

Pharmaceuticals in the environment: management strategies

Laurie Tenace

Florida Department of Environmental Protection
Bureau of Solid & Hazardous Waste
Waste Reduction Section

Presented to the Wakulla Springs
Basin Workgroup, 2/4/2010



Where's my
Prozac?

To be covered:

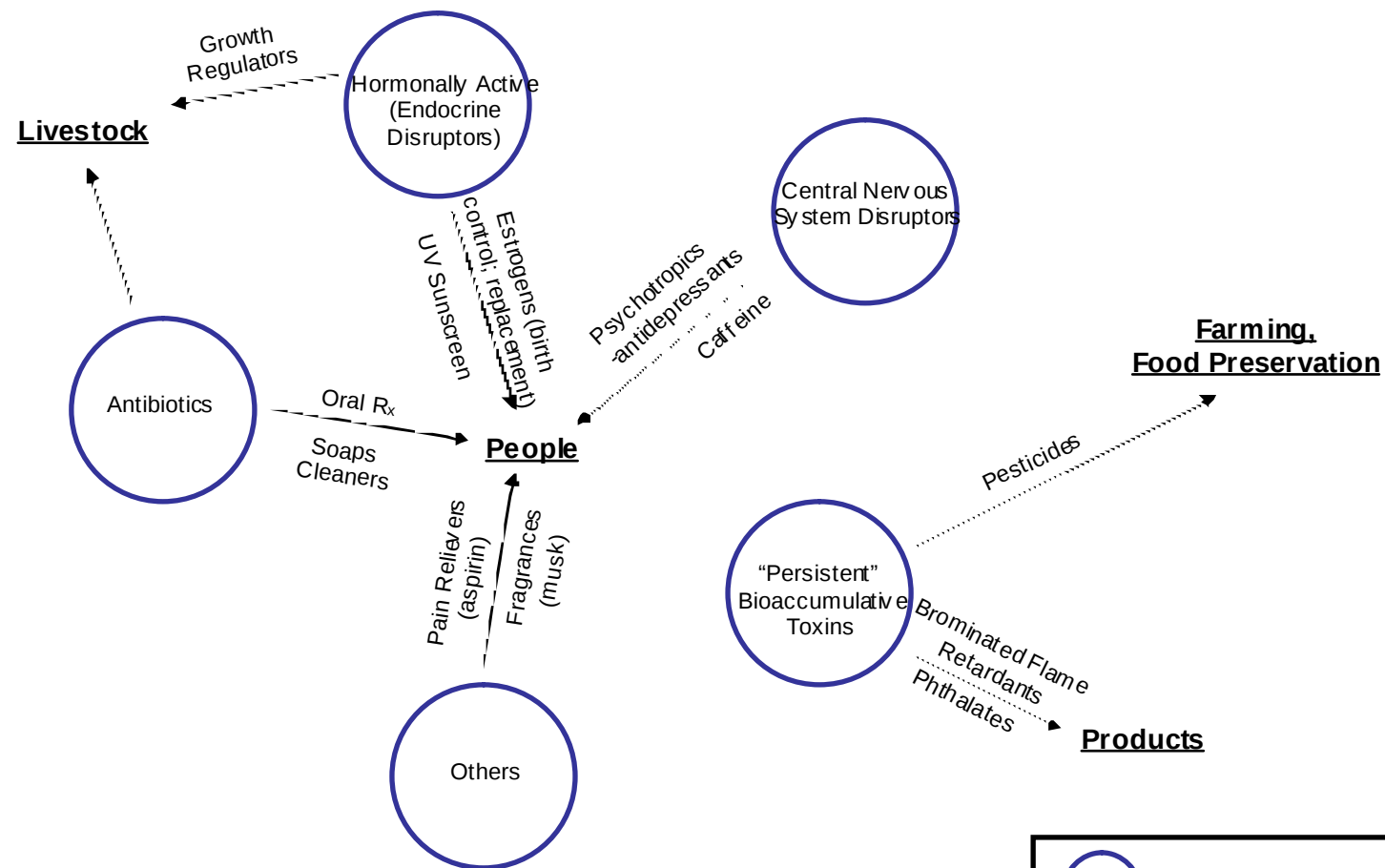
- How we have looked at the problem
- What is needed to make changes
- How it is being addressed – by us and others
 - Disposal guidelines
 - Take back programs
 - Legislation

What do we call it?

