<u>Not</u> to Flush: safe, secure, sustainable unused medicine take-back systems are needed

Dave Galvin
King County, Washington, and
The Product Stewardship Institute

NACWA – May 18, 2011 – St. Louis, MO

Local Hazardous Waste Management Program in King County, Washington

Product Stewardship Institute
Sustainable Solutions to Protect Our Environment

A timely subject…

AP: Drugs found in drinking water

Updated 31d ago | Comments 147 | Recommend 76

Hormonal chemicals may be imperiling fish

PERVASIVE IN AREA'S WATER | Even at the low levels detected, scientists worry about the possible effect on fish growth and reproduction.

BY WARREN CORNWALL AND KEITH ERVIN
Seattle Times staff reporters

As they swim deep beneath Seattle's Elliott Bay, male English sole carry something in their bodies that's not supposed to be there: a protein

fish, first found in the 1990s, are thought to be tims of human hormones hormone-mimicking che cals — flushed into the wa from sewage-treatm plants, factories, storm-wa drains and runoff from roa — that had made their repr

< Hormones
FROM B1

SEATTLE POST-INTELLIGENCER | TUESDAY, APRIL 15, 2008

Pain pills a rising cause of death

Prescription drug overdoses are up 56% since 1997

Gre s were found at rou but some scien

COMMON ABUSED DRUGS

Generic Name	Common brand names	Medical indications
	Buprenex, Subutex, Suboxone	Pain, addiction treatment
	Codeine	Pain, cough suppressant
	Actiq, Sublimaze, Duragesic	Pain

Drugs in water causing troubling problems to fish, wildlife

OxyContin abuse in region soars

OUTPACING METH | The illicit use of the painkiller, especially among teens, has driven up its street price, which has made pharmacies robbery targets.

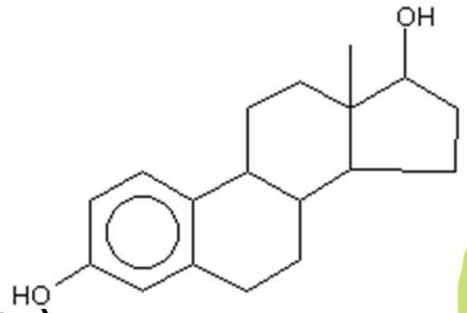
the region say that methamphetamine's popularity is quickly being outpaced by the powerful prescription painkiller simply known as "Oxy."

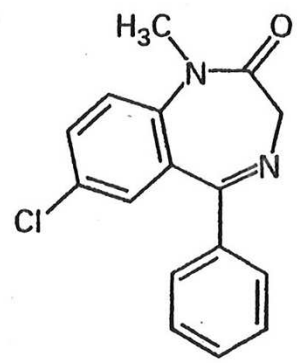
among teens, Oxy commands a street value of $80 per pill.

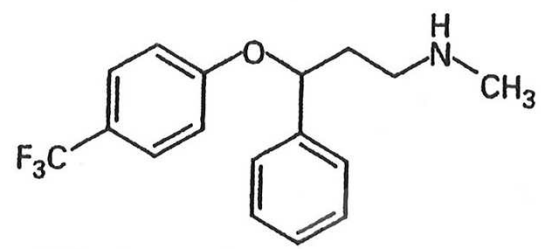
According to the Drug Enforcement Administration (DEA), prescription-drug

Pharmaceuticals

- Antibiotics
- Anti-inflammatories
- Beta-blockers
- Anti-depressants (SSRIs)
- Steroids
- Hormones, estrogen replacements, BC pills
- Chemotherapeutics
- Stimulants
- Etc.







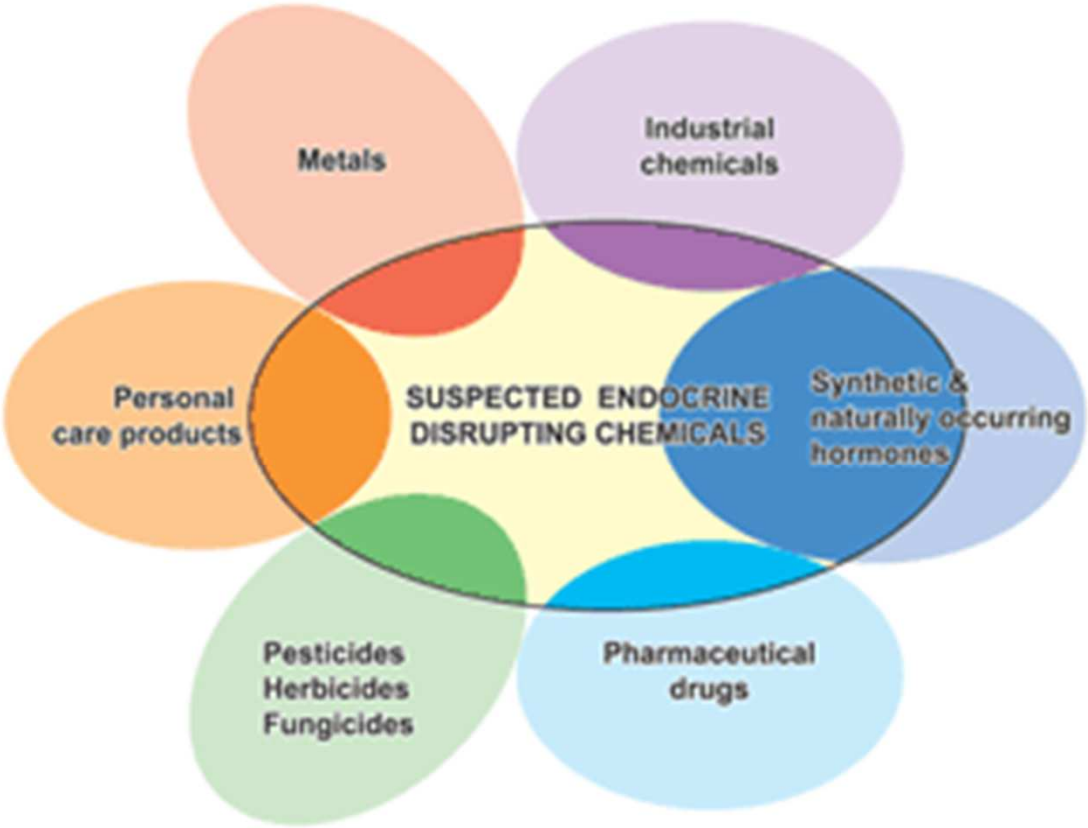
Pharmaceuticals (cont'd)

