

# Pharmaceutical Waste Program for Inpatient Pharmacy



**Portland Service Area**

**Pharmacy Leadership Team**

# What is Pharmaceutical Waste?

- Pharmaceutical waste is waste generated through IV preparation, compounding, spills or breakage, partially used vials syringes, and IV's, and outdated products
- Pharmaceutical agents (solid, liquid, or gas) that can pose a substantial hazard to human health or the environment when not properly managed are deemed hazardous
- These agents have been characterized and identified by:
  - Regulatory Agencies (EPA, OSHA, DOT)
  - Professional consensus groups (NIOSH, NTP)

# Hazardous Waste in Pharmacy

- Pharmacy will now sort pharmaceutical waste designated as regulated and/or hazardous from that which is non-regulated and not described as hazardous
- New bins will be utilized within pharmacy in order to differentiate this waste for transport and appropriate disposal once it leaves the pharmacy



# Why Separate Pharmaceutical Waste?

- **Employee Safety**
  - To minimize risks associated with managing hazardous medications
- **Environmental Safety**
  - To keep pharmaceutical waste out of our groundwater and landfills and reduce potential harmful effects to our environment
- **Regulatory Compliance**
  - EPA regulations regarding hazardous waste management are increasingly being applied to hospitals and pharmacies.

# Which Drugs are Hazardous?

- Those defined by the Environmental Protection Agency
  - Resource Conservation and Recovery Act (RCRA) creates lists of regulated waste:
    1. Specifically listed waste
      - P-list = “acutely toxic” chemicals
      - U-list = “toxic” chemicals
    2. Waste exhibiting particular hazardous characteristics:
      - D-list = ignitable, corrosive, containing heavy metal (i.e. mercury, silver) or reactive

# P-Listed Waste - “acutely toxic”

- Arsenic Trioxide
- Nicotine
- Physostigmine
- Warfarin



- “Discarded products” or mixtures containing at least 3% of these P-listed materials are regulated as hazardous waste.
- Also, any **empty containers** (vials, etc) formerly holding P-listed waste must also be managed as hazardous waste.
  - Exception: wrappers from oral agents (nicotine, warfarin) can go in trash
- Waste must be incinerated at licensed facility.

# U-Listed Waste - “toxic”

- Chloral Hydrate
  - Chlorambucil
  - Cyclophosphamide
  - Melphalan
  - Phenol
    - Cepastat Lozenges
    - Chloraseptic Spray
  - Reserpine
  - Selenium Sulfide
  - Mitomycin or Daunomycin
- “Discarded products” or mixtures containing at least 10% of these U-listed materials are regulated as hazardous waste.
  - Empty containers are not regulated (containers do not need to be rinsed, just “empty by conventional means”).
  - Waste must be incinerated at licensed facility.

# D-Listed Waste

- Contain mercury preservative:
  - Blephamide
  - Neo/Poly/HC
  - Neo/Poly/Gra
  - Flurbiprofen
- Contain other heavy metals:
  - Chromium
  - Thermazene
  - Silver Sulfadiazene
- Contain m-cresol:
  - Insulin
  - Forteo
  - Levemir
- Acetone (ignitable)

- Waste containing these “toxic characteristics” have potential to leach from a landfill into the groundwater.



# D-Listed “Ignitable”

These materials have a flash point less than 140° F or are mixed with more than 24% alcohol

- ALL AEROSOLS
- Alcohol
- Alprostadil
- Aluminum Chloride Soln
- Ammonia
- Androgel-Testosterone Gel
- Benzoin
- Betamethasone
- Calcipotriene
- Ciclopirox Soln
- Clindamycin Soln
- Clobetasol Propionate
- Collodion
- Dexamethasone
- Dimethyl Sulfoxide
- Fluocinonide Soln
- Hurricaine Gel
- Mastisol
- Podofilox Gel
- Podocon
- Prednisone
- Ritonavir Soln
- Tacrolimus

# D-Listed “Corrosive” or “Oxidizer”

- Potassium Hydroxide (alkaline)
- Trichloroacetic Acid (acid)
- **Expired/unused silver nitrate** (oxidizer)

- Corrosive wastes are liquids with pH less than 2 or greater than 12.5.
- Oxidizers can react with other hazardous materials when mixed together.
- Because these materials are not compatible with ignitable liquids, they cannot be collected in the same bin as other hazardous waste.



