

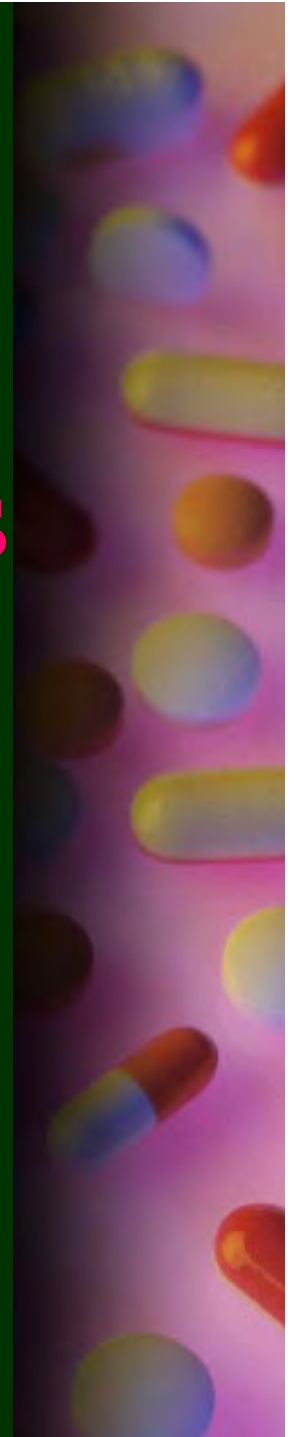
SF Bay Area's Safe Medicine Disposal Days

Karin D. North

City of Palo Alto

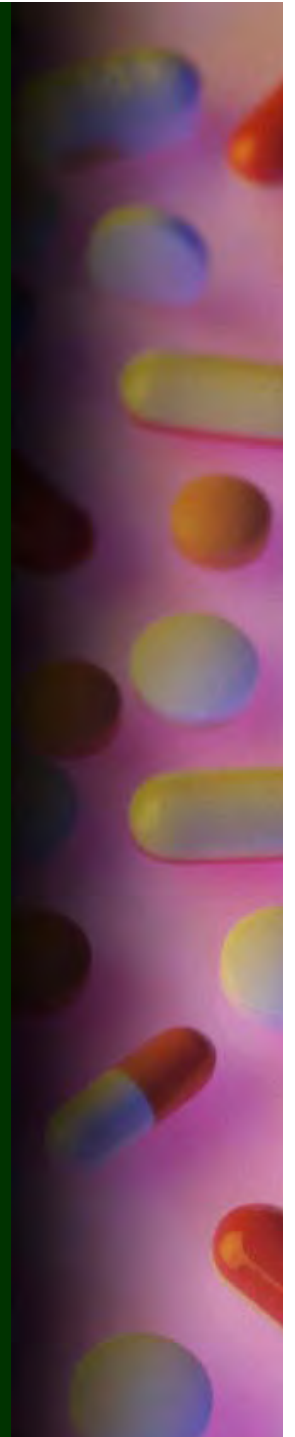
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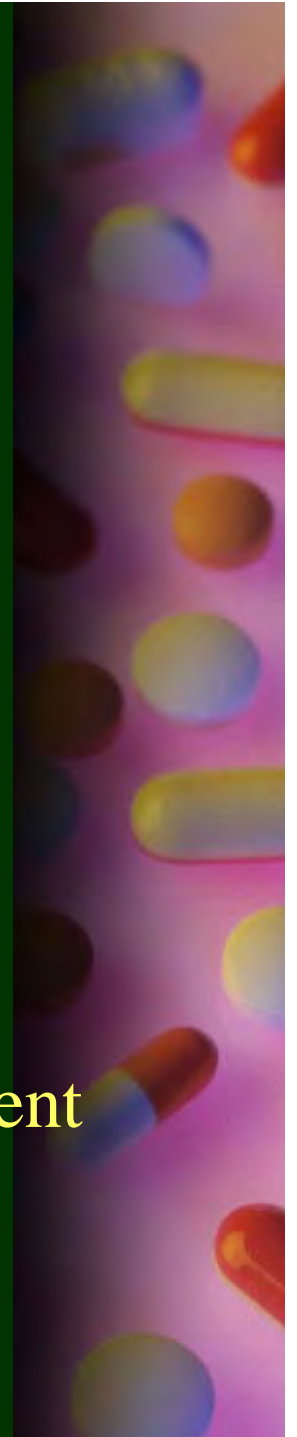
US Waterways are Impacted!

