

Introduction

This document provides information about labeling requirements for laboratory containers holding chemicals and hazardous waste as well as appropriate ways to deface containers prior to disposal or reuse. This document is intended to help EWU laboratories comply with state and federal regulations about chemical hazard communications and hazardous waste.

The Environmental Health & Safety (EH&S) department assists departments on campus with the safe management of chemicals and chemical waste that is produced during department operations. Please refer to the [EH&S website](#) to contact us, or for more information about laboratory operations.

EH&S provides many standard labels, and can generate specialized labels as needed.

General Labeling Requirements

Table I: Required Information for Container Labeling

Chemicals	Waste
Full chemical name	“Hazardous Waste”
Percentage	Waste composition:
Hazard warnings	<ul style="list-style-type: none"> • Full chemical names of all constituents • Percentages (or amounts) of each constituent <ul style="list-style-type: none"> ○ Percentage must equal 100, include water
Date	Hazard warnings Room, Building, and Department Contact name and phone number Date(s): <ul style="list-style-type: none"> • For accumulation containers, the date that accumulation started • Date the container was filled

- Most chemical solutions are indistinguishable from water, so proper labeling is important to prevent unfortunate accidents. Remember, container labeling would have helped Johnny:

*Johnny was a scientist but Johnny is no more
 For what he thought was H_2O was H_2SO_4 ¹*

- Containers should be stored so that their label is visible without the container needing to be touched or moved.
 - If gas cylinders were placed such that the contents label is not visible, contact EH&S so they can provide you with an extra label to put on the container. It’s best not to try and adjust them once they are stored.

Chemical Labeling

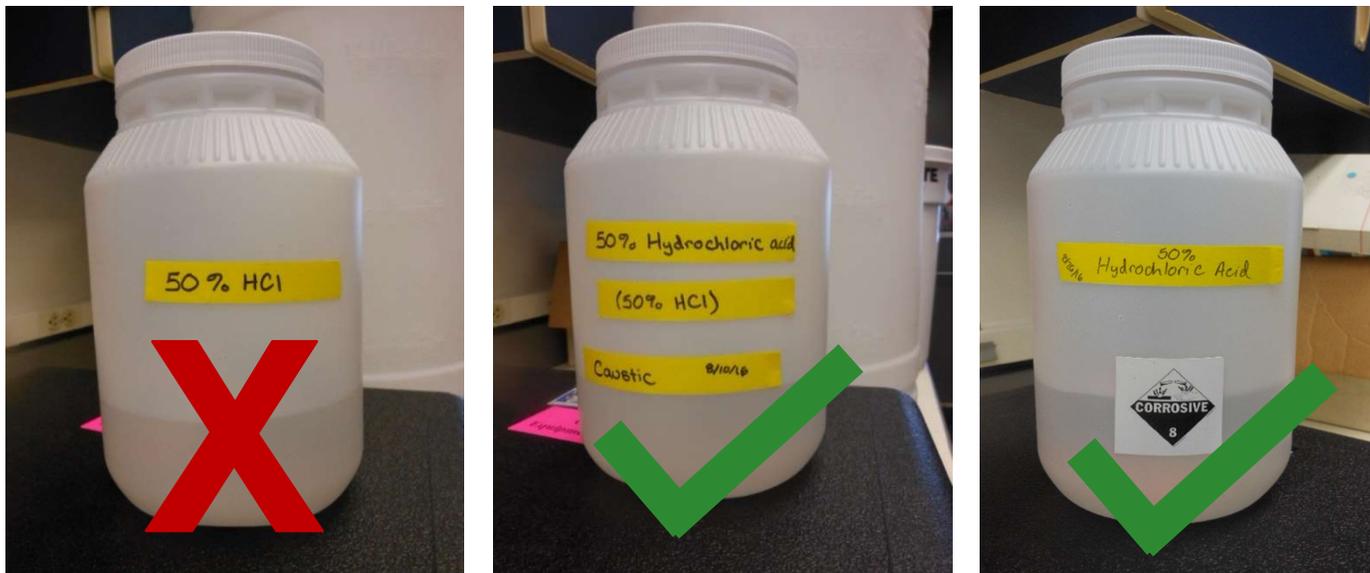
Purchased chemicals arrive with the chemical name and hazard information on them, they just need the date received added to them.