- Wide range of biologically-active chemicals
- Three classes by sale/ regulation:
  - Over The Counter
  - Prescription (or "Legend")
  - Controlled Substances
- Some designate as hazardous waste

Pharmaceuticals (cont'd)

- **Controlled Substances** – regulated by the Federal Drug Enforcement Administration due to potential for abuse
  - Schedule I – illegal drugs (ex., heroin, LSD)
  - Schedule II – morphine, OxyContin, codeine, Demerol, Ritalin, amphetamines, fentanyl
  - Schedule III – Tylenol with codeine, Vicodin
  - Schedule IV – benzodiazepines, Valium, Darvon
  - Schedule V – codeine cough syrups

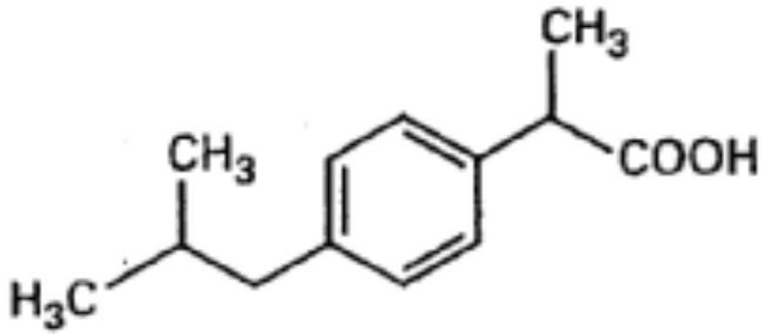
Some Pharmaceuticals are Endocrine Disrupting Chemicals

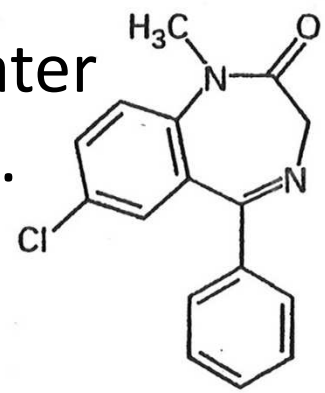


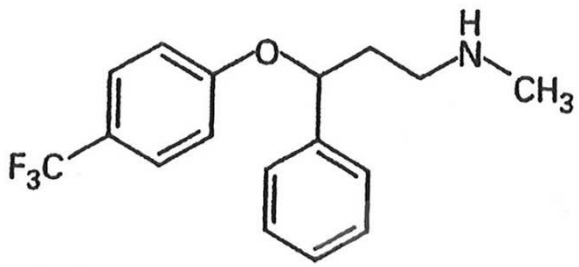
Some chemicals from the "families" above are potentially endocrine disrupters

Drugs are in wastewater systems and the environment

- Ibuprofen, valium, prozac, antibiotics, steroids, hormones
- Found in 80% of U.S. streams tested by USGS
- Found in drinking water supplies in many U.S. cities







Drugs also present poisoning and abuse hazards

- Most homes have many medicines on the shelves
- Common source of childhood poisonings
- Common source of teenage and adult abuse

Drugs enter the environment through use <u>and</u> disposal

- Probably most result from use, passing through us un-metabolized, then going through wastewater treatment systems
- Unused/unwanted quantities could be huge, as much as 50% of many prescriptions (80% for antibiotics): we figure 30% overall
- Common/historical recommendation was to flush; “crush&flush” is still widely practiced method

Lots of medicines go unused…

- Overprescribing/Overpurchasing.
- Patient doesn't finish.
- Changes in medications.
- Medicines expire.
- Lots of medicines needed during serious illness, but patient recovers.
- Lots of medicines, including strong pain relievers, needed for end-of-life care.

Drug treatability?