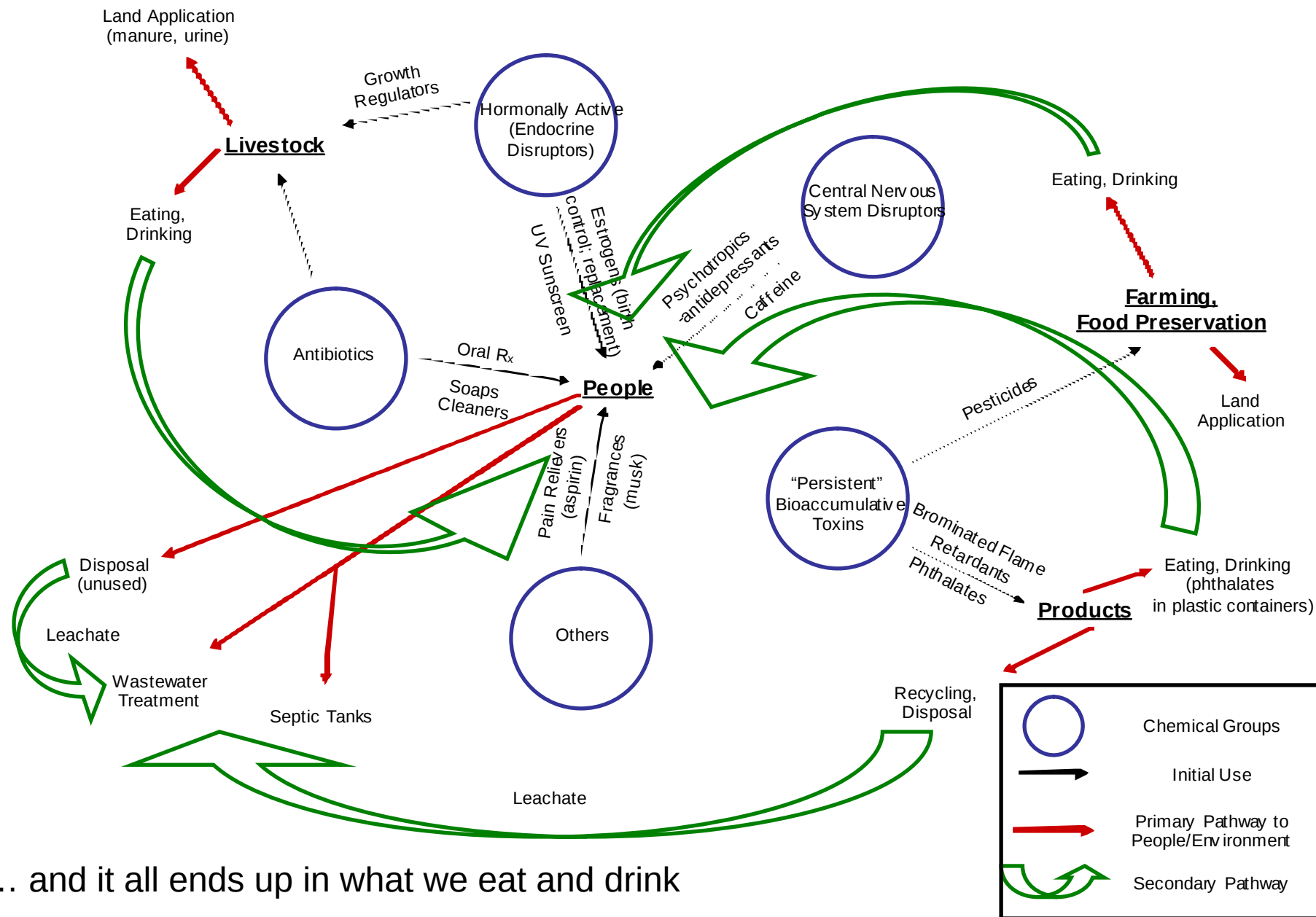
What is included?

- PPCPs – Pharmaceuticals and Personal Care Products
- EDC – Endocrine Disrupting Compounds
- ESOCs – Emerging Substances of Concern
- Microconstituents
- PhaCs – Pharmaceutically Active Compounds
- Feral Pharmaceuticals
- THIS talk is about pharmaceuticals = drugs

