

A background image showing a hand holding a white pill bottle, with several white and pink pills spilling out onto a light-colored surface. The scene is brightly lit, creating soft shadows.

Pacific Lutheran University Pharmaceutical Waste Management

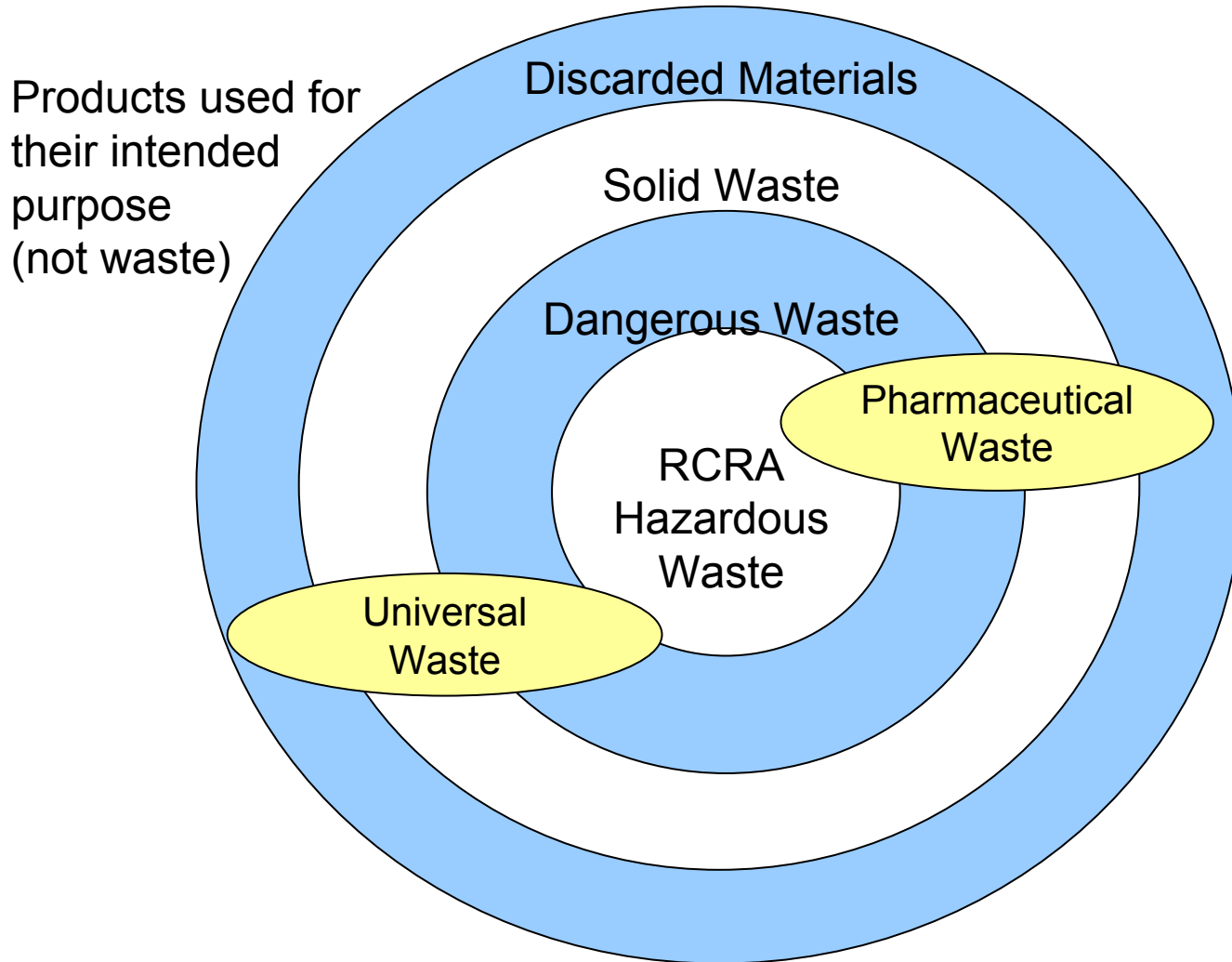
Joe Bell

EHS Manager

bellje@plu.edu

xSAFE (7233)

Universe of Waste



Hazardous Waste Regulations

Background

- State regulations can be more stringent than the federal regulations
 - Federal Regulations: Resource Conservation and Recovery Act (RCRA)
- Ecology was granted permission to implement the federal law and add to it
 - Dangerous Waste Regulations
 - Chapter 173-303 WAC

Dangerous Waste Regulations

Background

- These regulations are intended to protect human health and the environment.
- Dangerous Waste Designations:
 - Characteristic Wastes
 - Ignitable
 - Corrosive
 - Reactive
 - Listed
 - Persistent
 - Toxic

Why Do Dangerous Waste Laws Apply to Pharmaceuticals?

