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**Madison Environmental
Resourcing Inc.**

Medical Waste Awareness

Purpose

- **To give you a general awareness of infectious and hazardous pharmaceutical waste streams.**
 - Regulations that apply
 - Types of waste
 - How to collect
 - Package and shipping requirements

Wisconsin Administrative Code Regulations

- **Chapter 291 - General hazardous waste rules**
- **Infectious**
 - DNR NR 526 Wisconsin Administrative code
- **Hazardous**
 - NR 662 - Generator standards
 - NR 663 - Transporter standards
 - NR 664 – Treatment, storage and disposal
 - NR 673 – Universal waste

Regulations that apply

- **DOT**

- HAZMAT

- Department of Transportation (DOT) 49 CFR
 - Training: Required to sign manifest, recertify every 3 years. 49 CFR 172.702
 - Training Topics 172.704

- **OSHA**

- Hazardous Communication

- Training: Annually - Similar to OSHA 29 CFR 1910.200

- **EPA**

- RCRA - 40 CFR 262/265

Who Manages Waste at Health Care Facilities?

- **Physicians, nurses, laboratory technicians, pharmacy, ancillary, support staff and IT support staff can all generate waste.**
- **All employees who may come in contact with, dispense, or deliver any pharmaceutical, must be trained on proper disposal.**
- **All training must be documented.**



What Are the Consequences of Improper Waste Management?

- **The DNR, DOT and U.S. EPA can take enforcement action when businesses do not properly manage their wastes.**
- **Civil enforcement penalties for noncompliance**
 - \$10,000 to \$32,000 per day per violation
 - Willful - \$100,000 plus prison time
 - Depends on:
 - type of waste mismanaged
 - the seriousness of the violation

What Are the Consequences of Improper Waste Management?

- **DOT fine**
 - \$500 to \$15,000 per violation
 - Typically several are found

- **Person of authority is held accountable**
 - CEO
 - Pharmacist
 - Directors

Infectious waste

- **Infectious waste means waste capable of producing an infectious disease because it contains pathogens of sufficient virulence and quantity so that exposure to the waste by a susceptible human host could result in an infectious disease**

Regulated Medical Waste

- **Liquid or semi liquid blood or other potentially infectious material**
- **Contaminated items that would release blood or other material if compressed**
- **Contaminated sharps, Needles, scalpels**
- **Pathological – tissue, body parts**
- **Trace chemotherapy waste**

Modes of Transmission

- **Blood to blood**
- **Must be a portal of entry – open skin, eyes, nose, mouth**
- **Piercing skin – needlestick, abrasion**
- **Sexual transmission**
- **Not in saliva, urine, sweat or tears.**

Universal Precautions

- **Method of infection control that treats all human blood and other potentially infectious material as capable of transmitting pathogens**
- **Follow your facility controls**
 - Protect employees from exposure
 - Practice safe handling procedures
 - Follow proper packaging and manifesting

Personal protective equipment

- **Gloves**
- **Eye and face protection**
- **Respiratory protection**
- **Protective clothing**

Prevention

- **Wash hands with anti-microbial soap – 20 seconds**
- **Rinse with cool water**
- **Dry well with a disposable paper towel**
- **No water available use alcohol gel**

Packaging Groups (PG)

- **Indicate the degree of danger the material presents during transportation in commerce**
- **49 CFR 173.24, 173.197 and table 172.101**
- **PG indicates packaging requirements**
 - PG I Great Danger
 - PG II Moderate Danger
 - PG III Minor Danger
- **Regulated Medical Waste must be packaged in containers that meet PG II performance level**

Packaging

- Container must be lined with a certified biohazard red bag
- The top of the bag must be tied by gathering and twisting the neck of the bag and using a hand knot or zip tie. “Goose neck”
- Inner contents cannot leak when the bag is upside down (no free flowing liquids)
- Secure the lid on the container
- Auto-locking mechanisms must be properly lined up



Labeling Requirements

- **Universal biohazard symbol (29 CFR, Section 1910.1030)**
- **Regulated medical waste, n.o.s.**
- **Identification number—UN3291**



Shippers Certification

- **When you sign a shipping paper (manifest or BOL) you are confirming the following on behalf of your facility:**
 - Materials contained in this load are properly described.
 - Properly packaged.
 - Properly marked and labeled per USDOT.
 - Agreement to volumes transported.