Pharmaceuticals, Personal Care Products And Chemicals of Concern



Pharmaceuticals, Personal Care Products And Chemicals of Concern



... and it all ends up in what we eat and drink

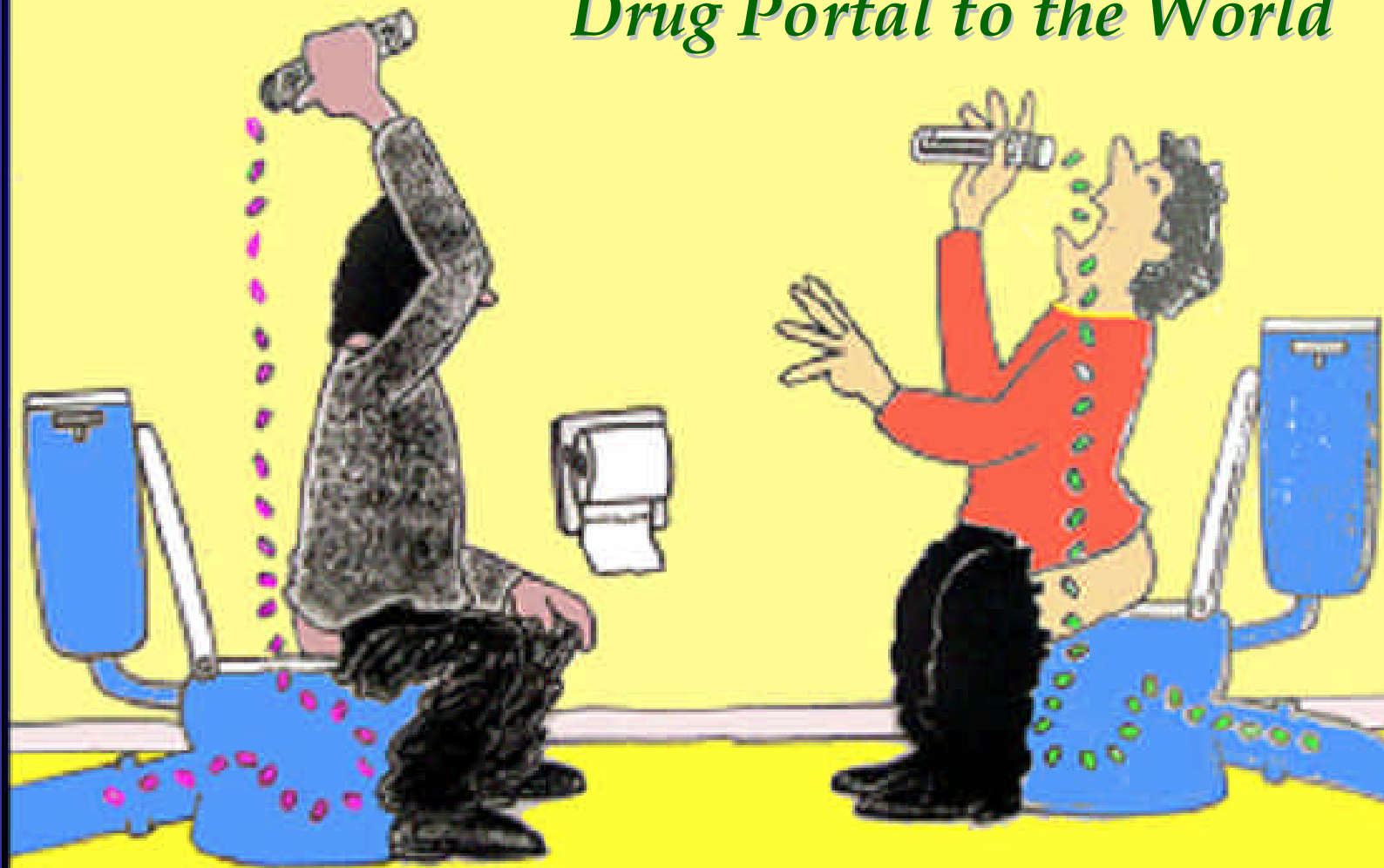
What are Endocrine Disruptors?

- hormones regulate mood, growth & development, tissue function, metabolism
- Major endocrine glands are pineal, pituitary, thyroid, thymus, adrenal, pancreas, ovary and testis – over 60 hormone chemicals
- EDs act like hormones but disrupt the function of true hormones.

Where are all the pharmaceuticals coming from?