- Pharmaceuticals = wide range of chemicals
- Many studies underway (EPA, WERF, USGS, …)
- Conventional activated sludge and MBR show good, although mixed removals
- Longer solids retention time often leads to greater removals
  - Trade-off with energy and cost
- Biosolids issues?

Source Control Makes Sense

- Complex chemicals, not all “treatable”
- Wastewater treatment plants are conduits for pharmaceuticals getting into the environment (from both use + disposal)
- Reduce use
- Reduce waste
- Promote DO NOT FLUSH message
- Separately manage unused left-overs

Source control (cont'd)

- Nat'l Summit on Preventing Pharmaceutical Waste (PSI, Philadelphia, Oct., 2010):
  - Modify co-pay and dispensing fee structures
  - Limit initial prescription size for certain meds
  - Pro-rate co-pays
  - Reduce waste from drug samples
  - Increase use of electronic medical records
  - Limit direct-to-consumer advertising
  - Reduce total amounts sold and amounts wasted

Proper Disposal of Prescription Drugs

Office of National Drug Control Policy October 2009

Federal Guidelines:

- Do not flush prescription drugs down the toilet or drain unless the label or accompanying patient information specifically instructs you to do so. For information on drugs that should be flushed visit the FDA's website.

- To dispose of prescription drugs not labeled to be flushed, you may be able to take advantage of community drug take-back programs or other programs, such as household hazardous waste collection events, that collect drugs at a central location for proper disposal. Call your city or county government's household trash and recycling service and ask if a drug take-back program is available in your community.

- If a drug take-back or collection program is not available:

  1. Take your prescription drugs out of their original containers.
  2. Mix drugs with an undesirable substance, such as cat litter or used coffee grounds.
  3. Put the mixture into a disposable container with a lid, such as an empty margarine tub, or into a sealable bag.
  4. Conceal or remove any personal information, including Rx number, on the empty containers by covering it with black permanent marker or duct tape, or by scratching it off.
  5. Place the sealed container with the mixture, and the empty drug containers, in the trash.

Office of National Drug Control Policy
750 17th St. N.W., Washington, D.C. 20503
p (202) 395- 6618 f (202) 395-6730

Federal footnote…

[1] *Consumers are advised to check their local laws and ordinances to make sure medicines can legally be disposed of with their household trash.*

U.S. Food and Drug Administration

MEDICINES RECOMMENDED FOR DISPOSAL BY FLUSHING

This list from FDA tells you what expired, unwanted, or unused medicines you should flush down the sink or toilet to help prevent danger to people and pets in the home. Flushing these medicines will get rid of them right away and help keep your family and pets safe.

FDA continually evaluates medicines for safety risks and will update the list as needed.

Medicine	*Active Ingredient*
Actiq, oral transmucosal lozenge *	Fentanyl Citrate
Avinza, capsules (extended release)	Morphine Sulfate
Daytrana, transdermal patch system	Methylphenidate
Demerol, tablets *	Meperidine Hydrochloride
Demerol, oral solution *	Meperidine Hydrochloride
Diastat/Diastat AcuDial, rectal gel	Diazepam
Dilaudid, tablets *	Hydromorphone Hydrochloride
Dilaudid, oral liquid *	Hydromorphone Hydrochloride
Dolophine Hydrochloride, tablets *	Methadone Hydrochloride
Duragesic, patch (extended release) *	Fentanyl
Embeda, capsules (extended release)	Morphine Sulfate; Naltrexone Hydrochloride
Exalgo, tablets (extended release)	Hydromorphone Hydrochloride
Fentora, tablets (buccal)	Fentanyl Citrate
Kadian, capsules (extended release)	Morphine Sulfate
Methadone Hydrochloride, oral solution *	Methadone Hydrochloride

Methadose, tablets *	Methadone Hydrochloride
Morphine Sulfate, tablets (immediate release) *	Morphine Sulfate
Morphine Sulfate, oral solution *	Morphine Sulfate
MS Contin, tablets (extended release) *	Morphine Sulfate
Onsolis, soluble film (buccal)	Fentanyl Citrate
Opana, tablets (immediate release)	Oxymorphone Hydrochloride
Opana ER, tablets (extended release)	Oxymorphone Hydrochloride
Oramorph SR, tablets (sustained release)	Morphine Sulfate
Oxycontin, tablets (extended release) *	Oxycodone Hydrochloride
Percocet, tablets *	Acetaminophen; Oxycodone Hydrochloride
Percodan, tablets *	Aspirin; Oxycodone Hydrochloride
Xyrem, oral solution	Sodium Oxybate

