

The Wonderful World of Waste



We are using Rhode Island as an example

Today's Talk is about RI Rules and Regulations



Your state will probably be different



Everything I say is an oversimplification



We will make note of differences as webinar goes on.

State Vs. Federal Regulations

- ▶ Federal Regulations usually cover every state/Territory/District of the U.S. Administered and Enforced by USEPA and EPA regional offices.
- ▶ Administration and Enforcement are often delegated, in part, to the states. Allowing states to administer and enforce federal (and state) Regulations through a process known as Authorization.
 - ▶ To be authorized, states must demonstrate they are at least as broad and as stringent than USEPA.
 - ▶ States may be more broad or more stringent than USEPA (although some state agencies are forbidden to be more stringent by their own state laws.

Who can decide what category a waste is in?

- ▶ The generator of waste ALWAYS, ALWAYS, ALWAYS has the burden of characterizing their waste.
 - ▶ Not the consultant
 - ▶ Not the regulator
 - ▶ Not the transporter
- ▶ As a regulator, you can agree or disagree with **THEIR** determination.
- ▶ Generator can be held liable for failing to make a determination, or making the wrong determination.
- ▶ Civil vs. Criminal violations based on intent.

Definition of “Waste”

From Webster- *material that is not wanted; the unusable remains or byproducts of something:*

synonyms: refuse · litter · debris · junk , trash, etc.

From Regulations:

- *Solid waste" means garbage, refuse and other discarded solid materials generated by residential, institutional, commercial, industrial and agricultural sources but does not include solids or dissolved material in domestic sewage or sewage sludge, nor does it include hazardous waste as defined in the Rhode Island Hazardous Waste Management Act, R.I. Gen. Laws Chapter 23-19.1, nor does it include used asphalt, concrete, Portland concrete cement, or tree stumps. For purposes of these Rules and Regulations, solid waste also includes non-hazardous liquid, semisolid, and containerized gaseous wastes, subject to any special conditions contained in these Rules and Regulations.*

RI Definition of a Solid Waste

- ▶ Can a waste that is not solid be a “solid waste”?
- ▶ What if a usable product is discarded?



The thing I just
produced.

Can it be
used for its
intended
purpose?

no

You have a solid waste

Y
E
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Did I discard,
abandon or
treat it like a
waste?

Yes

You have
a Solid
Waste

N
O





Yes

You have a waste

No



Yes

You have an exempt material
(may be covered by another rule)

No

You have a Solid waste
Can still get a BUD



Garbage

- ▶ Both municipal and Commercial
- ▶ Hazards
 - ▶ Odors
 - ▶ Disease through vectors
 - ▶ Contamination of groundwater
 - ▶ May contain hazardous waste from homeowners or other
- ▶ Management Methods
 - ▶ Landfilling
 - ▶ Incineration
 - ▶ Ship out of state



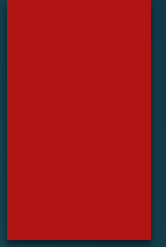
Construction and Demolition Debris

- ▶ Usually from building demolition
 - ▶ Wallboard (H_2SO_4)
 - ▶ Asphalt, brick and concrete
 - ▶ Wood
 - ▶ metals
- ▶ Typical Processing
 - ▶ Remove metals and wood for recycling and energy recovery
 - ▶ Remainder is ground and sent out at "C&D Fines"
- ▶ Hazards
 - ▶ Contamination with asbestos and radioactive waste
 - ▶ When ground and left in open ($\text{Ca}_2\text{SO}_4 + \text{H}_2\text{O} + \text{wood} \rightarrow \text{H}_2\text{S}$) Odors

Other Types of Solid Waste

- ▶ Wood Waste (treated, coated, painted wood)
- ▶ Leaf and Yard Waste (usually composted)
- ▶ Putrescible Waste + Food Waste (composting, anaerobic digestion)
- ▶ Contaminated soils (disposed in-place, alternative cover, solid or hazardous waste)
- ▶ Special Solid Wastes (must be managed differently than other solid waste)
 - ▶ Asbestos Containing Material (special containment)
 - ▶ Medical Waste (discussed later)

Things that are not Usually Solid Waste



Earthen Materials

Soil, brick, concrete, asphalt

Must not be painted,
coated or contaminated

If soils meet residential
standards, considered
uncontaminated.

