

2016 Safety Refresher Training

Presented By:
The Ragon Institute Lab Groups

September 13, 2016

Autoclave Procedures & Safety

the Kwon lab

Autoclaving PPE

1. Loading the autoclave in BSL2+ TC Room

Blue gown
Double-gloves
Goggles



2. Removing autoclave waste in anteroom

White lab coat
Double-gloves
Goggles
Face-shield



Running the autoclave

Phase I: Pre-Run Check

1. Check the gauges

Generator pressure should be 50-60 PSI
Jacket pressure should be at least 15 PSI



Photo credit: A

Running the autoclave

Phase I: Pre-Run Check

1. Check the gauges
2. Check the drain

Remove any items caught in the drain strainer. A clogged strainer may cause:

- ❖ Water build-up in the chamber
- ❖ Vacuum malfunction
- ❖ Inability to reach sterilizing temperatures
- ❖ Increased exhaust times
- ❖ Excessive drying times
- ❖ Improper air removal



Running the autoclave

Phase II: Loading

1. Open autoclave on BSL2+ side
2. Carefully load waste

WARNING: Do not over-fill the autoclave or seal bags too tightly. The steam must thoroughly penetrate the contents in order for proper sterilization to occur.



Running the autoclave

Phase III: Running a cycle

1. Make sure both autoclave doors are closed tightly

If it's too loose:

- ❖ Pressure won't build up appropriately during the autoclave cycle
- ❖ Steam will build up in the anteroom or TC, which can result in flooding and set off fire alarms

But it shouldn't be excessively tight - that could wear out the gasket!



Running the autoclave

Phase III: Running a cycle

1. Make sure both autoclave doors are closed tightly
2. Choosing the correct cycle

Any liquid whatsoever cycle	→	Liquids
Only dry material Cycle	→	Vacuum

Liquids autoclaved on the vacuum cycle will explode and cause a mess and damage the autoclave so *please be careful!*



Photo credit: A

Running the autoclave

Phase IV: Unloading

1. Allow the autoclave to completely finish the cycle & verify cycle completion
2. Open the anteroom door slightly to allow steam to escape & allow contents to cool slightly before removing.
3. Disposal:
 - a) Orange bags can be disposed of directly in biohazard waste
 - b) Contents of buckets and flasks can be poured down the drain through a strainer. The strainer should be emptied into biohazard waste and cleaned thoroughly



And one last thing

Don't forget to clean up

1. Use brushes available to clean flasks and buckets before re-use
2. Clean the sink area and the strainer thoroughly. Whatever looks gross now will only be harder to clean when it's cold and dry.

Keeping these spaces clean is a sign of respect to yourself, to your colleagues, and to the work you are doing!



Le Gall Lab

What You Need To Know About Hazardous Waste Disposal



Why should you care?

- Official MGH regulations because:
 - Environmental contamination, which compromises public health and creates significant clean-up and operational expenses,
 - Harmful health and safety exposures to individuals and groups of people,
 - Property damage,
 - Damage to, and/or interference with, facility and/or municipal wastewater treatment systems



What are hazardous chemical wastes?

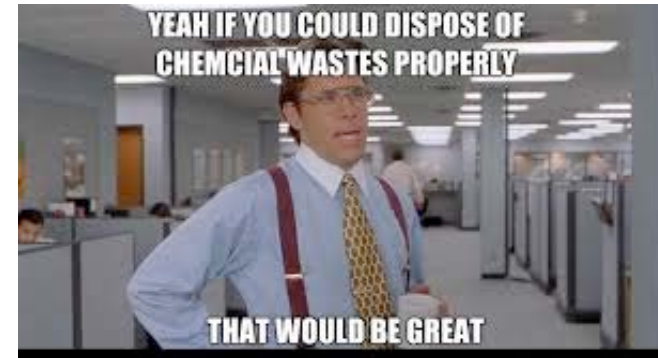
- Any compound that is:
 - Ignitable
 - Corrosive (pH less than or equal to 2, or greater than or equal to 12.5)
 - Reactive
 - Toxic
- There is a list, can also look at MSDS sheets

How to dispose of the hazardous chemical wastes?

Use designated areas and designated containers

Satellite Accumulation Area

- Specialized waste streams
 - Examples: glycerol, phenol, xylene, acetonitrile, ELISA reagent



SATELLITE ACCUMULATION AREA REQUIREMENTS

- All hazardous waste containers must be labeled with a MGH Hazardous Waste Label.
- All hazardous constituents must be listed out on the hazardous waste label. (No formulas or abbreviations)
- All the hazards must be checked off that **best describe the contents of the hazardous waste container**. [*corrosive, ignitable, toxic, reactive, oxidizer*]
- the hazardous waste label must contain the date the container is deemed “FULL” and ready for pick up as well as the building/laboratory information.
- All hazardous waste containers, within the SAA, must be **closed and capped tightly during storage**.
- All hazardous waste containers must be stored within a **designated secondary containment bin**.
- All **incompatible wastes must be segregated properly**.
- All **waste containers must be in good condition and free from rust and/or structural damage**.
- All **wastes must be compatible with the container that they are stored in**.

