

Refresher On-line Laboratory Safety Training

Module 2: Hazardous Waste Disposal

University Police and Safety Office (UP&SO)

Introduction

After this training, you will be able to:

- Define “Hazardous Waste,”
- Comply with all hazardous waste management rules at NDSU, including:
 - Labeling requirements
 - Storage requirements
- Safely manage all regulated wastes (e.g. hazardous waste, biohazard waste, sharps, and contaminated glass) in your lab.

After viewing this presentation you must pass the quiz with a 100% to complete the course.

UPDATES FROM THE SAFETY OFFICE

What Happens When Waste Handlers Don't Have Reliable Information About Their Waste?

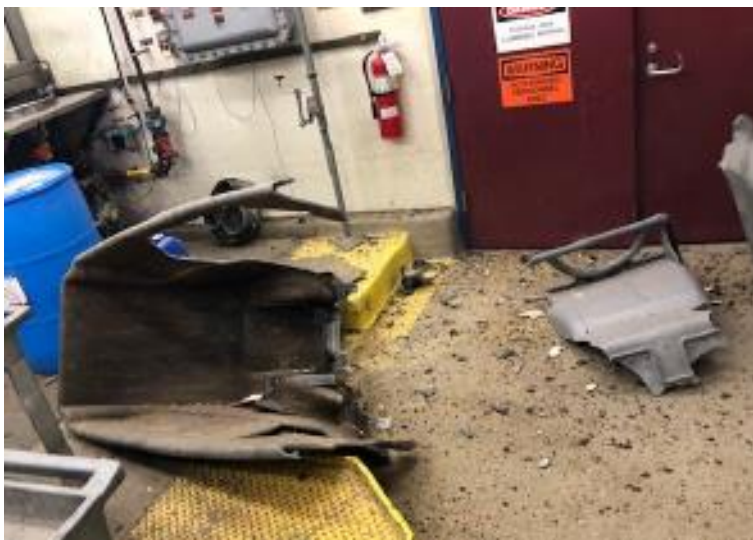


Figure 1: Damaged cart after detonation of emptied glass bottle containing a peroxide forming compound.

Dangers of Peroxide Formers—Explosion Incident:

June, 2019 - A waste bottle likely containing dangerous levels of peroxides exploded at a large research university in the Midwest. The explosion occurred during waste consolidation, after the chemical bottle was picked up from a research lab. The explosion was large enough to rip a cart in half (Figure 1), blow open the doors in the room, cause damage to adjacent rooms, and cause minor injuries to one employee. The lab researchers did not clearly indicate the hazards of the waste on the waste container before the waste was picked up.

Peroxide Forming Chemicals:

Some organic solvents (THF, ethers, and many more chemicals) spontaneously form peroxides under normal storage conditions, or during evaporation and distillation. These peroxides are explosive and can detonate from heat, friction, or mechanical shock!

A list of common peroxide forming chemicals and handling guidelines can be found [HERE](#).

UPDATES FROM THE SAFETY OFFICE

Pharmaceutical Wastes – NEW REGULATIONS 2021

Any waste that contains toxic pharmaceuticals can not be disposed of in the trash or be poured down the drain. The North Dakota Department of Environmental Quality (NDDEQ) published a guidance document in 2010 for the management of toxic pharmaceutical wastes [HERE](#).

The NDDEQ will issue new rules effective in 2021 regulating the disposal of ALL pharmaceutical waste. The [NDDEQ Guidance Document](#) and the Safety Office can help you determine if your waste falls under these regulations. Please contact the Safety Office (701.231.7759) for guidance.

Training Requirements

This on-line refresher training is required ***every semester*** (*spring, summer, and fall*) for any student, staff, or faculty member generating hazardous waste in a laboratory.

Before taking this refresher training, you must complete **In-Person Hazardous Waste Disposal Training**. Contact the Safety Office for the training schedule.

Training Schedule Available Online [HERE](#)

Hazardous Waste

Definition: A waste is hazardous if it can cause harm to human health and/or the environment when handled improperly.

Hazardous waste will be characterized by one or more of the following **hazard classes**:

- Acidic
- Caustic
- Flammable
- Halogenated
- Oxidizer
- Toxic
- Water Reactive



Note: Hazardous waste can never be poured down the drain or disposed of in the garbage!