Only have to do waste
determination when you
dig soil up.

Soils not meeting
residential standards Can
be exempt in in-situ



Naturally Contaminated not necessarily regulated



Wood Chips

- ▶ Must be clean wood to be exempt.
- ▶ Otherwise- solid waste



Regulated Medical Waste

- ▶ Also called
 - ▶ Biomedical waste
 - ▶ Biohazardous waste

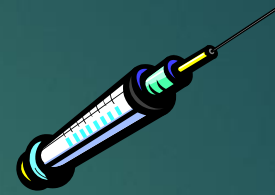


Regulated Medical Waste

- ▶ Regulated Medical Waste is a special Type of Solid Waste and includes:
 - ▶ Cultures and Stocks
 - ▶ Pathological Waste (incl. Anatomical Waste)
 - ▶ Human blood and body fluids
 - ▶ Sharps (used and unused)
 - ▶ Animal waste from research on pathogens
 - ▶ Isolation Wastes
 - ▶ Anything labeled as medical waste
 - ▶ Things like swabs or wipes not necessarily medical waste

Segregation is Required

- ▶ Sharps (including retractable)
- ▶ Fluids in bulk quantities
- ▶ Other Regulated Medical Waste (commonly referred to as “red bag waste) gloves, gauze, etc.
- ▶ “Incinerate Only” waste (pathological/isolation)
- ▶ Solid Waste mixed with RMW becomes RMW



Medical Waste Generator Requirements

- ▶ Generator registration- state only
- ▶ Identification
- ▶ Segregation- all solid waste mixed with medical waste
- ▶ Packaging- USDOT
- ▶ Proper Storage- away from potential contact
- ▶ Documentation- medical waste tracking form

Treatment

- ▶ Autoclave
- ▶ Incineration
- ▶ Treatment of fluids
- ▶ Composting of animal carcasses
- ▶ Other approved treatment
- ▶ Generators can treat their own waste



Recyclables

Recyclable material listed below.

If waste is not listed as recyclable, only exempt if the Department grants a beneficial use determination

Aluminum;

Automobiles;

Coated unbleached
kraft beverage
carriers;

Corrugated
cardboard;

Glass food and
beverage
containers;

Laser toner
cartridges;

Newspaper;

High density
polyethylene (HDPE)
plastic milk and
water containers;

Office paper;

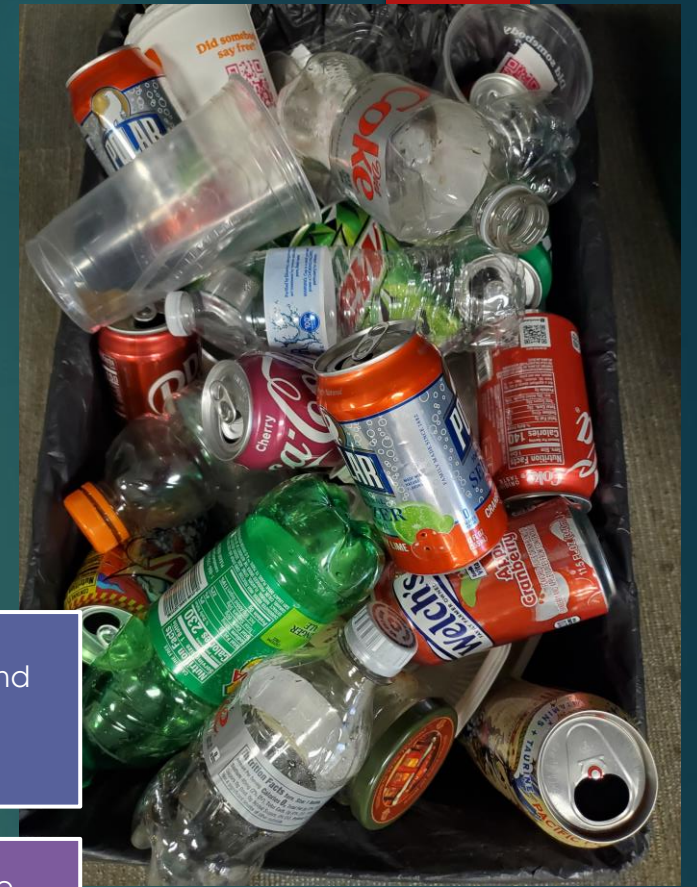
Polyethylene
terephthalate (PET)
plastic soft drink
containers;