Shipping Papers

- Contained in 49 CFR 172.200 (Entries must be legible and in English)
- All shipping papers must contain the following:
 - Proper shipping name of waste—regulated medical waste, n.o.s.
 - Hazard class and division—6.2
 - Waste identification number—UN 3291
 - Packaging group--PGII
 - Total volume— 145 lbs.
 - Shippers certification statement (generator signature)
- Emergency response number (manned 24/7)

State of Wisconsin
Department of Natural Resources

WISCONSIN INFECTIOUS
WASTE MANIFEST
Form 4400-176

State Manifest Document Number
WI – MA

Instructions on back of ply 1. Please type or print firmly.

GENERATOR

1. Name & Address
 UW Hospital & Clinics
 600 Highland Avenue
 Madison, WI 53792
Emergency 24/7 Contact Number: (608) 263-5205

2. Phone: **(608) 263-6482** Customer Number: 1000 Location Number: 01

3. Type of Generator: (T one)

9 Hospital **Regulated Medical Waste, n.o.s.**
 9 Clinic **UN #3291, PG II, Hazard Class 6.2**
 9 Nursing Home **Infectious substances, affecting humans**
 9 Sharps Collection Station **UN #2814, Hazard Class 6.2**
 9 Other (specify) _____

4. Type of Infectious Waste (T all that apply)
 9 Sharps (contaminated, unused or disinfected)
 9 Bulk blood and body fluids from humans
 9 Human tissue
 9 Microbiological laboratory waste
 9 Tissue, bulk blood or body fluid from animals carrying a zoonotic infectious agent
 9 Chemo
 9 Other _____

5. Quantity (Weight) of Infectious Waste: 9 Measured Pounds _____ 9 Estimated Pounds _____

6. Number and type of containers: _____

7. I certify that the contents of this waste are fully and accurately described, contained and labeled for transport according to applicable laws & regulations.

_____ print or type name _____ signature _____ date signed

TRANSPORTER

9. DNR Lic. No.: 12143

10. Phone: (608) 257-7652

8. Name & Address
 Madison Environmental Resourcing, Inc.
 1310 W. Badger Road
 Madison, WI 53715
Emergency 24/7 Contact Number: (608) 257-7652

11. I certify that I have received the infectious waste as described in items 5 and 6.

_____ print or type name _____ signature _____ date signed

TREATMENT FACILITY

13. DNR Lic. No.: 03742

14. Phone: (608) 257-7652

12. Name & Address
 Madison Environmental Resourcing, Inc.
 1310 W. Badger Road
 Madison, WI 53715
Emergency 24/7 Contact Number: (608) 257-7652

15. I certify that I have received the infectious waste as described in items 5 and 6.

_____ print or type name _____ signature _____ date signed

16. I certify that the waste described herein has been rendered non-infectious in accordance with all applicable laws & regulations.

_____ print or type name _____ signature _____ date signed

DISPOSAL FACILITY

18. DNR Lic. No.: 0318

19. Phone: (608) 838-9555

17. Name & Address
 Dane County Landfill Site #2
 7102 East Broadway
 Madison, WI 53704

20. ADDITIONAL INFORMATION/DESCRIPTION OF DISCREPANCIES

Manifest flow

- **Pick up:**
 - Generator signs manifest or Authorized agent representative signs if an agent letter is on file.
- **Transport:**
 - Transporter signs and then a copy is emailed to the designated contact.
- **Treatment:**
 - Treatment plant treats the waste and signs off.
- **Disposal:**
 - Waste is taken to landfill. A copy of manifest is emailed to designated person. This is the grave copy.