Hazardous Waste Management Requirements

Hazardous waste in your lab must be:

1. Stored in compatible containers
2. Stored in closed containers
3. Labeled properly
4. Called in immediately for pick-up after completing hazardous waste ticket

Hazardous Waste Must Be:

1. Stored in Compatible Containers

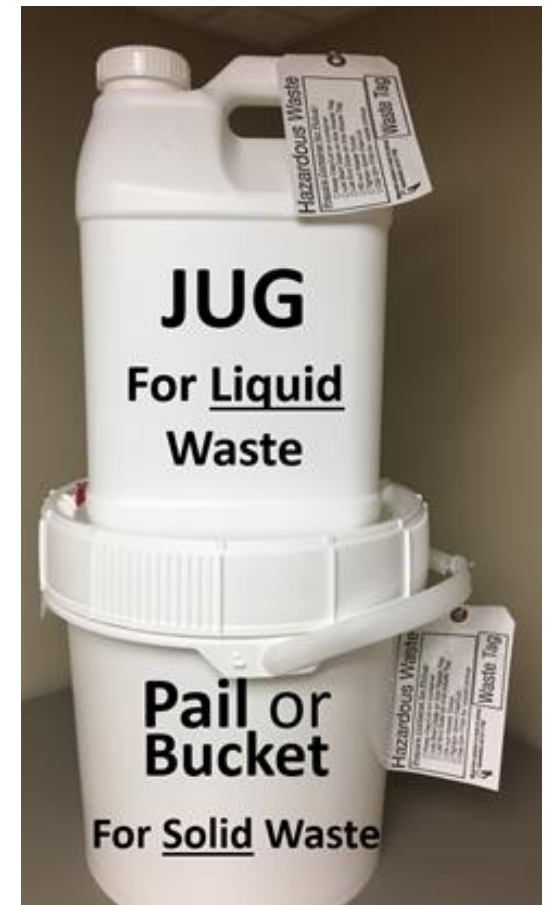
NDSU Safety Office provides hazardous waste containers.

Liquid waste is collected in jugs.

Solid waste is collected in buckets/pails.

DO NOT store incompatible waste materials in the same waste container.

Call the Safety Office at 701.231.7759 to request waste containers.



Hazardous Waste Must Be:

2. Stored in Closed Containers

Hazardous waste containers must be **closed at all times**, except when actively adding waste.



Funnels are not lids!

Note: Fill waste containers **only 90% full** to ensure you can screw the lid on!

Not properly closed.



Properly closed.

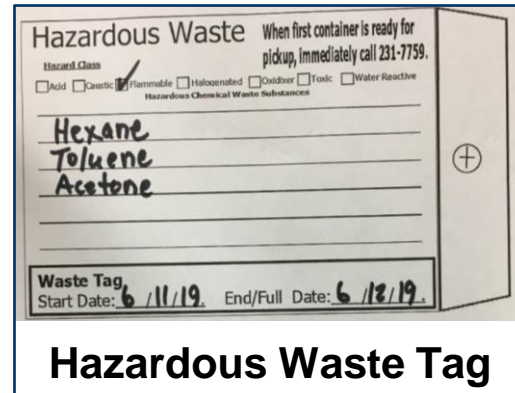


Hazardous Waste Must Be:

3. Labeled Properly

All waste containers must be labeled with:

- **Start date**
- **All contents**
- **Primary hazard class**
- **End date**



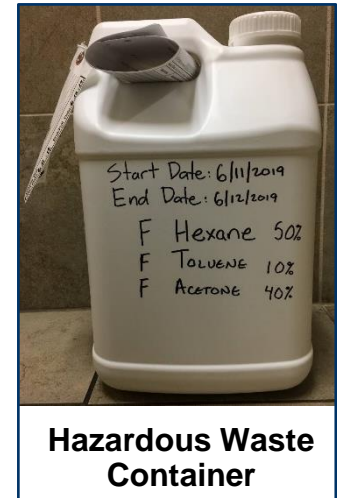
Hazardous Waste When first container is ready for pickup, immediately call 231-7759.

Hazard Class Flammable Corrosive Oxidizer Toxic Water Reactive
Hazardous Chemical Waste Substances

Hexane
Toluene
Acetone

Waste Tag
Start Date: 6/11/19. End/Full Date: 6/18/19.

Hazardous Waste Tag



Note: Hazardous waste labelling information can be listed on the **Hazardous Waste Tag** and/or the **Hazardous Waste Container**.

Hazardous Waste Must Be:

4. Called in Immediately for Pick-up

Before calling the Safety Office for a hazardous waste pick-up, you must complete a hazardous waste ticket for each waste container.