Steel, and tin
coated steel cans;

Vehicle batteries;

White goods;

Wood waste.



Solid Waste Rules

Not regulated

- Generation
- Transportation
- Storage under 3 cu yds

Regulated

- Disposal (landfilling, incineration, BUD)
- Processing or treatment (composting, separation, grinding)
- Waste that has been excavated becomes regulated.

IMPORTANT TERMS



Reuse- Just use it again- material is still fit for reuse



Recycling- waste is used as a substitute for an ingredient in a process. Push now to consider "advanced recycling" or "chemical recycling" as recycling.



Reclamation- **a material is 'reclaimed' if it is processed to recover a usable product, or if it is regenerated (as noted in discussion RCRA defines reclamation as a subset of recycling)**



Energy recovery- incineration, pyrolysis, etc. Waste is destroyed for energy

RCRA

Resource Conservation and Recovery Act.

- ▶ Subtitle C regulates Generation, Transportation, Storage and Disposal of Hazardous Waste
- ▶ Subtitle D regulates solid waste landfills
- ▶ When people say "RCRA" they mean hazardous waste

Hazardous Waste

- ▶ Federal Regulations by RCRA.
- ▶ States authorized to enforce.
- ▶ Must first be a solid waste to be a hazardous waste
- ▶ Regulated cradle to grave
- ▶ Note RI Solid Regulations say Hazardous waste is not "solid waste".
- ▶ Hazardous Waste Programs more consistent due to extensive Federal Program.

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY
AUTHORITY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY

ACQUAINTANCE _____
DATE _____
D.O.T. PROPER SHIPPING NAME WASH. FORMULA
H.W. NO. 0001
AND _____
U.S. OR F.R. NO. _____
UNSPILLING NAME Flammable, 3 (8) III
ADDRESS 021198
CITY Columbia Public Schools
STATE 01
ZIP 2000 1st St
HAZARDOUS WASTE NO. Lynch
HAZARDOUS WASTE - HANDLE WITH CARE

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Things not Regulated by RCRA

- ▶ Household hazardous waste generated in private homes
 - ▶ Does not include home business
 - ▶ If collect household hazardous waste, you become a generator
- ▶ Waste managed under a clean water act permit:
 - ▶ Disposed of by permit in sewer or pre-treatment system
 - ▶ Sludges removed from pre-treatment may be regulated
 - ▶ Disposed of by underground injection
 - ▶ Disposed of in a waterway
 - ▶ Activity is only exempt if it is specifically permitted under CWA!



