

Science at the heart of medicine

Hazardous Waste Refresher Training

Department of Environmental Health & Safety

<https://einsteinmed.edu/administration/environmental-health-safety/>



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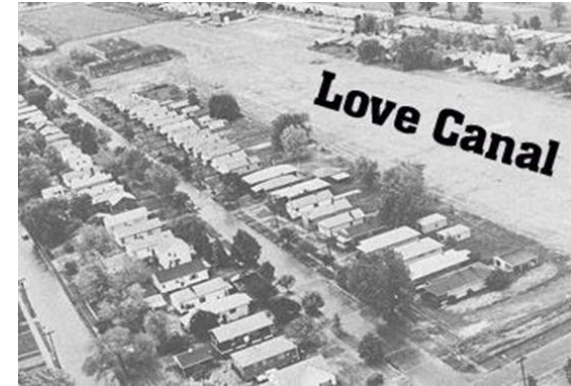
Resource Conservation and Recovery Act (RCRA)

- Passed by the Congress in 1976 to provide a cradle-to-grave management of hazardous waste
- Enforced by the following governmental agencies:
 - ❑ Federal - Environmental Protection Agency (EPA)
 - ❑ State - New York State Department of Environmental Conservation (DEC)
 - ❑ Local - New York City Department of Environmental Protection (DEP)

Major Events that led to the Development of RCRA

Love Canal, NY

- ❖ Hooker Chemical began dumping chemicals in 1941
- ❖ School built on the old dump site in 1954
- ❖ School and nearby houses became affected
- ❖ Cancer rates increased and an emergency was declared



Times Beach, MO

- ❖ Dioxin contaminated oil used to control dust on town roads in 1972
- ❖ Government spent \$32 million to buy residents homes in 1982-83 after numerous people and animals became sick



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Hazardous Waste

RCRA Definition:

- Any solid, liquid, or gaseous material – that “because of its quantity, concentration, or physical, chemical or infectious characteristic may cause or significantly contribute to an increase in mortality, serious irreversible illness, or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed.”

What is a Hazardous Waste

- ❑ Any waste that has the following characteristics:
 - ✓ Ignitable
 - ✓ Corrosive
 - ✓ Reactive
 - ✓ Toxic

- ❑ Is listed as a waste in 6NYCRR 371.4

Characteristics of a Waste

- Ignitable
 - Flash point <140 °F

Examples:

Acetonitrile, alcohols, acetone, toluene, xylene, ether, aerosol paints



Characteristics of a Waste

- **Corrosive**

- ✓ Aqueous solutions with a $\text{pH} \leq 2.0$ or $\text{pH} \geq 12.5$
- ✓ Or a liquid that corrodes steel/metals at a rate greater than $\frac{1}{4}$ inch per year at test temperature of 55°C



Examples:

Acids, glass cleaner, hydroxides, bases, drain cleaners, rust removers, other

Characteristics of a Waste

Reactive

- ✓ Unstable and may explode under certain conditions such as heat, friction or pressure;
- ✓ Produce toxic fumes, gases, and vapors when mixed with water

Examples: Picric acid, peroxide forming chemicals, ethyl ethers, dinitro compounds, other



Characteristics of a Waste

- Toxic
Fails Toxic Characteristic Leaching Procedure (TCLP) Test

Examples

Heavy metals: cadmium, mercury, lead, silver, chromic acid, other



Universal Waste



- ❑ Established by the EPA in 1995
- ❑ The Universal Waste Rule permits certain hazardous wastes to be managed under streamlined requirements that will encourage the collection, recycling or disposal of certain wastes.

Examples:

- ✓ Fluorescent and high intensity discharge lamps, neon, mercury vapor, high pressure sodium and metal halide lamps
- ✓ Batteries
- ✓ Mercury thermostats
- ✓ Certain pesticides
- ✓ Computer monitors



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Hazardous Waste Generator

➤ **Large Quantity Generator:**

- ❖ >2,200 lbs./month of hazardous waste
- ❖ >2.2 lbs./month of acutely hazardous waste

➤ **Small Quantity Generator:**

- ❖ Between 220 - 2,200 lbs./month of hazardous waste
- ❖ \leq 2.2 lbs./month of acutely hazardous waste

➤ **Very Small Quantity Generator:**

- ❖ Up to 220 lbs./month of hazardous waste
- ❖ \leq 2.2 lbs./month of acutely hazardous waste



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Large Quantity Generator (LQG)

LQG must have the following:

- ✓ EPA Identification Number
- ✓ Written Contingency Plan
- ✓ Training for Waste Handlers
- ✓ Waste stored for 90 days or less
- ✓ Waste minimization program



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Small Quantity Generator (SQG)

Einstein is currently a SQG and requires:

- ✓ EPA Identification Number
- ✓ Training for Waste Handlers
- ✓ Waste stored less than 180 days

At any point Einstein's generator status can change from SQG to become a LQG depending on the type and amount of waste generated within one month.