- USGS Analyzed 139 streams- 80% of samples analyzed one or more of pharmaceuticals
 - Acetaminophen (24%)
 - Steroids and hormones (16%)
 - Diltiazem (blood pressure medication) (13%)
 - Codeine (11%)
 - Antibiotics and antimicrobials (10%)
 - Ibuprofen (10%)



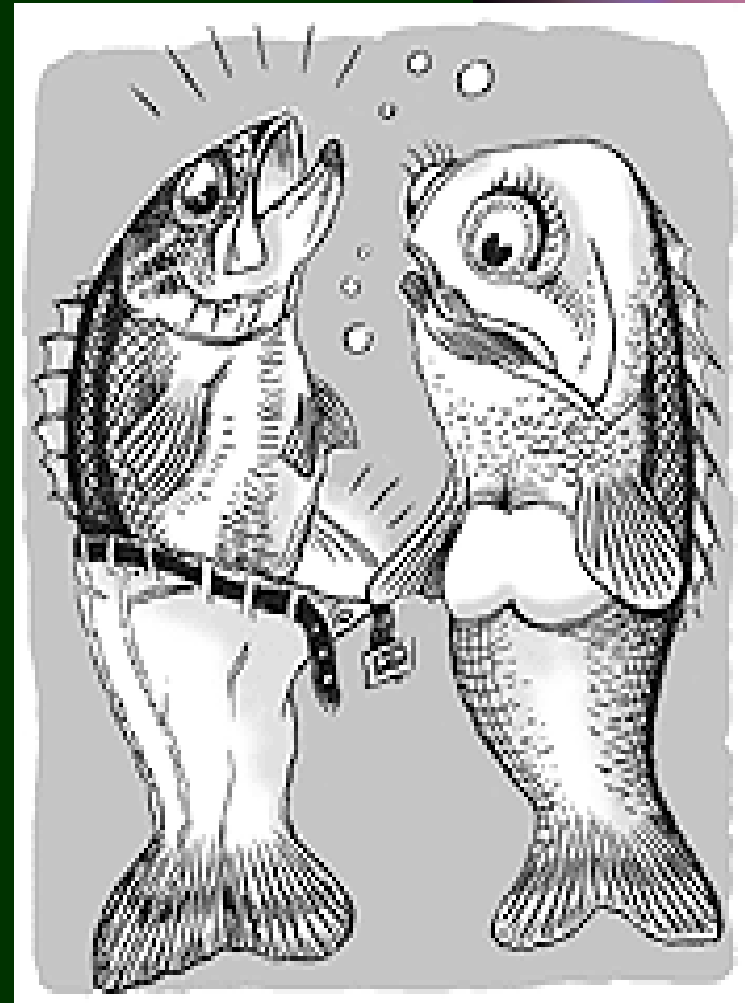
Why Do We Care?

- Potential effects to organisms
 - Endocrine disruption
 - Synergistic effects
 - Possible toxicity
- Precautionary Principle
 - Pharmaceuticals should not be in the aquatic environment
 - Limited toxicological information on pharmaceuticals less than 1% of active ingredient products
- Creation of “superbugs”



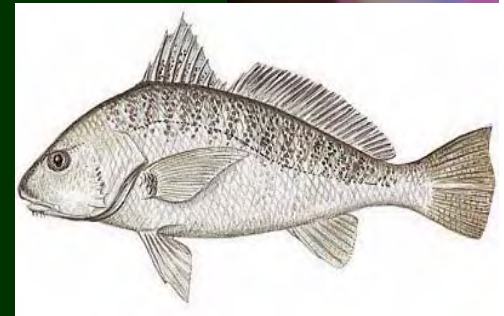
17alpha Ethynyl Estradiol

- Synthetic estrogen
- Present in 16% of rivers in USGS study
- Median concentration 73 ng/l
- Vitellogenin production (feminization) in male fish
- Effects at conc. as low as 1 ng/l