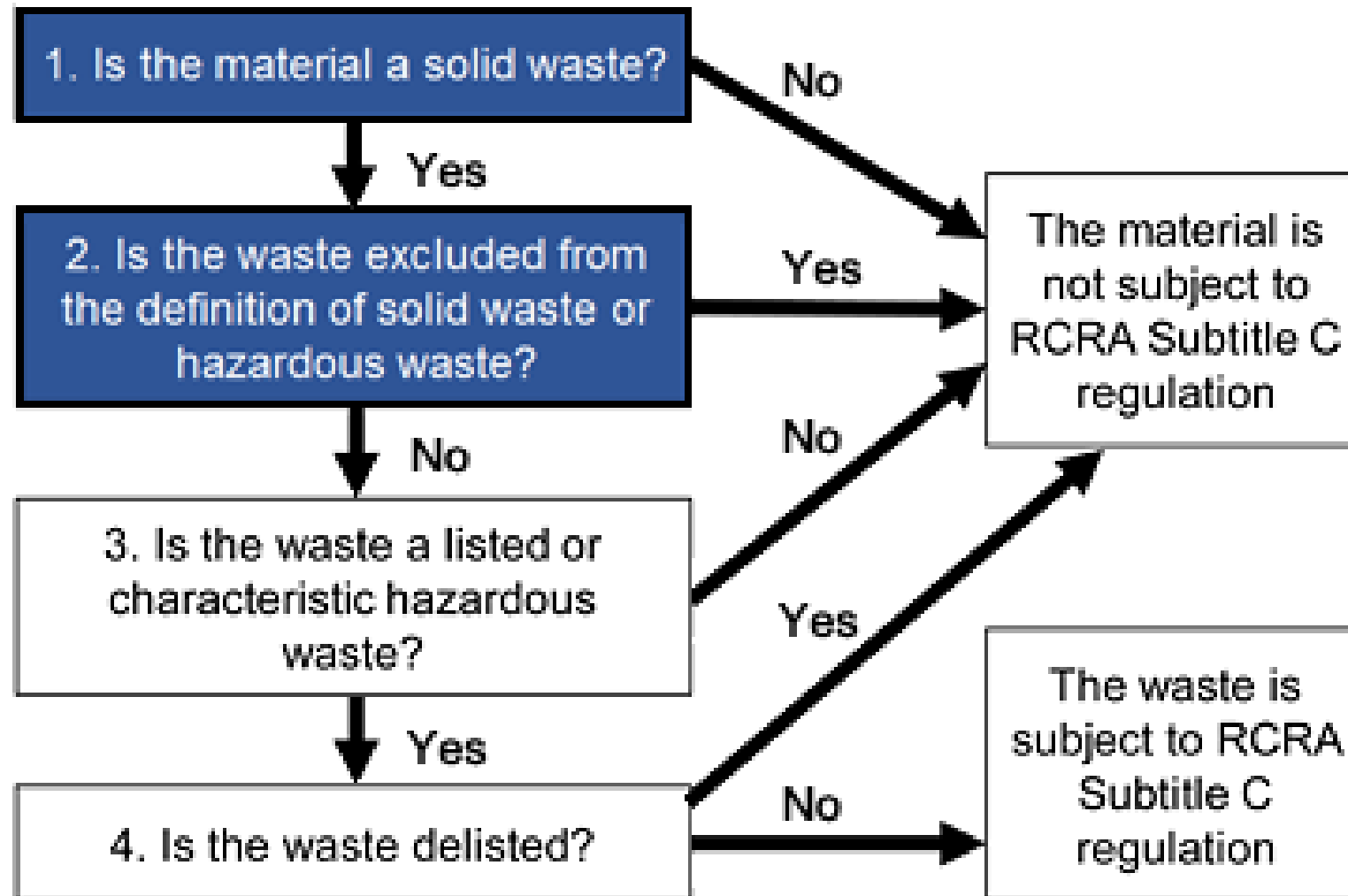
RCRA Requirements

- ▶ Generators must register and obtain and EPA ID number from the State.
 - ▶ EPA ID is tied to a location not an activity!
- ▶ Transporters must obtain and EPA ID number and be permitted by RIDEM to transport on roads in the state.
- ▶ Treatment, Storage and Disposal Facilities must get ID number, Permit from RIDEM and sometimes separate Permit from EPA. Known as Part B permit- very, very, long detailed permit process.