SATELLITE ACCUMULATION AREA REQUIREMENTS (continued)

- There must be only one container of a certain waste stream per Satellite Accumulation Area.
- All containers must be spaced so they can be inspected and all hazardous waste labels must be clearly visible and legible.
- Containers within the Satellite must be at or near the point of generation and under the control of the trained person directly responsible for that waste.
- The maximum capacity of containers, pertaining to SAA storage limits, is as follows: <55 gallons of hazardous waste and/or <1 quart of acutely hazardous waste.
- All hazardous waste that exceeds the storage limits noted above must be dated immediately, and within three days moved to the Main Accumulation Area (MAA).
- Satellite Accumulation Area should not be located under laboratory sinks.
- The area, where waste is accumulated, must have a Satellite Accumulation Area Sign posted.

Why do you need to label the waste containers properly?

DHMMO KILLS

Dangers:

- Death by inhalation
- Corrodes metals
- Bloating & nausea
- Electrical short-circuit
- Tissue damage & burns
- Soil erosion
- Brake failure
- Disaster & destruction

Uses:

- Animal research
- Abortion clinics
- Nuclear plants
- Chemical warfare
- Performance enhancers
- Torture
- Cult rituals
- Fire suppression

Places:

- Cancerous tumors
- Cleaning solvents
- Prisons & hospitals
- Acid rain
- Pharmaceuticals
- Lakes & streams
- Industrial waste
- Baby food & beer

Ban Dihydrogen Monoxide

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BTU/RAGON01

REFER TO INSTRUCTIONS ON REVERSE SIDE

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

CONTENTS

USE FULL CHEMICAL NAME
NO FORMULAS OR ABBREVIATIONS

1. _____ % _____
2. _____ % _____
3. _____ % _____
4. _____ % _____

HAZARDS (SEE REVERSE SIDE)

IGNITABLE/FLAMMABLE OXIDIZER
 CORROSIVE TOXIC/POISON
 OTHER (SPECIFY) _____

MARK DATE WHEN FULL OR READY FOR PICK UP

DATE ____ / ____ / ____

BUILDING _____ ROOM NO. _____
PI/MANAGER _____
PHONE _____

Labels are available next to all SAAs

All chemicals
No formulas or abbreviations

Specific Hazards
MSDS sheets or even bottle

Location and Contact Information

Only fill up when ready for pick up

BTL/RAGON01

REFER TO INSTRUCTIONS ON REVERSE SIDE

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

CONTENTS

USE FULL CHEMICAL NAME
NO FORMULAS OR ABBREVIATIONS

1. _____ % _____
2. _____ % _____
3. _____ % _____
4. _____ % _____

HAZARDS (SEE REVERSE SIDE)

- IGNITABLE/FLAMMABLE OXIDIZER
- CORROSIVE TOXIC/POISON
- OTHER (SPECIFY) _____

MARK DATE WHEN FULL OR READY FOR PICK UP

DATE _____ / _____ / _____

BUILDING _____ ROOM NO. _____

PI/MANAGER _____

PHONE _____

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

CONTENTS

USE FULL CHEMICAL NAME
NO FORMULAS OR ABBREVIATIONS

1. Water % 80
2. Acetonitrile % 10
3. Methanol % 10
4. Formic Acid % 0.1

HAZARDS (SEE REVERSE SIDE)

- IGNITABLE/FLAMMABLE OXIDIZER
- CORROSIVE TOXIC/POISON
- OTHER (SPECIFY) _____

MARK DATE WHEN FULL OR READY FOR PICK UP

DATE _____ / _____ / _____

BUILDING 400TS ROOM NO. 934

PI/MANAGER Le Gall

How about the empty bottles?

- Triple rinse with appropriate solvent (and dispose of the waste accordingly)
- deface all labels
- let the empty bottle dry out in the chemical hood
- dispose of the glass bottles in sharps container, plastic ones in the trash – or use it as a waste container...



What You Need To Remember:



NEVER DISPOSE OF CHEMICALS INTO A SINK OR THE REGULAR TRASH UNLESS YOU KNOW WITH CERTAINTY THAT IT IS SAFE TO DO SO

CHEMICALS MUST BE PROPERLY DISPOSED OF AT ALL TIMES USING THE SYSTEM ESTABLISHED BY THE HOSPITAL (SAA & proper labels)



REFER TO INSTRUCTIONS ON REVERSE SIDE

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

CONTENTS
USE FULL CHEMICAL NAME
NO FORMULAS OR ABBREVIATIONS

1. Water	80
2. Acetonitrile	10
3. Methanol	10
4. Formic Acid	0.1

HAZARDS (SEE REVERSE SIDE)

IRRITANT/FLAMMABLE OXIDIZER
 CORROSIVE TOXIC/POISON
 OTHER (SPECIFY) _____

MARK DATE WHEN FULL OR READY FOR PICK UP

DATE _____ / _____ / _____

BUILDING 40073 ROOM NO 939

PI/MANAGER Le Gall

If you are not sure, ask the lab managers, Betsy or Chris