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Accumulation Area

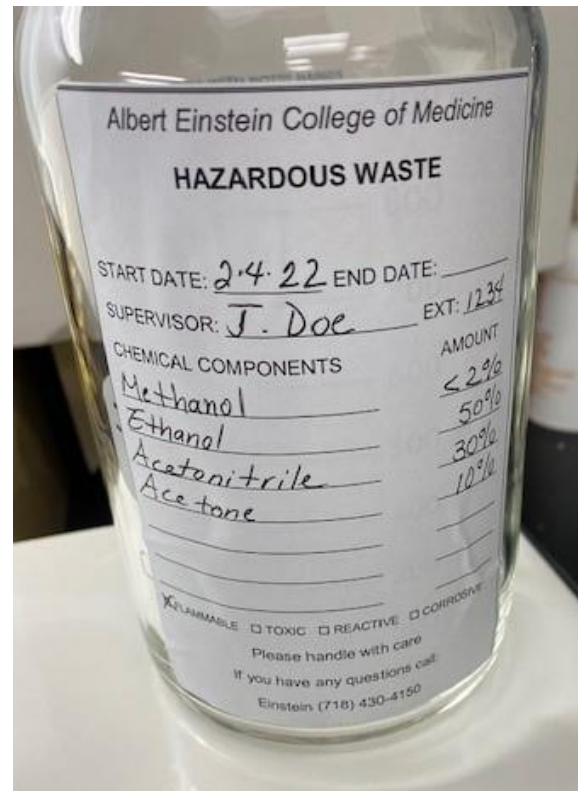
Any area that generates hazardous waste is required to have an accumulation area close to the point of generation



Inspection of Waste

Inspect waste once a week to ensure:

- ✓ Chemical waste is labeled with the EH&S “**Hazardous Waste**” label
- ✓ Container label identifies **contents**
- ✓ Containers are kept **closed**
- ✓ Containers are **not corroded**
- ✓ Containers are in **secondary containment**
- ✓ Containers are **dated**



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Inspection of Waste (Continued)

- ✓ Chemical waste is not leaking
- ✓ Chemicals and waste are segregated so that incompatible chemicals are not next to each other
- ✓ The total volume of chemical waste in the accumulation area does not exceed 55 gallons
- ✓ No more than 1 quart of acutely hazardous waste is accumulated
- ✓ Waste is placed in proper containers
- ✓ Accumulation areas are close to the place where waste is generated and under the control of the area supervisor

Labeling

- ◆ A waste label must be placed on the waste container as soon as the first drop of waste is added
- ◆ A waste label must be placed on all hazardous waste containers, even if the original label is present on the chemical bottle

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HAZARDOUS WASTE

START DATE: _____ END DATE: _____
SUPERVISOR: _____ EXT: _____

<u>CHEMICAL COMPONENTS</u>	<u>AMOUNT</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

FLAMMABLE TOXIC REACTIVE CORROSIVE

Please handle with care.
If you have any questions call:
(718) 430-4150



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Labeling

- ◆ Label must contain the words “Hazardous Waste”
- ◆ The date must identify when the container was filled
- ◆ The full name of the chemical(s) must be written on the label
- ◆ Labels can be obtained from the EH&S forms library at <https://intranet.einsteinmed.edu/download/?token=Lbtqt5eenn3JXZmFK%2b%2f9SGzOqo5Bxvk3vakqYZesGZY>, the EH&S office at Forchheimer-800, or by calling x4150
- ◆ Under no circumstances may a container labeled with the words “Hazardous Waste” be disposed in the regular trash




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Waste Pick up Form

- If you require a hazardous waste pick up, fill a Hazardous Waste Pick Up form online via the EH&S website at:

<https://www.einsteinmed.edu/administrator/environmental-health-safety/laboratory-safety/chemical-safety/chemical-waste-pick-up-request.asp>

- Or download, fill, and submit a copy of the form to F-800 by mail or fax (x8740)



Hazardous Waste Pick-Up Request Form

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Requester:	Date:
Principal Investigator:	Extension:
Email:	Building/Room:
Location of Waste:	

Waste Description <small>If mixed, list all known chemicals and concentrations</small>	Volume (L) or Weight (Kg)	# of Containers	Type of Container
1.			<input type="checkbox"/> Glass <input type="checkbox"/> Plastic <input type="checkbox"/> Metal <input type="checkbox"/> Box
2.			<input type="checkbox"/> Glass <input type="checkbox"/> Plastic <input type="checkbox"/> Metal <input type="checkbox"/> Box
3.			<input type="checkbox"/> Glass <input type="checkbox"/> Plastic <input type="checkbox"/> Metal <input type="checkbox"/> Box
4.			<input type="checkbox"/> Glass <input type="checkbox"/> Plastic <input type="checkbox"/> Metal <input type="checkbox"/> Box
5.			<input type="checkbox"/> Glass <input type="checkbox"/> Plastic <input type="checkbox"/> Metal <input type="checkbox"/> Box
6.			<input type="checkbox"/> Glass <input type="checkbox"/> Plastic <input type="checkbox"/> Metal <input type="checkbox"/> Box

Please note that each item of waste must have an attached [Hazardous Waste Label](#). Any container without a Hazardous Waste Label cannot be picked up by Environmental Health and Safety. Improperly completed forms and labels will cause delays in waste pick-up.

For Office Use Only

Comments:

EH&S Technician Initial:
Date:

On completion, fax to: x8740, deliver or mail to: EH&S - Forch 800, or email: hasani.douglas@einsteinmed.edu

10 August 2021
EHS-FRM-2018-005
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Location of Waste

- ✓ Identify a specific location in the laboratory
- ✓ Do not store waste containers on the floor
- ✓ Use secondary containment where necessary
- ✓ Containers must be kept closed at all times, except when adding more waste
- ✓ Do not use the fume hood for long-term waste storage
- ✓ Inspect waste storage areas weekly



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Segregation of Chemicals

- Segregate incompatible chemical wastes
- Never mix incompatible chemicals
- A compatibility chart is available at the link below:

https://ors.od.nih.gov/sr/dohs/Documents/General_Chemical_Storage_Compatibility_Chart.pdf



Consolidating Chemicals

The following chemical solvents may be consolidated in the same bottle:

Acetone

Cyclohexanone

Ethylbenzene

Methyl ethyl ketone

Xylene

Acetonitrile

Ethanol

Isopropanol

Nitrobenzene

Benzene

Ethyl acetate

Methanol

Toluene

Any time a new chemical is added to a container, write the full name of the chemical(s) on the hazardous waste label

If you consistently generate a large quantity (>5 gallons) of chemical waste, please call EH&S at x4150 for disposal advice



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Waste Disposal

No hazardous wastes may be:

- ❖ dumped down the drain
- ❖ discharged to sanitary sewer
- ❖ discarded with the garbage
- ❖ allowed to evaporate into the atmosphere

Consult with EH&S about disposal of non-hazardous chemicals



Disposal of Empty Containers

- ❖ Containers or bottles must:
 - **Be empty**
 - Be rinsed **three times** with the first rinse collected as hazardous waste
 - Have the **label** removed, **obscured**, or marked “empty”
 - Be disposed in the regular trash, unless acutely hazardous or odorous
- ❖ Call EH&S at X4150 for information on disposal of acutely hazardous chemical containers



Department of Transportation (DOT)

The DOT regulates the transportation of hazardous materials.



Hazardous Material Regulations (HMR) are located in the Code of Federal Regulations (CFR) Title 49 Transportation

Department of Transportation (DOT) Training Requirements

- > General Awareness and familiarization is designed to provide familiarity with the regulations to enable the employee to recognize and identify hazardous materials.
- ☞ Function-specific Trainings are specifically applicable to the functions the employee performs. Employees along with Einstein are responsible for **classifying, packaging, marking** and completing any required **documentation**.
- > Safety Training: Provided with Hazardous Communication and this refresher training.
- > Security Awareness Training
- > In-Depth Security Training

Classify, Package, Mark and Document

- Laboratory researchers and workers are responsible for knowing what waste is being generated and placing it in the appropriate **labeled** bag or container.
- EH&S will move labeled hazardous waste to the chemical storage room until it can be removed by Einstein's Hazardous waste vendor.
- The Hazardous waste pick up form and manifest will serve as documentation of proper disposal.