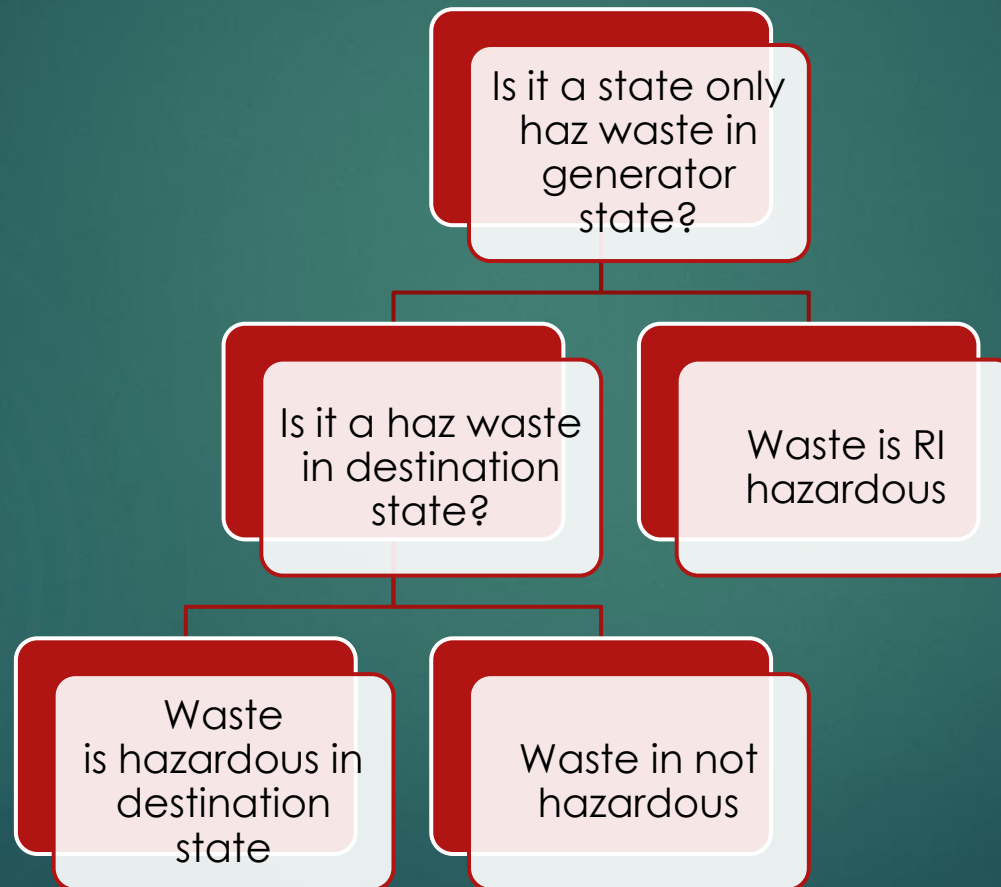
Types of Hazardous Waste

- Characteristic Wastes (D codes) 40 CFR 261.20
 - Ignitability (40 CFR 261.21)
 - Corrosivity (40 CFR 261.22)
 - Reactivity (40 CFR 261.23)
 - Toxicity (40 CFR 261.24) i.e. D008= waste with >5 mg/l lead
 - TCLP test.
 - TCLP vs. Totals
- Listed Wastes (F, K, P and U codes)
 - The F and K Lists (40 CFR 261.31) Generated by certain processes and industries. i.e. spent halogenated solvent waste (F001)
 - The P and U Lists (40 CFR 261.32) Unused chemicals being disposed

The Hazardous Waste Identification Process



Add 2 More Steps



Treatment of Hazardous Wastes

- ▶ Only TSDF's may treat hazardous waste except:
- ▶ Generators may do limited treatment of their own waste:
 - ▶ Elementary neutralization permitted under clean water act (RIPDES)
 - ▶ Wastewater treatment units
 - ▶ Totally enclosed treatment units
- ▶ Emergency responders may do treatment in an emergency to protect human health or the environment
- ▶ Generators may obtain Emergency permit to treat waste not safe to transport.
- ▶ A RCRA Corrective Action Permit can be obtained to treat RCRA Hazardous Waste that has been released to the environment (i.e. contaminated soil or groundwater)

Programs that Regulate Both Wastes and Products

- ▶ These Standards may apply to your waste activities in addition to waste requirements
- ▶ USDOT Hazardous Materials Transportation Act (49 CFR)
- ▶ OSHA Chemical Hazards and Toxic Substances (29 CFR 1910)
- ▶ Nuclear Regulatory Commission Regulations (10 CFR 20)
- ▶ Underground Storage Tank Requirements
- ▶ Aboveground Storage Tank Requirements