EBOLA

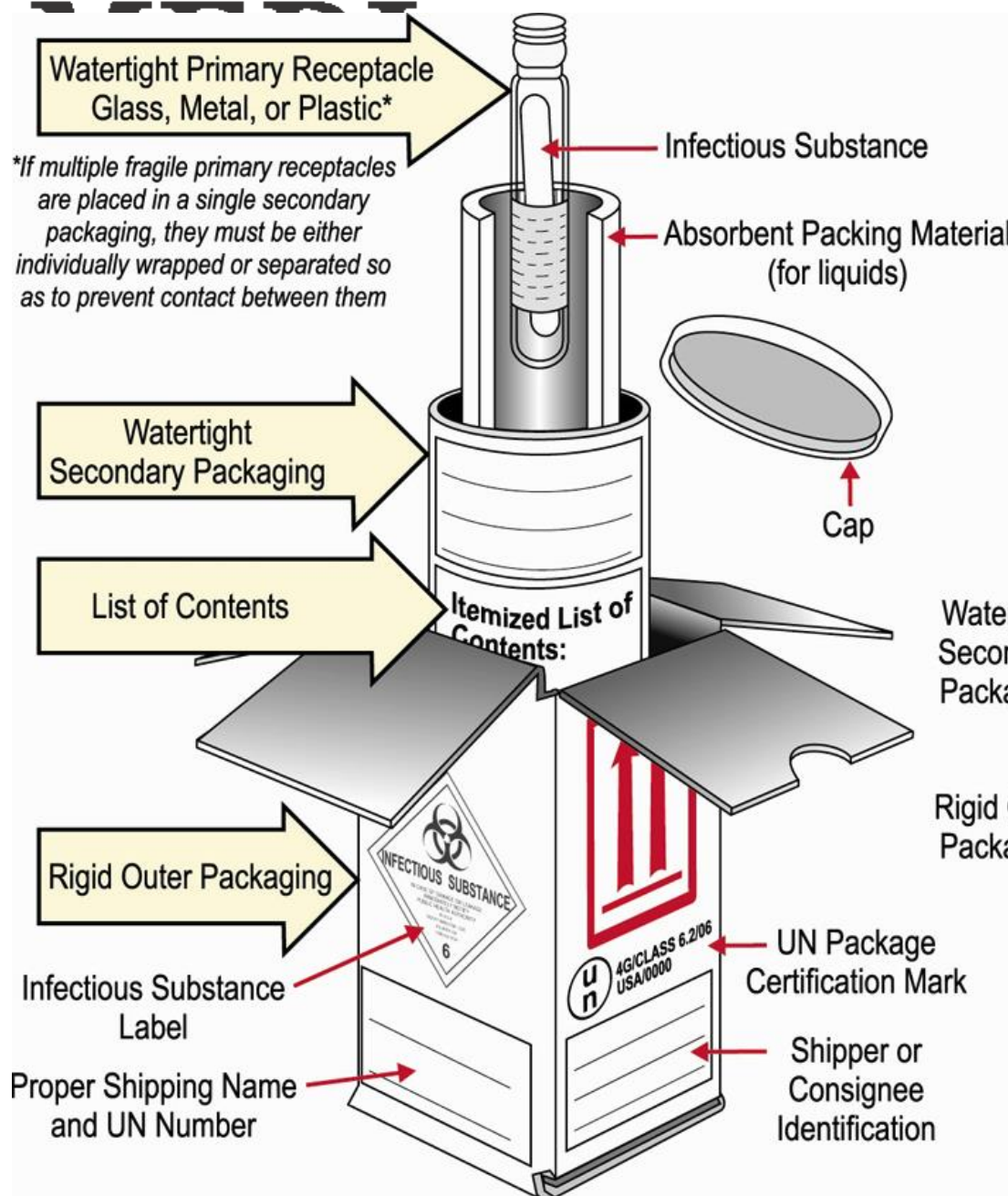
- **CDC**
 - Infectious medical waste
- **DOT**
 - Category A infectious waste
 - 49 CFR 173.134(1)(i)