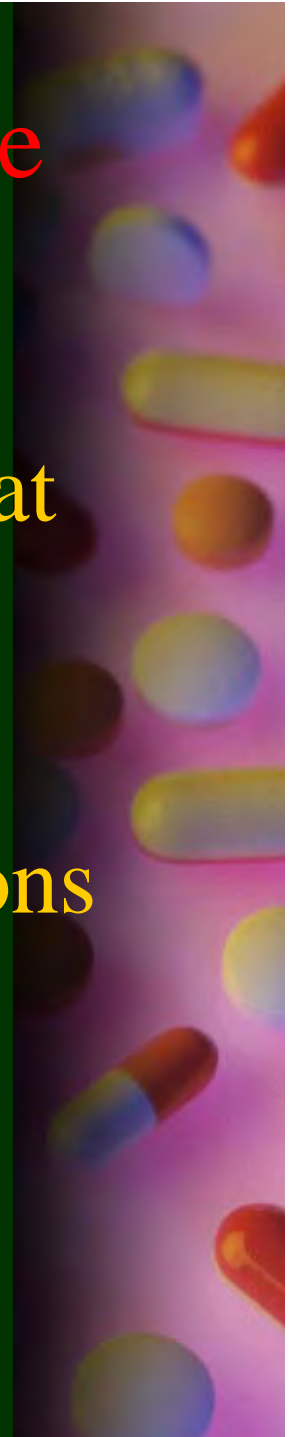
Other Endocrine Disruptors

- SSRIs (antidepressants) induce spawning in shellfish
- Calcium channel blockers (used to lower blood pressure) dramatically inhibit sperm activity in Atlantic croaker
- Clofibrate (used to lower cholesterol) caused high production of estrogen in juvenile zebra fish at concentrations present in Chesapeake Bay



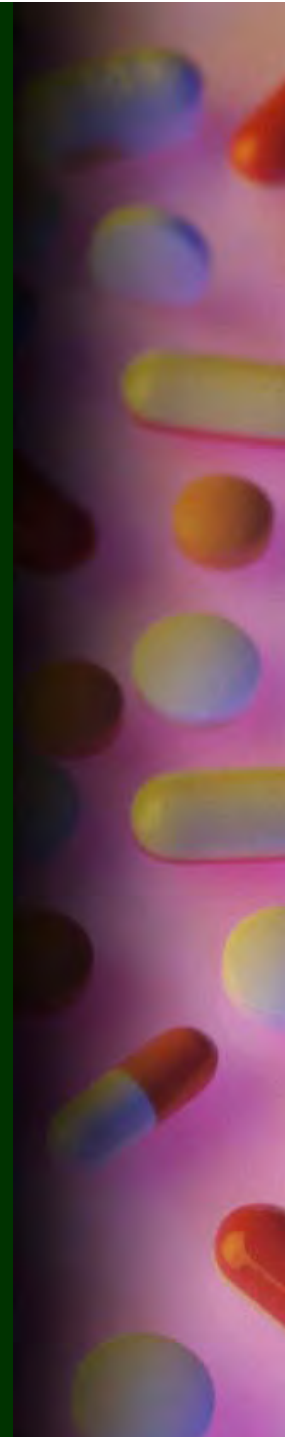
How Pharmaceuticals Get Into the Environment

- Wastewater treatment plants that treat household, industrial, and business
- Industrial dischargers
- Commercial animal feeding operations
- Surface application of biosolids



What can we do?

- Provide an alternative disposal option
- Educate
 - Hospital staff
 - Veterinary offices
 - Doctor's offices
 - Long term care facilities
 - Residents



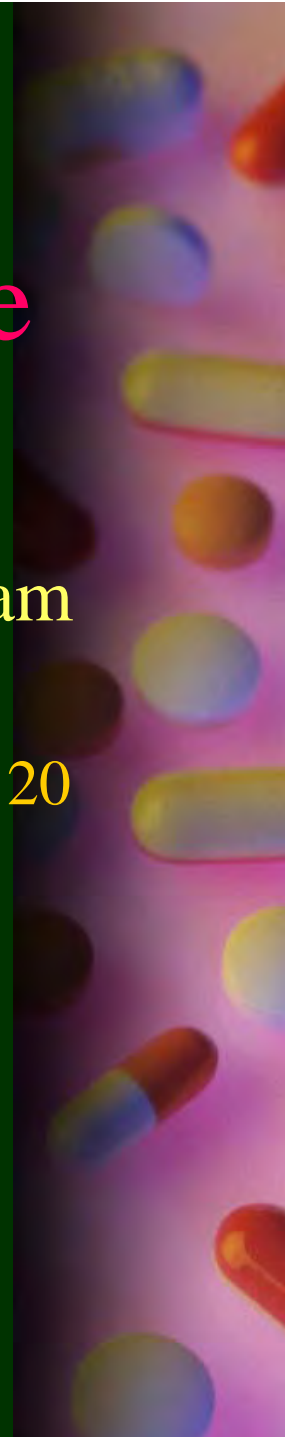
History of Residential Pharmaceutical Disposal in Bay Area

Palo Alto starts a collection program		DTSC and DHS do not regulate res. pharm. waste		SF Bay Area Disposal Days Event
	2003		2005	
2002	Spearheaded discussions with POTWs, HHW, DTSC, DHS, EPA, Water Board	2004	WMI White Paper on Sewering of Pharmaceutical Waste	2006

Residential Pharmaceutical Disposal Programs Worldwide

Return medicine to pharmacy!

