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)

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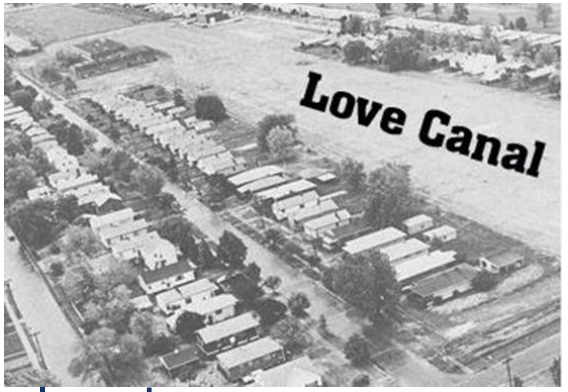
Major Events that led to the Development of RCRA

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.”

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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

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Characteristics of a Waste

- Ignitable
  - Flash point <140 ºF

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

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Characteristics of a Waste

- **Corrosive**
  - ✓ Aqueous solutions with a pH ≤ 2.0 or pH ≥ 12.5
  - ✓ Or a liquid that corrodes steel/metals at a rate greater than ¼ inch per year at test temperature of 55ºC

Examples:

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

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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

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Characteristics of a Waste

- Toxic

  Fails Toxic Characteristic Leaching Procedure (TCLP) Test

  <u>Examples</u>

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

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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
  - ≤ 2.2 lbs./month of acutely hazardous waste

- **Very Small Quantity Generator:**
  - Up to 220 lbs./month of hazardous waste
  - ≤ 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

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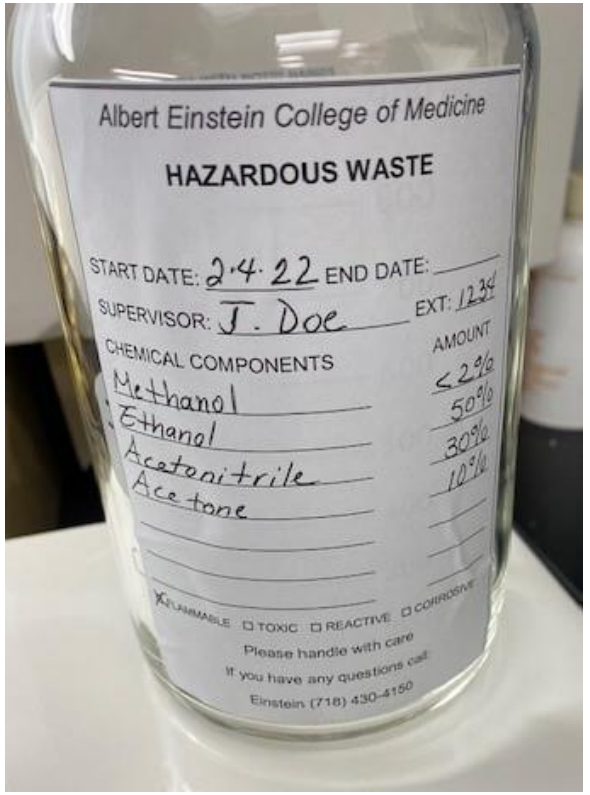
Inspection of Waste

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

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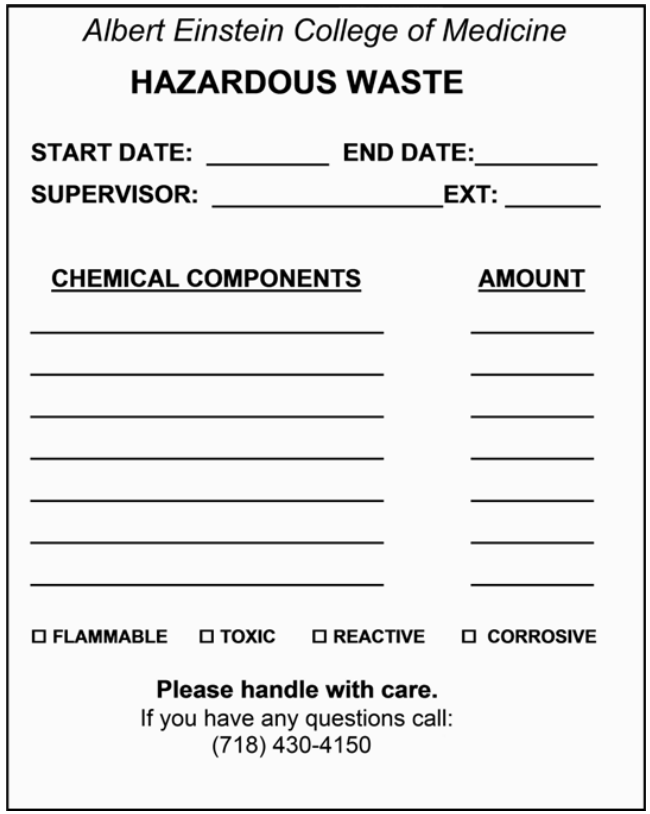
Labeling