Category A

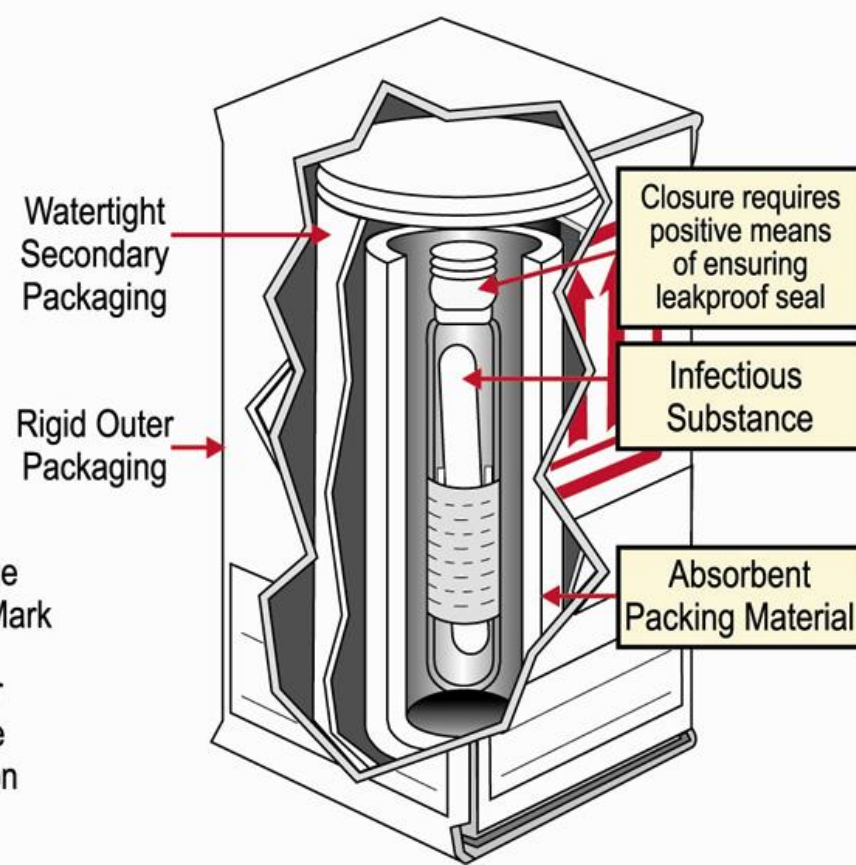
- An infectious substance is a material known or reasonably expected to contain a pathogen that is in a form capable of causing permanent disability or life threatening or fatal disease in otherwise health humans or animals when exposed to it
- Examples
 - Ebola
 - Rabies
 - Polio

Things to know about disposal

- **Ebola, CJD and other category A waste must be separated from other medical waste.**
- **Notify hauler and destruction company you have category A waste.**
- **Category A waste requires special certified packaging to ship.**
 - Triple pack
 - Primary – watertight
 - Secondary – watertight
 - Third – Rigid packaging



Cross Section of Closed Package



Things to know about disposal

Disposal companies

- Any company can transport as long as:
 - HAZMAT certified
 - Proper packaging and labeling
 - Special exempt packaging permit from DOT
 - Category A certified package

Proper packaging steps for EBOLA

- 1. Deposit waste into a 1.5 mil biohazard bag. Max 22 lbs.**
- 2. Spray contents with disinfectant then tie bag shut. Spray and wipe down outside of the bag**
- 3. Place bag 1 into bag 2. Spray and wipe down the outside of the bag 2.**

Proper packaging steps for EBOLA

4. Place bag 2 into the outer rigid container.

1. Plastic UN approve barrel
2. Triple fiber barrel with a 6 mil liner

5. Wipe down outside of outer container with disinfectant then move to secure storage area.

- **Manifest separately from other medical waste.**
- **Shipping**
 - UN 2814 Infectious substances, affecting humans, 6.2, PGII
 - Ship directly to treatment facility
 - Follow special permit requirements
- **Destruction Methods**
 - Autoclave
 - Microwave
 - Thermal

Pharmaceutical Waste

- ❖ **There are both legal and environmental reasons for starting a pharmaceutical waste collection program.**
 - The EPA enacted the Resource Conservation and Recovery Act (RCRA) in 1976 to protect the environment and it applies to every business, school, hospital, etc.
 - The original focus was on manufacturing but ultimately uncovered improper disposal of wastes from schools and laboratories in the 1990s and hospitals in the last decade.

What Are the Environmental and Health Concerns?

- **Products used in the health care industry, such as chemotherapy drugs, some pharmaceuticals, etc., can harm the environment and human health if they are not disposed of properly.**
- **For many years, flushing excess amounts of chemicals down the drain or disposing of hazardous pharmaceuticals with regulated medical waste has been a common practice.**

What Are the Environmental and Health Concerns?