# Other Hazardous Drugs

- RCRA went into effect in 1976
  - Drugs such as chemotherapy agents were not reviewed
  - Professional consensus groups have developed standards to identify additional hazardous drugs based on recommendations from organizations including:
    - OSHA (Occupational Safety and Health Administration)
    - NIOSH (National Institute for Occupational Safety and Health)
    - National Toxicology Report on Carcinogens
- PharmEcology: A company that aids in meeting EPA regulations and following recommendations from consensus groups
  - Provided Providence with additional hazardous drugs
    - List is extensive and will be provided on-site

# PharmEcology hazardous drugs

- Chemotherapy drugs
- Endocrine disrupters
- Pharmaceuticals listed as potential carcinogens
- Immuno-suppressives
- Marine pollutants
- Reproductive toxins not otherwise regulated
- Drugs listed on NIOSH Hazardous Drug Alert
- Drug formulations with LD<sub>50</sub> less than 50 mg/kg

- Doxorubicin
- Cisplatin
- Dacarbazine
- Climara
- Estrogen
- Oxytocin
- Azathioprene
- Ribavirin
- Deferoxamine
- Ketamine
- Quelicin
- Clotrimazole
- And more...

# Pharmaceutical Waste Containers

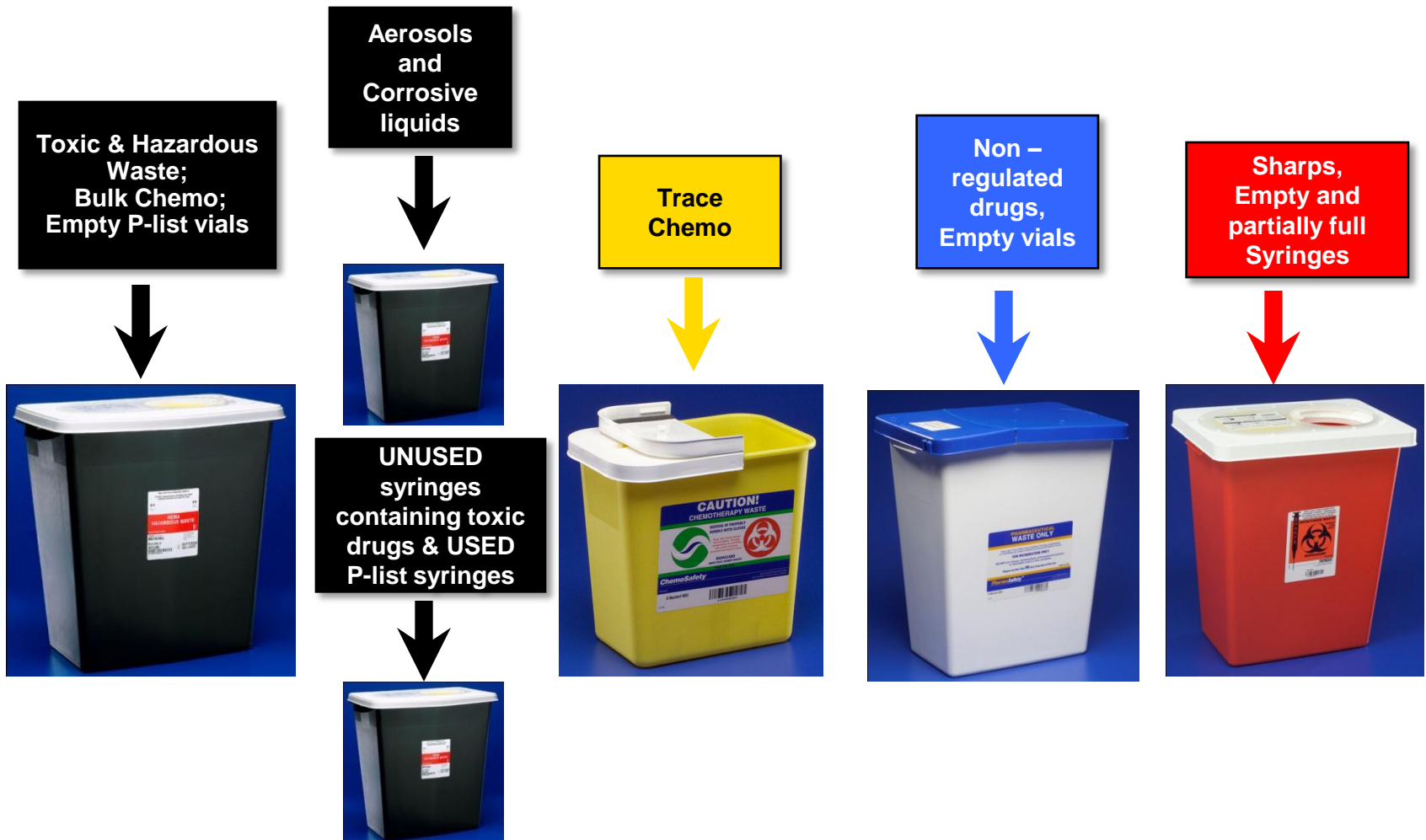
- Providence will utilize 5 different containers to segregate waste
- All pharmaceutical waste must be appropriately sorted into one of these bins