- 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:** _____

CHEMICAL COMPONENTS	**AMOUNT**

☐ **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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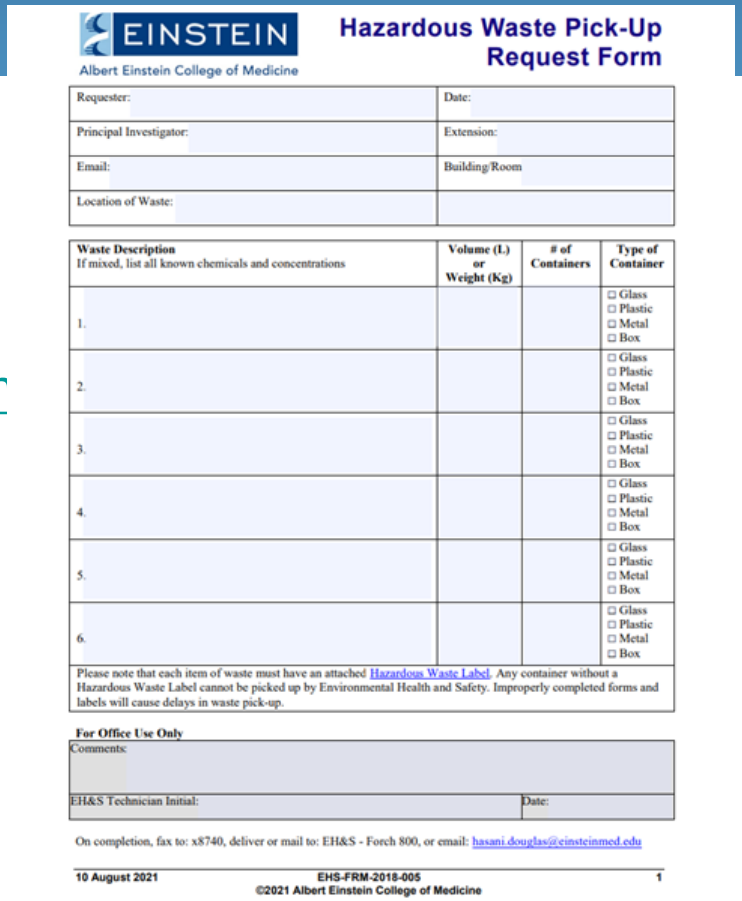
Waste Pick up Form

- 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/administration/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)



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Hazardous Waste Pick-Up Request Form

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

Waste Description If mixed, list all known chemicals and concentrations	Volume (L) or Weight (Kg)	# of Containers	Type of Container
1.			☐ Glass ☐ Plastic ☐ Metal ☐ Box
2.			☐ Glass ☐ Plastic ☐ Metal ☐ Box
3.			☐ Glass ☐ Plastic ☐ Metal ☐ Box
4.			☐ Glass ☐ Plastic ☐ Metal ☐ Box
5.			☐ Glass ☐ Plastic ☐ Metal ☐ Box
6.			☐ Glass ☐ Plastic ☐ Metal ☐ 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

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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

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Consolidating Chemicals

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

- Acetone
- Acetonitrile
- Benzene
- Cyclohexanone
- Ethanol
- Ethyl acetate
- Ethylbenzene
- Isopropanol
- Methanol
- Methyl ethyl ketone
- Nitrobenzene
- Toluene
- Xylene

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

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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

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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

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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

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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.

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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

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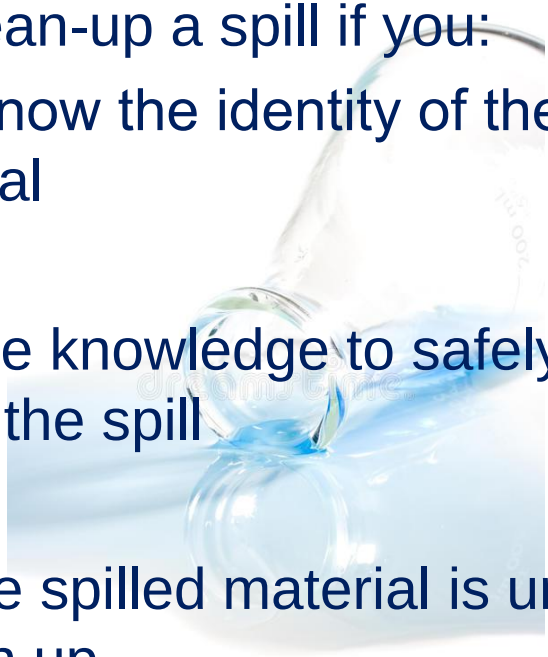
Spills

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



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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

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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.

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