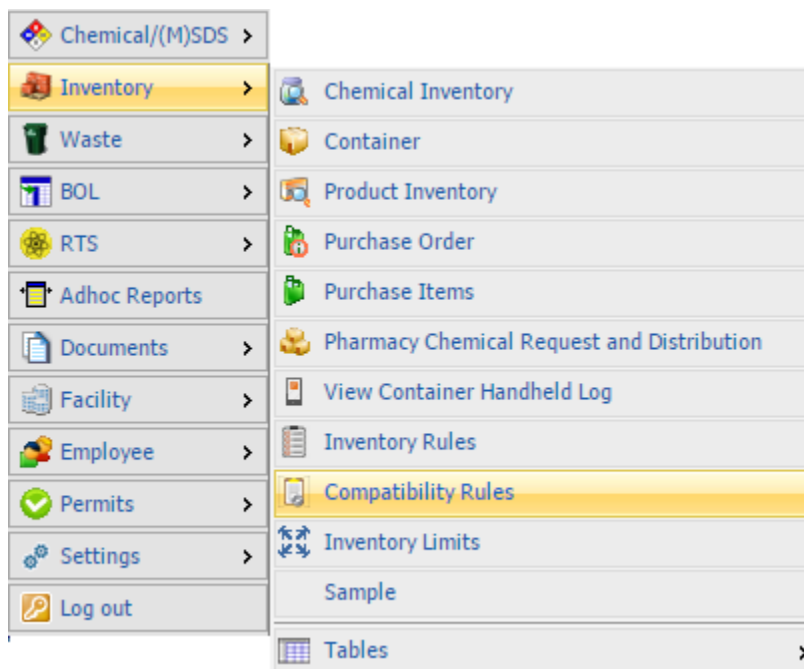


CHEMICAL SAFETY – EMS SOFTWARE

COMPATIBILITY RULES

Some chemicals are incompatible with each other and the best practice is to avoid the storage to the same areas in your inventory. There is a form available in EMS module where you can make the compatibility rules, according to the needs of your inventory.

- Select INVENTORY > COMPATIBILITY RULES



- Select add to open the form in add mode

In this form you can specify the compatibility rules in order for your system to ensure safety and legislation compliance. You can create rules for the Classification, UFC, the Hazard Class and the Regulations, as well as to assign each of them to the Facility, Building or Location of your choice.

- Depending on your choice the Category A and Category B combo data, will vary. E.g. When classification type is selected you will see the following data

Please Select Type

Description
ACID ANHYDRIDES
ALCOHOLS
ALCOHOLS - GLYCOLS - GLYCOL ETHER
ALDEHYDES
ALDEHYDES ACETALDEHYDE

When Hazard Class type is selected you will see the following data

Please Select Type

Hazard Class	Category
1.1	EXPLOSIVE 1.1
1.2	EXPLOSIVE 1.2
1.3	EXPLOSIVE 1.3
1.4	EXPLOSIVE 1.4

- You can create compatibility rules for Hazard Class by advising the following table.

