



East Bay Municipal Utility District

Pharmaceuticals: A Wastewater Perspective

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Overview

- 💧 Background
- 💧 Why should POTWs care?
- 💧 Bay Area collection efforts
- 💧 In pursuit of a long-term solution
- 💧 Coming soon?

Background

“Emerging” contaminants

- 💧 Synthetic or naturally occurring chemicals or microorganisms
- 💧 Not commonly monitored in the environment
- 💧 Potential to enter the environment and cause known or suspected adverse ecological and/or human health effects
- 💧 May be new chemicals OR
- 💧 Release may have occurred for a long time, but only recently recognized as a potential problem OR
- 💧 New use of existing chemicals

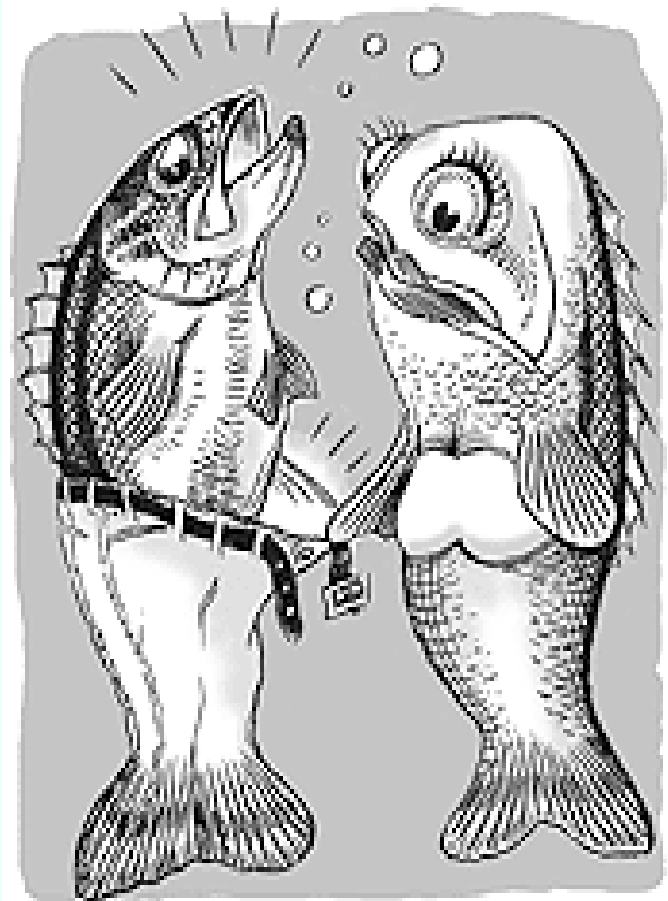
Background (continued)

Examples of emerging contaminants

- 💧 Pharmaceuticals
- 💧 Personal care products
- 💧 Antibacterial compounds
- 💧 Pesticides
- 💧 Flame retardants
- 💧 Surfactants
- 💧 Plasticizers

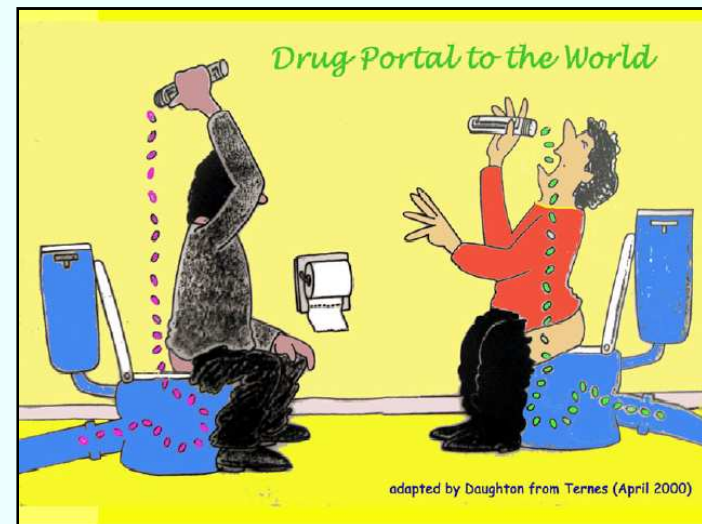
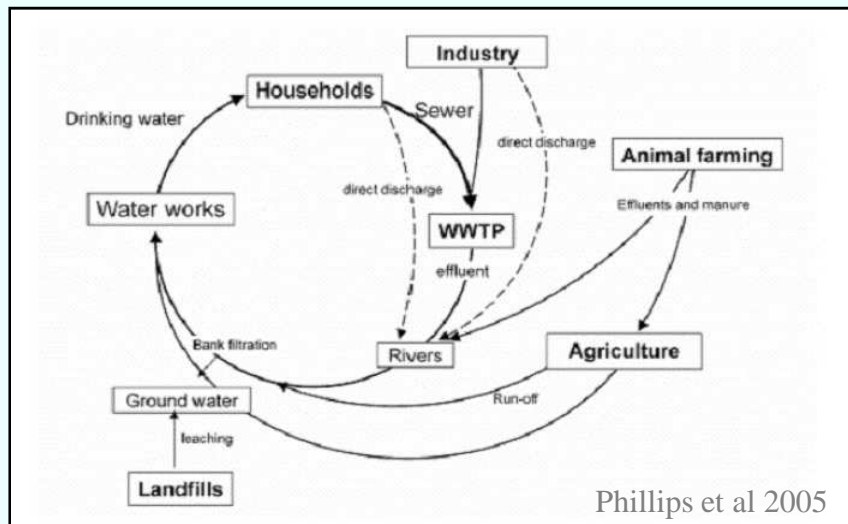
Background (continued)