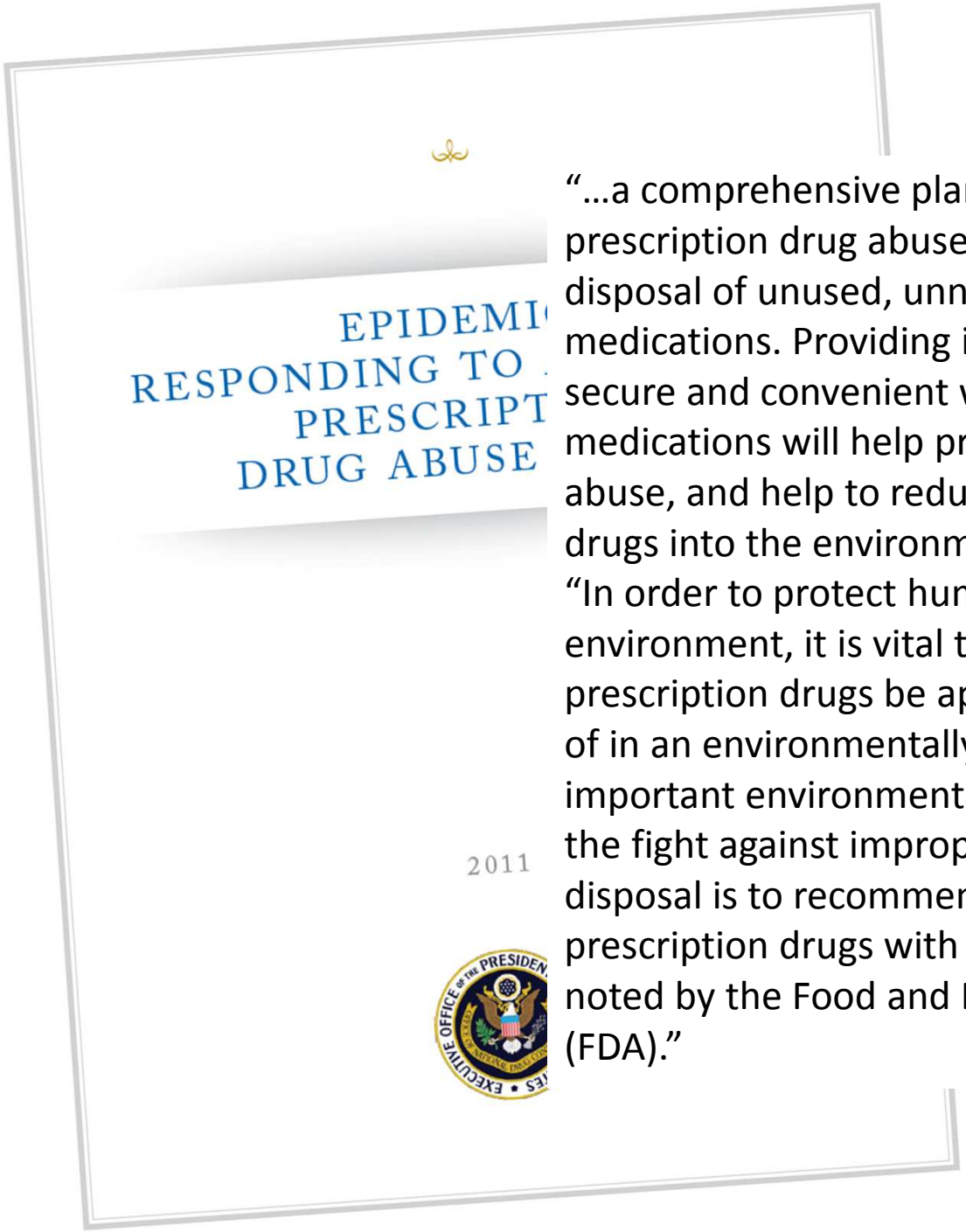
*These medicines have generic versions available or are only available in generic formulations.

List revised: March 2010

Released by the White House Office of National Drug Control Policy on April 20, 2011…