¹ This is also an example of why:

- Chemicals must NEVER be stored in containers that previously held foods or drinks
- Foods and drinks need to be stored away from laboratory reagents.

Laboratory generated solutions and secondary containers require the same information on them. Anything generated in the laboratory must have the full chemical name(s), the hazard(s), and the date.

Figure 1: Examples of Chemical Labeling



The label above is not appropriate because it has the chemical formula (HCl) instead of the chemical name. It is missing the hazard information and the date.

The two labels above are appropriate, they have the full chemical name (Hydrochloric acid), percent (50%), and the hazard associated with the chemical (caustic or corrosive sticker).

The chemical formula can be included, if it helps you, but isn't required.

Laboratory Experiment Unknowns

For academic laboratory experiments where unknowns are necessary, all containers must be labeled with a code that will allow the contents to be identified in the event of an emergency.

The code should be stored with the professor or laboratory instructor, AND a copy should be maintained with the department for quick reference.

Labeling Groups of Containers

In instances where a cabinet or box is full of multiple containers of the same substance (e.g. cabinets containing many specimen samples) the exterior of the cabinet/box can be labeled instead of the individual containers.

The labels need to include the full chemical name(s), percentage(s) and hazard warnings; the dates are not necessary in this case.

If a container is going to be removed from the labeled cabinet/box for more than a few hours, it should have a temporary label affixed to it while it is out.

Figure 5: Examples of Hazardous Waste Labeling

HAZARDOUS WASTE		
Eastern Washington University Environmental Health and Safety (EH&S) 509-359-2788		
Chemical Composition	ml	%
Ethanol (95%)		10
Ethidium Bromide	60.001	
Tris Acetate Ethylene-diamine Tetraacetic Acid (TAE) Buffer (2x)	30	
Methanol (95%)	6	
Water	54	
Total		100
<input type="checkbox"/> CORROSIVE <input type="checkbox"/> REACTIVE <input type="checkbox"/> NON-HAZARDOUS <input type="checkbox"/> TOXIC <input checked="" type="checkbox"/> IGNITABLE <input type="checkbox"/> OXIDIZER <input type="checkbox"/> OTHER (EXPLAIN)		
Date Filled: 8/26/16	Labeled By: Elizabeth R	
Department: EH&S	Phone: 6497	
Building: MAR	Room: 002	
REPLACE CAP AFTER FILLING	CALL EH&S FOR PICKUP	

HAZARDOUS WASTE		
Eastern Washington University Environmental Health and Safety (EH&S) 509-359-2788		
Chemical Composition	ml	%
Ethanol	5	
EtBr	0.001	
TAE Buffer (2x)	15	
Methanol	2	
Total		100
<input type="checkbox"/> CORROSIVE <input type="checkbox"/> REACTIVE <input type="checkbox"/> NON-HAZARDOUS <input type="checkbox"/> TOXIC <input type="checkbox"/> IGNITABLE <input type="checkbox"/> OXIDIZER <input type="checkbox"/> OTHER (EXPLAIN)		
Date Filled	Labeled By: ER	
Department	Phone	
Building: Mar	Room: 002	
REPLACE CAP AFTER FILLING	CALL EH&S FOR PICKUP	

HAZARDOUS WASTE		
Eastern Washington University Environmental Health and Safety (EH&S) 509-359-2788		
Chemical Composition	ml	%
EtOH		4
EtBr		
TAE buffer		50
Methanol		3
Total		100
<input type="checkbox"/> CORROSIVE <input type="checkbox"/> REACTIVE <input type="checkbox"/> NON-HAZARDOUS <input type="checkbox"/> TOXIC <input checked="" type="checkbox"/> IGNITABLE <input type="checkbox"/> OXIDIZER <input type="checkbox"/> OTHER (EXPLAIN)		
Date Filled	Labeled By: Elizabeth R	
Department	Phone	
Building: MAR	Room: 002	
REPLACE CAP AFTER FILLING	CALL EH&S FOR PICKUP	