- ◆ 2002 U.S. Geological Survey report on U.S. waterways
 - 17alpha Ethynyl Estradiol (16%)
 - Median concentration 73 ng/l
 - Effects at as low as 1 ng/l
 - Feminization of male fish
 - Acetaminophen (24%)
 - Steroids and hormones (16%)
 - Diltiazem (blood pressure medication) (13%)
 - Codeine (11%)
 - Antibiotics and antimicrobials (10%)
 - Ibuprofen (10%)



Why should POTWs Care?

- 💧 Major “source” of pharmaceuticals in surface waters
- 💧 Better detection limits
- 💧 Less tolerance for risk



Why should POTWs Care? (continued)

- Increasing attention to emerging contaminants, particularly pharmaceuticals

- Media
- Public
- Non-governmental organizations

- Potential impacts to organisms at low concentrations

- Persistence in the environment
- Bioaccumulation
- Chronic toxicity
- Endocrine disruption

- Future regulation?



Bay Area Pilot Projects

Palo Alto

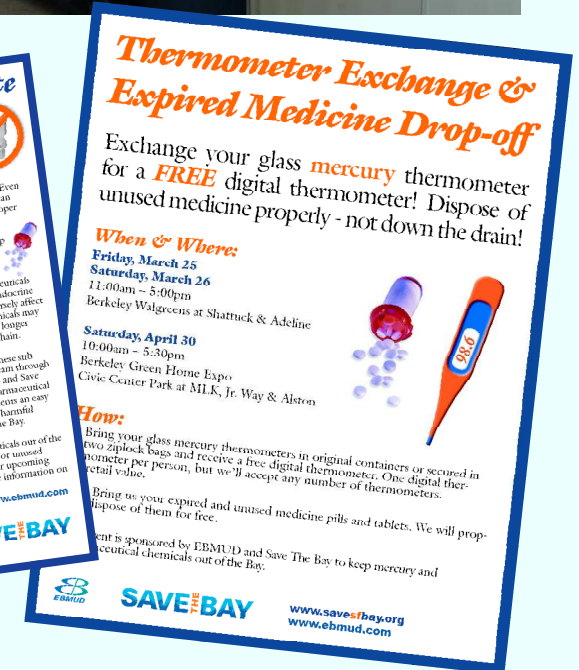
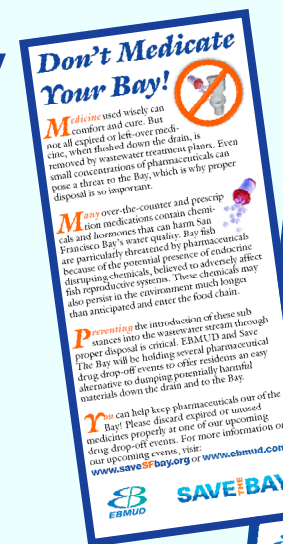
- 💧 Drop-bins at senior facilities
- 💧 Acceptance at HHW facility

EBMUD

- 💧 Partnered with Save The Bay
- 💧 One-day events with thermometer exchanges

Marin County

- 💧 Drop-bins at pharmacies



Local Pilot Projects (continued)

Lessons learned

- DEA regulations
 - Controlled medication
- No regional disposal message
 - HHW
 - Funding concerns
 - Controlled substances
 - Bay Area solid waste agencies do not want pharmaceuticals in garbage
 - Liability if garbage is sorted at landfill
 - Leachate



Regional Safe Medicine Disposal Days

May 13-21, 2006



- 💧 Week of disposal events throughout the region
- 💧 Regional coordination through Bay Area Pollution Prevention Group (BAPPG)
- 💧 Regional partnership with Walgreens
- 💧 Regional information sharing
- 💧 Publicity and media outreach coordinated regionally

Regional Safe Medicine Disposal

Days May 13-21, 2006

Objectives

- Build public awareness
- Provide disposal alternative
- Build agency capacity
- Conduct “by the book” events
 - Pharmacists segregate controlled substances
 - Police handle and destroy controlled substances
- Full accounting of costs
 - Staff/pharmacist/police time
 - Advertising/outreach
 - Printing
- Collect participant survey data



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

You **WOULDN'T** do this...