NDSU NORTH DAKOTA STATE UNIVERSITY Hazardous Waste Waste Ticket No. 100001

Circle Bld/Hall name or write in neatly below
 (Dunbar) Ladd R1 R1A R2 Sudro CIE Hill HillPrep
 ABEN Askansase Batcheller Dove Ely EGE Geoscience
 Harris Hultz Loftsgard OBB Renaissance Stevens
 VanEs VD... ServiceCenter PlotPlant Waldron Walster

Start Date: 10/07/19
 End/Full Date: 10/09/19

Bld/Hall: Rm/Lab #: 403

Your Email (Print Neatly): graduate.student@ndsu.edu
 Your Cell Phone: (701) 555 - 1212 Please fill in all Shaded Sections
 PI Email (Print Neatly): principal.investigator@ndsu.edu

Hazard Class: Acid A, Caustic C, Flammable F, Halogenated H, Oxidizer O, Toxic T, Water Reactive W

Hazard Class	Hazardous Chemical Waste Substance	Amount (Mass, Volume or %)
F	HEXANES	1L
F	Ethyl acetate	1L
F	Acetone	2L
H	Dichloromethane	1.5L
F	Methanol	0.5L
T	WATER	2L

Comments/Additional Information on Substance(s): Total Vol. or Mass: 8L
Including, But Not Limited To, Shock Sensitive, Storage or Cleanup Issues, Strong Oxidizer, Lachrymator/Irritant, Sensitivity to Temperature, Sensitivity, Carcinogenic, Teratogenic or Mutagenic, etc.

When container is ready, immediately call 231-7759 for container pickup.

Safety Office Use Only Initials: _____
 Storage Class Waste Phase
 A C F H O T W Liquid Solid Pickup Date: / /

Remember to complete all sections on the Hazardous Waste Ticket:

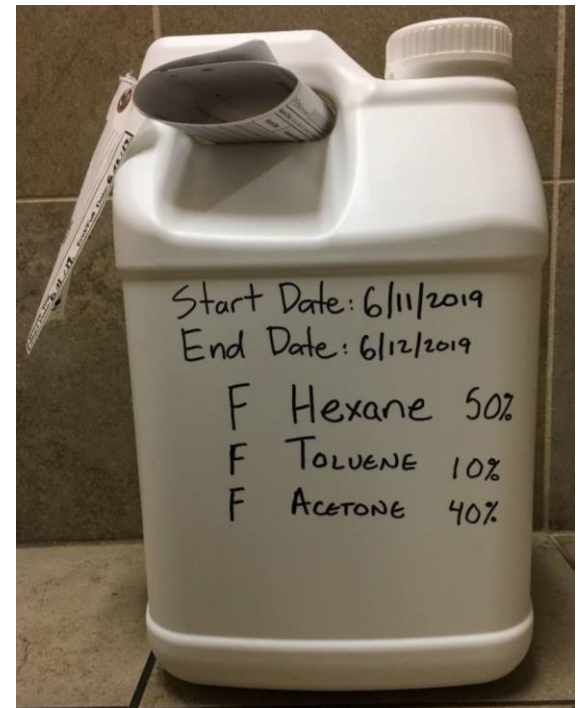
1. Waste Location
2. Start and End Dates
3. Contact Information
4. Hazard Class
5. Chemical Contents and Amounts
6. Total Mass or Volume
7. Any Additional Hazard Information

Hazardous Waste Must Be:

4. Called in Immediately for Pick-up

To call in a hazardous waste pick-up, dial:

701.231.7759



Example of a waste container ready for pick-up with a completed hazardous waste ticket in the handle of the jug.

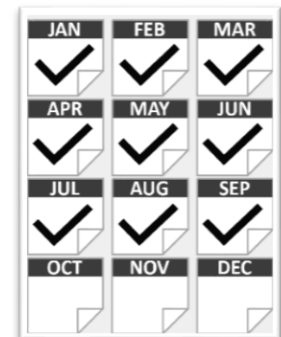
Hazardous Waste Storage Limits

Hazardous waste **must be called in for pick-up immediately** (within 24 hours) when:

- One waste container is full, or
- One waste container is no longer being filled,

and

- At the end of each semester in teaching labs, or
- Within 9 months of start date in research labs.



Biohazard Waste

The Safety Office provides biohazard burn-up bins (BUB) for disposing of biohazard waste.

To prepare the BUB for disposal:

- The inner bag must be twisted, folded over, and taped securely shut.
- The lid must be closed and attached to the box with tape $\frac{3}{4}$ down the sides.
- If >15 lbs (7 kgs), the bottom of the BUB must also be taped.
- Ensure no liquids, sharps, or glass are in the BUB.
- Complete a Biohazard Waste Form.
- Call the Safety Office for pick-up.



Example of a biohazard burn-up bin prepared for pick-up.