- Manufacturing
- Hospitals and other medical facilities
 - Hospice, long term care, clinics, vets
- Human use
 - Excretion and flushing
- Agriculture
- No one know how much is being contributed by various sources

Drug Portal to the World



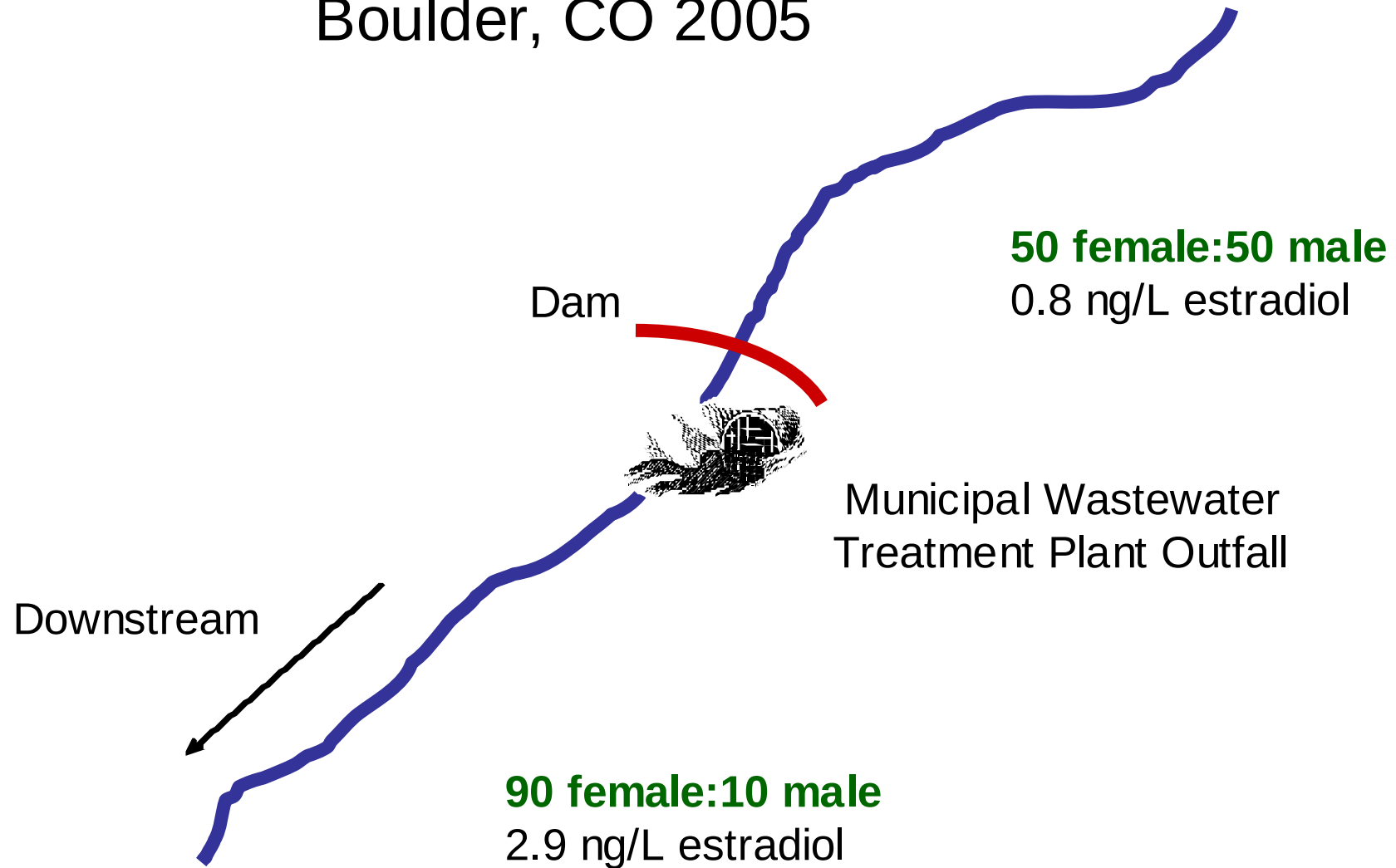
adapted by Daughton from Tennes (April 2000)



Who is watching this issue?

- EPA - water issue, not hazardous waste
- DEA – drug diversion & controlled substances (drugs with potential for abuse)
- Big Pharma – drug manufacturers
- Media – not always well reported
- Consumers
 - Don't want to feel helpless!
 - Their perceptions drive programs

Ethinylestradiol and Fish Sex Ratios Boulder, CO 2005



Chemical Cocktails

- Standard lab analysis and field study examine one chemical at a time
- Multiple chemicals are typical in the environment
- Effects of these “cocktails” are just starting to be studied



Is It “Hazardous”?

- Only about 5% of drugs are regulated under existing RCRA regulations from the '70s.
- The remaining 95%? How do we measure health effects from both traditional toxicity measures and newer criteria, such as antibiotic resistance, endocrine disruption, and developmental disruption due to prenatal or early postnatal exposure?