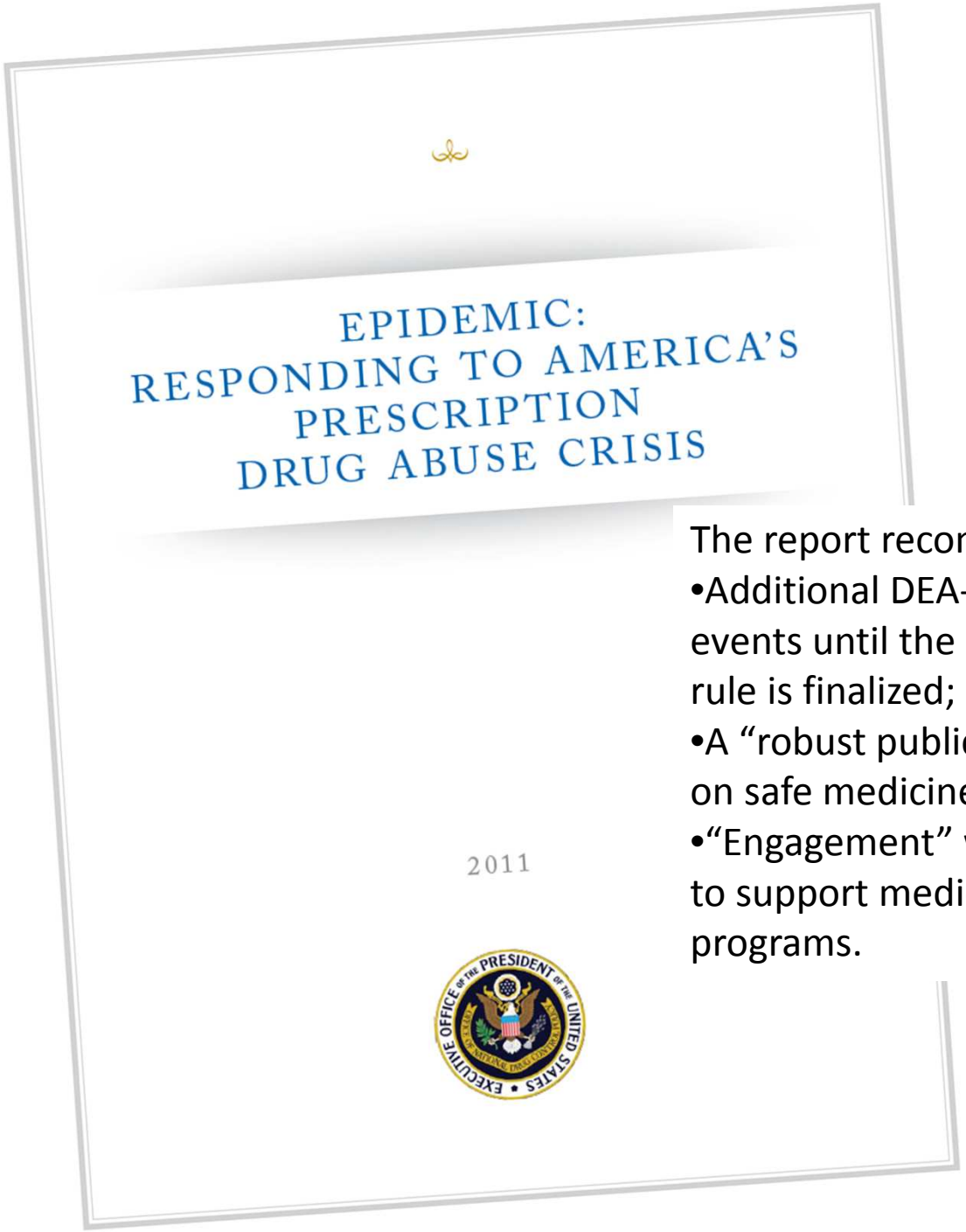
EPIDEMIC: RESPONDING TO AMERICA'S PRESCRIPTION DRUG ABUSE CRISIS

2011



"…a comprehensive plan to address prescription drug abuse must include proper disposal of unused, unneeded, or expired medications. Providing individuals with a secure and convenient way to dispose of medications will help prevent diversion and abuse, and help to reduce the introduction of drugs into the environment.

"In order to protect human health and the environment, it is vital that collected prescription drugs be appropriately disposed of in an environmentally safe manner. …an important environmental safety message in the fight against improper medication disposal is to recommend against flushing prescription drugs with the few exceptions noted by the Food and Drug Administration (FDA)."



The report recommends:

•Additional DEA-sponsored take-back events until the medication-disposal rule is finalized;

•A "robust public education initiative" on safe medicine return;

•"Engagement" with PhRMA and others to support medication disposal programs.

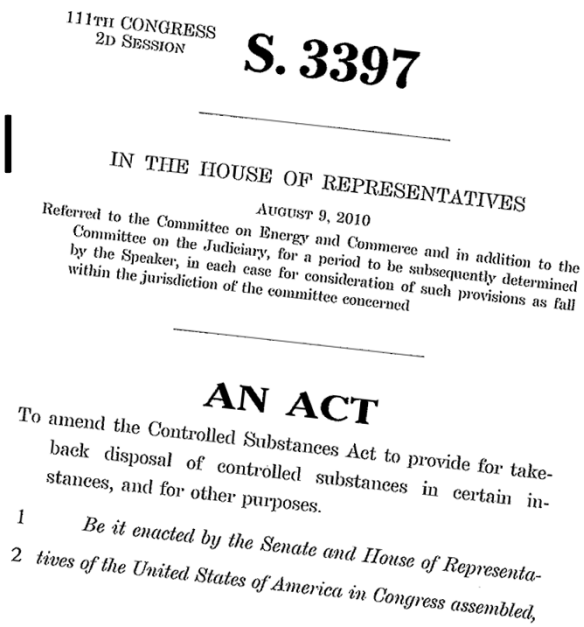
Models/pilot projects

- One-day collection events
- Household hazardous waste services
- Drop-off at police or sheriff offices
- Mail-back
- Drop-off/take-back at pharmacies

UNITED STATES POSTAL SERVICE®

Controlled Substance barrier

- Only the end-user or law enforcement can legally possess a CS drug once dispensed
- Take-back programs thus must involve police or sheriffs
- "Safe and Secure Drug Disposal Act of 2010" enacted
- DEA is currently drafting rules



111TH CONGRESS
2D SESSION

S. 3397

IN THE HOUSE OF REPRESENTATIVES

AUGUST 9, 2010

Referred to the Committee on Energy and Commerce and in addition to the Committee on the Judiciary, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