- Because the same things that can be therapeutic in small doses can cause harm in big doses.
- The environment and animals respond to toxins and dosages differently.
- Little bits can add up in the environment.
- Pharmaceutical wastes designate as Dangerous Wastes.

Current Management Practices ...does not destroy the drugs...

Disposal to...	Ends up in...	Designed for...	Potential risks to...
Storm drain	local waterways	rainwater	general public, aquatic environment
Garbage or dumpster	landfill	municipal solid waste	general public, workers, intact drugs reside in landfill
Toilet, sink, floor drain	sewage treatment plant	domestic sewage	plumbers, plant workers, aquatic environment, beneficial reuse of water & biosolids
	septic tank	domestic sewage	plumbers, groundwater, soil, tank pumping services
Red bag, biohazardous, infectious waste	disinfection facility	disinfection	facility workers, air, intact drugs reside in landfill

Status Quo of Pharmaceutical Waste Management

- Reverse Distribution
 - Only viable pharmaceuticals can go to reverse distribution.
- Sharps Containers With No Residual Pharmaceuticals & Regulated Medical Waste
 - Picked-up by LeMay, Inc. from Wellness Center. Waste transported to Stericycle. After sterilization then to landfill.
 - * Not allowable for pharmaceutical waste.

Dangerous Waste Regulations

Chapter 173-303 WAC

- All DW must be:
 - Designated
 - Know waste code and quantities
 - Profiled
 - Unique to PLU's various dangerous wastes and disposal facilities
 - Manifested
 - Waste sent off on Uniform Hazardous Waste Manifest
 - Counted
 - Pounds of waste counted towards generator status
 - Reported
 - On Dangerous Waste Annual Report

Designation 101

Chapter 173-303 WAC

- Three kinds of DW in Washington
 - **Characteristic**
 - Meet the definition of ignitable, corrosive, reactive or federally toxic
 - **Listed**
 - F or K (not pharmaceutical)
 - P or U
 - **WA State Criteria**
 - Meet the definition of state persistent or toxic

Characteristic Wastes

WAC 173-303-090

- **Ignitable (D001)**
 - Flash Point < 60° C (140° F)
 - Alcohol concentration > 24%
- **Corrosive (D002)**
 - pH ≤ 2 or pH ≥ 12.5
 - Corrodes Steel
 - Solid meets pH characteristic in 50% solution

Characteristic Wastes

WAC 173-303-090

- **Reactive (D003)**
 - Prone to violent change
 - Reacts violently with water
 - Generates toxic gases if mixed with water
- **Federally Toxic (D004 - D043)**
 - Concentration based
 - TCLP levels (1/20 of total concentration)
 - Toxicity Characteristic Leachate Procedure

Listed Waste

WAC 173-303-081, -082

- Discarded Chemical Products (P- and U-codes)
 - Must be unused
 - Sole-active ingredient
 - Code may also apply to spills and debris

Listed Waste

Examples of P-listed waste

- Warfarin (concentration $> 0.3\%$) – P001
- Arsenic/Arsenic Trioxide/Trisenox – P012
- Nicotine – P075
- Epinephrine – P042
- Nitroglycerin (*if it is reactive) – P081
- Phentermine (CIV) – P046
- Physostigmine – P204

Listed Waste

Examples of U-listed waste

- Mitomycin C – U010
- Lindane – U129
- Resperine – U200
- Warfarin & salts (conc < 0.3%) – U248
- Phenol – U188
- Streptozotocin – U206
- Chloral/Chloral Hydrate (CIV) – U034
- Paraldehyde – U182

WA State Criteria Wastes

WAC 173-303-100

- **State Toxic (WT01 or WT02)**
 - Waste kills fish, rats, or rabbits
 - Can book-designate, or can do bioassay
 - WT01 or WT02, depending on toxicity

Designation Exercise

Influenza Vaccine

- Is this a RCRA waste?
 - Yes
 - **D009** for mercury in the Thimerosal
- Is this a controlled substance?
 - No
- Manage as a Dangerous Waste
 - Send to a RCRA permitted facility