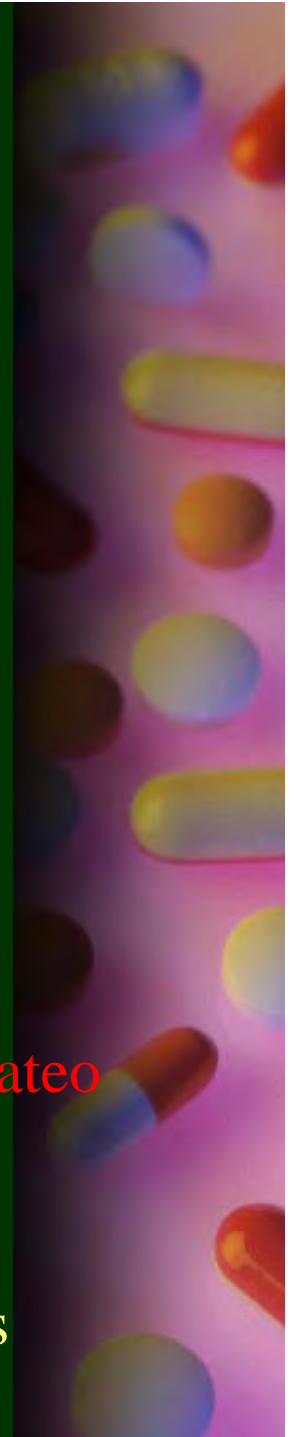
- Australia – Return Unwanted Medicine Program at pharmacies
 - In FY05/06 collected 335 tonnes (738,580 lbs) for 20 million people
 - California population 33 million people
- British Columbia
- Countries in Europe



SF Bay Regional Update

Pilot Program Stats

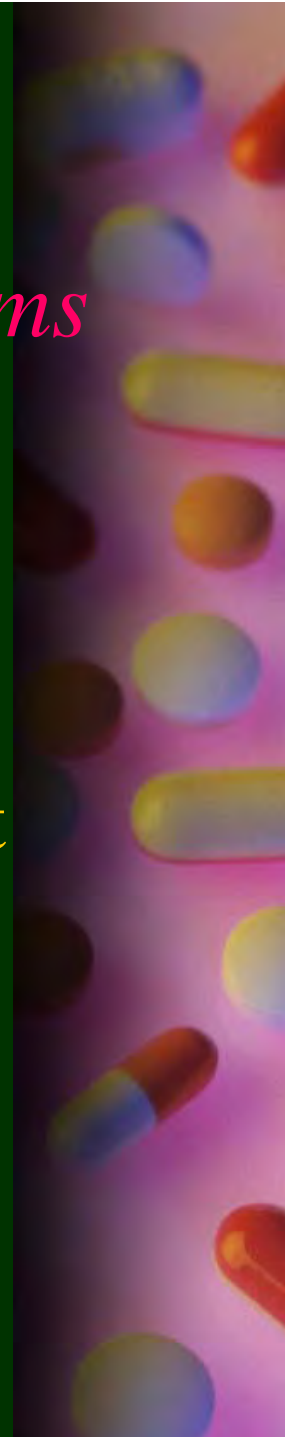
- Palo Alto
 - Collects pharmaceuticals at plant 5 days a week and at HHW program. Since 2002 collected >1000 lbs
- Marin County Health Department
 - Currently, collects pharmaceuticals at 7 pharmacies
 - Collected over 300 lbs of pharmaceutical waste
- San Mateo County Program
 - 2005, 13 cities participated, week long collection event collected 240 lbs of pharmaceutical waste
 - Update – now collect at 4 police departments in San Mateo County!
- East Bay MUD and Save the Bay
 - Multiple collection events throughout East Bay MUD's service area



SF Bay Regional Update

Household Hazardous Waste Programs

- Many HHW programs will not accept
 - Due to funding
 - Potential issues with controlled substances
- Some HHW programs continue to accept
 - No advertising
 - Small pilot programs



2006 Regional Pharmaceutical Disposal Campaign

- Regional coordination through Bay Area Pollution Prevention Group
- Week of disposal events throughout the region during one week in May 2006
- “By the book” events with pharmacist and police involvement
- Publicity and media outreach coordinated regionally



Safe Medicine Disposal Days
Safer for your family, safer for the Bay

Flushing expired or unwanted medicine down the drain may harm San Francisco Bay. Wastewater treatment cannot remove all medicine, but with your help, local agencies are protecting the Bay.