- Recent studies indicate that some of these chemicals are passing through wastewater treatment systems and entering our lakes and stream.
- May affect drinking water supplies for local municipalities and the ecosystem.



Medications in the Environment

How Does This Apply To Healthcare Industry?



- **Any Partially Used Medication:**
 - ✓ Partial Vials, Bottles
 - ✓ Partial IV Bags and Tubing With Medicine Additives
 - ✓ Loose Pills, Tablets, Capsules
 - ✓ Aerosol Inhalers
 - ✓ Hand sanitizer, foam or gel
 - ✓ Creams, Ointments, Medicated Shampoos (lindane, selenium sulfide)
 - ✓ Patient Prep-Alcohol and Iodine
- **Empty Vials/Containers That Held Acutely Toxic (P-Listed) Drugs**
- **Nicotine and Warfarin**

What wastes are regulated by the EPA?

D-list: “Characteristic” waste:

- **Wastes have one of four characteristics:**
 1. Ignitability
 2. Corrosivity
 3. Reactivity
 4. Toxicity – if concentration of chemical is above regulatory level of mg/ml

U-List: “Toxic” waste

- **Many chemo drugs**

P-List: “Acutely Hazardous”

- **Includes:**
 - Arsenic trioxide
 - Nicotine
 - Warfarin
 - Physostigmine
 - Epinephrin (not salts)
- **Requires more stringent disposal, including packaging.**
- **Most hazardous.**

Characteristics

- **Ignitability**
 - Solutions containing >24% alcohol
 - Silver nitrate, resin
- **Reactivity**
 - Nitroglycerine
- **Corrosivity**
 - Glacial acetic acid
 - Sodium hydroxide
- **Toxicity**
 - Metals, Chloroform, Lindane, M-cresol

Generator size

WDNR chapter NR 662

Generator size	Storage time (days)	Haz Waste (lbs/mo) (max lbs on site)	Acutely Toxic "P" (lbs/month)
Conditionally Exempt Small Quantity (CESQG)	No limit	<220 lbs/mo 2200 max lbs	2.2 lbs/mo Max on site or comply with Large
Small Quantity	180	2200/mo 6600 max lbs	2.2 lbs/mo Max on site or comply with Large
Large Quantity	90	No Limit	No limit

Where Do Hazardous Pharmaceuticals Go?



- Drugs and chemicals should be placed in a black container labeled “HAZARDOUS WASTE”- MEDS.
- Drugs and empty containers that contained P-listed waste will be collected separately in a 1.5 qrt container labeled “HAZARDOUS WASTE”- Nicotine, Warfarin.
- Sharps or blood contaminated items that are mixed with pharmaceutical waste will be put in a container labeled “**HAZARDOUS WASTE**”- MEDS- **Dual Waste Pharmaceuticals.**

MERI Chemotherapy Waste

- **Two types of chemotherapy waste.**

- **Bulk**

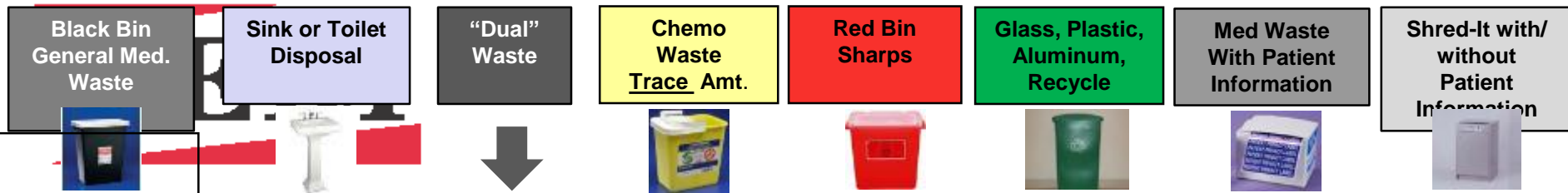
- Bulk chemo is any unused drug and any PPE or rag that has been spilled on or used to clean up spills.
 - Bulk chemo waste is hazardous waste and goes in the black box.