Biohazard Waste Form		North Dakota State University University Police & Safety Office 1601 - 16th Avenue, Bldg. 300 Fargo, ND 58105 701-231-7755	
Please hand - you are getting 4 copies			
Date:	Oct. 16, 2017	Department:	Chemistry Biochemistry
Building and room #:	Duoban 50	Telephone #:	701.231.8478
Contact person:	Venise Guy		
Type of waste (i.e. blood, tissues, paper, etc.):	blood tissues & gloves		
Approximate amount of waste (in pounds):	10 lbs		
Reason for incineration (i.e. biomedical, biohazard, etc.):	Biohazard		
Autoclaved:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Date:
UR500 Delivered by:			
Lab Date incinerated:	Approved by:		

Instructions: White copy retained by originating department, yellow copy - Safety Office, blue copy - returned to Safety Office after incineration, and grey - retained by incinerator after incineration.

Biohazard Waste Form



Example of a properly closed inner bag.

Contaminated Sharps Waste

All contaminated sharps (needles, razor blades, scalpels, etc...) must be collected in appropriate containers, and picked up by the Safety Office.



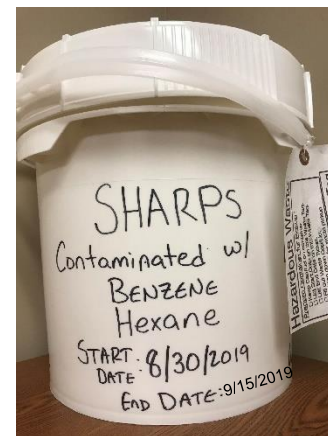
Biohazard Waste Form

Date: 08/14/2017 Department: Chemistry Biochemistry
 Building and room #: Dunbar 50 Telephone #: 762.231.8092
 Contact person: Verisara Gwy
 Type of waste (i.e. blood, tissues, paper, etc.): Sharp, Scalpels & probes
 Approximate amount of waste (liters, pounds, etc.): 10 lbs
 Reason for incineration (i.e. biomedical, biohazard, etc.): biohazard

Authorized: _____ Date: _____
 Delivered by: _____
 Lab: _____ Date incinerated: _____ Approved by: _____

Biohazard Contaminated Sharps

- Collected in red sharps container
- A Biohazard Waste Form must be filled out for biohazard sharps



NDSU Hazardous Waste Ticket No.

Circle Risk/Label name or write in nearby below:
 Dunbar Lacks PR PIA P2 Radio CIE H11 H11P2
 A512A Substances Bioterrorist Dishes Dry ICE Carcinogens
 Herts Hertz Lofogard OHS Performance Solvents
 Vortec VCL Service/Center Pflafer Waldron Waldron

Start Date: 8/30/19
 End/Full Date: 9/15/19

Bld/Hall: Dunbar Rm/Lab#: 402

Your Email (send weekly): graduate.student@ndsu.edu
 Your Cell Phone: (701) 555-1212 Please fill in all Shaded Sections
 PI Email (sent Name): principal.investigator@ndsu.edu

Hazard Class	Hazardous Chemical Waste Substance	Amount (pails, volume or %)
	T, F Sharps contaminated w/ Benzene and Hexane	100%

Comments/Additional Information on Substances: _____ Total Vol. or Mass: 5 lb
 Contains sharps

When container is ready, IMMEDIATELY call 231-7759 for container pickup.

Storage Class: ACF Waste Phase: Hot
 Liquid Solid Pickup Date: / /

Chemical Contaminated Sharps

- Collected in solid waste pail/bucket labeled 'SHARPS' with all chemical contaminants listed
- Hazardous Waste Ticket must be filled out for chemical contaminated sharps

Glass Waste and Recycling

- Recycle Clear and Amber Glass Bottles:

- Rinse container three times
- Collect rinse as liquid hazardous waste
- Deface label with permanent marker
- Label “3 X Rinsed”
- Call Safety Office for pick up



- Clean Broken Glass

- Deface label and place in a clean broken glass disposal box.
- Building custodians remove clean broken glass disposal boxes.

- Chemically Contaminated Glass

- Place in a hazardous waste bucket.
- Complete a waste ticket and call the Safety Office for pickup.



Clean Broken Glass Disposal Box

Chemical Clean Out Procedure

Unwanted and expired chemicals can be disposed of through the Safety Office.

Call the Safety Office to coordinate a **Chemical Clean Out**.

701.231.7759



Think About Hazardous Waste SAFETY...

SAFETY for all hazardous waste containers:

Start Date Listed on Waste Tag & Waste Ticket.

All Chemical Contents Listed on Waste Tag & Waste Ticket.

Firmly Close Containers at All Times.

End Date Listed on Waste Tag & Waste Ticket.

Tags and Tickets Filled Out Completely.

You Must Call 701.231.7759 Immediately for Pick-up.

Thank You!

Please contact the Safety Office with any questions or concerns about this training!

701.231.7759

You must pass the quiz with a 100% to complete the course.