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Green Pharmacy Coalition: Reducing Pharmaceuticals in the Environment

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Fate of Unused Pharmaceuticals

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- What are Pharmaceuticals Final Destination?

- Water
- Land
- Air



1-2-3... Mark Kruger injects bottles of prescription medication into the Bella Vista, Arkansas, Police Department's Drug Incinerator. The incinerator is used as an alternative to flushing unwanted drugs, which can make their way into the drinking water system.



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What we do not know?

- The ultimate fate of APIs in *landfills*
- How much disposal in *sewers* contributes to environmental residues
- How much incineration of pharmaceuticals will contribute to air pollution.
- Not much about actual inventories of disposed medication



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What We Do Know

- In terms of water, excretion is more responsible for APIs entering the environment than direct disposal
 - Worth calculating, which ones in terms of
 - Excr. clearance/PBT/DDD

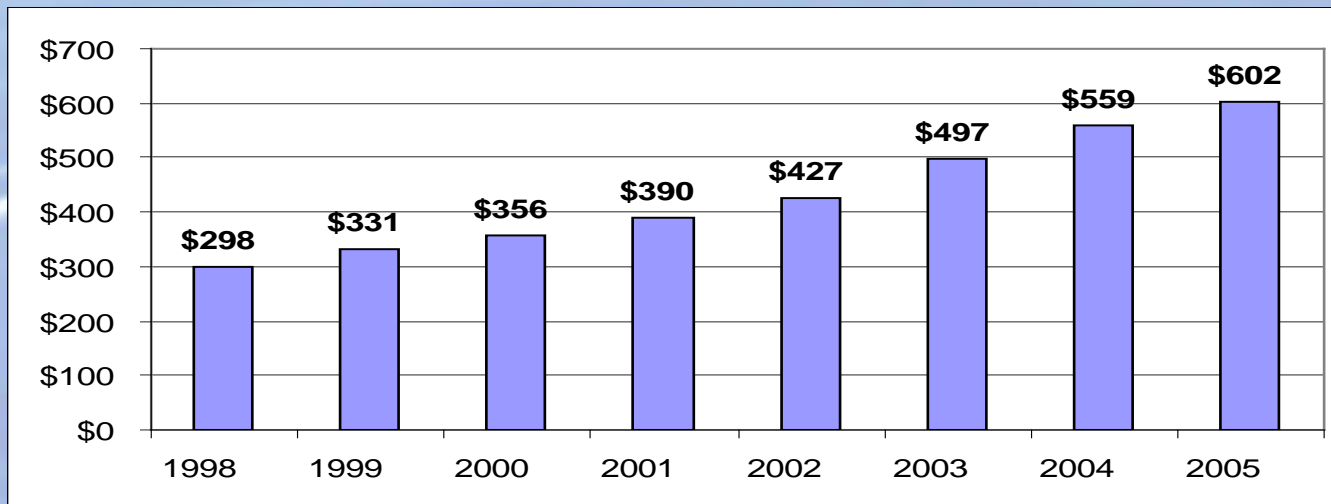




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What We Do Know

- Drugs accumulate in peoples homes
- Healthcare facilities have pharmaceutical waste
 - Reverse distribution
 - Disposal





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C02 and Pharm Footprint

- Procurement forms 60% of the emissions for which NHS England is responsible; within the procurement sector pharmaceuticals are the largest subsector, making up 22% of total emissions.
- Emissions from procurement of pharmaceuticals make up a fifth of the total for NHS England, and are comparable to emissions from either building energy use or travel sectors.



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NHS Recommendation

- Examine usage/wastage of pharmaceuticals
- Work with key manufacturers on lowering GHG emission
- Study the carbon intensities by world region for generic and R&D based medicines
- Investigate alternative models of care which may be less drug intensive



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What is Most Important?

- A key insight into this challenge is that a wide spectrum of actions targeted at reducing the transfer of PPCPs to the environment holds the potential for reciprocally improving the quality and cost of healthcare

– C. Daughton





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Integral Solutions

- Treating the environment and healthcare as an integral system could greatly clarify where and how to invest resources to achieve optimal outcomes.
- As improvements in either can lead to collateral improvements in the other.
 - C. Daughton





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Teleosis Institute's Green Pharmacy Program

Free and safe disposal for unwanted medicines

- Launched in June 1st 2007, ended May 31st 2008.
- One year of data processed
 - 15 active take-back sites in the San Francisco Bay Area
 - Many community recycling events
- Collected over 15000 pounds of unwanted medicines since inception to date



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One Year Data

- **2473** pounds of drugs
 - 72% returned medicines in pill, capsule or tablet form
 - 393,143 returned pills, capsules, and tablets
 - 26% in other forms
 - (i.e. liquids, powders, gels, aerosols, or suppositories)
 - 2% unknown



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Value

- Total Value (US\$) of Drugs Returned
 - Total Wholesale Value:
 - \$557,213.00
 - Total Retail Value
 - Between \$724,377.00 to \$891,541.00



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Marketing Status

- Prescription 60%
- OTC 37%
- Unknown 3 %



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Where do we collect it from?

- Origin of Returned Drugs:
 - Ongoing Sites 73 %
 - Pharmacy (66) %
 - