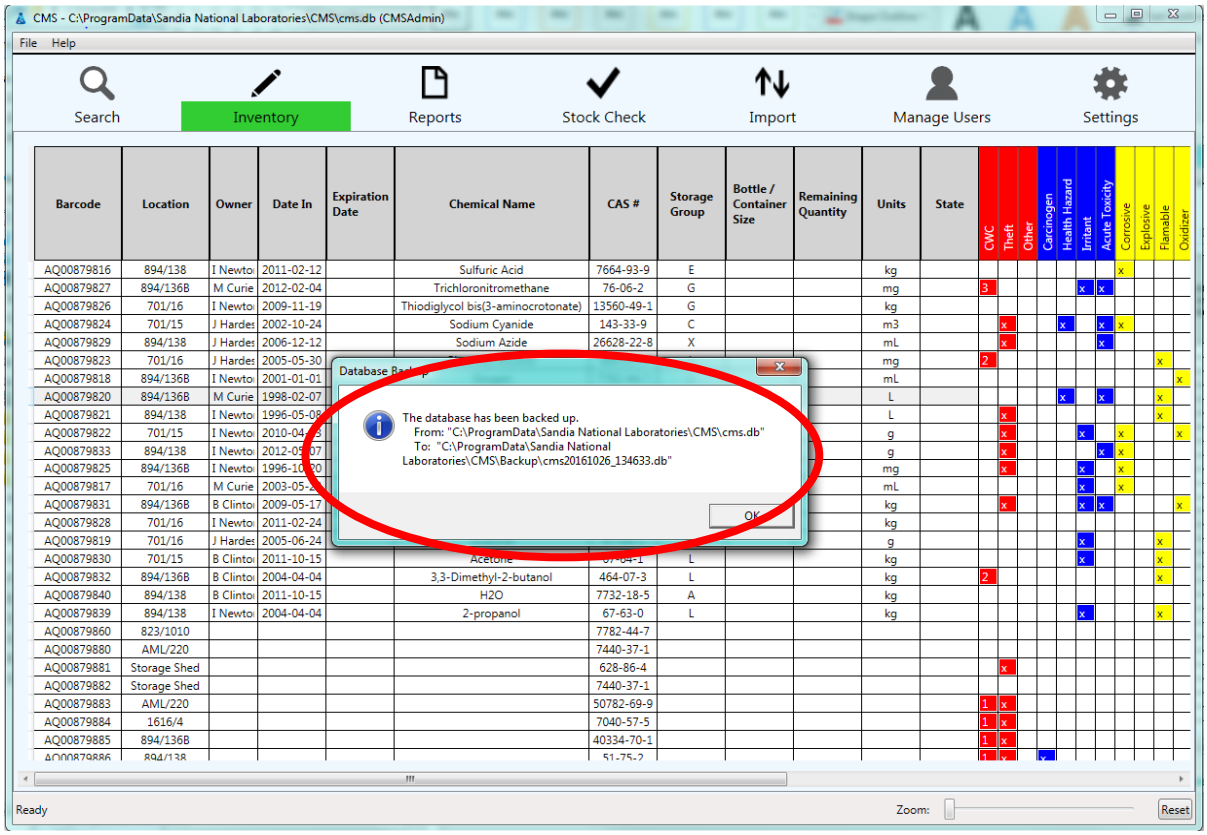


2) A popup window will appear to enter the "**Description**".
   a. Guidance for this section should be in a CIMS SOP so that consistency between the various users is maintained. You can put the current date or description of the action just completed (ex: previous inventory import 2017Nov18).

3) Click "**OK**" (see picture below)



4) A popup window will appear to confirm the backup has been completed (see picture below). Notice that the backup file is saved in the program data folder with the current date and a unique number (example: C:\\ProgramData\cms\Backup\cms20161109_154188.db). Click "**OK**"



5) To see the backup file in the CMS© software. Click on "**File**" and select "**Restore CMS Database**"
   a. The new window will show all backup files for the CMS© software (automatic or user selected).
   b. Any new data/information/changes are automatically saved to the current database file. There is no need to force a backup every day. It is recommended to create a backup on a regular basis in case errors are made in the data.

NOTE
There is no "Undo" in the CMS© software.

Selecting a file at this point will load the database. For instruction on restoring to a previously saved backup see the instructions below.

2.3.5.2 Restore

1) To restore the CMS© inventory to a previously saved version, click on "**File**" and select "**Restore CMS Database**".
    a. The new window will show all backup files for the CMS© software (automatic or user selected).
2) Select the desired backup file and click "**Restore**".
3) A new popup window will open. Click "**Yes**"

Congratulations, the CMS© software installation and inventory setup is complete. It is important to remember that the CMS© is a living system which must be updated on a regular basis to include continual updates to users, owners, chemicals, and locations. An SOP is highly recommended to properly document staff responsibilities, operations, and training requirements.

Chapter

3

3 Basic Features

This section provides basic instructions for creating and updating your chemical inventory.

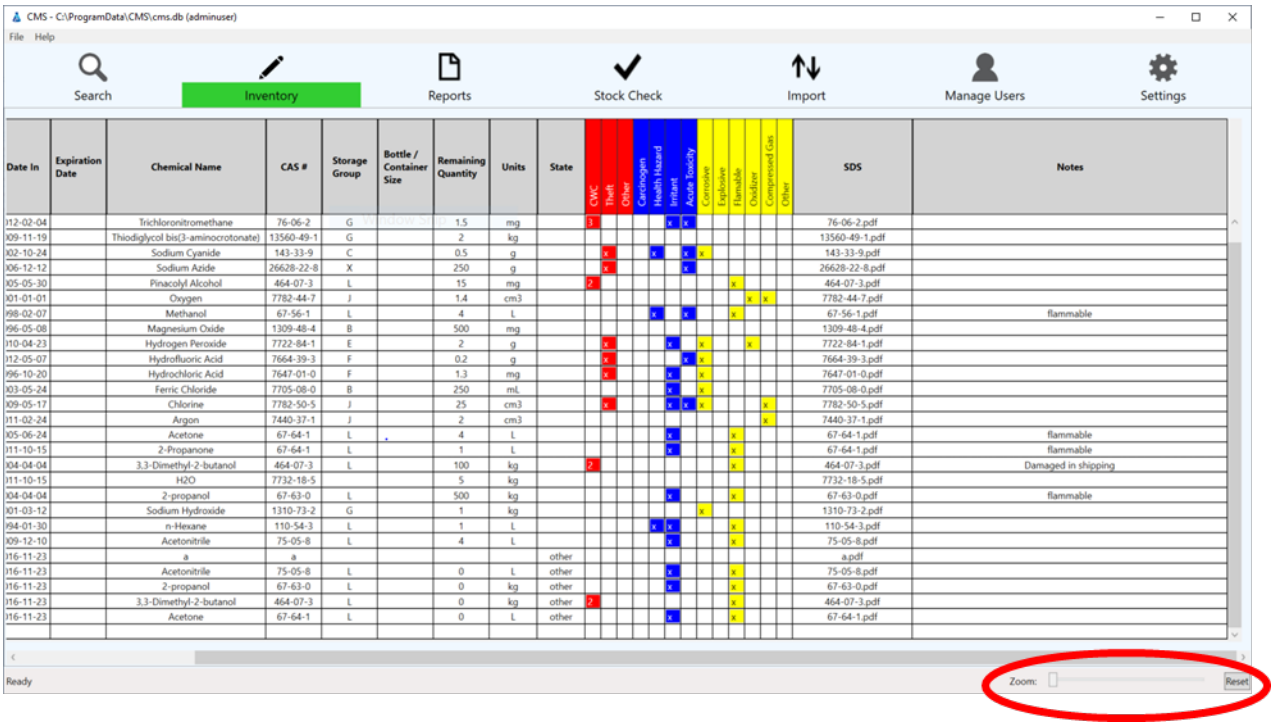
One of the main reasons for keeping a chemical inventory is to improve chemical security through increased material protection, control, detection of discrepancies, and accountability. Performing regular inventory audits is a critical step in making these improvements. A main goal of this chapter is to provide basic instructions for maintaining the inventory and performing an inventory audit. The sections below are organized by the icons that are in the icon bar in the CMS© software. Each section will address the relation to the important aspects of the entire CIMS.

3.1.1 Basic Functionality

The CMS© Software has a few built-in functionalities to assist with viewing preferences.

Zoom

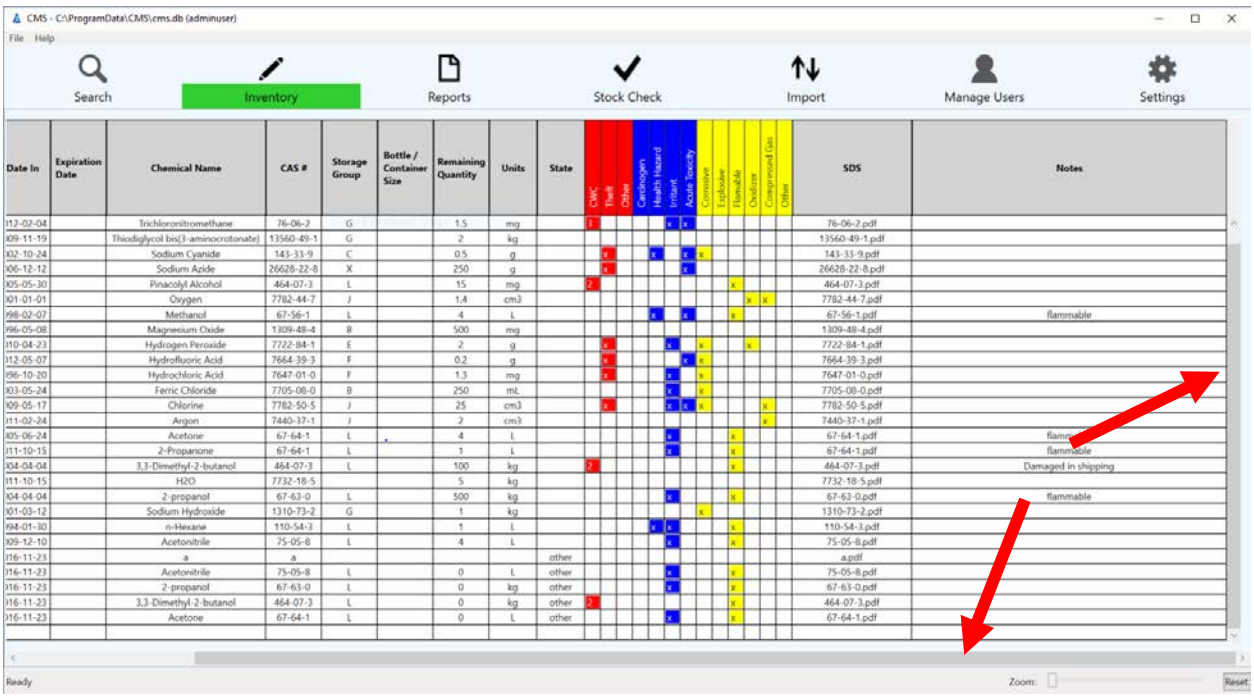
Depending on the computer screen size and resolution, some information in CMS© might not be legible under default settings. CMS© offers a simple magnification tool that allows for closer inspection of data in the inventory, search results, reports, import data, etc. To use this tool, notice the scroll bar at the bottom right of the screen next to the word, "**Zoom**," as shown in the picture below. Simply click on the small tab and drag to the right or left to adjust the level of zoom. Dragging the tab to the right will zoom in. Dragging to the left will zoom out. The program default setting is fully zoomed out. The "**Reset**" button at the very bottom right returns the program to default zoom settings.



Scroll Bars

Depending on the computer screen size and resolution, some information in CMS© might not be visible within the window, under default settings. The scroll bars allow the user to adjust the visible portion of the window: to the left, the right, up, or down. Depending on your screen size and the size of the window, there are usually two scroll bars: one located at the bottom of the window, and the other one at the right of the window. Scroll bars can be used by (1) the pushing the arrow keys on a keyboard or (2) clicking and dragging the scroll bar with a mouse.

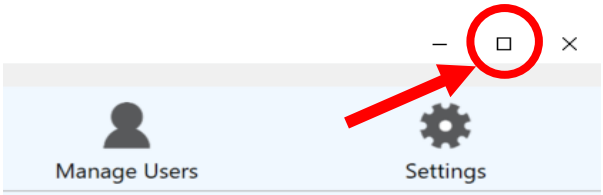
NOTE
Some scroll bars are not visible until the content on the screen exceeds the window screen. Example: When in the "Inventory" Icon, the vertical scroll bar is only visible after the "Notes" column when the number of items exceeds the screen vertically (more than 20).



Window Resizing

To resize a window, you have 2 basic options:

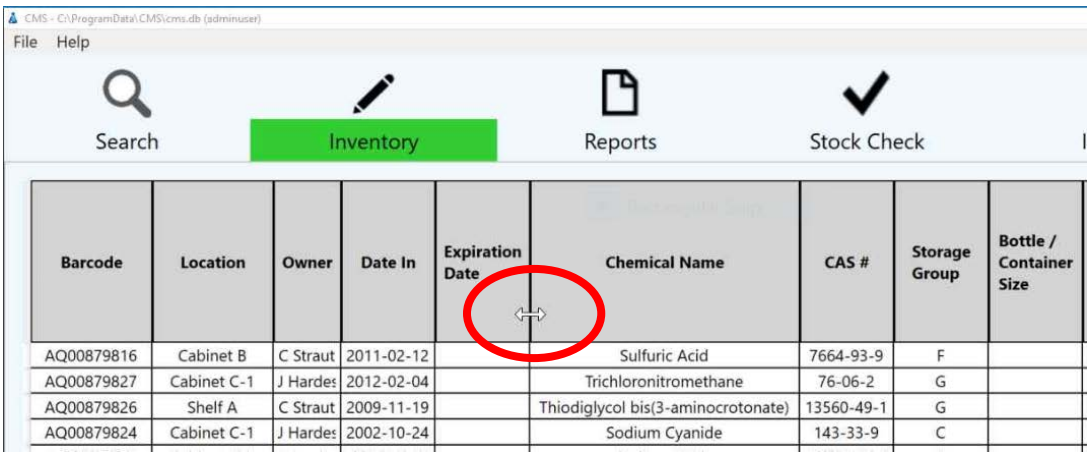
A. To expand the software to full screen: click the square button in the far top right corner of the window (see screen shot below).



B. To customize the window size (you must not be in "full screen" mode): place the cursor over the edge or corner of the window until a double arrow appears (↔). Click and hold the edge or corner of the window with the double-headed arrow cursor, and adjust the window to the preferred size. If resizing the window from the top or bottom corner, you can drag the window up or down. If resizing the window from the right or left corner, you can drag the window left or right.

Column Resizing

Column sizing can be done for only the columns in the "Inventory," Stock Check," and "Manage Users" icons. To resize a column, place the cursor on the line between two columns headers. A double arrow (↔) should appear. Once the double arrow appears, click and drag the column to the desired width.



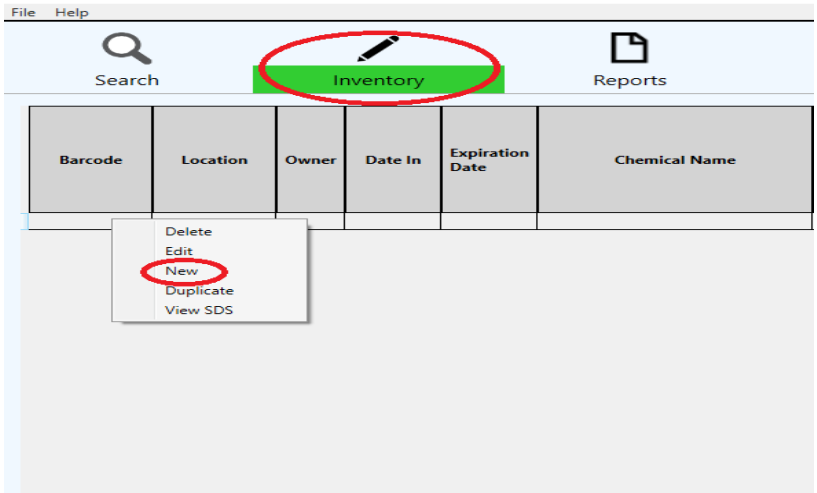
3.2 "Inventory" Icon

A key part of a CIMS should contain a complete list of the chemicals under management is accessible in the CMS© "Inventory" icon. All Users have access privileges to see the inventory, but only the Administrator, Manager, or Auditor have access privileges to add or edit inventory items. If a previous inventory was created on the CIMS Excel® tool (or a program that has the same inventory format) it may be imported by the Administrator (see Chapter 2 "Importing Inventory" section).

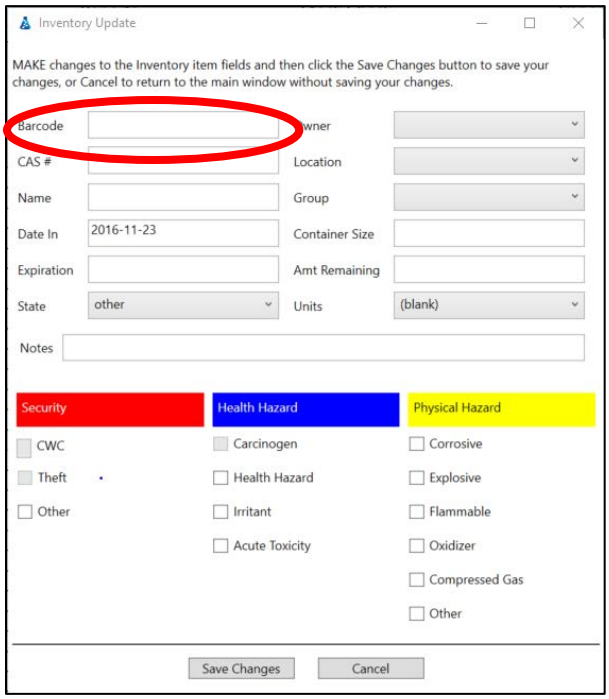
3.2.1 Adding a New Chemical

1) Place a new barcode on the new chemical container (see more information on Labeling Containers with Barcodes in Appendix I).

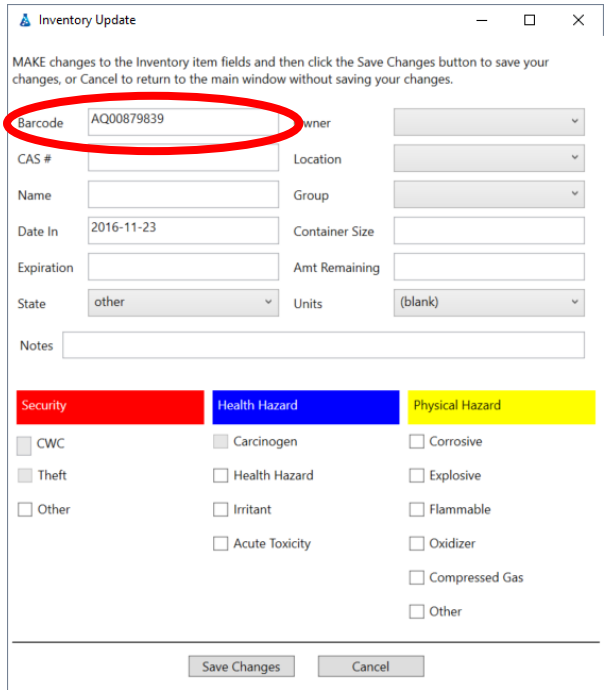
2) Open the CMS© software, click on the "**Inventory**" icon, and right click on any line and click on "**New**"



3) After selecting "**New**," a popup window will appear. Enter in information for the chemical. Click on the first row rectangular box next to the word "**Barcode**"



4) With the barcode scanner connected to the computer, scan the barcode on the bottle or enter the barcode manually.
    a) The new barcode number will appear in the selected spreadsheet line (see below)



5) Enter the information of the chemical into the fields. Use the check boxes to identify any "Security" risks, "Health Hazards", or "Physical Hazards" for the chemical. Be sure to check that the information is complete and accurate. See the detailed information on each field below for an example entry (see figure below):

   a) **Location**: the room number (and building number, cabinet number, or other identifiers as appropriate) where that chemical container is stored. This drop down menu is set when the software is installed (see Chapter 2).

   b) **Owner**: the name of the person responsible for the safe and secure stewardship of that chemical during its entire lifecycle at the institution. This drop down menu is set when the software is installed (see Chapter 2).

   c) **Date In**: the date that the chemical was received by, or responsibility for that chemical was transferred to the listed owner. CMS© auto-populates this cell with the present date; adjust if needed.

   d) **Chemical Name**: the name of the chemical. Try to use a consistent naming protocol. For example, in your inventory always use only one name to refer to "isopropanol" – do not use multiple names for the same chemical with multiple entries (e.g. 2-propanol, isopropanol, isopropyl alcohol, or rubbing alcohol).

NOTE
To help with consistent nomenclature for chemicals in your inventory make chemical names a part of the Standard Operating Procedures (SOPs). Create a protocol regarding which chemical names are to be used; add a list of preferred names for common chemicals to the SOP for the CMS©.

   e) **CAS #**: the number provided by the Chemical Abstracts Service (or the CAS Registry number). CAS numbers are unique identifiers associated with a specific chemical and are very useful for overcoming the problems created by chemicals that go by many different names. **Inputting the correct CAS number is especially important**. The automatic alerts will automatically populate upon entry of the CAS number for hazardous materials that are included in the SDS folder.

NOTE
It is important to ensure that the CAS registry number is correct and matches the chemical name. ***Automatic alerts are generated based on CAS number***, not chemical name or barcode. For more information on CAS registry numbers, please see the Definitions section.

   f) **Storage Group:** the storage group based on your facilities classification guidance. This is an optional entry and the drop down menu is set when the software is installed (see Chapter 2).

g) **Bottle/Container Size**: provide only a numerical value of the chemical that originally came in a given container (e.g., 250, 500, 1). The "**Units**" will indicate the volume or weight unit to this numerical amount (e.g., kg, L, mg, etc.).

h) **Remaining Quantity**: use this column to indicate how much of the material is remaining or left after usage. This is an optional field entry for numerical values (e.g., 2.1, 3.0, etc.) only.

   i. When importing a previous CIMS file the "**Quantity**" column will be imported into the CMS "**Remaining Quantity**" column.

i) **Units**: use units to indicate the proper measure (e.g. volume (L, ml) or weight (mg, g, kg)). A drop down menu is provided listing the common SI units.

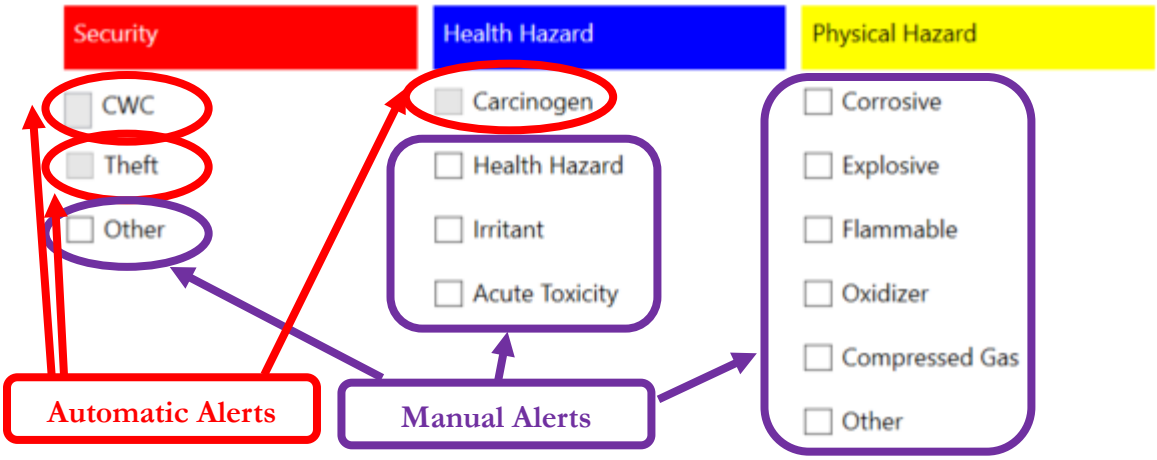
j) **State**: state of matter of the chemical (e.g., solid, liquid, gas). A drop down menu is provided listing the states of matter.

k) **Notes**: insert any additional information you may have or want to be included that is associated with the chemical. This information can be anything that the Administrator wants to note about the chemical. Examples: "Don't store near water," "Damaged in shipping," "Very expensive use sparingly," "Lock up this chemical," etc. (Only approximately 56 characters are viewable in the "Inventory").

l) **Alerts**: draw attention to chemicals that require special considerations. The alerts are of two types automatic and manual:

   1) **Automatically populated** based on the CAS number and do not allow data entry and are grayed out. These boxes are: "CWC," "Theft," and "Carcinogen" (see below or the Appendix for detailed definition).

   2) **Manually populated** by the user entering an '√' in the box.



   ii. The Alerts section is subdivided into three parts: Security, Health Hazards, and Physical Hazards. When the box is checked, the inventory line item will be highlighted in the alerts section in accordance of the alert hazard (security = red, health = blue, and physical = yellow) (see figure below).

1) **Security**:

   a. **CWC**: Organisation for the Prohibition of Chemical Weapons (OPCW) Chemical Weapons Convention (CWC) schedule chemicals 1, 2, or 3. (see Appendix for detailed definition).

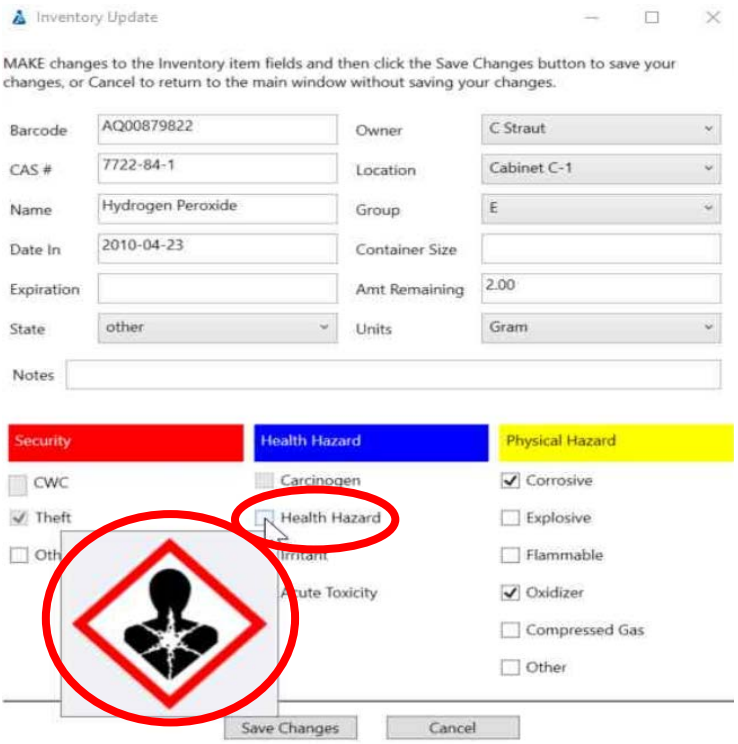
   b. **Theft:** Chemical of Interest (COI) that have the potential for a security threat by theft (see Appendix for detailed definition).

   c. **Other:** Manually populated by the administrator based on any additional security risk your facility identifies for a particular chemical.

2) **Health Hazard**:

   a. **Carcinogen**: Automatically populated if the CAS is listed as an International Agency for Research on Cancer (IARC) 1, 2A, or 2B chemical. (see Appendix for detailed definition).

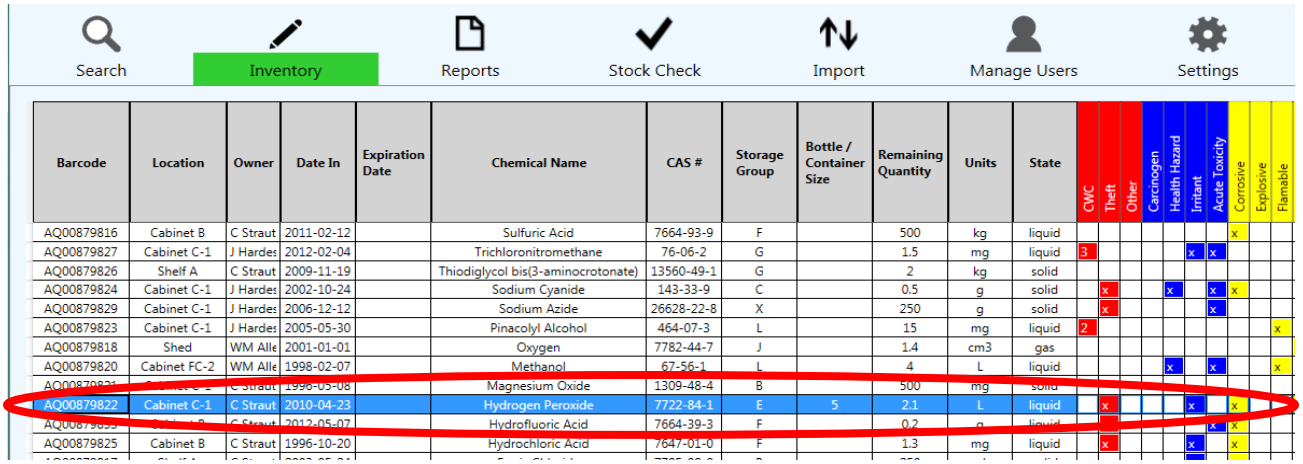
   b. **Health Hazard, Irritant, Acute Toxicity**: Various health hazards as defined by the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) symbols. Hover over the word for the pictogram of the category. If the chemical has the symbol either on the bottle or in the SDS the user should manually mark the cell with a " √ ".



3) **Physical Hazards**: Physical hazard classification symbols defined by GHS and "Other", based on any additional physical hazard your

6) Be sure to check that the information is complete and accurate and click "**Save Changes**".

7) The new chemical should now appear in the inventory (see picture below). The cells with an "x" are highlighted based on the alert. Security is red, Health Hazards are blue, and Physical Hazards are yellow.



Barcode	Location	Owner	Date In	Expiration Date	Chemical Name	CAS #	Storage Group	Bottle / Container Size	Remaining Quantity	Units	State	CWC	Theft	Other	Carcinogen	Health Hazard	Irritant	Acute Toxicity	Corrosive	Explosive	Flamable
AQ00879816	Cabinet B	C Straut	2011-02-12		Sulfuric Acid	7664-93-9	F		500	kg	liquid								x		
AQ00879827	Cabinet C-1	J Hardes	2012-02-04		Trichloronitromethane	76-06-2	G		1.5	mg	liquid	3					x	x			
AQ00879826	Shelf A	C Straut	2009-11-19		Thiodiglycol bis(3-aminocrotonate)	13560-49-1	G		2	kg	solid										
AQ00879824	Cabinet C-1	J Hardes	2002-10-24		Sodium Cyanide	143-33-9	C		0.5	g	solid		x			x		x	x		
AQ00879829	Cabinet C-1	J Hardes	2006-12-12		Sodium Azide	26628-22-8	X		250	g	solid		x					x			
AQ00879823	Cabinet C-1	J Hardes	2005-05-30		Pinacolyl Alcohol	464-07-3	L		15	mg	liquid	2									x
AQ00879818	Shed	WM Alle	2001-01-01		Oxygen	7782-44-7	J		1.4	cm3	gas										
AQ00879820	Cabinet FC-2	WM Alle	1998-02-07		Methanol	67-56-1	L		4	L	liquid					x		x			x
AQ00879821	[illegible]	C Straut	1996-05-08		Magnesium Oxide	1309-48-4	B		500	mg	solid										
AQ00879822	Cabinet C-1	C Straut	2010-04-23		Hydrogen Peroxide	7722-84-1	E	5	2.1	L	liquid		x				x		x		
AQ00879855	[illegible]	C Straut	2012-05-07		Hydrofluoric Acid	7664-39-3	F		0.2	g	liquid							x	x		
AQ00879825	Cabinet B	C Straut	1996-10-20		Hydrochloric Acid	7647-01-0	F		1.3	mg	liquid		x				x		x		

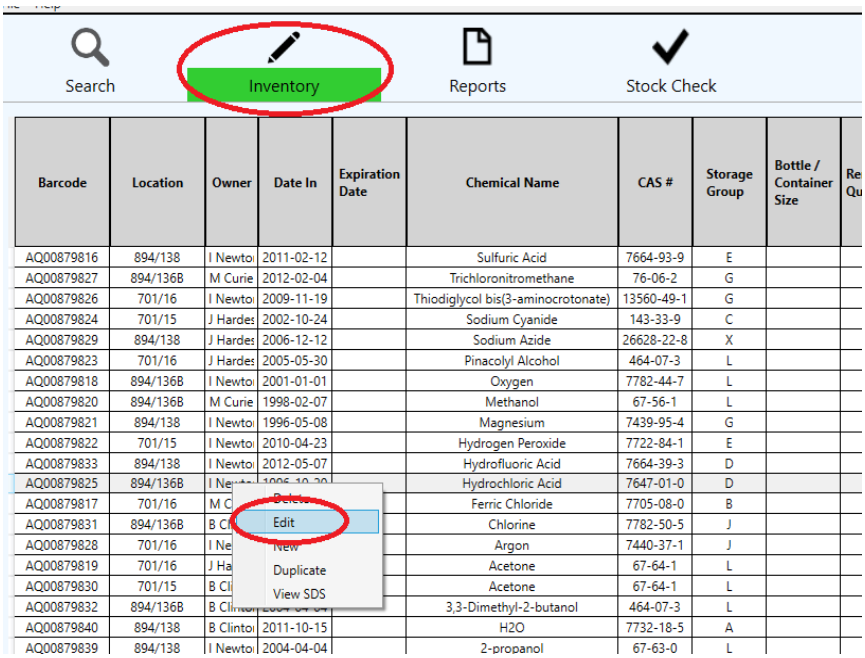
8) Place the container into the designated storage or laboratory location.

3.2.2 Updating Items in the Inventory

Administrator, Manager, or Auditor access is required to make changes in the inventory. Thus, changes of inventory are formally communicated by all CMS© Users to the Administrator, Manager, and Auditor. It is important that institutional rules and policies be enforced when changes in the inventory occur. Requirements should include communication, authorization, and tracking procedures for any changes to the inventory, such as when chemicals are moved from one lab to another or when ownership of chemicals is transferred. Developing an appropriate SOP is highly recommended. For security purposes, moving or making other changes regarding certain chemicals should require additional specific authorization.

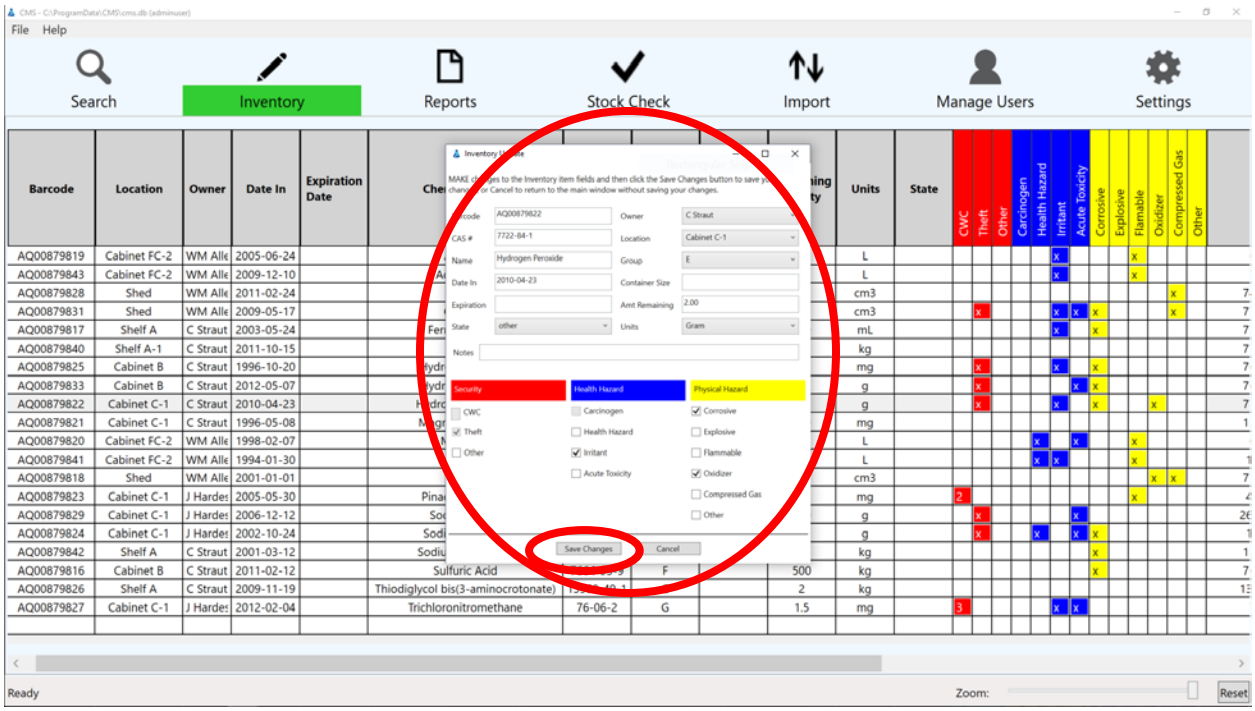
Steps to update items in the inventory:

1) Select the "**Inventory**" icon and look for the chemical you want to modify.
2) Right click anywhere on the row of the chemical and select "**Edit**" from the drop down menu.



Barcode	Location	Owner	Date In	Expiration Date	Chemical Name	CAS #	Storage Group	Bottle / Container Size	Re Qu
AQ00879816	894/138	I Newto	2011-02-12		Sulfuric Acid	7664-93-9	E		
AQ00879827	894/136B	M Curie	2012-02-04		Trichloronitromethane	76-06-2	G		
AQ00879826	701/16	I Newto	2009-11-19		Thiodiglycol bis(3-aminocrotonate)	13560-49-1	G		
AQ00879824	701/15	J Hardes	2002-10-24		Sodium Cyanide	143-33-9	C		
AQ00879829	894/138	J Hardes	2006-12-12		Sodium Azide	26628-22-8	X		
AQ00879823	701/16	J Hardes	2005-05-30		Pinacolyl Alcohol	464-07-3	L		
AQ00879818	894/136B	I Newto	2001-01-01		Oxygen	7782-44-7	L		
AQ00879820	894/136B	M Curie	1998-02-07		Methanol	67-56-1	L		
AQ00879821	894/138	I Newto	1996-05-08		Magnesium	7439-95-4	G		
AQ00879822	701/15	I Newto	2010-04-23		Hydrogen Peroxide	7722-84-1	E		
AQ00879833	894/138	I Newto	2012-05-07		Hydrofluoric Acid	7664-39-3	D		
AQ00879825	894/136B	I Ne			Hydrochloric Acid	7647-01-0	D		
AQ00879817	701/16	M C			Ferric Chloride	7705-08-0	B		
AQ00879831	894/136B	B Cl			Chlorine	7782-50-5	J		
AQ00879828	701/16	I Ne			Argon	7440-37-1	J		
AQ00879819	701/16	J Ha			Acetone	67-64-1	L		
AQ00879830	701/15	B Cl			Acetone	67-64-1	L		
AQ00879832	894/136B	B Clinto			3,3-Dimethyl-2-butanol	464-07-3	L		
AQ00879840	894/138	B Clinto	2011-10-15		H2O	7732-18-5	A		
AQ00879839	894/138	I Newto	2004-04-04		2-propanol	67-63-0	L		

3) A window will appear that will allow you to make the necessary changes to any information regarding that item. After you are done editing the information, click on "**Save Changes**".



3.2.3 Removing Items from the Inventory

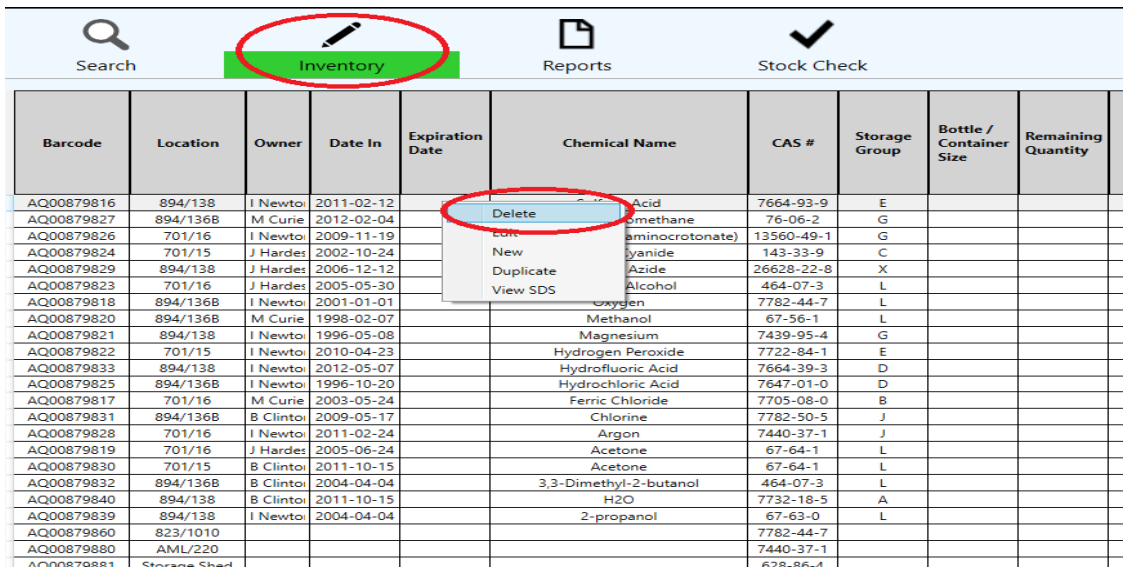
Administrator, Manager, or Auditor access is required for all deletions from the inventory. Thus, removal of chemicals from the inventory is formally communicated by all CMS© users to the Administrator, Manager, and Auditor. When chemicals are used up, no longer needed, or otherwise become declared as waste, they need to be removed from the inventory. It is recommended that each department develop a SOP for labs using the CMS on how to keep the inventory updated regarding the disposal of chemicals.

Steps to remove items in the inventory:

1) Select the "**Inventory**" icon and look for the chemical you want to remove and right click anywhere in that row.

2) Select "**Delete**" and a popup window will confirm whether you want to delete the chemical. Click "**Yes**" in the popup window and the chemical will be erased.

NOTE
There is no "undo" in the CMS© Software. Be sure to check that the item should be deleted.



Barcode	Location	Owner	Date In	Expiration Date	Chemical Name	CAS #	Storage Group	Bottle / Container Size	Remaining Quantity
AQ00879816	894/138	I Newto	2011-02-12		Acid	7664-93-9	E		
AQ00879827	894/136B	M Curie	2012-02-04		methane	76-06-2	G		
AQ00879826	701/16	I Newto	2009-11-19		aminocrotonate)	13560-49-1	G		
AQ00879824	701/15	J Hardes	2002-10-24		yanide	143-33-9	C		
AQ00879829	894/138	J Hardes	2006-12-12		Azide	26628-22-8	X		
AQ00879823	701/16	J Hardes	2005-05-30		Alcohol	464-07-3	L		
AQ00879818	894/136B	I Newto	2001-01-01		Oxygen	7782-44-7	L		
AQ00879820	894/136B	M Curie	1998-02-07		Methanol	67-56-1	L		
AQ00879821	894/138	I Newto	1996-05-08		Magnesium	7439-95-4	G		
AQ00879822	701/15	I Newto	2010-04-23		Hydrogen Peroxide	7722-84-1	E		
AQ00879833	894/138	I Newto	2012-05-07		Hydrofluoric Acid	7664-39-3	D		
AQ00879825	894/136B	I Newto	1996-10-20		Hydrochloric Acid	7647-01-0	D		
AQ00879817	701/16	M Curie	2003-05-24		Ferric Chloride	7705-08-0	B		
AQ00879831	894/136B	B Clinto	2009-05-17		Chlorine	7782-50-5	J		
AQ00879828	701/16	I Newto	2011-02-24		Argon	7440-37-1	J		
AQ00879819	701/16	J Hardes	2005-06-24		Acetone	67-64-1	L		
AQ00879830	701/15	B Clinto	2011-10-15		Acetone	67-64-1	L		
AQ00879832	894/136B	B Clinto	2004-04-04		3,3-Dimethyl-2-butanol	464-07-3	L		
AQ00879840	894/138	B Clinto	2011-10-15		H2O	7732-18-5	A		
AQ00879839	894/138	I Newto	2004-04-04		2-propanol	67-63-0	L		
AQ00879860	823/1010					7782-44-7			
AQ00879880	AML/220					7440-37-1			
AQ00879881	Storage Shed					628-86-4			

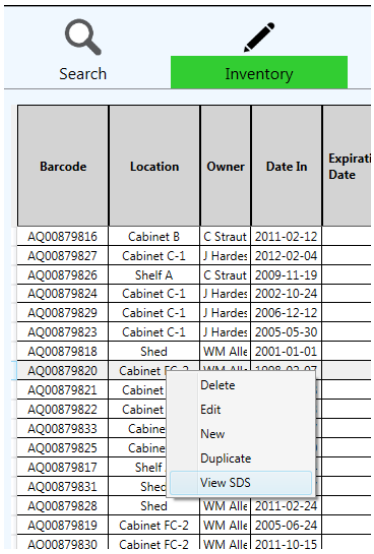
3) If a chemical has been deleted by mistake the only option is to restore the database to a previously saved database. (See Chapter 2 Database Restore)

3.2.4 Safety Data Sheets

Safety data sheets (SDS) may be viewed for chemicals listed in the inventory as long as the SDS is available in the SDS Folder (see chapter 2 section on SDS Folder Setup to properly setup the SDS folder). The link will automatically generate when a barcode, chemical name, and CAS number are added to the entry line.

To view the SDS in the "Inventory" icon:

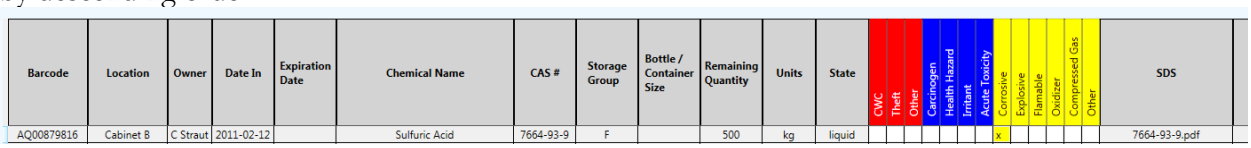
1) Right click anywhere on the row of the chemical and select "**View SDS**" (see picture below).



2) The SDS will appear in a separate Adobe ® Acrobat window.

3.2.5 Sorting the Inventory

Inventory sorting can be useful when finding a particular item that needs to be edited or deleted. By default, the inventory is sorted by newest added items on the bottom. The inventory can be sorted by any of the inventory spreadsheet title columns (e.g. Barcode, Location, Owner, Corrosive, etc.). Click once on the column to sort by ascending numerical or alphabetical and click once more to sort by descending order.



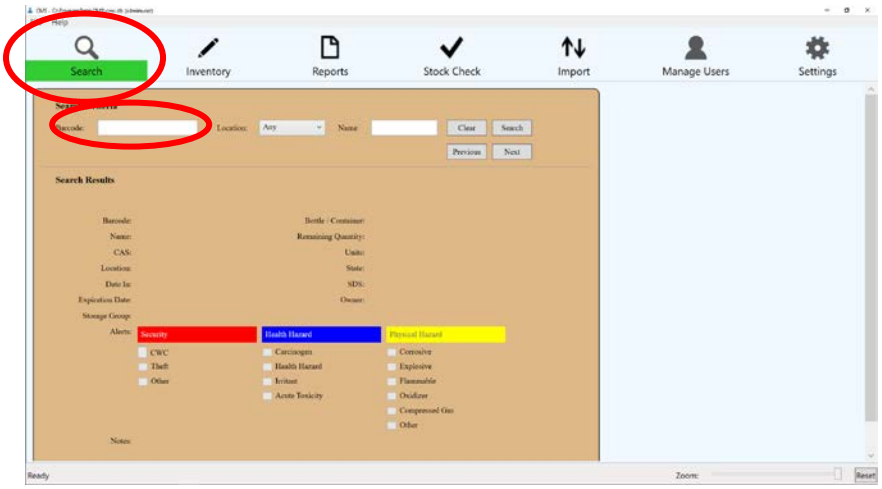
Barcode	Location	Owner	Date In	Expiration Date	Chemical Name	CAS #	Storage Group	Bottle / Container Size	Remaining Quantity	Units	State	CWC	Theft	Other	Carcinogen	Health Hazard	Irritant	Acute Toxicity	Corrosive	Explosive	Flamable	Oxidizer	Compressed Gas	Other	SDS
AQ00879816	Cabinet B	C Straut	2011-02-12		Sulfuric Acid	7664-93-9	F		500	kg	liquid								x						7664-93-9.pdf

3.3 "Search" Icon

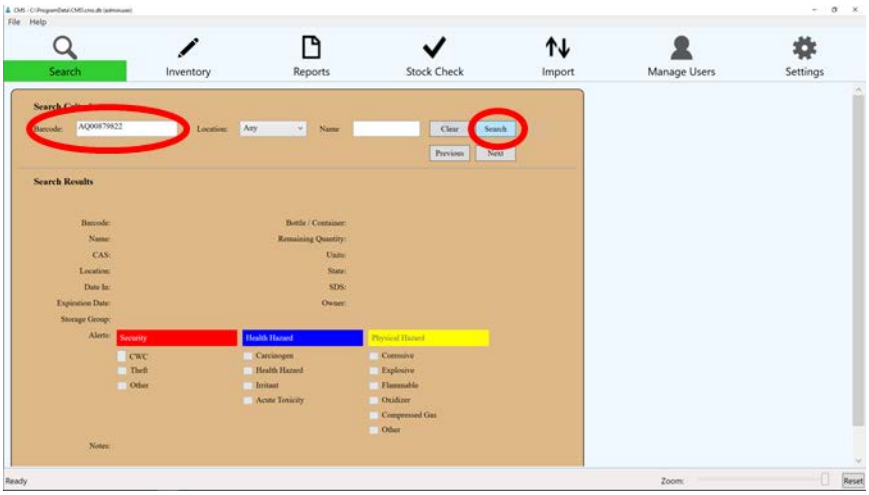
The "Search" icon allows all CMS© users to find a specific information on a chemical, based on its barcode (scanned or typed), chemical name, or location. As shown below, once the search is completed, information about the material is given along with any security, health hazard and/or physical hazard alerts.

3.3.1 Search for a Barcode

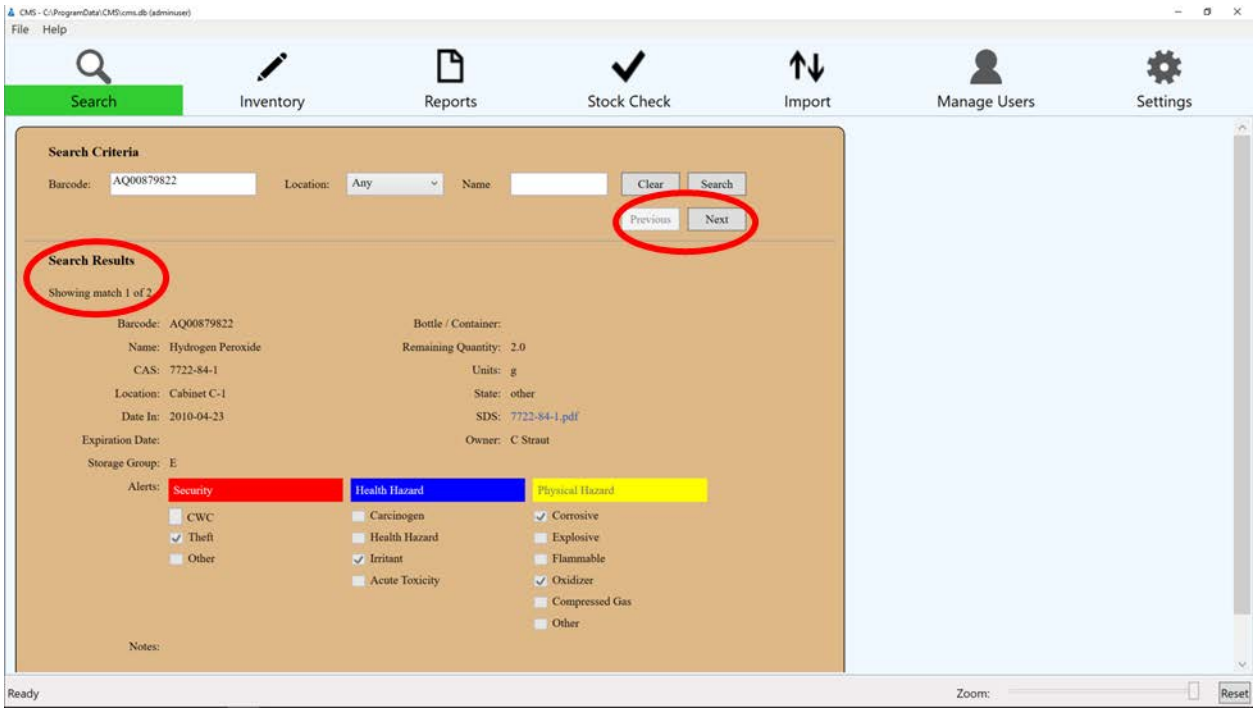
1) Select the "**Search**" icon (top left) and click on the white field labeled "**Barcode**"



2) Type or scan a barcode for a chemical (Scanning a chemical container will automatically search the inventory, however, when you type a barcode, you must click the "**Search**" button to the right of the search criteria)



3) The number of matches will be shown directly under the words "**Search Results**". To toggle through the results, use the "**Previous**" and "**Next**" buttons.



3.3.2 Search for a Chemical Name

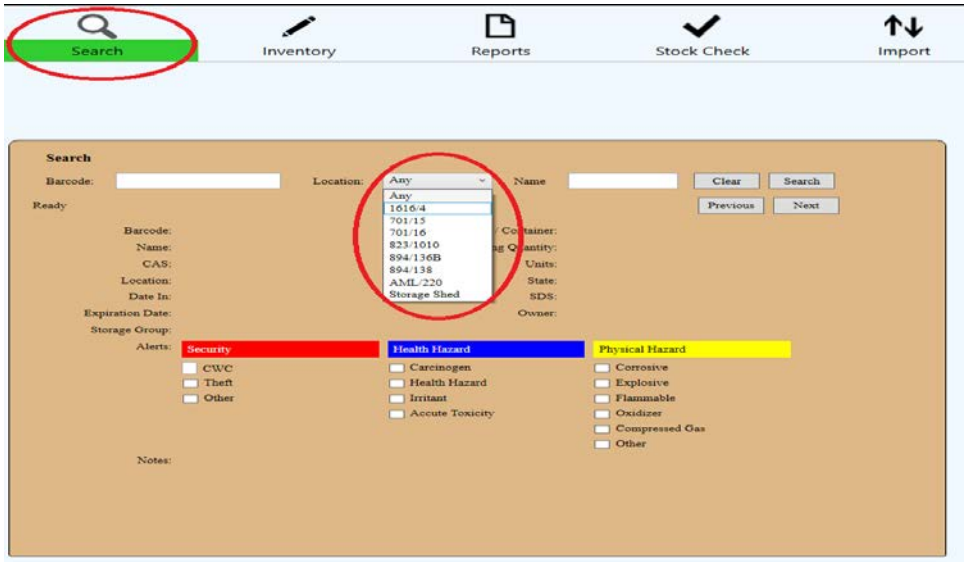
1) Select the "**Search**" icon (top left) and click on the white field labeled "**Name**".

2) Type the name of the chemical you are looking for and click the "**Search**" button to the right of the search criteria.

3) The number of matches will be shown directly under the words "**Search Results**". To scroll through the results, use the "**Previous**" and "**Next**" buttons.

3.3.3 Search Using Location

1) Select the "**Search**" icon (top left) and click on the dropdown menu labeled "**Location**" that will show you all the locations where there are chemicals stored (as reported by the Administrator or the Manager in the "**Settings**" icon).

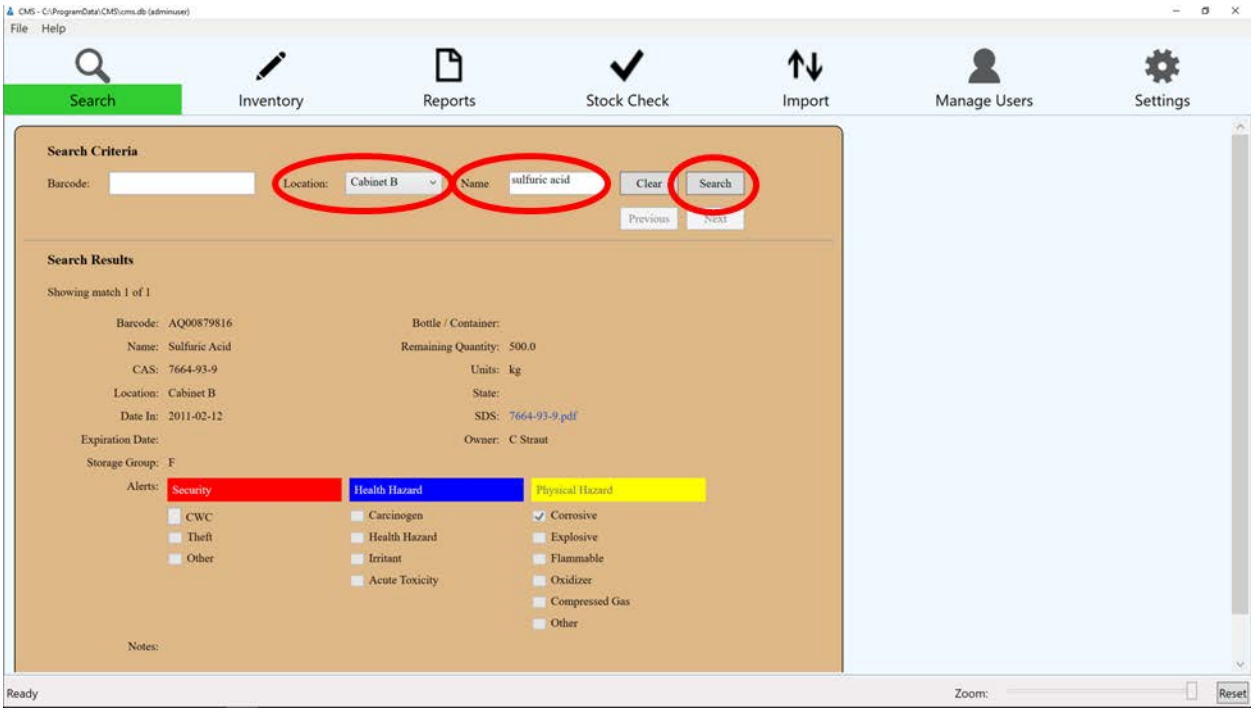


NOTE
As a default, the "**Location**" is set to "**Any**," which will search all inventories for the chemical you are looking for.

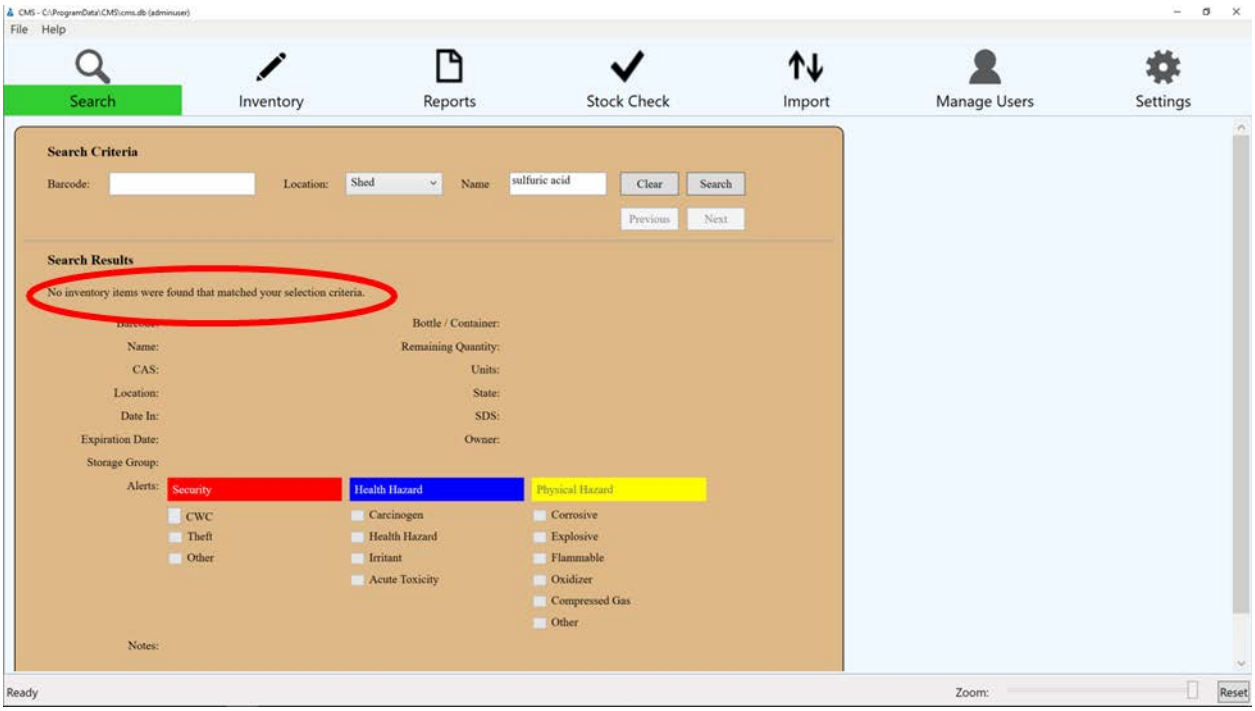
2) To search for all chemicals in a specific location, select the location you desire and click on the "**Search**" button to the right of the search criteria.

3) The number of matches will be shown directly under the words "**Search Results**". To toggle between the results, use the "**Previous**" and "**Next**" buttons.

4) To search for a chemical in a specific location, you can either type the name or scan the barcode of the chemical, select the location you desire, and click the "**Search**" button to the right of the search criteria.



5) If the chemical you are looking for is not in the location you selected, you will be prompted with the following message "No inventory items were found that matched your selection criteria" (see picture below).



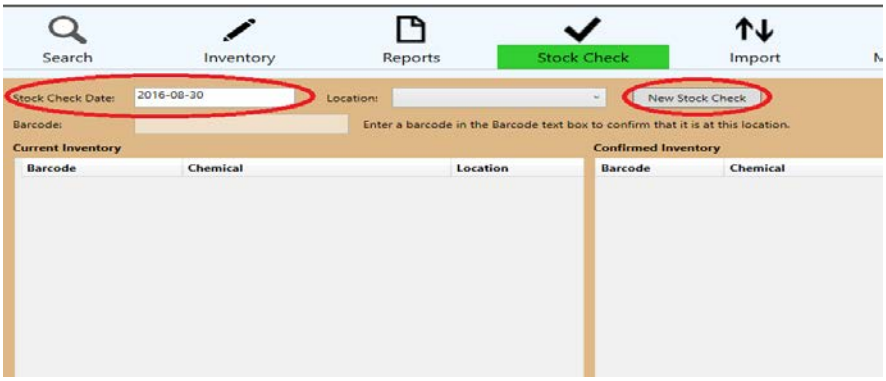
"Stock Check" Icon

The "Stock Check" icon is accessible to the Administrator, Manager, and Auditor users. This feature is designed to assist in physical inventory inspections commonly termed "Audits" or "Stock Checks." Audits are an important part of a chemical management program because they 1) evaluate the accuracy of the inventory, 2) identify program gaps in implementing/maintaining the CMS© software, and 3) identify trends in chemical usage. Audits should be performed on a regular basis; however, the institution/facility must decide on the "regular" time interval that is suitable. To help with consistency, Audits should be incorporated as part of the SOPs. Create a protocol regarding when and how often an audit must be done. It is also important to specifically identify which type of audit must be performed, visual inspection or physical inspection. The following instructions will guide you through the steps to take with the CMS© software before a physical inspection.

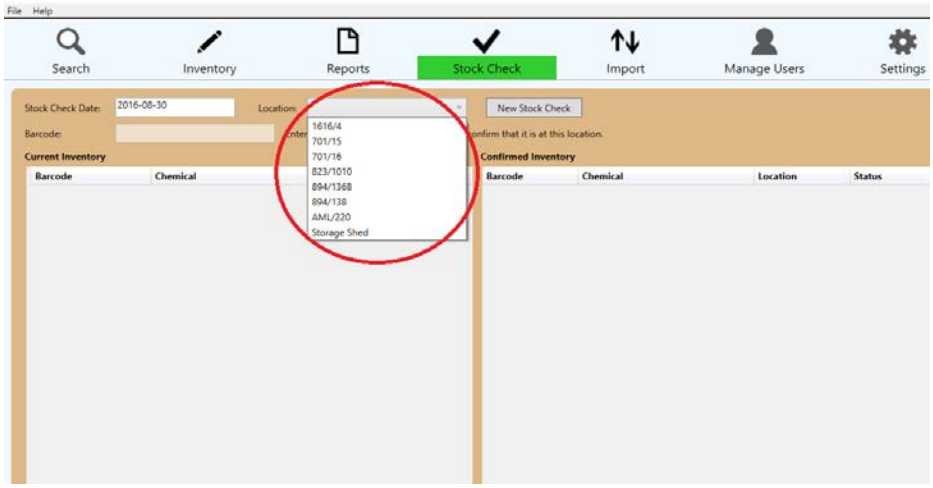
3.3.4 Inventory Audit

The CMS© only allows for audits based on one location at a time. To complete a stock check for another location or across all locations, follow the instructions after step 9. Reports can be generated based on the Stock Check results (see the Reports section in Chapter 4).

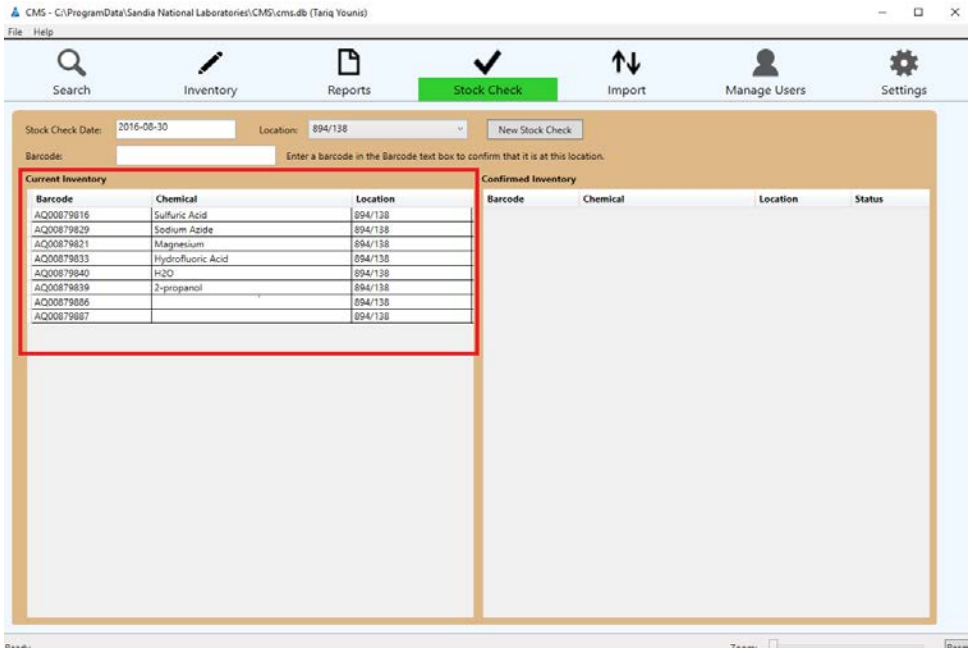
1) Select the "**Stock Check**" icon.
2) Click on "**New Stock Check**" and notice that the "**Stock Check Date**" field automatically populates the current date



3) Choose a location from the "**Location**" dropdown menu

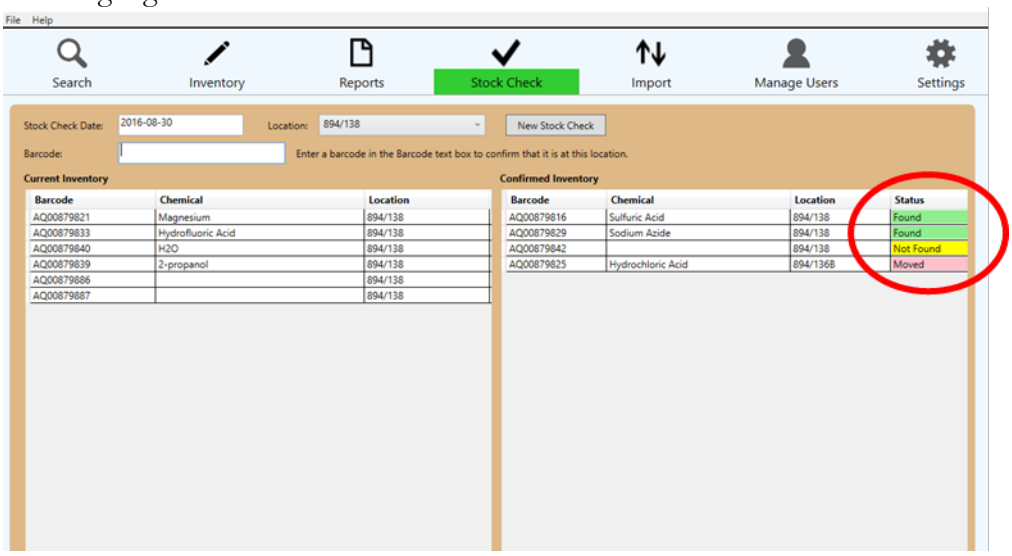


4) Once a location is selected, a list of all the items in that location will be listed on the left side under "**Current Inventory**"



5) Scan or type a barcode of an item in the "**Barcode**" field and hit enter.

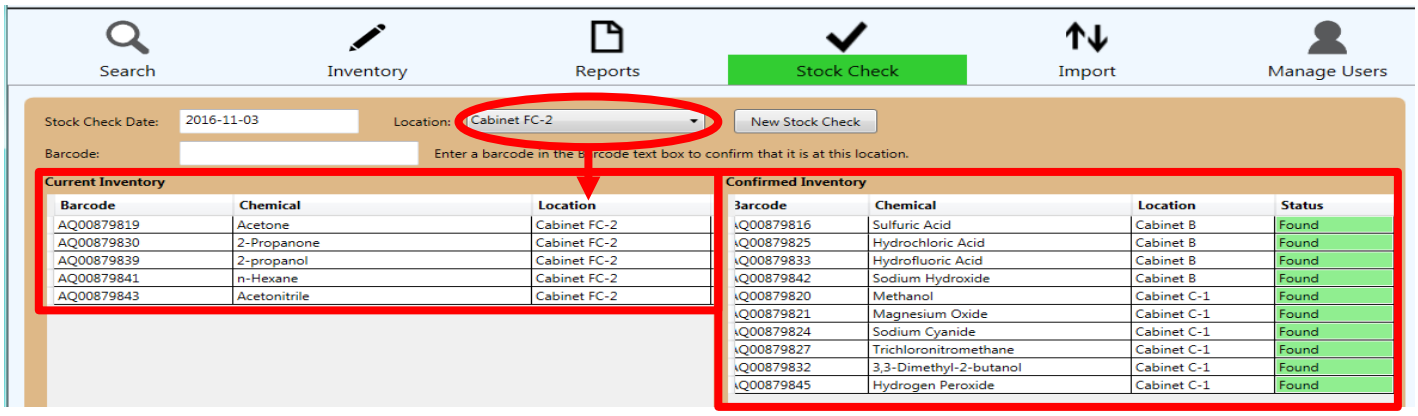
6) The barcode will appear in the "**Confirmed Inventory**" section. (see picture below as an example)
    a. If the item scanned is listed in the selected location, it will be moved from the "**Current Inventory**" to the "**Confirmed Inventory**" with the word "**Found**" in the "**Status**" column and will appear as a green highlighted cell.
    b. If a barcode scanned does not correspond to a chemical in the location selected, the word "**Moved**" will appear in the "**Status**" column and will appear as a red highlighted cell.
    c. If a barcode scanned does not correspond to a chemical in the entire database, the words "**No Record**" will appear in the "**Status**" column and will appear as a yellow highlighted cell.



7) If you entered a barcode incorrectly, right click on the row in the "**Confirmed Inventory**," select "**Remove from this list**," and select "Yes" in the popup window when prompted.
8) You can sort the "**Confirmed Inventory**" by clicking any of the column (Barcode, Chemical, location, or Status).
9) At this point corrections should be made to any of the items highlighted in red or yellow. The Administrator and/or Manager should check records and follow procedures in the SOP to determine that the chemical is legitimate and is approved for that location and Owner.
10) The information should then be corrected. If you are inspecting multiple locations, you can continue with step 10 and correct the inventory discrepancies once the entire audit is finished.
    a. In the "**Confirmed Inventory**" right click on the highlighted cell and select "**Update inventory item**".
    b. A separate window will appear to enter (or correct) the information for this inventory item. Click "**Save Changes**" and the window will close.
    c. The item will then appear as "Found" in the "**Confirmed Inventory**".

11) For a multiple location physical audit:

a. Select another location in the drop down menu. The items in the new location will now appear in the "**Current Inventory**" section and all the items that were already inventoried will still remain in the "**Confirmed Inventory.**"



b. Continue with the audit as with step 5 through 9 to complete the audit for this location. (Note: You should wait to correct the inventory discrepancies until the entire audit is finished)

c. Repeat step 10 to include additional locations.

d. The audit report information is saved until the "**New Stock Check**" button is clicked. (See Stock Check Reports in the Chapter 4)

12) Audit reports can be generated by CMS©. Click on the "Reports" icon to see a summary of the results from each location audited (see chapter 4 for more information).

13) It is highly recommended to save the database after every completed audit.

a. See "Database Setup" in Chapter 1 for detailed instructions.

14) The "Confirmed Inventory" items can be sorted by clicking on any of the column title or headers (i.e., Barcode, Chemical, Location, Status).

NOTE
Monitoring discrepancies may indicate common problem in SOPs or "practices and procedure" in the CIMS. Frequent discrepancies may require a review/update of SOPs and practices or additional training. Rewards or penalties can be used to promote proper implementations, such as team celebration for labs with the smallest number of discrepancies.

Chapter

4

4 Advanced Features

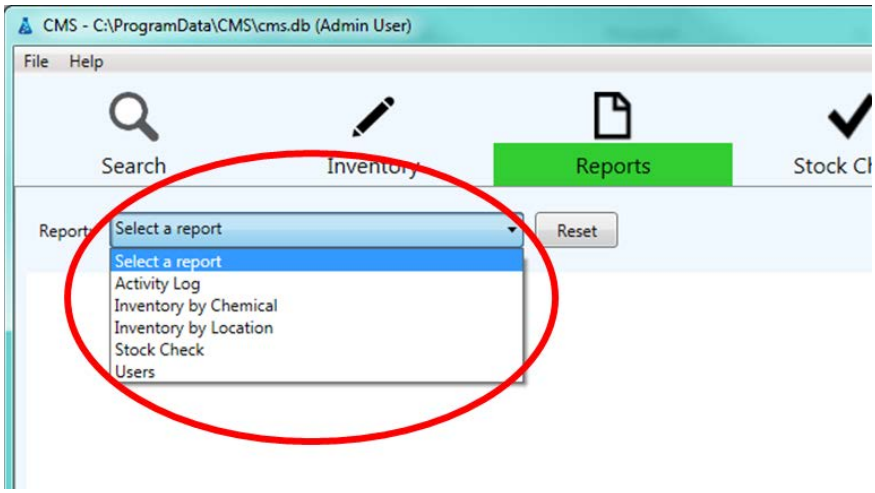
This section will provide an overview of some advanced features that are currently available with the CMS© software.

4.1 "Reports" Icon

Inventory reporting and audits are common practices that are used to report chemical quantities to national or international regulatory organizations. Reporting requirements will involve a search for specific chemicals and a report of total quantities. Please check with your institution to determine which reporting requirements are necessary. Example reporting requirements include: Organisation for the Prohibition of Chemical Weapons (OPCW), Chemical Weapons Convention (CWC), Chemical Facility Anti-Terrorism Standards (CFATS), Chemicals of Interest (COI), or Chemicals of Concern (COC). See the definitions section for more information.

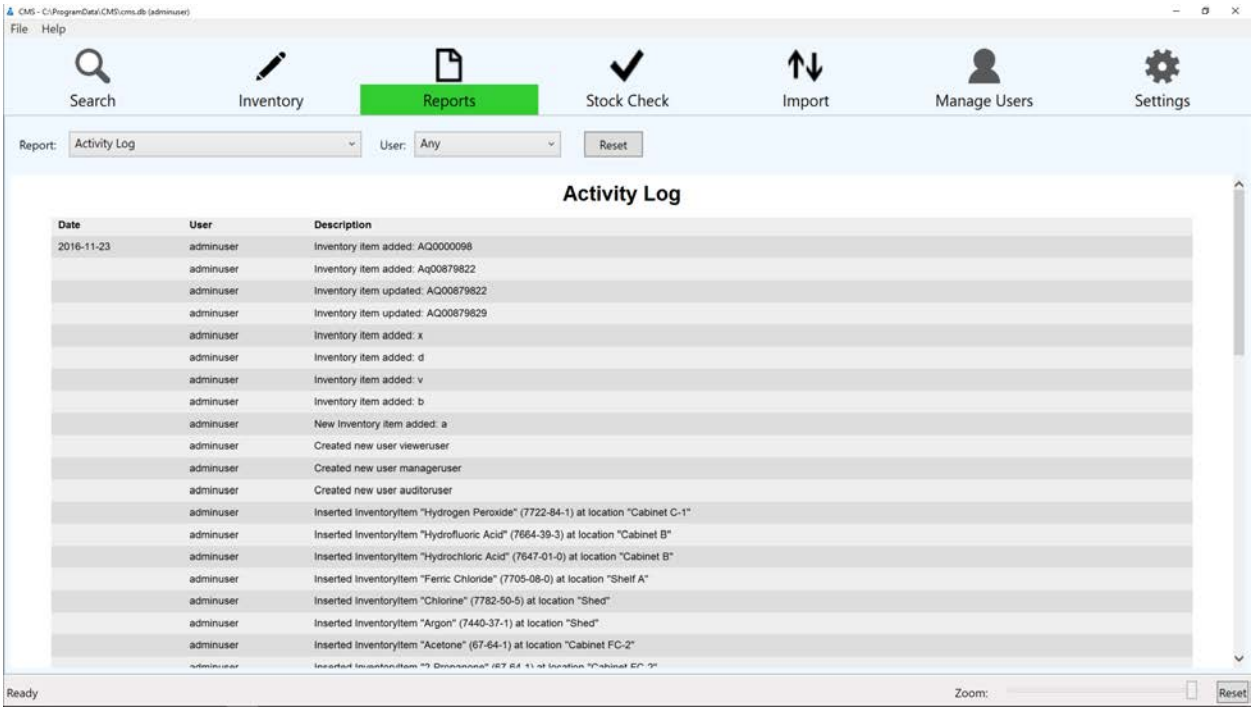
Reporting should be performed on a regular basis, but is typically defined by the institution and the country's government regulations. The schedule of reporting and audits is recommended to be included in your SOP (mentioned in Chapter 1 & 2). Reporting requirements will involve a search for specific chemicals and a report of total quantities. Please check with your institution to determine which reporting requirements are necessary.