Drop off expired or unwanted medicine during our
Safe Medicine Disposal Days, May 13-21, 2006!

For locations, dates and hours, visit
www.BayWise.org
or call 1-888-BayWise.

The fish will thank you!

Drop-offs at select locations in San Francisco, Palo Alto, Oakland, San Jose, Millbrae, Sunnyvale, San Leandro, Fremont, Mountain View, Belmont, Menlo Park and more!

 **BAY AREA POLLUTION PREVENTION GROUP** 

2006 Regional Campaign (continued)

- 19 agencies and organizations participated
- 38 collection events regionally
- 3,685 pounds collected from ~1500 residents
 - 9% controlled substances (median)
 - 721 pounds – from Palo Alto



2006 Regional Campaign (continued)

- Extensive Advertising
 - Dedicated website (www.BayWise.org)
 - 65 newspaper ads in local and regional papers
 - >215,000 direct mailings
 - >30,000 flyers distributed
 - 320 transit ads
 - Radio PSAs
- Media Assistance
 - 5 press events
 - 10 newspaper articles
 - 4 radio interviews
 - 5 TV stations covered events



2006 Regional Campaign (continued)

Newspaper Article Titles

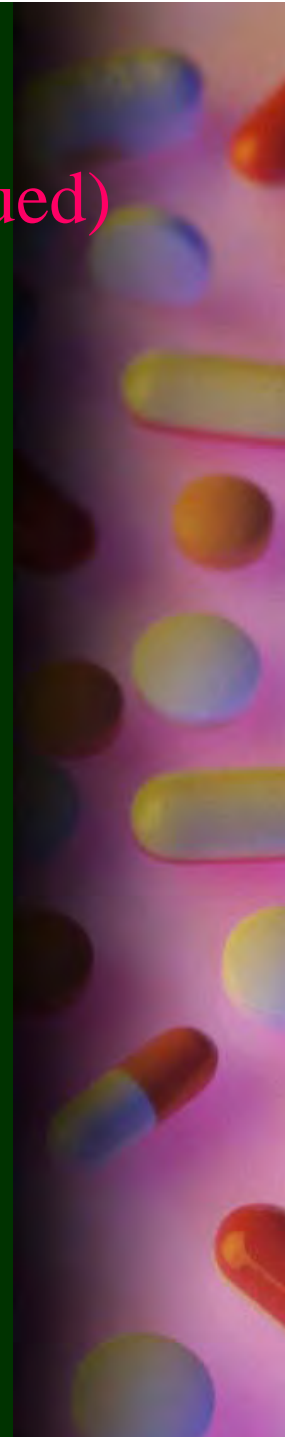
- “Program aims to keep drugs out of bay”, San Jose Mercury News
- “Don’t dump old medicine in toilet”, San Francisco Chronicle
- “Drugs disposed of incorrectly could give Bay bad diagnosis”, Contra Costa Times
- “Flushed meds could spur a fishy situation”
San Mateo County Times



2006 Regional Campaign (continued)

Marketing Effectiveness

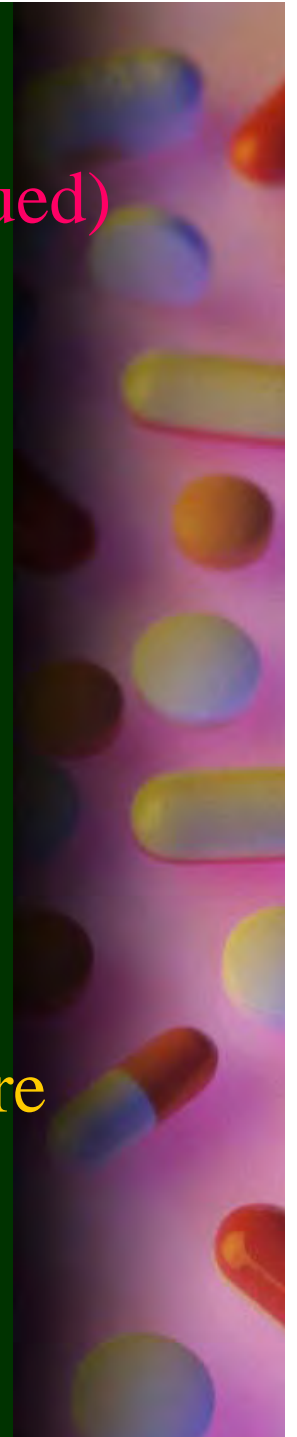
- Direct mail and flyers most effective
- Newspaper articles and ads effective
- Transit advertising – least effective and most expensive