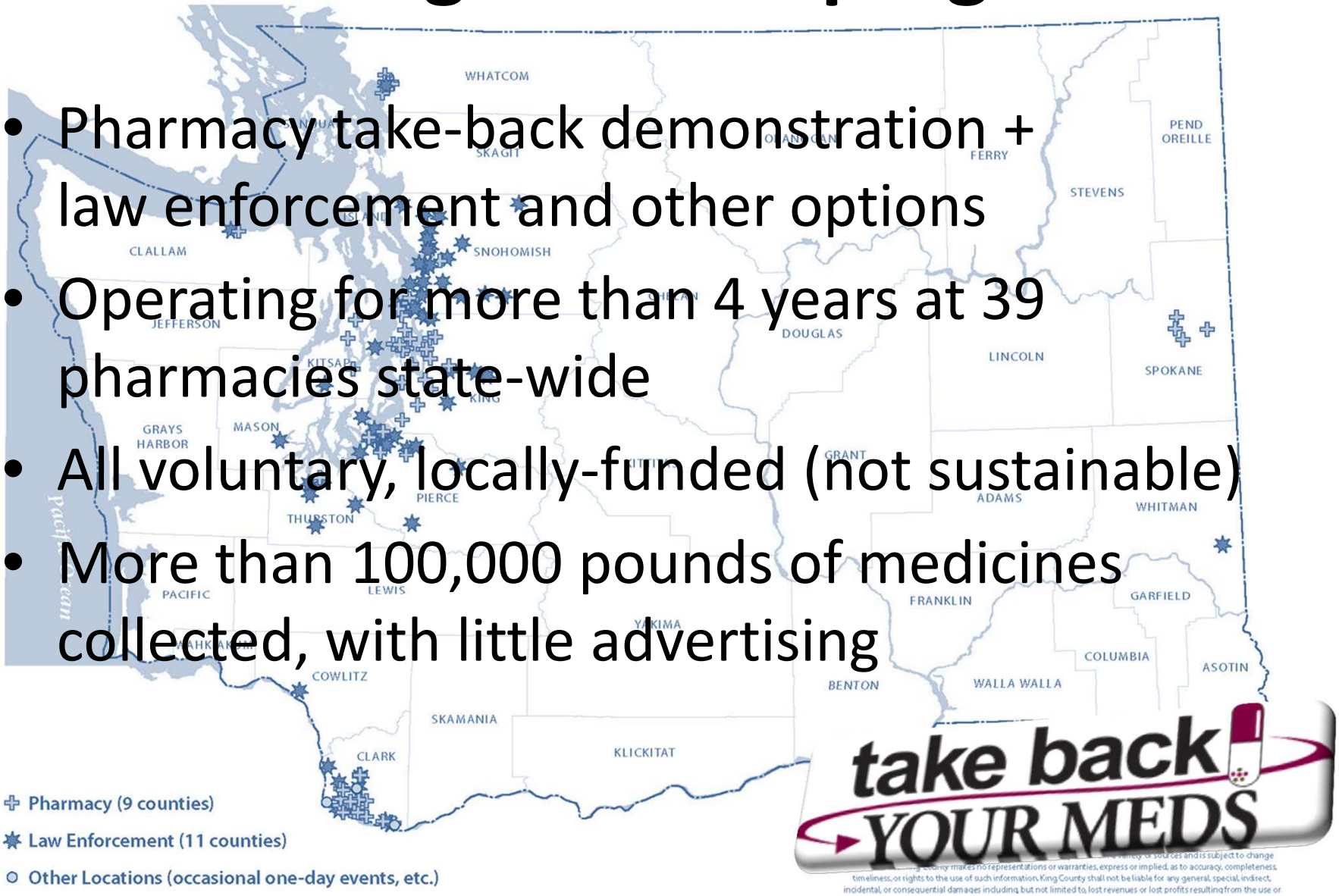
AN ACT

To amend the Controlled Substances Act to provide for take-back disposal of controlled substances in certain instances, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

Washington State program

- Pharmacy take-back demonstration + law enforcement and other options
- Operating for more than 4 years at 39 pharmacies state-wide
- All voluntary, locally-funded (not sustainable)
- More than 100,000 pounds of medicines collected, with little advertising



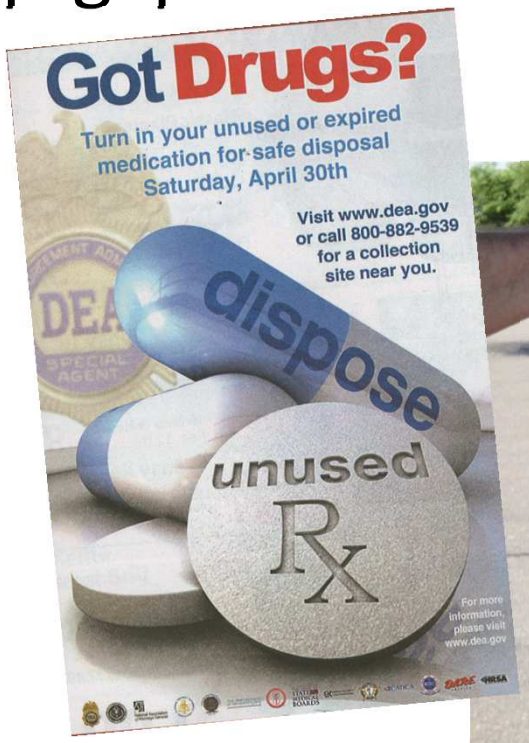
take back YOUR MEDS

Washington State (cont'd)