The CMS© software assists in reporting requirements by providing the option to produce simplified, exportable reports. The CMS© has five optional reports that can be generated. This section below will explain each of the five reports. The "Reports" icon allows you to select from five options, simply click on the "Report:" dropdown menu and choose from following:



4.1.1 Activity Log

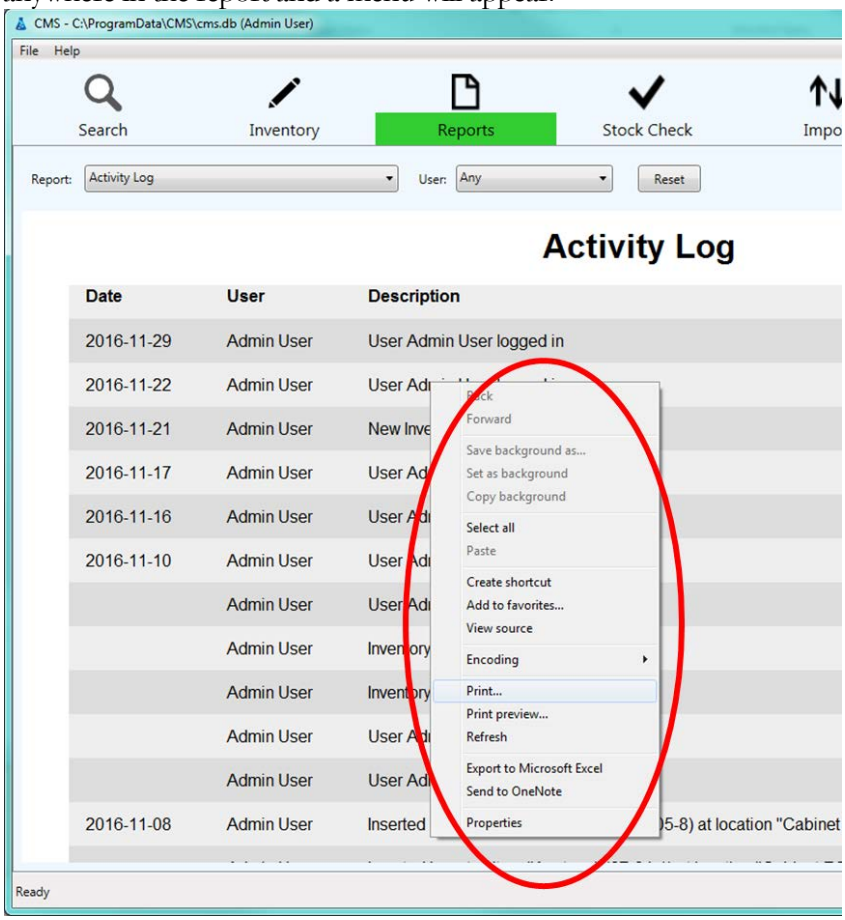
The first reporting option in the CMS© software is the "Activity Log." The report will automatically populate, as shown in the screen below, once you select "Activity Log." This report displays the activity performed in the program by date with the logged in user who made the changes in regards to adding/importing items to the inventory.



The report is a log of all changes made to the chemical inventory. The report can be filtered by "**User:**" with the dropdown arrows.

To print the report:

1) Right click anywhere in the report and a menu will appear.

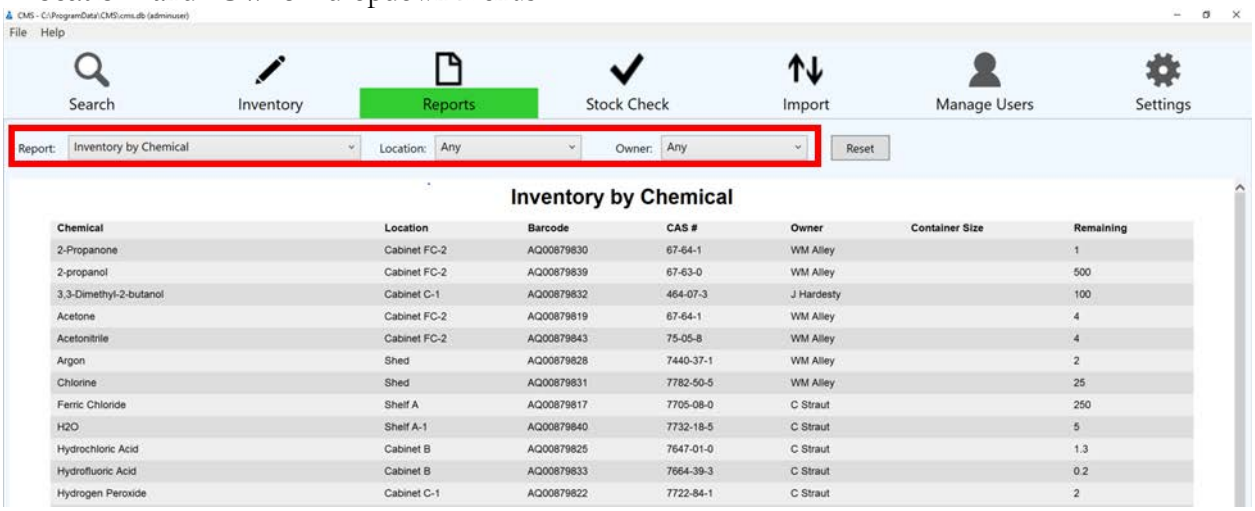


2) Select "**Print**" or "**Print Preview**," select the printer, and click "**Print**"

4.1.2 Inventory by Chemical

The "Inventory by Chemical" report lists all the chemicals in alphabetical order. The report displays the chemical name, location, barcode, CAS #, owner, container size and quantity. This report is designed to assist with (or simplify) quantity reporting of chemicals for the specific location/laboratory and the institution or facility.

The report can be filtered to view select items based on a specific location and/or owner from the "**Location**" and "**Owner**" dropdown menus.



Chemical	Location	Barcode	CAS #	Owner	Container Size	Remaining
2-Propanone	Cabinet FC-2	AQ00879830	67-64-1	WM Alley		1
2-propanol	Cabinet FC-2	AQ00879839	67-63-0	WM Alley		500
3,3-Dimethyl-2-butanol	Cabinet C-1	AQ00879832	464-07-3	J Hardesty		100
Acetone	Cabinet FC-2	AQ00879819	67-64-1	WM Alley		4
Acetonitrile	Cabinet FC-2	AQ00879843	75-05-8	WM Alley		4
Argon	Shed	AQ00879828	7440-37-1	WM Alley		2
Chlorine	Shed	AQ00879831	7782-50-5	WM Alley		25
Ferric Chloride	Shelf A	AQ00879817	7705-08-0	C Straut		250
H2O	Shelf A-1	AQ00879840	7732-18-5	C Straut		5
Hydrochloric Acid	Cabinet B	AQ00879825	7647-01-0	C Straut		1.3
Hydrofluoric Acid	Cabinet B	AQ00879833	7664-39-3	C Straut		0.2
Hydrogen Peroxide	Cabinet C-1	AQ00879822	7722-84-1	C Straut		2

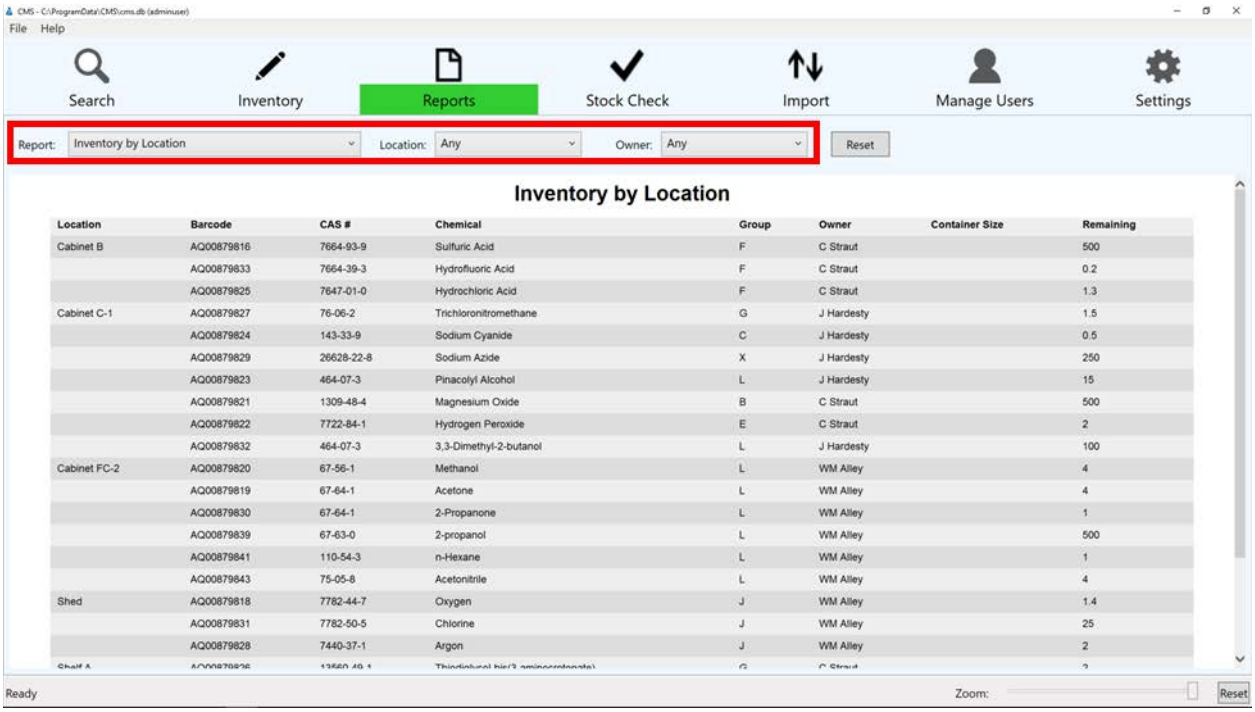
To print the report:

1) Right click anywhere in the report and a menu will appear.
2) Select "**Print**" or "**Print Preview**," select the printer, and click "**Print**"

4.1.3 Inventory by Location

The "Inventory by Location" report lists all the chemicals in order of their location. This report is designed to 1) quickly check for chemical compatibility (if storage location is listed by cabinets), 2) export/print simplified chemical inventory lists for each location, and 3) provide a printable list to assist with physical inventory audits.

The report displays the chemical name, location, barcode, CAS #, owner, container sizer and quantity. The report can be filtered by a specific location and/or owner from the "**Location**" and "**Owner**" dropdown menus.



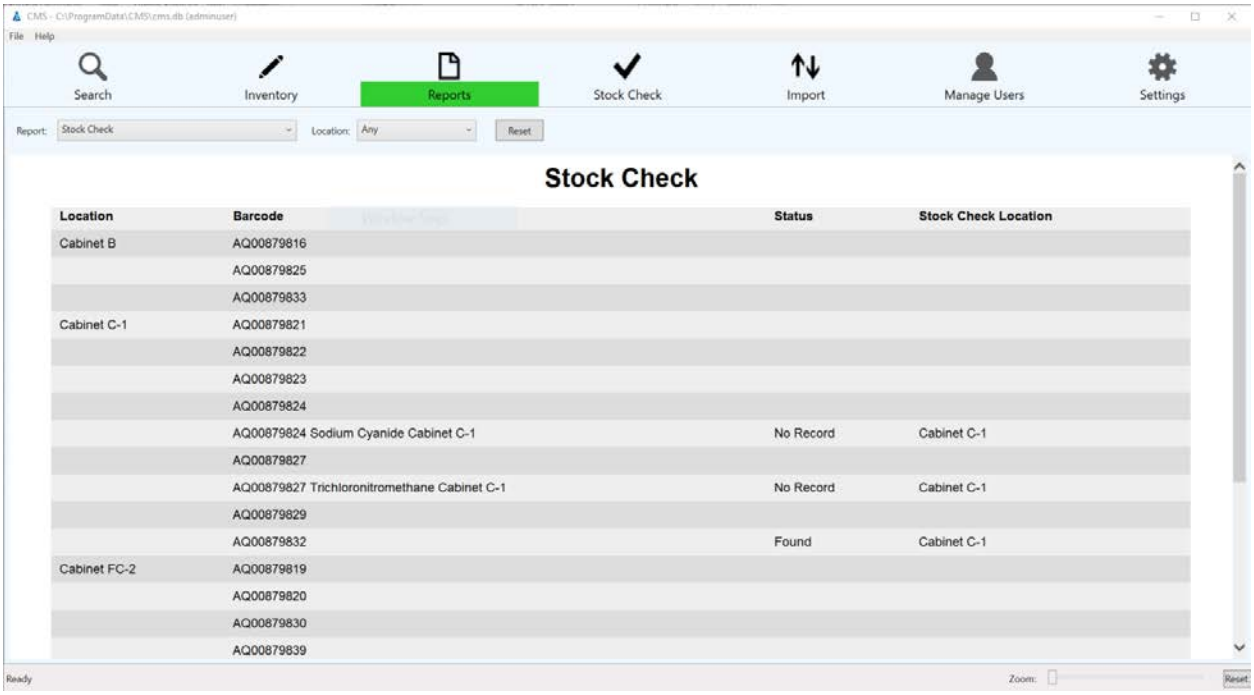
Location	Barcode	CAS #	Chemical	Group	Owner	Container Size	Remaining
Cabinet B	AQ00879816	7664-93-9	Sulfuric Acid	F	C Straut		500
	AQ00879833	7664-39-3	Hydrofluoric Acid	F	C Straut		0.2
	AQ00879825	7647-01-0	Hydrochloric Acid	F	C Straut		1.3
Cabinet C-1	AQ00879827	76-06-2	Trichloronitromethane	G	J Hardesty		1.5
	AQ00879824	143-33-9	Sodium Cyanide	C	J Hardesty		0.5
	AQ00879829	26628-22-8	Sodium Azide	X	J Hardesty		250
	AQ00879823	464-07-3	Pinacolyl Alcohol	L	J Hardesty		15
	AQ00879821	1309-48-4	Magnesium Oxide	B	C Straut		500
	AQ00879822	7722-84-1	Hydrogen Peroxide	E	C Straut		2
	AQ00879832	464-07-3	3,3-Dimethyl-2-butanol	L	J Hardesty		100
Cabinet FC-2	AQ00879820	67-56-1	Methanol	L	WM Alley		4
	AQ00879819	67-64-1	Acetone	L	WM Alley		4
	AQ00879830	67-64-1	2-Propanone	L	WM Alley		1
	AQ00879839	67-63-0	2-propanol	L	WM Alley		500
	AQ00879841	110-54-3	n-Hexane	L	WM Alley		1
	AQ00879843	75-05-8	Acetonitrile	L	WM Alley		4
Shed	AQ00879818	7782-44-7	Oxygen	J	WM Alley		1.4
	AQ00879831	7782-50-5	Chlorine	J	WM Alley		25
	AQ00879828	7440-37-1	Argon	J	WM Alley		2

To print the report:

1) Right click anywhere in the report and a menu will appear.
2) Select "**Print**" or "**Print Preview**," select the printer, and click "**Print**".

4.1.4 Stock Check

The "Stock Check" report summarizes the results of the previous stock check performed in the "Stock Check" icon with all the inventory that is listed in the "Inventory" icon. The report groups the results based on the original inventory "Location" with the "Barcode," "Status," "Stock Check," and the "Stock Check Location".



<u>Column Definitions:</u>

Barcode – All barcoded items listed in the "Location" are assigned in the "Inventory" icon.

Status – Audit status results from the "Stock Check" icon. If the field is blank then the item has not been audited.

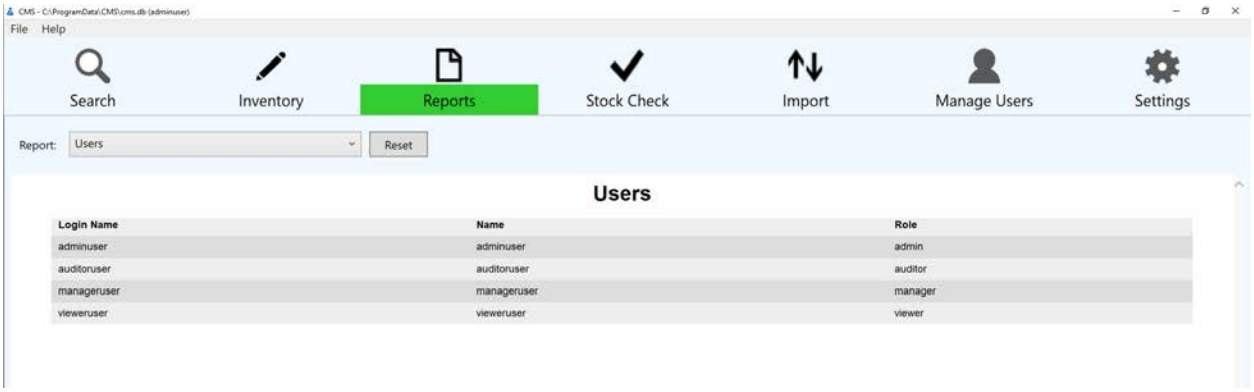
Stock Check Location – Location the item was audited in the "Stock Check".

To print the report:

1) Right click anywhere in the report and a menu will appear.
2) Select "**Print**" or "**Print Preview**," select the printer, and click "**Print**".

4.1.5 Users

The "Users" report is a simplified report of all the CMS© software accounts. The list is the same as that seen by the Administrator in the "Manage Users" icon, but is not accessible to any other user. The report is designed for the lab manager to quickly verify who has access to the software as well as request changes to the Administrator.



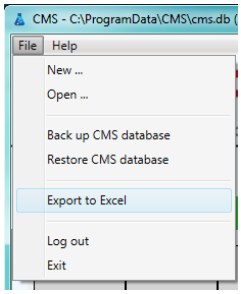
To print the report:

1) Right click anywhere in the report and a menu will appear.
2) Select "**Print**" or "**Print Preview**," select the printer, and click "**Print**".