2006 Regional Campaign (continued)

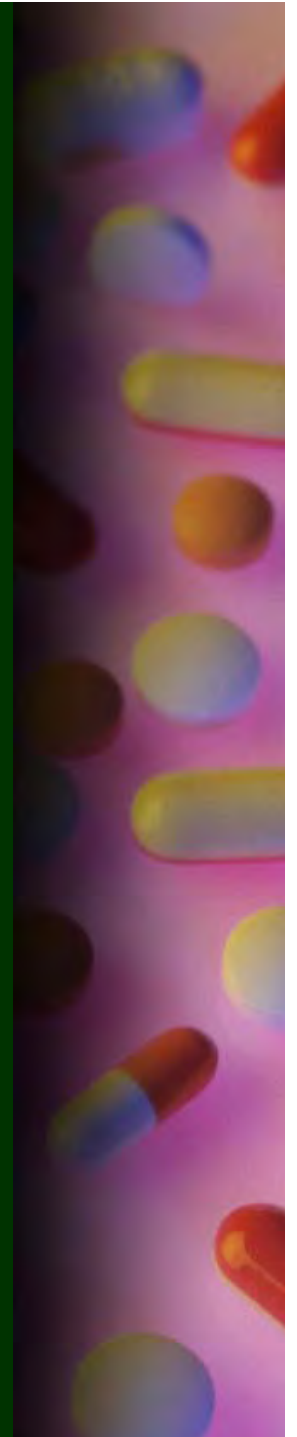
Survey Results

- Past disposal practices
 - Half disposed of in trash
 - One quarter in the toilet
 - Rest HHW events or stockpiled
- Reasons for disposal
 - 74% held onto medications for > 1 year
 - Most medications were expired/ out of date
- Majority of people who utilized the program were women over 60 years of age
- Typically disposed of 13 containers per person



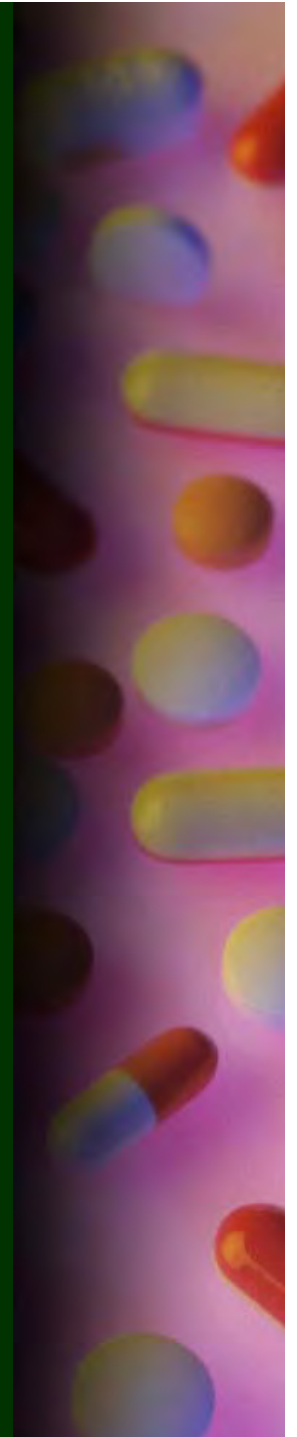
Regional Campaign (continued)

- Lessons learned
 - “By the (DEA) book” events are costly
 - Staff time - ~1,980 staff hours from 19 agencies
 - Pharmacist time
 - Police involvement
 - Demand for proper disposal is high – need sustainable solution

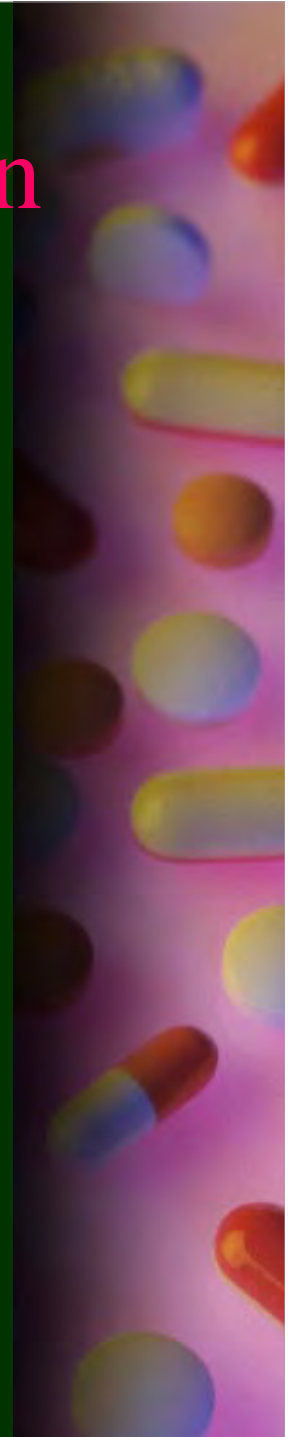


Next Steps

- Create a sustainable model that DEA approves
- Explore existing infrastructure that pharmaceutical industry already has in place (*e.g., reverse distributor*)
- Develop legislation that creates an easy solution for residential disposal of waste