Does it cause cancer?

- Often used to gauge health effects
- Endocrine disruption, antibiotic resistance, and developmental disruption due to prenatal or early postnatal exposure are also important criteria.

“Pharming”

- For kids between 12-17, abuse of prescription pain killers now ranks second—only behind marijuana—as the Nation’s most prevalent illegal drug problem
- Viewed as “safer” than illegal drug use
- Prescription drug death rate was 3 times the rate of deaths caused by all illicit drugs combined – Florida, 2007



Precautionary
Principle
v.
Sound Science

Precautionary Principle

- “When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.”

The original Precautionary Principle statement drafted in 1998 at the Wingspread Conference Center, Racine, WI, can be accessed at <http://www.gdrc.org/u-gov/precaution-3.html>.

Sound Science

- “We can’t manage what we can’t measure.”
- With new analytical methods, we can find things at vanishingly low quantities – and for \$\$\$\$
- We need to combine research with action.

Where We Are



- Pharmwaste List serve: contact me
- Guidance
 - Disposal for homeowners, disposal for solid waste managers
- We know landfill disposal may not be the best option – but it's the best we can offer right now
 - Florida & Maine research on landfill leachate

How to Dispose of Unwanted Medications

Expired or unwanted prescription and over-the-counter medications from households are typically disposed of by flushing them down the toilet or a drain. Although this method of disposal prevents immediate accidental ingestion, it can cause contamination in our aquatic environment because wastewater treatment systems are not designed to remove many of these medications.

Seven Steps to Safety

Please use these practical guidelines when disposing of prescription and over-the-counter medicines:

For Pills and Liquid:

1. Keep the medicines in the original container. This will help identify the contents if they are accidentally ingested.
2. Mark out your name and prescription number for safety.
3. For pills: add some water or soda to start dissolving them.
For liquids: add something inedible like kitty litter, dirt or cayenne pepper.
4. Close the lid and secure it with duct or packing tape.
5. Put the bottle(s) inside an opaque (non see-through) container like a coffee can or plastic laundry bottle.
6. Tape that container closed.
7. Hide the container in the trash. Do not put in the recycle bin.



• DO NOT give drugs to anyone else

• DO NOT flush drugs down the toilet

• DO NOT put drugs in the trash without disguising them – human or animal scavengers may find them and misuse them.



Don't Flush That Leftover Medicine

Florida Department of Environmental Protection
3900 Commonwealth Blvd.
Tallahassee, Florida 32399
850.245.2118
www.dep.state.fl.us



Federal Guidelines

- Office of National Drug Control Policy
- How they differ from ours
 - Remove from original container vs. leave in container & mark out your ID
 - Flush if they are labeled as such
 - with a list of drugs to be flushed
 - We feel this just confuses people and could lead to more flushing

Florida Collection Events

- Ongoing collection at some Household Hazardous Waste programs in Florida are NOT our recommendation
 - Unfair cost for counties to assume
 - Liability of having drugs on site
- Operation Medicine Cabinet
 - Collier County – by Substance Abuse Coalition of Collier County
 - Homeowner collections at parks and community centers
 - Continuing collections at HHW
- Other scattered events and interest

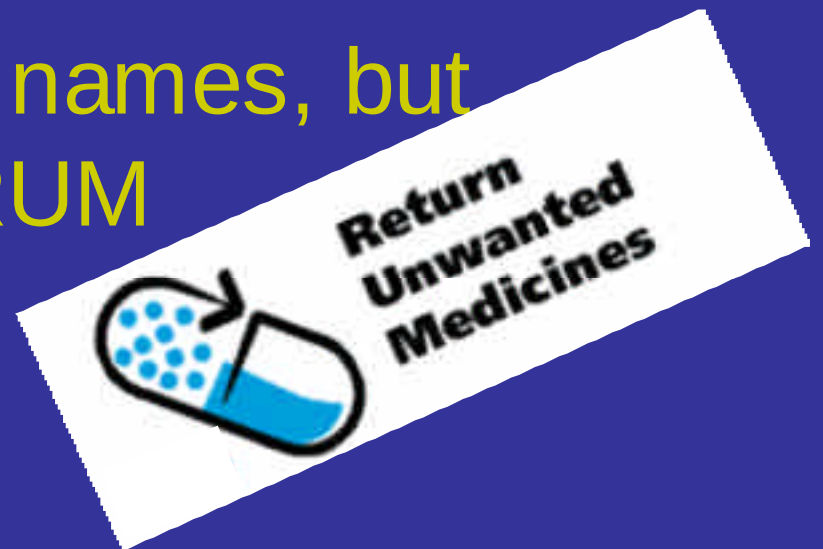
Existing Programs: Pharms (Pharmaceuticals from Households: A Return Mechanism)