- **Trace**

- Trace chemo are empty containers and PPE worn but not spilled on.
 - Trace chemo sharps should go into a hard sided container.
 - Trace chemo goes in a yellow bag (**no loose sharps**) or container labeled “Trace Chemo”.



PHARMACEUTICAL WASTE MANAGEMENT



NO CONTROLLED SUBSTANCES!

NO SHARPS!

- Vials (full or partial). (For empty vials-destroy patient info and dispose in regular trash.)
- Creams/ Ointments/ Lotions/Pastes
- Warfarin (tablets and packaging)
- Nicotine (and packaging)
- Solid dosage medications – opened (tablets, capsules)
- IV Medication Drips
- Arsenic Trioxide
- Insulin
- Benzocaine spray
- Lindane
- Selenium Sulfate
- Phenol
- Full or partial chemo agents
- Epinephrine (unused EpiPens; used pens go in sharps bin)
- Physostigmine
- Chloral Hydrate
- Erythromycin Ointment
- Silver nitrate applicators (unused)
- Inhalers

MAINTENANCE FLUIDS

TPN

NOTE: If patient information is not present, dispose of empty bags in trash. If patient information is present, destroy by applying privacy label and then dispose of in regular trash OR peel label & put in Shred-It bin.

If patient information cannot be destroyed, dispose of in black bin.

CONTROLLED SUBSTANCES

Frequently used controlled substances include:

- Hydromorphone
- Morphine
- Lorazepam
- Oxycodone
- Diazepam
- Meperidine
- Codeine
- Midazolam
- Fentanyl

Narcotic waste should not be placed in Pyxis return bin.

WITNESSED & DOCUMENTED in Pyxis: Withdraw remaining controlled substances from vial or IV and squirt down drain. Narcotic tablets should be

RARE AVOID WHEN POSSIBLE

“Dual Waste” defined as hazardous or non-hazardous drugs mixed in body fluids.

Example: Mitomycin used in Urology procedures

Bin MUST be labeled as Dual Waste

Materials that were used to prepare or administer chemotherapy drugs.

- Chemo Vials (empty)
- Syringes/needles used in Chemo drug preparation
- IVs and tubing (empty)
- Items in contact with chemo drugs: Gowns, gloves, goggles, wipes, etc.

NO MEDICATIONS!

- All syringes with needles
- Used EpiPens
- Empty ampules
- Scalpels
- Lancets

All containers with less than <3% of content can be placed into containers

Plastics

- 1-7 Can be recycled by Waste Management

Aluminum

- Such as: Soda cans, soup cans

Glass

- Such as: Glass vials, beverage containers, vases

Empty IVs, tubing, or vials with patient Information:

Destroy patient information by applying privacy label. Then dispose of in **REGULAR TRASH.**

•Peel Patient information label and put in Shred It bin

All paper should be put in gray Shred It bins.

Includes: Patient information with labels, training documents, patient instructions, paper with staples, financial information, newspapers, magazines, folders without metal

Excludes: Paper or binder clips, Kleenex, three ring binders, spiral notebooks, laminated sheets, cardboard

Important Notes

- **No DEA Regulated Material/Controlled Substances in the black container– witness waste. Must be unrecoverable.**
- **No needles or sharps in the reusable black container.**
- **Crimp and secure IV tubing, then wrap around bag before placing into container**
- **Empty (<3% of volume) go in trash**



Dual Wastes

Blood in IV tubing with chemo drug

- Place in red bag and put in black box with dual waste label.
- Avoid making this if possible.
- Keep separated from other waste.
- Label **“Dual Waste”**



Main Hazardous Accumulation Area

- **Safety issues**

- Hazardous waste sign posted.
- Emergency contact phone numbers and phone location.
- Fire extinguisher within 75 feet
- Eye wash within 55 feet. (can be portable)
- Evacuation map.
- Spill kit available.
- Ensure container labels visible.
- Write the date the container entered the room on the container.

Conclusion

- **Explained the different regulations that apply**
- **Identify the risks associated with non-compliance**
- **Discussed the types of waste and methods of collection**
- **Described the proper packaging requirements and shipping papers for the different waste types**
- **Thank you for your attention**



Thank You

Contact information

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