take back YOUR MEDS

DEA Take-Back Events

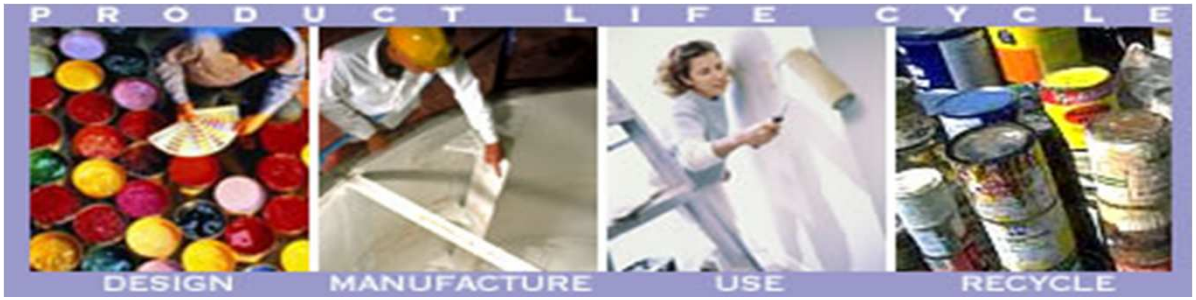
- September, 2010: 121 tons
- April, 2011: 188 tons
- Stop-gap measure until ongoing programs are in place



Best approach: Product Stewardship

Product Stewardship

- It's about long-term sustainability, zero waste, materials management, "ownership."
- Full life-cycle responsibility.
- Those with the greatest ability to influence the life-cycle impacts of a product have the greatest responsibility.



Upstream Design - Source Control

- **One objective of product stewardship is to encourage manufacturers to redesign products with fewer toxics, to reduce waste, and to encourage complete recycling or destruction.**
- **End-of-life take-back is part of a product stewardship system for anything not compostable or able to be fully treated in wastewater systems.**

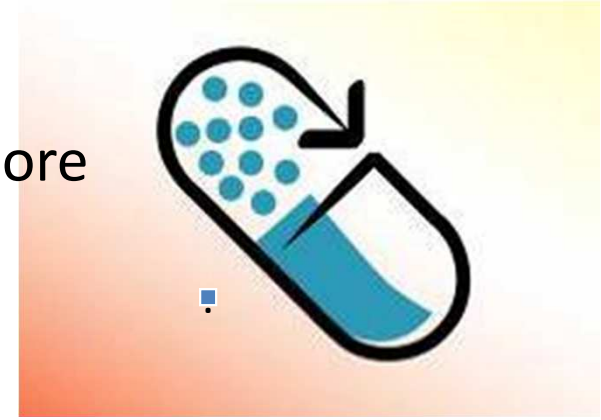
Product Stewardship Elsewhere

Many Products

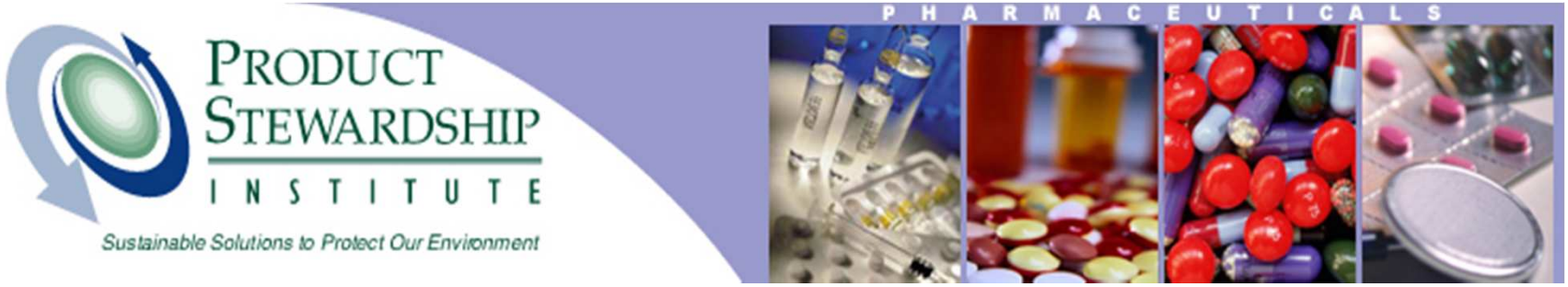
- Pharmaceuticals
- Paint
- Pesticides
- Batteries
- Thermostats
- Tires
- Mercury Switches in Cars
- Vehicles
- Electronics
- Cell phones
- Beverage Containers
- Packaging
- . . . . and more

Many Places

- BC
- And all across Canada
- European Union
- Japan
- Taiwan
- South Korea
- Australia
- . . . .and more