USDOT HAZARDOUS MATERIAL

- ▶ Based on Hazard of Release



Hazardous Materials Transportation (49 CFR)

- ▶ Governed by USDOT Hazardous Materials Transportation Act
- ▶ Covers any material transported on public roads, waterways, railroads or by air.
- ▶ Governs transportation of products or waste.
 - ▶ *a hazardous material means a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has designated as hazardous under section 5103 of Federal hazardous materials transportation law*
- ▶ Covered subjects:
 - ▶ Container type
 - ▶ Container labeling
 - ▶ Shipping documents
 - ▶ Placarding

Hazardous Material Transportation

- ▶ Must meet the definition of a “**Hazardous Material**”
- ▶ Definition is based on physical characteristics of waste
- ▶ States can enforce HMTA regulations or their own identical standards but..
- ▶ States **may not** be more stringent or have a different standard than 49 CFR standards. This is known as federal preemption.
- ▶ Enforced by USDOT and RI state police not RIDOT

Different Kinds of Hazardous



OSHA Hazardous Substances

OSHA lists hazardous substances that relate to worker safety

Requires employees be informed about potential exposure to chemicals they work with.

Requires 40 Hour HAZWOPER training and 8 hour recertification for those who work with Hazardous Substances.

CERCLA, Superfund and State Remediation Programs

- ▶ CERCLA defines a list of Hazardous Substances that, if they have been released to the environment, may require cleanup under federal program. Highest priority sites known as “Superfund” Sites.
- ▶ Action and cleanup levels often based on risk.
- ▶ RI Remediation Regulations list out its own list of Hazardous Substances that make a site regulated under the program.
 - ▶ RI has set numerical standards for levels of hazardous substances that are allowable in soils and groundwater.
 - ▶ Exceedance of these levels may require:
 - ▶ Treatment
 - ▶ Removal
 - ▶ Environmental Land Use Restrictions



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CERCLA and State Hazardous Waste Cleanups

- ▶ You are not exempt from Hazardous, Medical and Solid Waste Regulations!
- ▶ If you dig up a waste you must characterize and dispose of it
- ▶ If you dig, pump or otherwise remove hazardous waste you must:
- ▶ Get an EPA ID number, use of manifest and dispose of it via licensed transporter at licensed facility.

or

- ▶ Get a RCRA Corrective Action Permit for onsite treatment or disposal.

DEM Hazardous Substance

► Site Remediation Program

- Example: lead, arsenic, benzene
- Must be released into the environment
- Numbers for soil and groundwater



Hazardous Substances

- ▶ Cleanup numbers based on possible use.
- ▶ Lower than haz waste numbers but based on totals not TCLP
- ▶ Contaminated soils may be regulated but not necessarily hazardous waste

Toxic Substances Control Act (TSCA)

- ▶ EPA regulates potential risks from new and existing chemicals and acts to address any unreasonable risks chemicals may have on human health and the environment.
- ▶ Affects Waste Programs mostly because it regulates Polychlorinated Biphenyls (PCB's)
- ▶ Usually related to sources of > 50 ppm PCB

Different Kinds of Hazardous



Radioactive Materials- 10 CFR 20

- ▶ Regulated by RI Department of Health/Radiation Control Program and US Nuclear Regulatory Commission.
- ▶ Generation, use, transportation and disposal are all regulated.
- ▶ Regulates any radioactive material whether a waste or product. Examples include:
 - ▶ Radiological materials used for medical treatment and diagnosis (x-rays, radiation treatments, radioactive tracer compounds, etc.)
 - ▶ Sensors with a radioactive source used in testing material density
 - ▶ Spent Nuclear Fuels
 - ▶ Other items contaminated from use around radioactive materials (i.e. PPE)