HAZARDOUS MATERIALS LOAD AND SEGREGATION CHART

CLASS	HAZARD CLASS	CLASS OR DIVISION	PACKING GROUP	NOTES	1.1								2.3		2.3		6.1					
					1.2	1.3	1.4	1.5	1.6	2.1	2.2	ZONE A	ZONE B	3	4.1	4.2	4.3	5.1	5.2	PG I ZONE A	7	8
1	EXPLOSIVES	*Add division number and compatibility group	ANY QUANTITY	A	*	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X
	EXPLOSIVES	*Add division number and compatibility group	ANY QUANTITY		*	*	*	*	*	*	X		X	X	X		X	X	X	X	X	X
	EXPLOSIVES	*Add compatibility group	1001 Lbs.		*	*	*	*	*	*	0		0	0	0					0		0
	VERY INSENSITIVE EXPLOSIVES		1001 Lbs.	A	*	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X
	EXTREMELY INSENSITIVE EXPLOSIVES		1001 Lbs.		*	*	*	*	*	*												
	2	FLAMMABLE GASES		1001 Lbs.		X	X	0	X				X	0								0
NON-TOXIC NON-FLAMMABLE GASES			1001 Lbs.	B	X			X														
POISONOUS GAS ZONE A			ANY QUANTITY	G	X	X	0	X		X					X	X	X	X	X			X
POISONOUS GAS ZONE B			ANY QUANTITY	G	X	X	0	X		0					0	0	0	0	0			0
FLAMMABLE LIQUIDS			1001 Lbs.		X	X	0	X				X	0						0		X	
3	FLAMMABLE SOLIDS		1001 Lbs.		X			X				X	0							X		0
	SPONTANEOUSLY COMBUSTIBLE		1001 Lbs.		X	X	0	X				X	0							X		X
	DANGEROUS WHEN WET MATERIALS		ANY QUANTITY		X	X		X				X	0							X		0
	5	OXIDIZERS		1001 Lbs.	A	X	X		X				X	0	0						X	
ORGANIC PEROXIDES			1001 Lbs.	F	X	X		X				X	0							X		0
6	POISONOUS LIQUIDS PG I ZONE A		ANY QUANTITY	E H	X	X	0	X		0					X	X	X	X	X			X
7	RADIOACTIVE MATERIALS		ANY QUANTITY (yellow or white)		X			X		0												
8	CORROSIVE LIQUIDS		1001 Lbs.		X	X	0	X				X	0		0	X	0	0	0	0	X	

- As mentioned before, except from Hazard class, you can create rules for Classification, UFC and the Regulations. In the example below, we demonstrate how to make a rule for Regulations and how the system functions according to this rule.

STEPS

- Open two SDS records and assign them a Regulation (different to each other). From Regulation grid right click on the gray area and enter or choose a regulation from the popup menu.

In our example we assigned Regulation 313 to ACEPHATE and P65 to BENZENE.

Product/MSDS/SDS

Prod.Name: ACEPHATE
 Manufacturer: SIGMA-ALDRICH

Product Data COMP/REGS/MISC (M)SDS Image Chemical Ref. Data Environmental

Composition	CAS	Min	Max	Average	Unit	Confiden
No records found. Click here for options						

Help

Chemical Regulations

Regulation: 313
 Agency:
 TPQ:
 TPQ Unit:
 Reportable QTY:
 RQ Unit:
 Alt. Regulation:

Save Cancel

Part Number	Description
No records found. Click here for options	

Help

Synonym Project Facility Regulation Part No./Loc. Green Chemical PPE

REG	TPQ	TPQ Units	RQ	RQ Units
No records found. Click here for options				

Help

Product/MSDS/SDS

Prod.Name: BENZENE
 Manufacturer: PETROBAS

Product Data COMP/REGS/MISC (M)SDS Image Chemical Ref. Data Environmental

Composition	CAS	Min	Max	Average	Unit
No records found. Click here for options					

Help


Part Number	Description	Quantity	B.O.L.	In. Desc.	In. Unit
No records found. Click here for options					

Help

Synonym Project Facility Regulation Part No./Loc. Green Chemical PPE

REG	TPQ	TPQ Units	RQ	RQ Units
...	P65			

Help

2. Create a compatibility rule for Regulations 313 and P65, select a location and then save  your record.

Area Selection

LOCATION

Apply to all Areas:

Compatibility Settings

Type: REGULATION

Category A: 313

Warning Qty: Unit: GALLONS

Stop Qty: Unit: GALLONS

Category B: P65

Warning Qty: Unit: GALLONS

Stop Qty: Unit: GALLONS

3. Add a container for the chemical BENZENE and place it in TEST LOCATION.

Location

Loc./Desc.: TEST LOCATION Building: BUILDING 1

Facility: AMERICAN CHEMICALS Floor: Room:

Department: Control Area:

PRODUCT

Material Name: BENZENE Kit:

Manufacturer: PETROBRAS Supplier: PETROBRAS

Prod. Ref./Chem. Ref: BENZENE CAS: 71-43-2

Phys. State: Liquid Pure/Mix/Dilution: Part Number:

Post Date: 2/3/2016 Container Type: Barcode: 12122272

No. of Cont.: 1 Pressure: P.O. Number:

Surplus: Temperature: BOL:

Employee Name: PRAT JEAN Specify Other Storage:

Employee ID: 201455210 Process:

Request Employee ID: Days on Site:

Location Request: Record Date: 2/3/2016

Open Date: Expiration Days: 365

Request Date: Expiration Date:

Project: Container Status:

Initial Cost: Remaining Cost:

Cost/Unit:

Document:

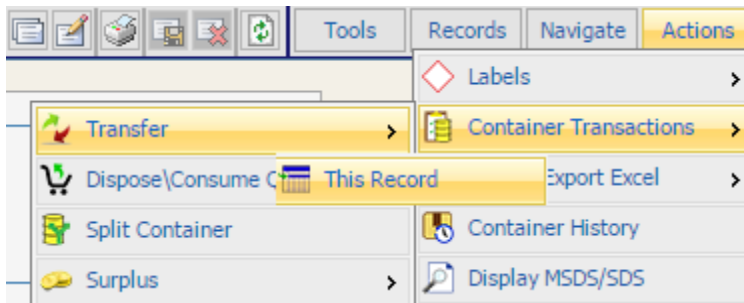
Container Quantity: 10 Returned:

Cont. Unit: GALLONS LOT:

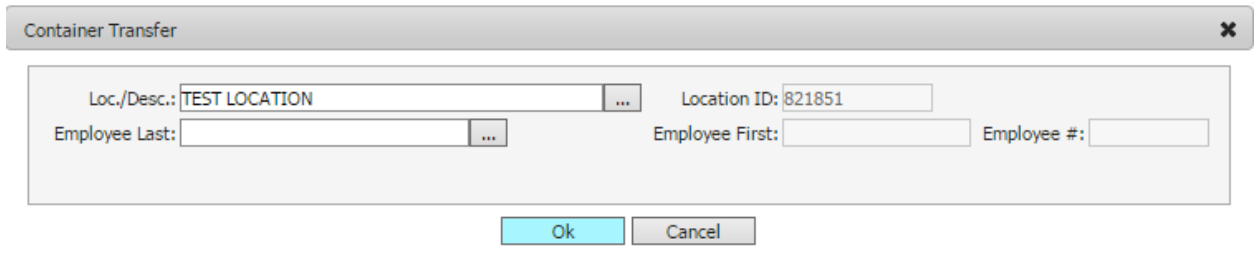
Container Size: 10 Case ID:

4. Add a container for the chemical ACEPHATE and place it to another location.

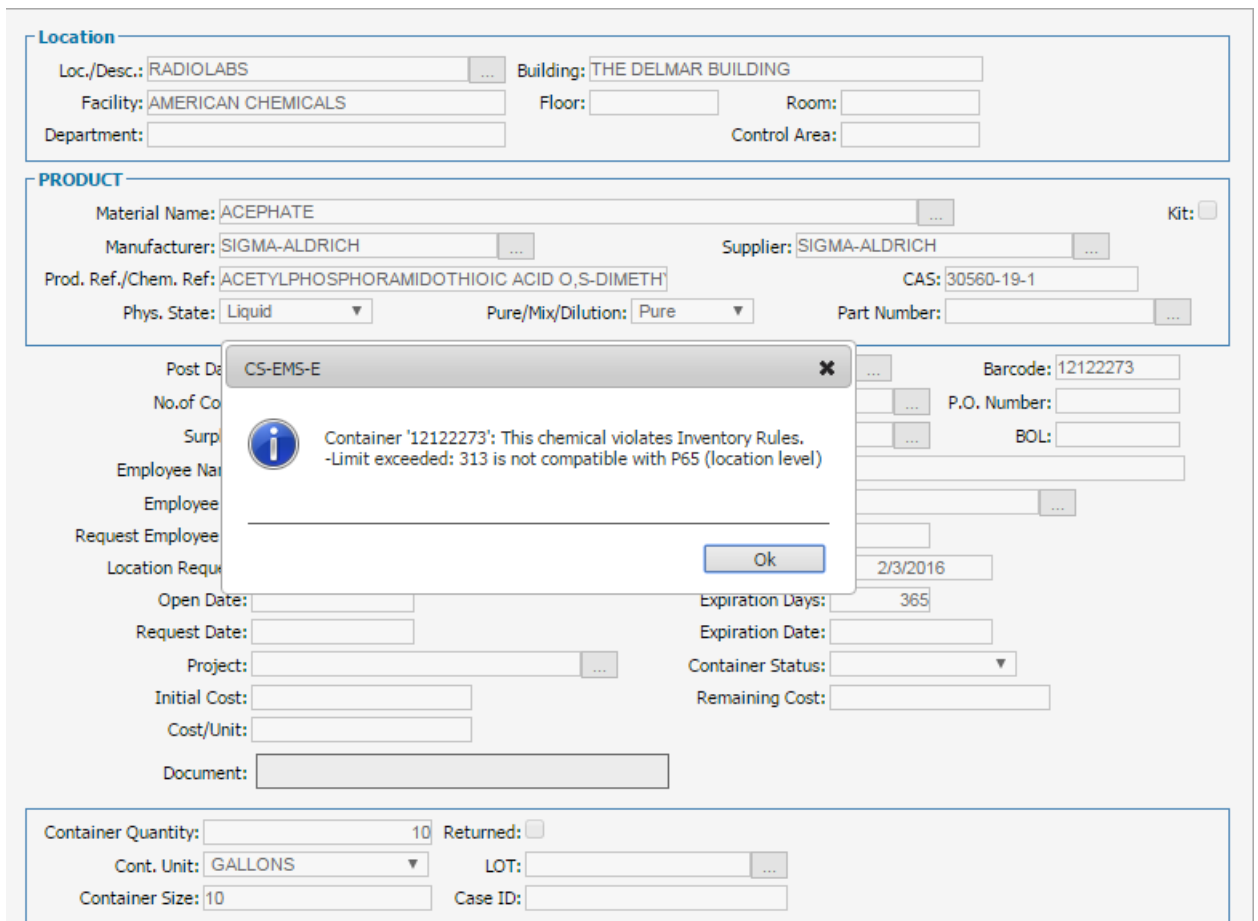
5. Select Actions > Container Transactions > Transfer > This Record



and try to transfer this container to **TEST LOCATION**.



6. Because of the compatibility rule the system will impede the transfer and will display a message on screen informing about the violation.



QUANTITY THRESHOLDS

You can also create compatibility rules by using the quantity thresholds. You can specify whether one chemical or more are compatible with other chemicals depending on its quantity. The chemicals are considered compatible and can be stored to the same area as long as they do not violate the limits.

Set up the limits from the fields *Warning Qty* and *Stop Qty* of the form. The system will impede the transfer when the limit from the field *Stop Qty* is exceeded. Likewise, the system will display a warning message when *Warning Qty* is exceeded. We will demonstrate below the function of the *Stop Qty* field.

STEPS

1. In your Inventory you have the following containers stored in STORE LOCATION:

1. BENZENE with quantity of 1000 gallons. This chemical has regulation **P65**.
2. ACEPHATE with quantity of 500 gallons. This chemical has regulation **313**.
3. ACETONE with quantity of 500 gallons. This chemical has regulation **AIR**.
4. (-)-ENTERODIOL with quantity of 110 gallons. This chemical has regulation **EHS**.

4 records								
BARCODE	PRODUCT NAME	LOCATION	ROOM	CAS#	TOTAL QTY	UDM	# OF CONT.	(M)SDS
12122274	ACETONE	STORE LOCATION		67-64-1	500	GALLONS	1	(M)SDS >
12122275	BENZENE	STORE LOCATION		71-43-2	1000	GALLONS	1	(M)SDS >
12122276	ACEPHATE	STORE LOCATION		30560-19-1	500	GALLONS	1	(M)SDS >
12122277	(-)-ENTERODIOL	STORE LOCATION		80226-00-2	110	GALLONS	1	(M)SDS >

2. Create a new compatibility rule for STORE LOCATION.

From the drop down menu choose the *Type*: REGULATION.

At the categories A/B below select from the pop up one or more regulations.

Enter for Category A the regulations **P65 and AIR** and then set up the quantity threshold. Enter 1500 gallons in the *Stop Qty* field.

Enter for Category B the regulations **313 and EHS** and then set up the quantity threshold. Enter 600 gallons in the *Stop Qty* field.