Emergency Spill Response

Most small spills can be cleaned up by the laboratory



If a spill is too large, call EH&S at x4150 or x4111 (off hours) for spill assistance



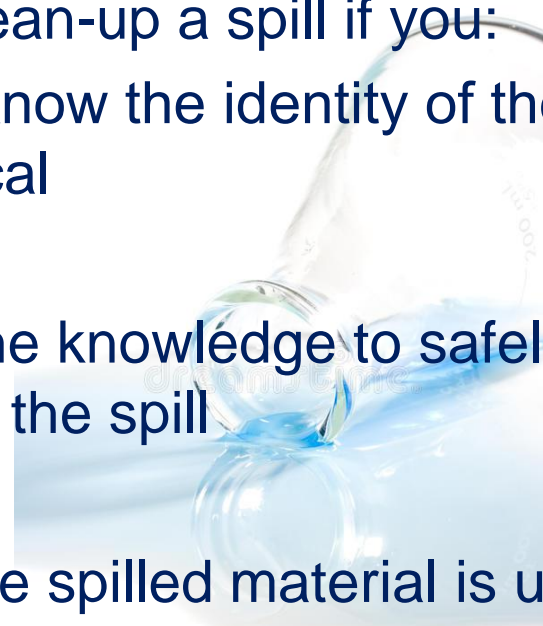
Spills

Clean-up small spills if you:

- Have materials to absorb and bag the spilled material
- Are familiar with the properties of the spilled materials
- Have the proper personal protection equipment
- Know spilled acids or bases are diluted

Do not clean-up a spill if you:

- Don't know the identity of the chemical
- Lack the knowledge to safely handle the spill
- Feel the spilled material is unsafe to clean up



Emergency

Splash to the Eyes:

- ❖ Immediately flush with copious amounts of water for at least 15 minutes
- ❖ Seek medical attention, if necessary



Splash to the Body:

- ❖ Remove contaminated clothing
- ❖ Immediately flush with copious amounts of water for at least 15 minutes
- ❖ Seek medical attention, if necessary



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Medical Emergency

- ✓ In the event of a medical emergency call 911 then x4111
- ✓ x4111 will make security aware of the problem and security will escort the EMS personnel to the emergency location



Waste Minimization

- ❖ Purchase only what is needed
- ❖ Minimize and rotate inventories; redistribute excess chemicals
- ❖ Substitute hazardous substances with less hazardous materials
- ❖ Review and modify process to minimize amount of waste generated
- ❖ Recycle waste materials back into the same process or into a different process
- ❖ Separate hazardous waste from non-hazardous waste
- ❖ Reduce the amounts of hazardous materials used in a procedure
- ❖ Do not purchase mercury-containing thermometers
- ❖ Share unused chemicals with other laboratories



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Mixed Wastes

Do not mix the following wastes:

- Chemical with biological
- Chemical with radiological
- Biological with radiological
- Lab supplies (needles, pipettes, tubes, gloves) with chemical or radiological
- Halogenated with non-halogenated solvents
- Solvents with aqueous waste
- Incompatible chemicals

If your waste needs to be mixed, please consult with EH&S before proceeding



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Summary

- Chemical disposal is free
- Never pour any chemical down the drain
- Never allow waste to evaporate into the air
- Always label and cap bottles
- Deface and rinse all chemical bottles before disposal
- Mixed-waste disposal is costly, discuss your options with EH&S
- For more waste information, visit our website at <https://intranet.einsteinmed.edu/departments/environmental-health-safety/policies/> or the Waste Disposal Guidelines
- For additional information you may also consult a Safety Data Sheet (SDS) or call EH&S at x4150



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Contact Information

Environmental Health and Safety Department

Forchheimer 800

718-430-4150

email: safety@einsteinmed.edu



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Hazardous Waste Refresher Quiz

Refresher Quiz



Upon completing the quiz, you will be emailed a certificate.