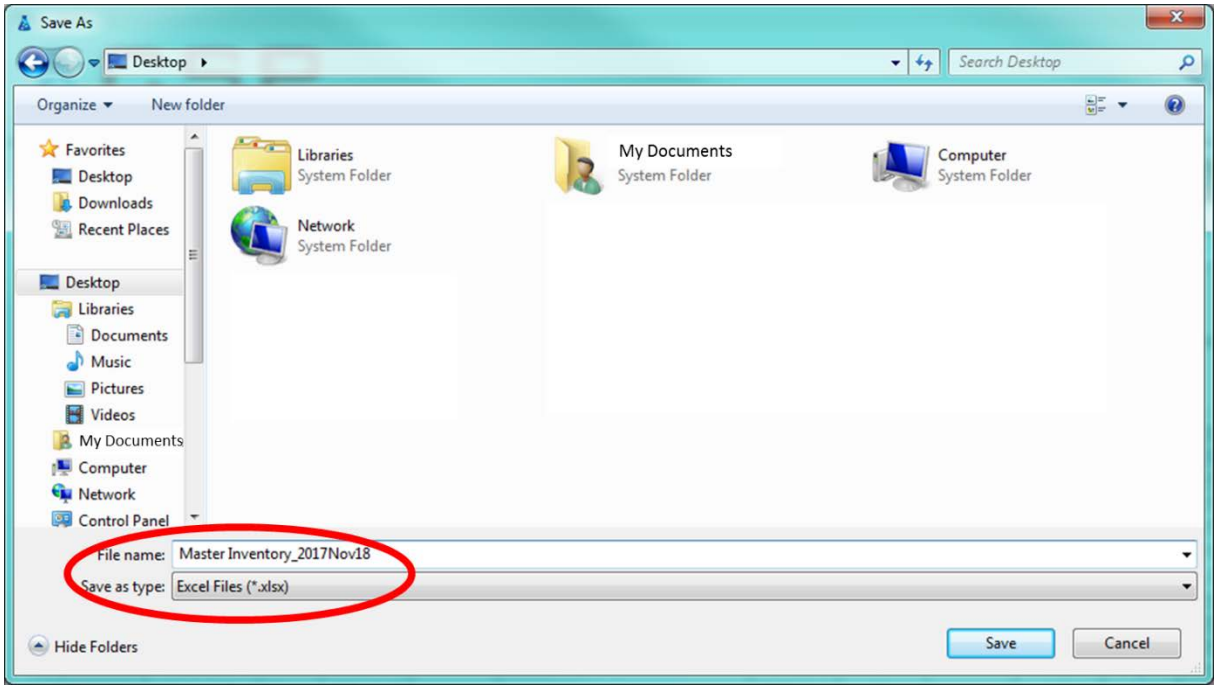
4.2 Exporting

In cases where a paper or simplified spreadsheet of the inventory is needed (or desired) the inventory can be exported. The CMS© software allows for all the items in the "Inventory" icon to be exported to an Excel® spreadsheet.

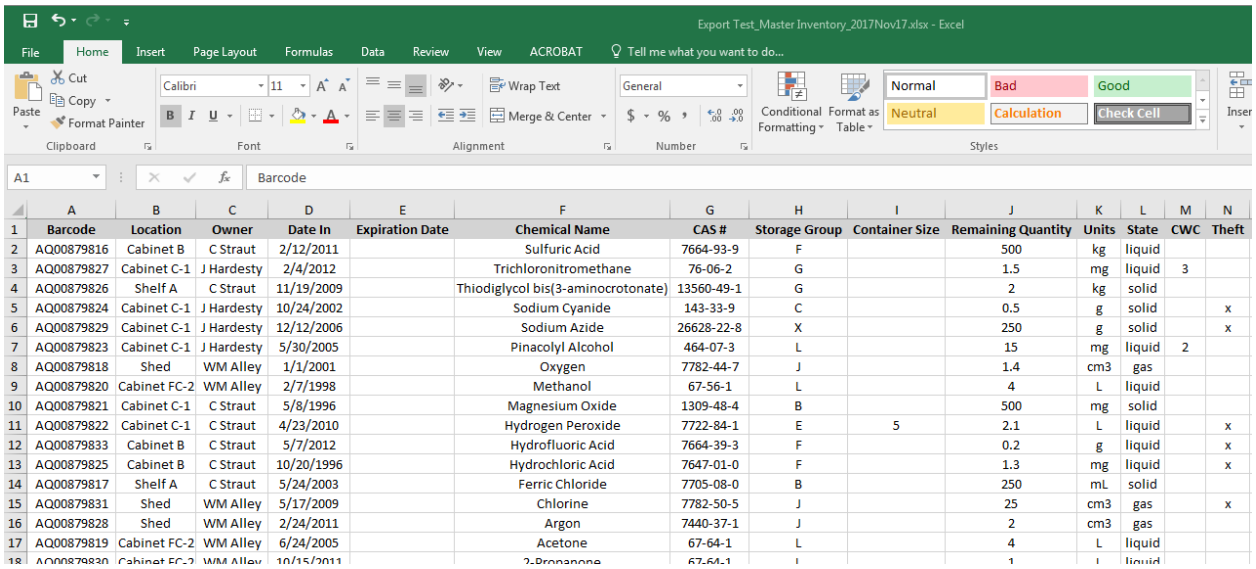
1) In the CMS© software click on "**File**" and select "**Export to Excel**"



2) A popup window will appear to save the file to the computer (It is recommended to save the file with a descriptive name that indicates the date of the inventory (ex: Master Inventory_2017Nov18). Click "**Save**"



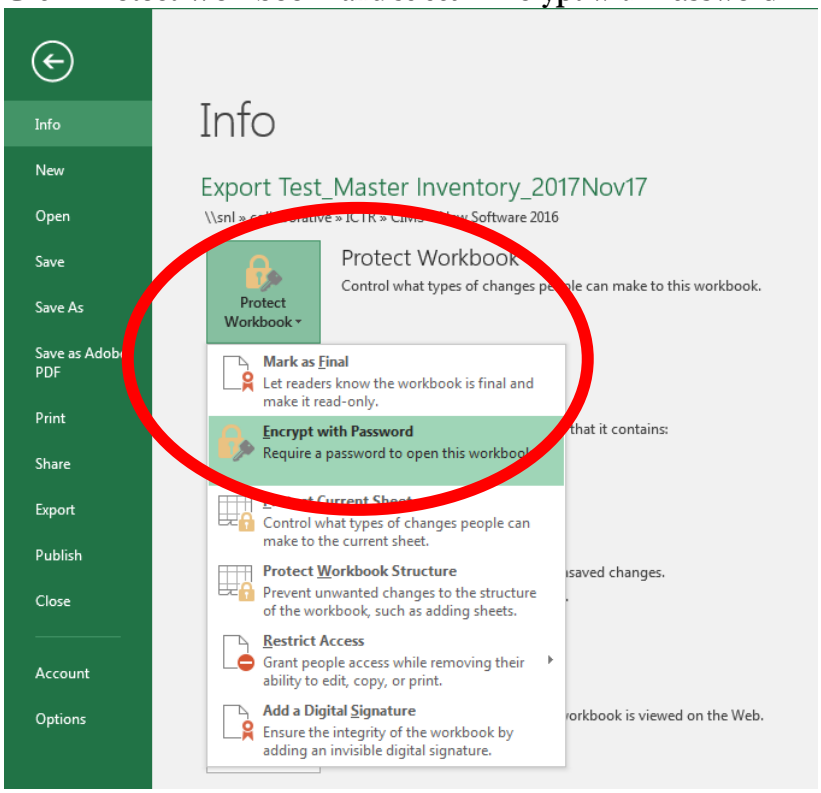
3) The exported inventory will appear in an Excel® spreadsheet window.



Barcode	Location	Owner	Date In	Expiration Date	Chemical Name	CAS #	Storage Group	Container Size	Remaining Quantity	Units	State	CWC	Theft
AQ00879816	Cabinet B	C Straut	2/12/2011		Sulfuric Acid	7664-93-9	F		500	kg	liquid		
AQ00879827	Cabinet C-1	J Hardesty	2/4/2012		Trichloronitromethane	76-06-2	G		1.5	mg	liquid	3	
AQ00879826	Shelf A	C Straut	11/19/2009		Thiodiglycol bis(3-aminocrotonate)	13560-49-1	G		2	kg	solid		
AQ00879824	Cabinet C-1	J Hardesty	10/24/2002		Sodium Cyanide	143-33-9	C		0.5	g	solid		x
AQ00879829	Cabinet C-1	J Hardesty	12/12/2006		Sodium Azide	26628-22-8	X		250	g	solid		x
AQ00879823	Cabinet C-1	J Hardesty	5/30/2005		Pinacolyl Alcohol	464-07-3	L		15	mg	liquid	2	
AQ00879818	Shed	WM Alley	1/1/2001		Oxygen	7782-44-7	J		1.4	cm3	gas		
AQ00879820	Cabinet FC-2	WM Alley	2/7/1998		Methanol	67-56-1	L		4	L	liquid		
AQ00879821	Cabinet C-1	C Straut	5/8/1996		Magnesium Oxide	1309-48-4	B		500	mg	solid		
AQ00879822	Cabinet C-1	C Straut	4/23/2010		Hydrogen Peroxide	7722-84-1	E	5	2.1	L	liquid		x
AQ00879833	Cabinet B	C Straut	5/7/2012		Hydrofluoric Acid	7664-39-3	F		0.2	g	liquid		x
AQ00879825	Cabinet B	C Straut	10/20/1996		Hydrochloric Acid	7647-01-0	F		1.3	mg	liquid		x
AQ00879817	Shelf A	C Straut	5/24/2003		Ferric Chloride	7705-08-0	B		250	mL	solid		
AQ00879831	Shed	WM Alley	5/17/2009		Chlorine	7782-50-5	J		25	cm3	gas		x
AQ00879828	Shed	WM Alley	2/24/2011		Argon	7440-37-1	J		2	cm3	gas		
AQ00879819	Cabinet FC-2	WM Alley	6/24/2005		Acetone	67-64-1	L		4	L	liquid		

4) It is highly recommended that additional security measures be placed on the file to prevent unauthorized access to the inventory file. Instruction below are for Microsoft® Office 2016.

a. Click "**File**".
b. Click "**Protect Workbook**" and select "**Encrypt with Password**"



c. A separate window will appear to enter in the desired password and click "**OK**".
d. Reenter the password and click "**OK**".

4.3 Networking

Networking the inventory software is not currently supported; however, the software and database can be shared on multiple locations. The inventory database can be shared with other computer locations as well as stored on a networked drive or server. The instructions below can be used to share the database with other computer locations.

4.3.1 Multiple Computer Locations

The software can be installed on multiple computer locations; however, the Administrator will need to properly set up each location. Each location will have its own database and operate independently. If updates are made to one location and these updates are needed at all locations, then the database must be shared to all the other locations. If you wish to share the database see the instructions below.

4.3.2 Sharing the Database

Sharing the database from the original computer (computer 1) will allow other computer locations (computer 2) to have the same information; however, each location will still operate independently of one another. Each time a change is made, the Administrator must share and install the updated database.

1) Be sure to save the database (See Chapter 1 "Database Setup" for detailed instructions) on "computer 1".
2) Open the location: C:\ProgramData\CMS\Backup on "computer 1"
3) Find the latest saved database file (.db) and corresponding text file (.txt) "on computer 1" (the file is saved by the date generated and a unique number after): "cmsYYYYMMDD_unique#"

cms20161103_144846.db	11/3/2016 1:08 PM	Data Base File	26 KB
cms20161103_144846.txt	11/3/2016 2:48 PM	Text Document	1 KB

4) Transfer both files (.db and .txt) from "computer 1" to "computer 2" (by email, network, jump or flash drive, etc.).
5) Save the files (.db and .txt) on "computer 2" in the folder C:\ProgramData\CMS\Backup.
6) Open CMS©.
7) Click "**File**" in the top left corner of the CMS© window.
8) Select "**Open…**"
9) In the popup window, select the imported database (.db) file.

NOTE
If the popup window does not default to the folder "C:\ProgramData\CMS\Backup", navigate to this folder from the dropdown menu at the top of the popup window. Some Windows® users may need to "unhide" the folder "C:\ProgramData". This can be done by opening the "**Local Disk C:**" folder on the computer, selecting the "**View**" icon at the top of the window, and clicking the box "**Hidden Items**".

10) Click "**Open**".
11) A popup window will appear in CMS©. Enter the Administrator user name and password
12) Click "**OK**" to complete the sharing of the database.

4.4 Modification of Software

Modification of the software is not currently supported or recommended. If updates are made to the automatic listed used to create the alerts for "Security", "Theft", and "Carcinogen" then Users will be notified of the latest CMS© software version. For information and guidance, please contact chemsecurity@sandia.gov.

4.5 Uninstalling CMS©

4.5.1 Uninstalling CMS© from Microsoft® Windows® 7

To uninstall CMS© from a Microsoft® Windows® 7 system:

1) Click on the "**Start Menu**" icon from your Windows® 7 desktop (default settings place the "**Start Menu**" icon at the bottom left of the desktop).
2) Click on "**Control Panel**".
3) Click on "**Programs and Features**".
4) Click on the "**CMS**" icon.
5) Click on the "**Uninstall**". This action will open a popup window that confirms the user would like to uninstall CMS©.
6) Select the "**Yes**" icon in the popup window. This action will open a popup window that requires the user to allow CMS© to uninstall.
7) To uninstall, select "**Yes**".
8) CMS© is now uninstalled. The database (backup files) will still remain in the "**Program Data**" folder. To remove these files, open the location "**C:\ProgramData**", find the CMS folder, right click and select, and select delete.

4.5.2 Uninstalling CMS© from Microsoft® Windows® 10

To uninstall CMS© from a Microsoft® Windows® 10 system:

1. Click on the "**Start Menu**" icon from your Windows® 10 desktop (default settings place the "**Start Menu**" icon at the bottom left of the desktop).
2. Click on the "**Settings**" icon.
3. Click on the "**Systems**" icon.
4. Click on the "**Apps & features**" icon to open a list of programs installed on the machine.
5. Click on the "**CMS**" icon.
6. Click on the "**Uninstall**" icon. This action will open a popup window that confirms the user would like to uninstall CMS©.
7. Select the "**Uninstall**" icon in the popup window. This action will open a popup window that requires the user to allow CMS© to uninstall.
8. To uninstall, select "**Yes**".
9. CMS© is now uninstalled (Note: the database (backup files) will still remain in the "**Program Data**" folder. To remove these files, open the location "**C:\ProgramData**", find the CMS folder, right click and select, and select delete.

Chapter 5

5 Appendix

5.1 I. Labeling Containers with Barcodes

Find a clean flat surface on the chemical container and attach the adhesive barcode label. For round chemical containers, try attaching the barcode label vertically, as the scanner may not be able to read the barcode due to curvature of the container:

Figure A-1: For round chemical containers, place the barcode vertically.

For very small chemical containers, it may be necessary to either (a) use a larger secondary container, plastic bag, etc. or (b) place the adhesive barcode onto a tag secured to the chemical container. Protect the adhesive barcodes and other chemical container labels from solvents or anything that might remove them or make them unreadable.

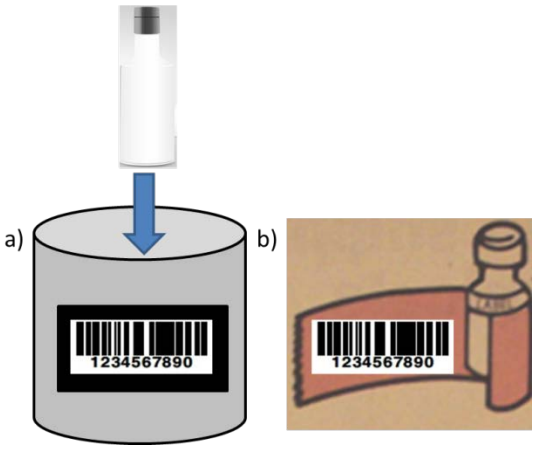


Figure A-2: For very small chemical containers, (a) use a larger secondary container, plastic bag, etc. or (b) place the adhesive barcode onto a tag secured to the chemical container.

5.2 II. Definitions

5.2.1.1.1 ACUTE TOXICITY

Acute toxicity is a GHS classification and includes five GHS categories, assigned on the basis of LD_{50} (oral, dermal) or LC_{50} (inhalation). Category 1 requires the least exposure and Category 5 requires the most exposure to be lethal. The GHS symbol for acute toxicity is shown as a skull and crossbones. For more information on GHS see the definition below.