Area Selection

LOCATION: STORE LOCATION Apply to all Areas:

Compatibility Settings

Type: REGULATION

Category A: AIR,P65

Warning Qty: Unit: GALLONS

Stop Qty: 1,500 Unit: GALLONS

Category B: 313,EHS

Warning Qty: Unit: GALLONS

Stop Qty: 600 Unit: GALLONS

- Now that you have set up the quantity thresholds, create a new container for the chemical BENZENE with quantity 100 gallons and place it to **RADIOLABS** location.
- Try to transfer this container to **STORE LOCATION** by selecting Actions > Container Transactions > Transfer > This Record

Location

Loc./Desc.: RADIOLABS Building: THE DELMAR BUILDING

Facility: AMERICAN CHEMICALS Floor: Room:

Department: Control Area:

PRODUCT

Material Name: BENZENE Kit:

Manufacturer: PETROBRAS Supplier: PETROBRAS

Prod. Ref./Chem. Ref: BENZENE CAS: 71-43-2

Phys. State: Liquid Pure/Mix/Dilution: Part Number:

Container Transfer

Loc./Desc.: STORE LOCATION Location ID: 821852

Employee Last: Employee First: Employee #:

Open Date: Expiration Days: 365

Request Date: Expiration Date:

Project: Container Status:

Initial Cost: Remaining Cost:

Cost/Unit:

Document:

Container Quantity: 100 Returned:

- Because the limit is exceeded (see step 2) and the quantity threshold is violated the system impedes the transaction. A message is displayed on screen informing that the

regulations **P65** and **AIR** are not compatible with **313** and **EHS**.

The screenshot shows a software interface with two main sections: **Location** and **PRODUCT**. The **Location** section includes fields for Loc./Desc. (RADIOLABS), Building (THE DELMAR BUILDING), Facility (AMERICAN CHEMICALS), Floor, Room, Department, and Control Area. The **PRODUCT** section includes Material Name (BENZENE), Manufacturer (PETROBRAS), Supplier (PETROBRAS), Prod. Ref./Chem. Ref. (BENZENE), Phys. State (Liquid), CAS (71-43-2), and Part Number. A pop-up window titled "CS-EMS-E" is centered over the form, displaying an information icon and the message: "Container '12122278': This chemical violates Inventory Rules. -Limit exceeded: AIR,P65 is not compatible with 313,EHS (location level)". An "Ok" button is at the bottom of the pop-up. Other visible fields include Barcode (12122278), P.O. Number, BOL, Open Date, Request Date, Project, Initial Cost, Cost/Unit, Document, Expiration Days (365), Expiration Date, Container Status, and Remaining Cost.

Individual chemical incompatibility generator

EMS also supports the option of assigning incompatibilities to a specific chemical. For example, instead of creating compatibility rules between two different hazard classes, the user is able to designate a single chemical incompatible to a hazard class or hazard classes.

Open a detail MSDS record and select the forth Tab

Chemical Ref. Data

In the *Incompatibilities* section, at the bottom of the screen, enter your information.

Prod.Name: ...

Manufacturer: ...

Shared:

MSDS/SDS #:

Product Data | COMP/REGS/MISC | (M)SDS Image | Chemical Ref. Data | Environmental

Mol. Weight: Specific Vol.: Vapor Pressure:

Boiling Point: Vapor Density:

Melting Point: Uniform Fire Code: ...

TWA: International Fire Code: ...

STEL: Upper Explosion Limit:

Water Sol.: Lower Explosion Limit:

Evap. Rate: Auto Ignite Temp.: Unit:

Conv. Factor: Critical Temperature: Unit:

Storage Req.: ... Pesticide ID: IARC:

Specific Gravity (LIQ): ... Storage Temp.:

Density: Pounds/Gallons Storage Pressure:

pH: Special Handling Equip.: ...

Flash PT: Special Fire Fighting Media: ...

Classification: ... EINECS: ...

Curies: Shock Sensitive: Precious Metal:

STCC: ICSC Page: View

OSHA Hazardous: CERS Chem.Library ID:

NIOSH Page: View US EPA SRS:

ECHA Page: View

Incompatibilities

Regulation: ... Hazard Class: ...

Classification: ... UFC: ...