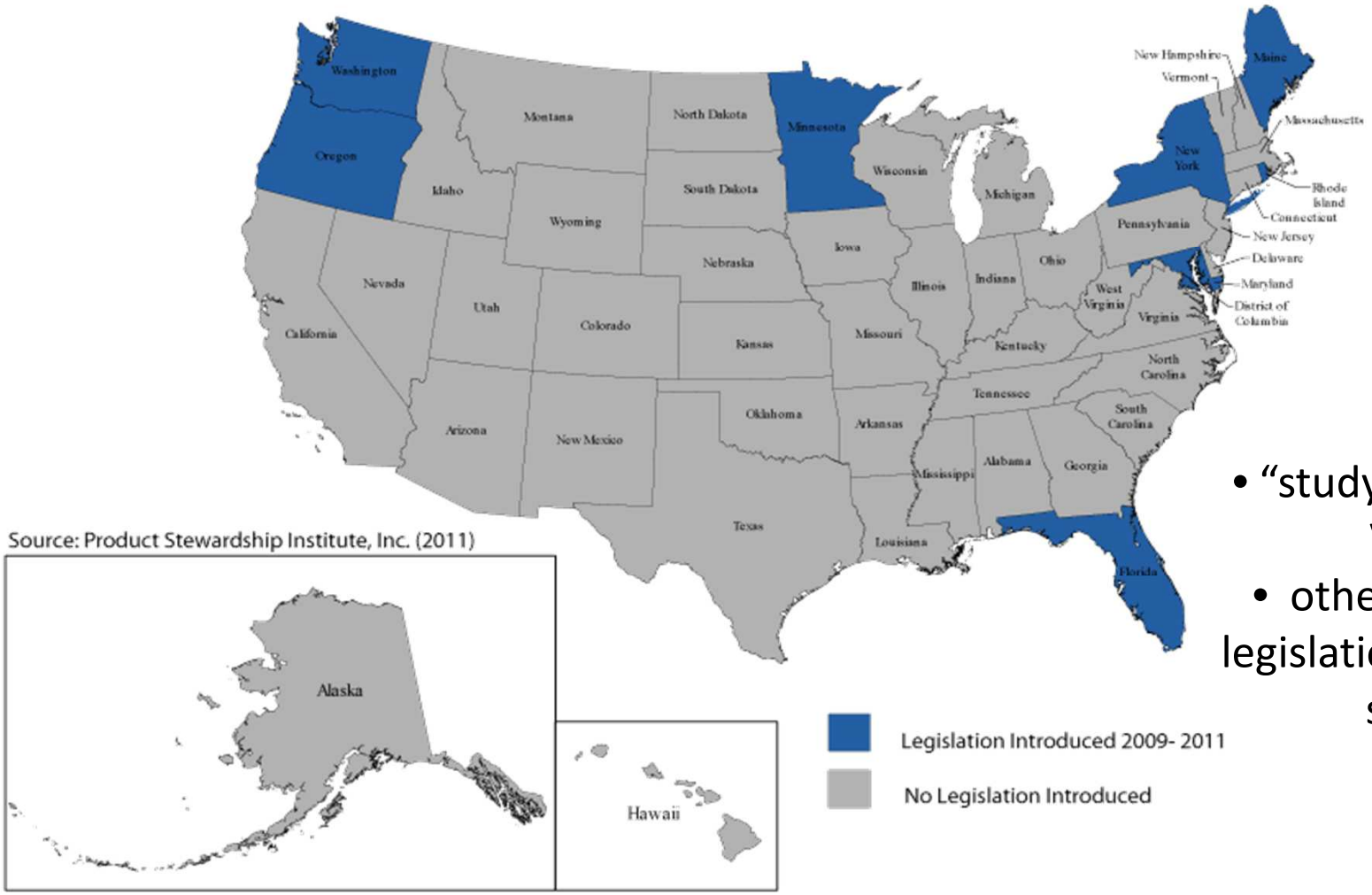


PSI Pharmaceutical Initiative



- National dialogue (with NACWA support)
- National website: www.takebacknetwork.com/
- Change federal law and regulations
- Support state efforts to enact P.S. laws
- Promote extended producer responsibility as the right solution to this problem.

Recent Pharmaceutical Take-Back Legislation



Source: Product Stewardship Institute, Inc. (2011)

- "study bills" in CA, VT, RI
- other take-back legislation in a dozen states

Why support medicine take-back?

"This is about saving even just one life…if we can dispose of cans and bottles and oil from our car properly, why can't we dispose of something the size of a dime that can kill you?"

- Bernard Strain, whose teenage son Timothy died last year after accidentally taking prescription methadone pills that had been sitting in a medicine cabinet.

  New York Times, September 24, 2010

In closing…

- Pharmaceuticals are a complex, “emerging” issue important to WQ professionals
- Large quantities of drugs go unused, and offer potential for flushing
- Source control is a key tool
- Residential take-back programs for unused/waste medicines are an important part of source control efforts

In closing… (cont'd)

- Take-back should have a measurable effect
- We need to counter PhRMA's message that all medicines can be effectively treated at WTPs
- If WTPs are required to take out more pharmaceuticals, it will cost $billion$

- NACWA and water quality experts need to speak up and show strong support for source control solutions such as take-back

In closing… (cont'd)

- The cost will fall on local tax- or rate-payers unless a better model is chosen
- We should work together to push for a product stewardship solution

For more information

- **Nationally:** www.takebacknetwork.com/
- **Washington State:** www.takebackyourmeds.com

- Dave.Galvin@kingcounty.gov