Complete

Full chemical names
 Percent = 100
 Hazard marked
 Date, Location, and Contact Info present

Incomplete

Some chemical formulas instead of names
 Hazard isn't marked
 Missing Date, and Phone Number

Incomplete

Chemical formulas instead of names
 Amount of Ethidium Bromide missing
 Percent = 57
 Missing Date, and Phone Number

Figure 6: Normal Piece of Paper Used As Hazardous Waste Label

Hazardous Waste
 Filling in progress - Start 4/16/16

Contents
 Ethanol - 5 mL - 4/16
 Tris Acetate Ethylenediamine Tetraacetic Acid (TAE) Buffer
 1x - 30 mL 4/16
 - 30 mL 4/22
 Ethidium Bromide - 5 mL - 4/22
 Methanol - 3 mL - 4/22
 Tris Acetate Ethylenediamine Tetraacetic Acid Buffer
 1x - 50 mL - 5/3
 Ethanol - 7 mL - 5/3

Flammable

Elizabeth Rosenzweig
 EH&S Mar 002
 x6497

Containers that are being used repeatedly throughout an experiment can have a piece of paper attached to them as the label.

This can be useful if different amounts of the chemicals are going to be added over time.

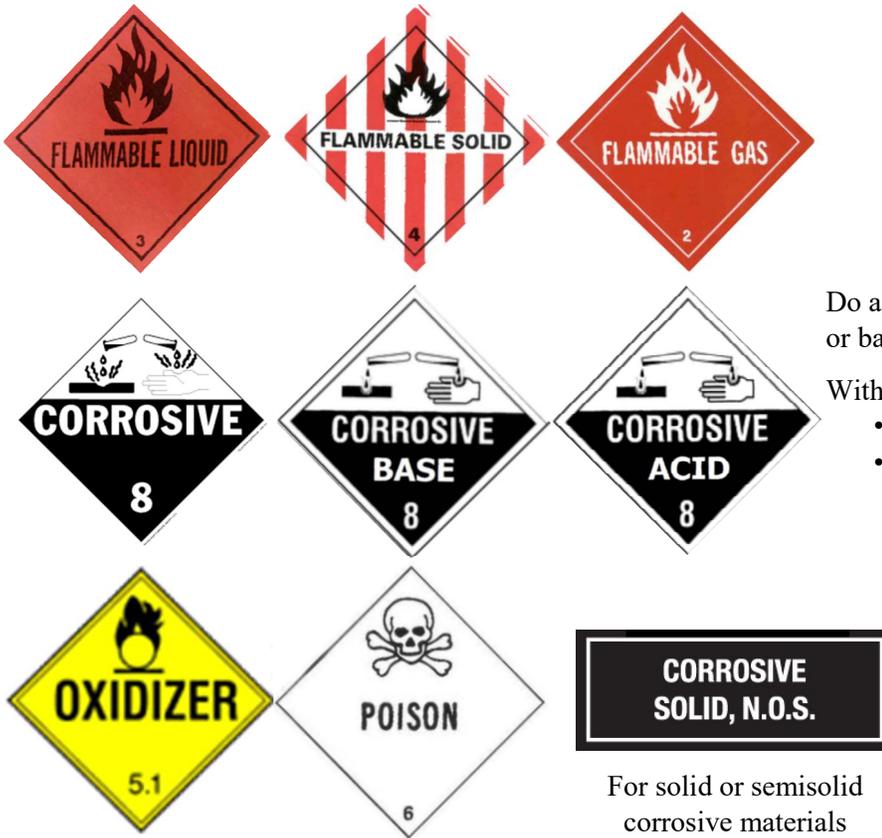
Each time something is added to the waste bottle the label should be updated with the new information.