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.

...so please **DON'T** do this!



Safe Medicine Disposal Days
May 13-21, 2006
Drop-offs at select locations in San Francisco, Palo Alto, Oakland, San Jose, Milpitas, Sunnyvale, San Leandro, Fremont, Mountain View, Delmont, Menlo Park and more!
For locations, dates and hours, visit www.BayWise.org or call 1-888-BayWise
Please bring medicine in original containers, with personal information marked out.
The fish will thank you!

BAY AREA POLLUTION PREVENTION GROUP
BayGreens
The Partnership for a Greener Bay

Regional Safe Medicine Disposal Days

May 13-21, 2006

- 💧 19 agencies and organizations participated
- 💧 38 collection events regionally in 1 week
- 💧 Extensive publicity
 - Dedicated website (www.BayWise.org)
 - Regional phone hotline
 - >215,000 direct mailings
 - >30,000 flyers distributed
 - 320 transit ads
 - Radio PSAs
 - Email listservs
 - Community calendars
 - 65 newspaper ads in local and regional papers



Regional Safe Medicine Disposal Days

May 13-21, 2006

Results

- 💧 3,685 pounds collected in one week
 - 9% controlled substances (median)
- 💧 Extensive media
 - 5 press events
 - 10 newspaper articles
 - 4 radio interviews
 - 5 TV stations covered events
- 💧 Some agencies continuing programs



Regional Safe Medicine Disposal Days

May 13-21, 2006

Survey results

- Previous disposal methods
 - 45% garbage
 - 28% toilet
- 74% stored medicine more than 1 year



Regional Safe Medicine Disposal Days

May 13-21, 2006

Lessons learned

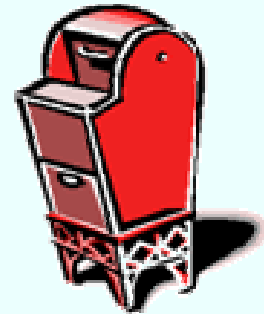
- 💧 One-time events “by the (DEA) book” are costly
 - Staff time - 1,980 staff hours from 19 agencies
 - Pharmacist time expensive
 - Police involvement extremely difficult
- 💧 But demand for proper disposal is high – need non-event based solution



In pursuit of a long-term solution...

💧 Working with DEA on long-term solution since May 2006

- Events with pharmacist and police = OK
- Bins at pharmacies handled by law enforcement = OK
- Pharmacy-based program without police (if collecting controlled substances) = NO
- Mail-back program to law enforcement = OK
- Mail-back program to reverse distributor = ?



💧 December 2006

- BAPPG crafted pilot mail-back proposal to DEA & USPS with reverse distributor as mailer recipient

💧 Next steps:

- Explore partnership with CA Bureau of Narcotics Enforcement



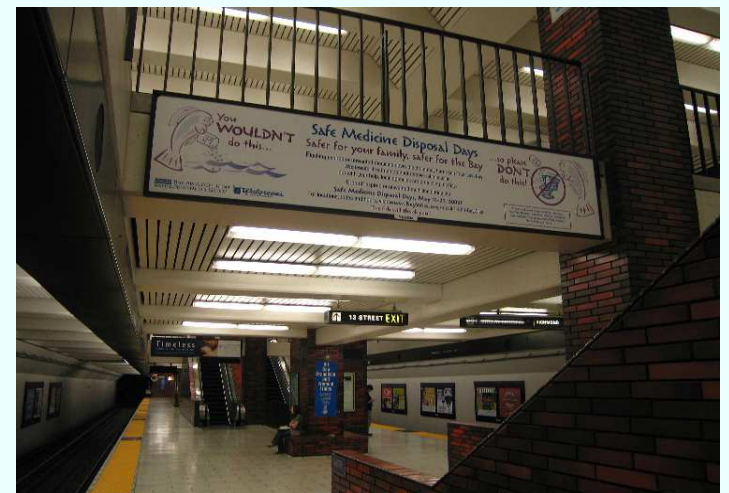
In pursuit of a long-term solution (continued)

- New collections in San Mateo County police stations
 - Mailbox style collection bins
 - Removal by hazardous waste hauler
- Expansion of non-controlled bins in Marin County & East San Francisco Bay
- Passage of SB 966 – a first step



Coming soon...?

- 💧 More bins at pharmacies and select locations for non-controlled medicine
- 💧 Mailers for controlled medicine
- 💧 All-in-one bins at select police stations within EBMUD wastewater service area
- 💧 Continued one-time events until long-term solutions in place, & to kick off new sites



Acknowledgements

- ◆ Bay Area Pollution Prevention Group
- ◆ Karin North, City of Palo Alto
- ◆ Save The Bay
- ◆ Teleosis Institute Green Pharmacy Program