Designation Exercise

Cough Syrup w/ Codeine

- Is this a RCRA waste?
 - If alcohol content $\geq 24\%$, Yes – **D001**
 - If alcohol $< 24\%$, not a DW
- Is this a controlled substance?
 - Yes – Codeine is schedule drug
- Is this a State-only Toxic waste?
 - Yes – WT02
- If D001 - Manage under RCRA and DEA
 - Send to a RCRA permitted facility via secure channels in accordance with DEA regulations of a witnessed destruction
- If not D001 – Manage under DEA

Designation Exercise

Ibuprofen, Acetaminophen or Aspirin

- Is this a RCRA waste?
 - No
- Is this a controlled substance?
 - No
- Is this a State-only Toxic waste?
 - Yes – **WT02**
- Manage as a WT02 DW

Designation Exercise

Lidocaine

- Is this a RCRA waste?
 - No
- Is this a controlled substance?
 - No
- Is this a State-only Toxic waste?
 - Yes – **WT02**
- Manage as a WT02 DW

Designation Exercise

Bismuth subsalicylate (e.g. Pepto-Bismol)

- Is this a RCRA waste?
 - No
- Is this a controlled substance?
 - No
- Is this a State-only Toxic waste?
 - No
- Manage as Solid Waste

Designation Exercise

Empty Containers

- Is this a RCRA waste?
 - No
- Is this a controlled substance?
 - No
- Is this a State-only Toxic waste?
 - Yes
- Manage as WT02 DW

PLU Pharmaceutical Waste Management

- All pharmaceutical / chemotherapy wastes designate:
 - All pharmaceutical waste sent to RCRA permitted facility as Dangerous Waste
- Dual Waste:
 - Dangerous pharmaceutical waste that is also infectious
 - * Manage as Dangerous Waste
- Empty Containers:
 - Manage as Dangerous Waste
- Regulated Medical Waste:
 - Sharps, Infectious waste
 - Managed, as in the past, through LeMay, Inc.
- Solid Waste:
 - Non-regulated municipal waste

What does this mean for you?

- Management of the infectious waste does not change.
- Dual Wastes now managed as DW
 - * When free liquids left in syringe.
- Empty Containers now managed as DW
- Segregate Solid from Liquid Pharmaceuticals.
- Dispose in correct labeled container.
- Note item on correct Log.
- Attach copy of MSDS to Log.
- Call PLU Environmental Services when container full.
- Keep copy of Log when container picked up.
- Keep disposal containers in secure/locked area.

How to keep PLU in compliance

- Train employees
- Perform a thorough evaluation of your pharmaceuticals:
 - Order / Accept what your facility will use.
 - Order correct dosage shots to reduce Dual Waste.
 - Be aware of expiration dates
 - Utilize Reverse Distributors
- No pharmaceuticals rinsed down the drain
- EHS to utilize Hazardous Waste Vendor
 - Cradle -to- Grave Waste Tracking
 - Create unique pharmaceutical waste profile
- Keep all pharmaceuticals and wastes secured.

Resource Directory of Pharmaceutical Reverse Distributors

Certified Returns (L.L. Horizons) 800-461-1145

EXP Pharmaceutical Services 800-350-0397
www.expworld.com

Guaranteed Returns (Devos Ltd.) 800-473-2138
www.guaranteedreturns.com

Inventory Management Company 800-828-5758
www.hospitalinventory.com

Maximum RX Credit, Inc. 800-932-6724
www.max-rx-credit.com

MedShop 800-239-9677
www.gomeshop.com

Med-Turn, Inc. 800-488-5735
www.medturn.com

National Pharmaceutical Returns, Inc. 800-470-7725
www.npreturns.com

OneSource Returns (Excess Management Systems, Inc.) 800-835-9440
www.onesourcesreturns.com

Pharmaceutical Credit Corp. 800-487-4308
www.pcccredit.com

Pharmaceutical Returns Service, Inc. 800-215-5878

Pharmacy Software Solutions, Inc. (Direct Return) 847-549-1171
www.directreturn.com

Professional Returns 480-216-9676

Reliable RX Return 800-215-0727
www.reliablereturns.com

Return Logistics International Corp. 912-748-5100
www.returnlogistics.com

RX Automation, Inc. 800-474-9090
www.rxautomation.com

PHARMACEUTICAL WASTE



PHARMACEUTICAL
WASTE
(SOLID)

PHARMACEUTICAL
WASTE
(LIQUID)

QUESTIONS?