The date each element was added isn't required, but can be useful.

As long as the required labeling elements are present it doesn't matter what sort of label is being used.

Figure 7: Hazard Identification Labels – These labels, and many others, are available from EH&S

These labels are used to identify the main hazard(s). You can also write out the hazard(s) on the labels.



Do a pH test to determine if your waste is an acid or base.

With regards to hazardous waste:

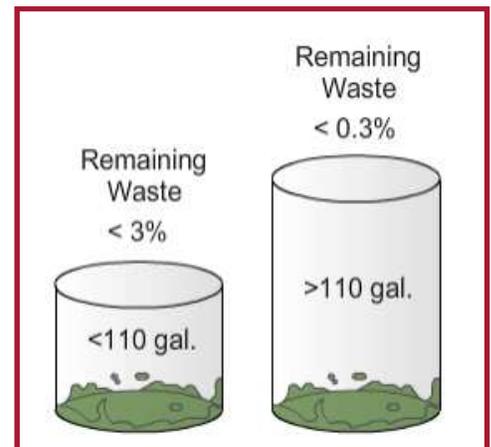
- a base is anything with a pH above 12.5
- an acid is anything with a pH below 2

RCRA Empty

Containers that have been contaminated with hazardous waste are exempted if they are empty. There are two measures to determine if a container is *empty*:

According to federal regulations, a container is considered empty when all wastes are removed using common practices and:

- There must be no more than 2.5 cm (1 inch) remaining in the container (>110 gal), -- or --
- containers less than 110 gallons must have **no more than 3% remaining**, -- or --
- containers over 110 gallons must have no more than 0.3% remaining in the container
- Compressed gas cylinders are considered empty when the pressure in the container approaches atmospheric pressure.
- Containers holding acutely hazardous chemicals must be handled as a dangerous waste. These containers should not be cleaned or treated in any way.
 - A list of acutely hazardous chemicals is found on pages 5-10 of the [Acutely Toxic Chemicals](#) document on the EH&S website.



If a container meets the RCRA Empty standard, the “empty” container may be managed as follows:

- ✓ All indications of the contents and any associated hazards must be completely defaced, covered, or removed. See **Label Defacing** below.
- ✓ A container of 5 gallons or smaller may be disposed in a non-hazardous landfill or recycled for scrap.
- ✓ A container larger than 5 gallons must be reclaimed for scrap value, reconditioned, remanufactured or refilled.
- ✓ Containers holding flammable aerosols must be completely discharged of contents and propellant before disposed in a non-hazardous waste landfill.

RCRA Empty containers can be stored for later reuse. When they are stored an “Empty” or “RCRA Empty” label should be added to them. These labels are available from EH&S.

Figure 8: RCRA Empty Labels



Refer to *Disposal of Laboratory Chemical Containers Guidance* on the [EH&S website](http://ewu.edu/healthandsafety) for additional information about disposing of empty containers. (ewu.edu/healthandsafety)

Note: any empty container must be protected from the outside elements. If rain water or snow melt enters the container and fills the container above the 3 percent level it is no longer considered RCRA Empty. The contents will then need to be profiled and designated for disposal by EH&S at a considerable cost.

Label Defacing

Containers that are empty, or that are getting new contents added, must have the original labels completely defaced, covered over, or removed.

When defacing a label, the chemical name and any hazards must be illegible. Some containers have the chemical name repeated in several places, every instance of the name must be illegible so look carefully when defacing.

Figure 9: Defacing a Chemical Label



Examples of appropriately defaced labels

There are three options for defacing a label:

- Cover all the chemical and warning information, like the left photo
- Attach a new label, like the right photo
- Remove the original label

Figure 10: Poorly Defaced Bottle



Acetone is still easy to read

Warning text has not been covered

The hazard symbols and NFPA diamond are not covered

Not pictured are several other places on the bottle that say "Acetone" that weren't covered

Figure 11: RCRA Empty Bottle



This label is well defaced and the "Empty" label has been applied.

The only problem is that the "Empty" label isn't dated.