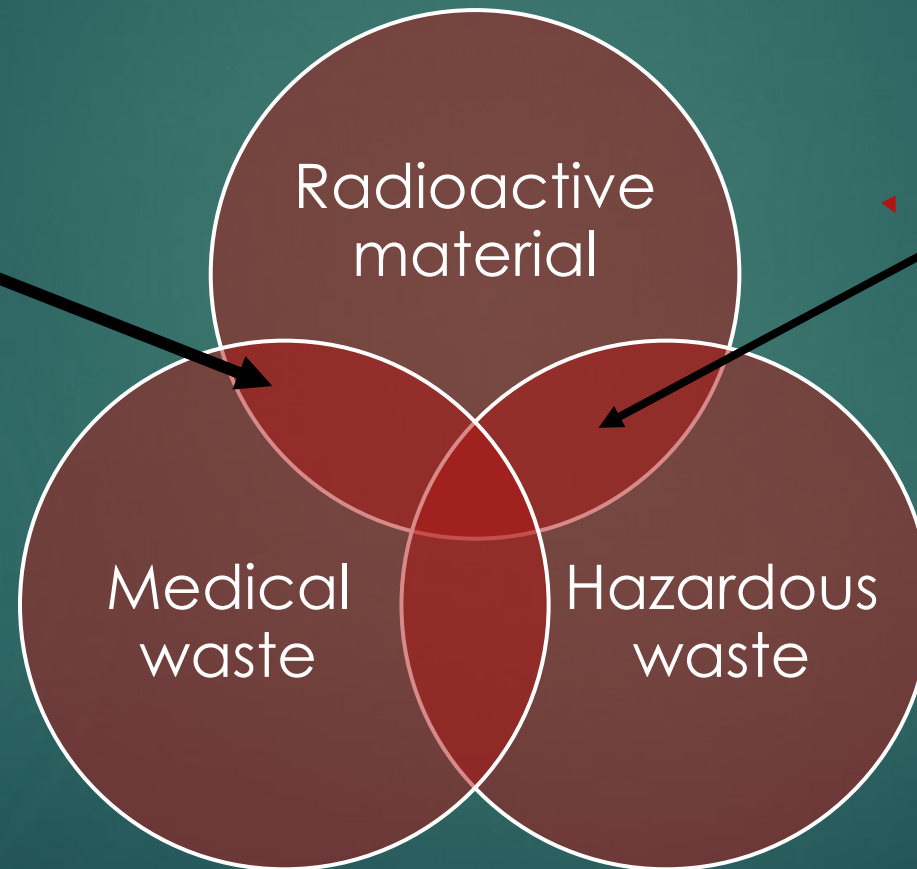
Uses of Radioactive Material

- ▶ Therapeutic Medicinal Uses
- ▶ Diagnostic Medicinal Uses
- ▶ Gauges, industrial radiography and well logging
- ▶ Research and Development
- ▶ Also may encounter low level radioactive waste as:
 - ▶ Material from areas with higher radioactive background levels
 - ▶ Material where radioactive materials have become concentrated (sewage or coal ash)

Affect on Regulatory Programs

- ▶ Many waste facilities screen for radioactive compounds with Geiger counter.
 - ▶ Usually not set to a numerical standard but at 3 X background radiation
 - ▶ You cannot “treat” radioactivity. Only 2 ways to deal with it:
 - ▶ Decay This ranges from a fraction of a second to billions of years. Cannot be hastened or extended.
 - ▶ Containment- based on nature or radiation you can contain it with materials ranging from a piece of cloth to many feet of lead.
- ▶ Can Affect:
 - ▶ Medical waste (common)
 - ▶ Solid waste (rare)
 - ▶ Hazardous waste (even more rare)

Usually from
diagnostic
procedures



Radioactive
material

Medical
waste

Hazardous
waste

◀ Mixed Waste

Above Ground Storage Tanks

- ▶ Regulated by Office of Emergency Response for certain materials
- ▶ Also subject to Community Right to Know Laws



Underground Storage Tank Programs

- ▶ Federally Delegated Programs
- ▶ UST Regulations relate to storage of products underground
- ▶ LUST Regulations relate to cleanup of releases from underground storage tanks.



Disaster Debris- Everything, Everywhere all at once



Image from FEMA

Contact Information

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