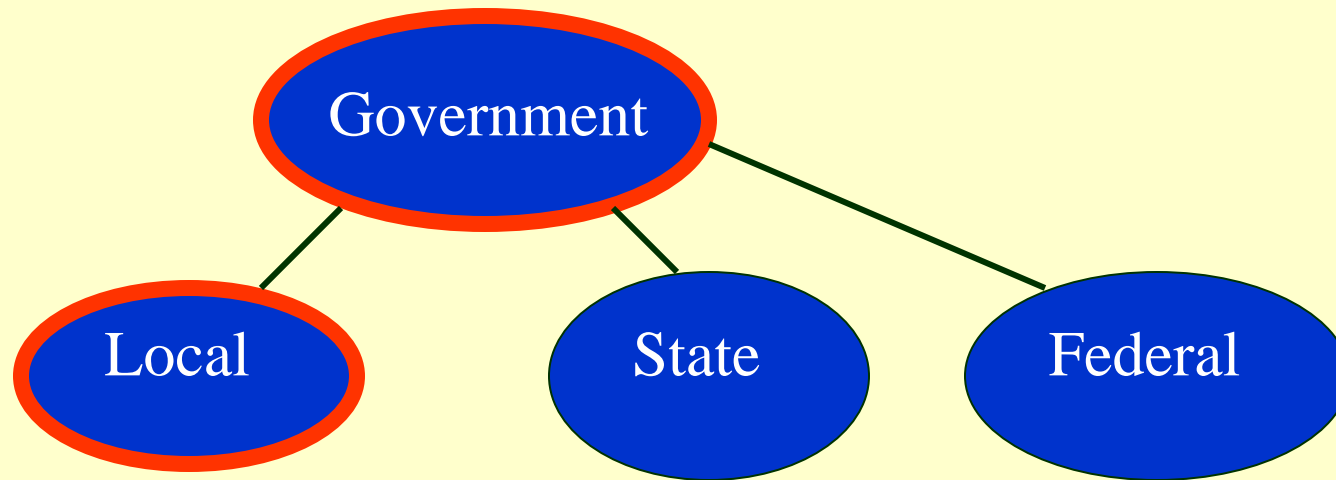
Why was the Regional Campaign Successful?