5.2.1.1.2 ADMINISTRATOR ROLE

The "Administrator" User role allows access to all of the information in the inventory file and gives the Administrator control of the inventory (input of information and removal of items within the inventory). A password is required to have Administrator privileges. See Chapter 2 for setup and detailed information.

5.2.1.1.3 ALERTS FIELD

The "Alerts" field highlights chemicals that are one of three categories, "Security", "Health Hazard", or "Physical Hazard." The alerts are designed to draw attention to chemicals that require special considerations. See Chapter 3 for more information.

5.2.1.1.4 AUDITOR ROLE

The Auditor User role is designed for institutions that have or use a person outside of the lab to audit or check inventory. This user has access to "Search," "Inventory," "Reports," and "Stock Check." The Auditor is responsible for laboratory inventory audits and checks printed inventory for accuracy. The Auditor is not capable of viewing all of the "Settings" icon which prevents the Auditor from adding SDS folder locations, chemical storage locations, chemical storage groups and owners. See Chapter 2 for setup and detailed information.

5.2.1.1.5 CARCINOGEN

Carcinogens are agents that can cause cancer. There are many potential routes of exposure for carcinogens including ingestion, inhalation, and dermal contact. Safety data sheets (SDS) should always contain an indication of carcinogenic potential, if the information is available. Chemicals flagged with this alert are listed under IARC 1A, 2A, or 2B. The IARC website should provide you with the most up-to-date list of chemical carcinogens. Carcinogens are not a GHS category, but they are included within the larger category of Health Hazards.

CHEMICAL ABSTRACT SERVICE (CAS)

Chemical Abstract Service (CAS) Number is also referred to as CAS Registry Number or CAS #. This is a unique numeric identifier that can contain up to 10 digits assigned to one unique chemical substance and are separated into 3 groups by hyphens. The first part of the number, starting from the left, has 2 to 7 digits; the second part has 2 digits. The final part consists of a single check digit. The check digit is developed by a standard calculation and can be used to verify the CAS validity. Please see the CAS website for more information on the standard calculation and how to validate the CAS number.

All chemical substances registered with CAS will have a CAS Number assigned to them. The CAS Registry is the most authoritative collection of disclosed chemical substance information, containing more than 71 million organic and inorganic substances and 64 million sequences. A search of CAS numbers can be found at http://www.cas.org/ . See Chapter 3 for details.

5.2.1.1.6 CHEMICAL FACILITY ANTI-TERRORISM STANDARDS (CFATS)

The Chemical Facility Anti-Terrorism Standards (CFATS) program was launched in the United States (US) in 2007 by the US Department of Homeland Security (DHS). The program is designed to identify and regulate high-risk chemical facilities to ensure they have security measures in place to reduce risks associated with these storing these chemicals. For more information on CFATS or DHS please visit the program website at https://www.dhs.gov/chemical-facility-anti-terrorism-standards or internet search for DHS CFATS.

5.2.1.1.7 CHEMICAL WEAPONS CONVENTION (CWC) LIST

"The Chemical Weapons Convention (CWC) [implemented by the Organisation for the Prohibition of Chemical Weapons (OPCW)] aims to eliminate an entire category of weapons of mass destruction by prohibiting the development, production, acquisition, stockpiling, retention, transfer or use of chemical weapons by States Parties. States Parties, in turn, must take the steps necessary to enforce that prohibition in respect of persons (natural or legal) within their jurisdiction. All States Parties have agreed to chemically disarm by destroying any stockpiles of chemical weapons they may hold and any facilities which produced them, as well as any chemical weapons they abandoned on the territory of other States Parties in the past. States Parties have also agreed to create a verification regime for certain toxic chemicals and their precursors (listed in Schedules 1, 2 and 3 in the Annex on Chemicals to the CWC) in order to ensure that such chemicals are only used for purposes not prohibited." Therefore, any chemical listed on the CWC List must be managed and controlled by all signatories to the CWC. Even for non-signatories, the chemicals on the list are important to track and secure. To find out more information about the CWC please visit http://www.opcw.org/chemical-weapons-convention/. If the website link is broken, conduct an internet search for "OPCW CWC".

For the most up to date list of guidelines for scheduled chemicals please see: http://www.opcw.org/chemical-weapons-convention/annex-on-chemicals/a-guidelines-for-schedules-of-chemicals/. This website address should remain correct. If issues arise conduct an internet search for "OPCW CWC List"

5.2.1.1.8 CHEMICALS OF INTEREST (COI)

Chemicals are defined by the US Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards (CFATS) program as Chemicals of Interest (COI), which are chemicals known to be targeted for theft. These are "chemicals or materials, [that can be] mixed with readily available materials or easily converted into weapons using simple chemistry, equipment or techniques, [and] have the potential to create significant adverse consequences for human life or health." A complete list is in the US Federal Regulation Title 6: Domestic Security Part 27. For the most up to date list, please see "Title 6: Domestic Security Part 27 Appendix A" at http://www.ecfr.gov/ or https://www.dhs.gov/xlibrary/assets/chemsec_appendixa-chemicalofinterestlist.pdf.

5.2.1.1.9 CHEMICALS OF CONCERN (COC)

Chemicals of Concern (COC) are defined by the U.S. Environmental Protection Agency Toxic Substances Control Act (TSCA) and the European Chemicals Agency (ECHA) as chemical substances that "presents or may present an unreasonable risk of injury to health or the environment."

5.2.1.1.10 CIMS

A Chemical Inventory Management System (CIMS) is a system or program that is used to track chemicals at a facility or institution. An effective CIMS begins tracking these chemicals at the point

of procurement and continues through use and disposal. The management of chemicals throughout the life cycle (procurement to disposal) is a key concept for the secure management of chemicals at any institution. See Chapter 1.

5.2.1.1.11 CMS©

The CMS© is a software developed by Sandia National Laboratories to assist in the chemical inventory management system or program at small-medium institutions.

5.2.1.1.12 COMPRESSED GAS

Compressed Gas is a GHS classification used to indicate gases that are under pressure (compressed), liquefied gasses, refrigerated liquefied gasses, and/or dissolved gases. For more information on GHS see the definition.

5.2.1.1.13 CORROSIVE

Corrosive is a GHS classification and indicates: Skin Corrosion/Burns, Eye Damage, and Corrosive to Metals. A corrosive substance is one that will destroy and damage other substances with which it comes into contact. It may attack a great variety of materials, including metals and various organic compounds. For health purposes, we are concerned with chemical effects on living tissue and irreversible damage to the skin, eyes and mucous membranes. For more information on GHS see the definition.

5.2.1.1.14 EXPLOSIVE

Explosive is a GHS classification and indicates chemicals that are: Explosives, Self-Reactives, and/or Organic Peroxides. For more information on GHS see the definition.

5.2.1.1.15 FLAMMABLE

Flammable is a GHS classification and indicates: Flammables, Pyrophoric, Self-Heating, Emits Flammable Gas, Self-Reactives, and/or Organic Peroxides. The GHS symbol for flammable is shown as a flame. For more information on GHS see the definition.

5.2.1.1.16 GHS

The Globally Harmonized System of Classification and Labeling of Chemicals, or GHS, is an internationally agreed-upon system, created by the United Nations. It is designed to replace the many classification and labeling systems around the world by using consistent criteria for classification and labeling on a global level.

5.2.1.1.17 HEALTH HAZARD

Health hazard is a GHS classification and indicates chemicals that are: Carcinogen, Mutagenicity, Reproductive Toxicity, Respiratory Sensitizer, Target Organ Toxicity, and Aspiration Toxicity. For more information on GHS see the definition.

5.2.1.1.18 IRRITANT

Irritant is a GHS classification and indicates chemicals that are: Irritant (skin and eye), Skin Sensitizer, Acute Toxicity, Narcotic Effects, Respiratory Tract Irritant, and Hazardous to Ozone Layer (Non-Mandatory). The GHS symbol for irritant is shown as an exclamation mark. For more information on GHS see the definition.

5.2.1.1.19 INVENTORY ICON

The "**Inventory**" icon is lists all the inventory entered into the CMS© software. It is viewable to all Users but only editable by the Administrator, Auditor, and Manager. See Chapter 2 for setup and detailed information.

5.2.1.1.20 MANAGER ROLE

The Manager is ideally the person responsible for managing daily inventory usage. The manager has similar access privileges and responsibilities as the Administrator, except that the Manager is not capable of adding new users in the "Settings" icon and importing databases from an Excel® file. An account for the Manager must be created by the Administrator. See Chapter 2 for setup and detailed information.

5.2.1.1.21 MATERIAL SAFTEY DATA SHEET (MSDS

Material Safety Data Sheets (MSDS)s, refer to **Safety Data Sheet (SDS).**

5.2.1.1.22 NOTE FIELD

This field is available to add customized notes and additional alerts to an inventory item. Examples of notes may include compatibility, reactivity, expiration date, or analysis date. See Chapter 3

5.2.1.1.23 ORGANISATION FOR THE PROHIBITION OF CHEMICAL WEAPONS (OPCW)

"The Organisation for the Prohibition of Chemical Weapons [(OPCW)] is the implementing body of the Chemical Weapons Convention (CWC), which entered into force in 1997. As of today OPCW has 192 Member States, who are working together to achieve a world free of chemical weapons." For more information on the OPCW, please visit: https://www.opcw.org/.

5.2.1.1.24 OXIDIZER

Oxidizer is a GHS classification and indicates chemicals that, while itself is not necessarily combustible, may (generally by yielding oxygen) cause or contribute to the combustion of other material. The GHS symbol for oxidizer is shown as a flame over a circle. For more information on GHS see the definition.

5.2.1.1.25 SAFETY DATA SHEETS (SDS)

Safety Data Sheets (SDS), are typically supplied by the chemical manufacturer and includes instructions for the safe use and potential hazards associated with a particular material or product. Specific product information is also included in the SDS, such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill-handling procedures. For accurate information on a chemical, look for the most up-to-date SDS from the supplier or manufacturer.

5.2.1.1.26 SEARCH ICON

The "Search" icon in the CMS© software allows the users to scan or type in a barcode number and obtain basic information on the chemical, including alerts, location, and SDS. See Chapter 3 for more information.

5.2.1.1.27 STATE

The "State" field is used to indicate the physical state of matter (solid, liquid, gas) for the substance.

5.2.1.1.28 STOCK CHECK ICON

The "Stock Check icon allows the Administrator, Manager, or Auditor, to perform an inventory audit in the laboratory. Scanning the barcodes on the chemical containers will generate a list of the chemicals and their barcodes that are used for inventory audit. See Chapter 3 for detailed information.

5.2.1.1.29 STORAGE GROUP

Storage Group designates the storage classification of compatible chemicals, as each group includes chemicals that will not react violently if mixed together. This system may classify storage groups independent of main hazard classes, to allow the number of Storage Groups to be as few as possible. The "Storage Group" field in the "Inventory" icon helps chemical users identify the proper groups of chemicals that can be safely stored together. A drop down list can be generated on the "Settings" icon under "Storage Group". It is recommended to use the storage group classification published by Stanford University (developed for laboratory scale storage, and should not be routinely applied to non-laboratory storage situations). Please also see note on page 14. More information about the chemical storage classification guidance from Stanford University's ChemTracker Storage System can be found at this website:
https://www.stanford.edu/dept/EHS/prod/researchlab/chem/Chemicals_by_Storage_Group.pdf

5.2.1.1.30 THEFT

Security alert "Theft" can be seen in the Alerts section of the inventory (Inventory Icon). This is an automatic field that is populated based on CAS numbers. These chemicals are defined by the US Department of Homeland Security (DHS) as Chemicals of Interest (COI), which are chemicals known to be targeted for theft. See Chapter 3 or Chemicals of Interest (COI) definition for more information.

5.2.1.1.31 VIEWER ROLE

The "Viewer" role is a general user who should have access to view and search the inventory, such as technicians and laboratory students but is not responsible for adding/removing inventory items. This user has access to the "Search" "Inventory" and "Reports" icons. This is the only user that can be generically assigned for access by multiple people. See Chapter 2 for setup and detailed information.

5.3 III. Acronyms

5.3.1.1 ***CAS*** *- Chemical Abstract Services*
5.3.1.2 ***CIMS*** *- Chemical Inventory Management System*
5.3.1.3 ***CFATS*** *- Chemical Facility Anti-Terrorism Standards*
5.3.1.4 ***COI*** *- Chemical of Interest*
5.3.1.5 ***COC*** *- Chemical of Concern*
5.3.1.6 ***CWC*** *- Chemical Weapons Convention*
5.3.1.7 ***DHS*** *- Department of Homeland Security*
5.3.1.8 ***GHS*** *– Global Harmonized System of Classification and Labeling of Chemicals*
5.3.1.9 ***MSDS*** *- Material Safety Data Sheet*
5.3.1.10 ***OPCW*** *- Organisation for the Prohibition of Chemical Weapons*
5.3.1.11 ***OSHA*** *- Occupational Safety & Health Administration*
5.3.1.12 ***SDS*** *- Safety Data Sheet*
5.3.1.13 ***SOP*** *- Standard Operating Procedure*

5.4 IV. Troubleshooting

Provided below is a small list of common problems encountered when using the CIMS software. If your issue is not listed in this section, please contact chemsecurity@sandia.gov for additional guidance

Problem	Cause	Solution	Reference Section
SDS does not automatically link with CAS #	1) CAS # is incorrect or not entered 2) SDS not in the "SDS folder" 3) SDS Folder not properly linked in the "Inventory" Icon	1) Check the CAS # 2) Check the "SDS Folder" 3) Check that the "Settings" icon properly links to the SDS folder 4) Add Barcode #, chemical name, and CAS #	See Chapter 2 for setting up the "SDS Folder"
Barcode number is not readable	1) Improper Barcode label position 2) Incompatible barcode symbology 3) Barcode is scratched or destroyed	1) Check that the barcode scanner is properly connected to the computer 2) Reposition the barcode 3) Replace with new, compatible, barcode label	See Chapter 2, "Barcode Label and Scanner Requirements" See Appendix I, "Labelling Containers with Barcodes"
Some icons are missing	The user you are logged in as does not possess the rights and privileges to view all the icons available	Seek approval from the "Administrator"	See Chapter 1, "Roles and Responsibilities"
Searching for a specific chemical by barcode or name does not return any results	1) Barcode label is damaged 2) Name of the chemical has not been added to the inventory	1) Check the previous solutions for barcode problem 2) If you possess the privilege of editing the inventory, add the name of the chemical, otherwise notify the manager or the administrator	See Chapter 3, "Updating Items the Inventory"
Importing a chemical inventory from the older Excel®-based CIMS doesn't show	Older versions of the CIMS file may not include all of the same features, information,	Edit the inventory manually	See Chapter 2 for importing a CIMS file to CMS© software

Problem	Cause	Solution	Reference Section
all information in the new version	and columns that the new CMS© software has		See Chapter 3 for information on how you can add, edit, or remove items from the "Inventory" icon.
Deleting a chemical from the inventory by mistake	A user could be trying to add, duplicate, or view SDS and hit "Delete" instead	If the inventory has been backed up recently, then you can simply "Restore" your lost information. It is important to back up your inventory regularly to avoid loss of data	See the end of Chapter 2, "Database Setup"

6 Index

Administrator, 5, 6, 64
Alerts, 36, 37
Auditor, 5
Barcode, 8, 63, 70
CAS, 36, 37, 54, 55, 69, 70
CCW, 52
CFATS, 52, 69
CIMS, 4, 5, 6, 8, 69
COC, 52, 69
COI, 37, 52, 65, 69
CWC, 37, 65, 69
Definitions, 64
DHS, 65, 69
Equipment, 8, 14
Exporting, 58
GHS, 37, 38, 69
Hardware, 7
Import, 16, 18
Installation, 8, 14
Inventory, 19, 33
Inventory Audit, 5, 6, 30, 48
Inventory Setup, 16
Manage Users, 25, 56
Manager, 5
MSDS, 24, 69
Networking, 60
OPCW, 37, 52, 65, 69
OSHA, 69
Reporting, 5, 52
SDS, 11, 23, 42, 70
Search, 6, 44, 45
Settings, 20, 24
Software Setup, 15
SOP, 6, 51, 52, 69
Stock Check, 48, 56
Uninstalling, 61
Viewer, 5, 6