## Proper waste management:

- Protects the environment
- Protects waste handlers' health and safety
- Prevents mixing of incompatible materials
- Maintains regulatory compliance

# Pharmaceutical Waste and Disposal



# Black Bin #1 Waste: (no sharps)

- P-listed drugs
  - Including partially full or empty containers (**excluding** wrappers for oral dosage forms)
- D-listed drugs
- U-listed drugs
- Ignitable liquids
- **Bulk chemotherapy**
- PharmEcology hazardous drugs



## Black Bin #2 Waste: (no sharps or syringes)

- Aerosols – pressurized and ignitable
- Corrosive acid/bases
  - Trichloroacetic acid
  - Potassium hydroxide solution
- Oxidizers
  - **UNUSED** Silver nitrate products only (used silver nitrate goes in blue bin)
- **NO SHARPS**



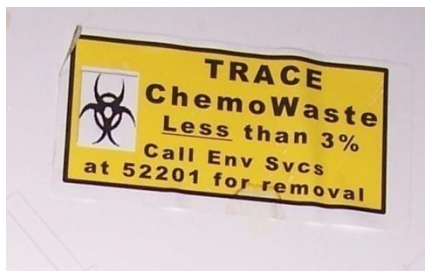
## Blue/White Bin Waste: (no sharps or syringes)

- All non-regulated drugs not identified as hazardous
  - Includes partially full and empty glass and plastic vials
    - **Exception:** Vials that contain the 4 P-listed drugs. These go in Black Bin #1
- **NO SHARPS OR SYRINGES**
- **Note:** you may recycle empty glass bottles as long as they are **TRULY EMPTY**



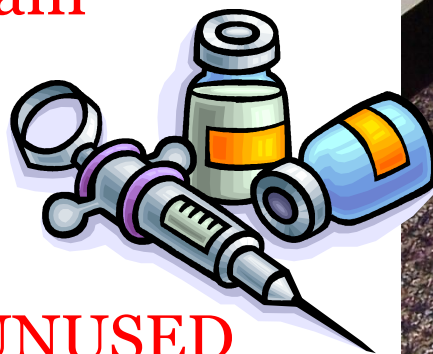
# Yellow Bin Waste: (no sharps or syringes)

- Trace Chemo **Only**
  - Empty vials, tubing, syringes, and iv bags, as well as gowns, gloves, wipes, and other items contaminated with less than 3% of chemotherapy drug.
- Bulk chemo will now go in black bin #1
- Empty syringes and sharps go in red sharps containers.



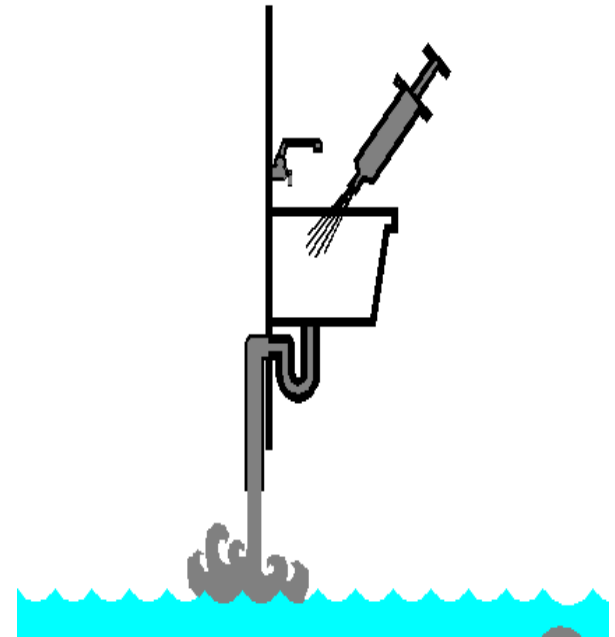
# Red Sharps Containers

- **ALL** empty syringes
  - **ALL** syringes that have been used even if they contain residual drug.
- **Exceptions:**
  - Syringes containing **UNUSED HAZARDOUS** drugs (expired medication) must go in **black** sharps container.
  - Syringes used for P-list drugs must go in **dual waste** container



# Sewer System

- IV's containing sterile water, sugar/salt solutions (i.e. NS, LR, D5LR, D5NS20K, KCl)
- **All** controlled substances



Only non-hazardous IV solutions and DEA controlled substances go down the drain

# Identifying Black Bin #1 Drugs

- There will be a **black dot placed on the shelf** or container in which the drug resides within our inventory
- There will be a printed, alphabetized **list attached to the wall** near the bin for reference
- Other containers will have a label to help identify what is to be placed in them

Add picture  
of label /  
pharmacy  
shelf

# Questions?

- See your site-specific coordinator for more information