Multiple Stakeholders



Multiple Stakeholders



POTWs

HHW

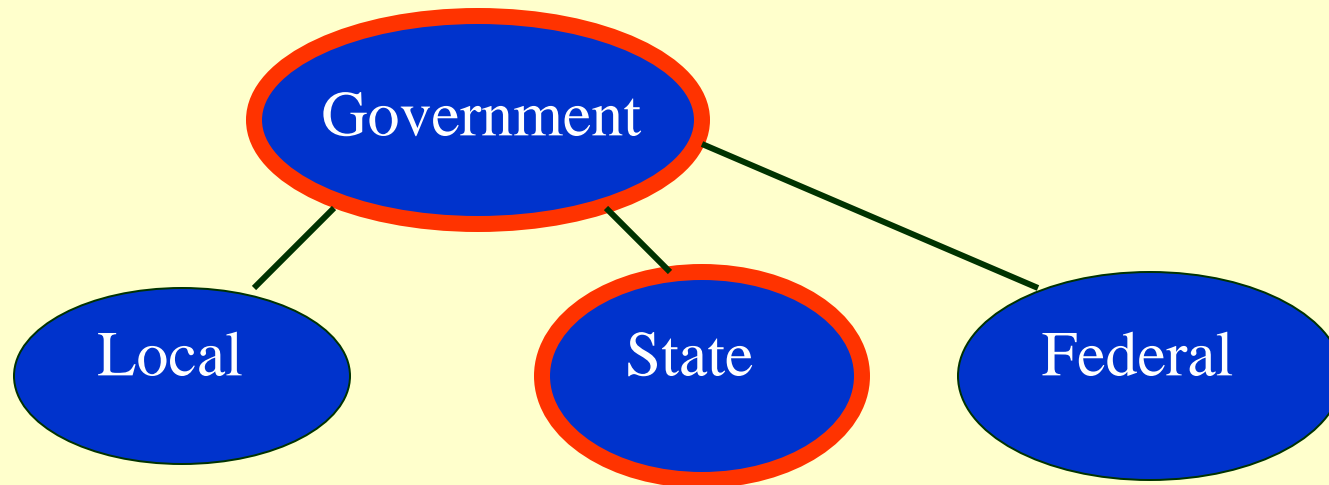
Solid Waste

County Health

Cities

Law enforcement

Multiple Stakeholders



POTWs

HHW

Solid Waste

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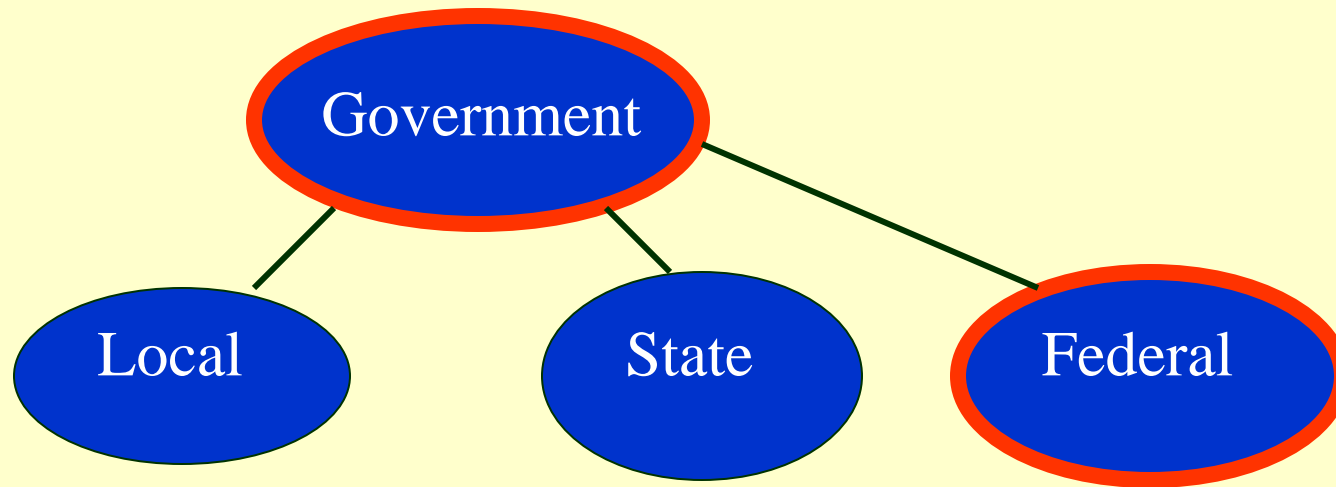
Law enforcement

Dept of Toxic Substances
Control

Department of Health
Services

Water Board

Multiple Stakeholders



POTWs
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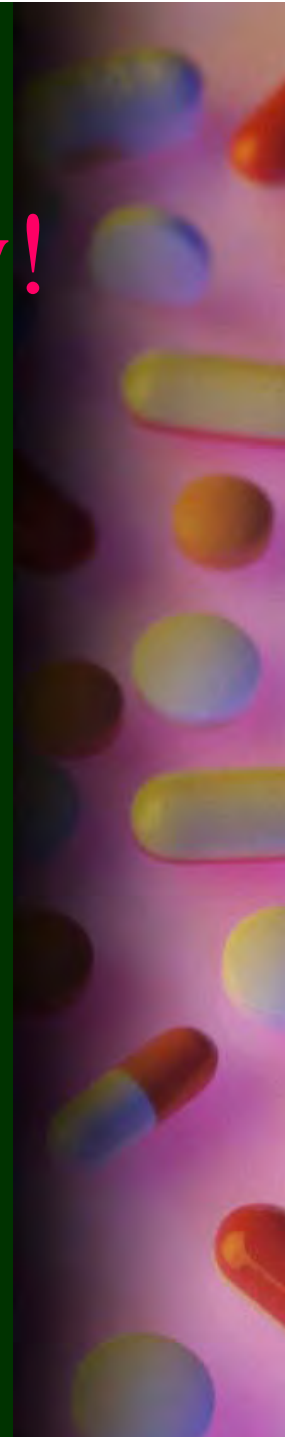
Environmental
Protection Agency
**Drug Enforcement
Administration**

Multiple Stakeholders



National Collaboration is Key!

- Work with pharmaceutical companies to craft solution
- Modify DEA Regulations
- Education is vital
- Many partner agencies available
- Develop funding alternatives



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