- Washington State
- Clinical & Retail
Pharmacy Take-Back
- Nursing Home Take-
Back Program



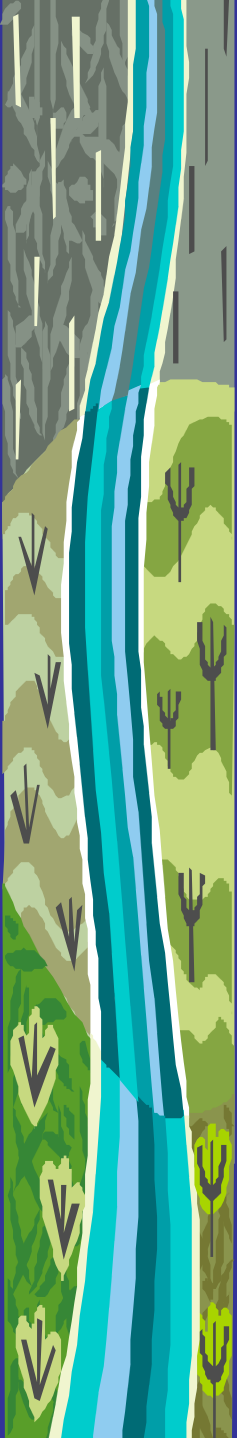
Existing Programs

- RUM – Australia's Return Unwanted Medicine program allows returns to pharmacies – paid for by drug mfrs & government.
- Canada – no snappy names, but programs similar to RUM in several provinces



Where We're Going





Solutions

- Upstream [pollution prevention]
 - Less doctor prescription
 - Less patient use
 - Better patient compliance (fewer unused)
 - More efficient drug delivery (less excretion)
- Downstream [waste/wastewater management]
 - Recycling, unused medicine exchange
 - Wastewater Treatment (improved removal)
 - Legislation?
 - “Extended Producer Responsibility”; “Product Stewardship”

Legislation

- Florida – 2009, 2 proposed bills died in committee. Nothing proposed for 2010.
- Maine – approved mail back program
- Minnesota, Oregon, Washington all have proposed bills.
- If bills only provide take-back events – not a sustainable solution
- Federal – amend Controlled Substances Act

When Smoke Ran Like Water by Devra Davis

- “All this sexual confusion in wildlife probably is not good for us either. How can we be sure ...what it may mean? . . . We are surely different from deer and whales and polar bears, but we may not be different enough.”

What can YOU do?

- Use less Rx medication
 - Ask your doc for non-medical treatments
 - Only fill Rx if you really need it
 - Use diet, exercise, and avoid chemical exposures to improve your health
- Safeguard medicine in your home
- Safely dispose of medicine you do not need – do not flush!

OPERATION MEDICINE CABINET

FREE Medicine Collection Event

When: Saturday, February 13 • 11 a.m. to 3 p.m.

Where: Costco, Mahan Drive
(4067 Lagniappe Way, Tallahassee, FL)

Why: To help protect our environment and water supplies

Cost: It's FREE!

When we keep old medications in our home, it increases the chance of illegal use. But don't flush them either, because that sends them right into our water system. **Doing this can contaminate our waters, including drinking water.**

Disposing of your unused or expired prescriptions/medications properly is important. So bring your unwanted or unneeded medications to this free collection event and we'll dispose of them for you—free of charge!

Please Make Sure To...

- Keep medications in original containers
- Keep labels on containers
- Cross through personal information on containers

We will not accept...

- Sharps
- Medical Wastes
- Thermometers



Please Note:

This event is for individual residents of Tallahassee and Leon county. Prescriptions and other medications from doctor's offices, nursing homes, hospitals and other institutional sources will NOT BE ACCEPTED.

Event sponsored by:

Florida Department of Environmental Protection • Costco • Leon County Sheriff's Office • Southern Waste Information Exchange, Inc. (SWIX) • Florida Department of Health • City of Tallahassee Solid Waste Services • Leon County Public Works Department, Solid Waste Division • 94.9 TNT

**Contact the Southern Waste Information Exchange, Inc
for more information: 386-6280 • info@swix.ws**



Florida Department of Environmental Protection

850.245.8759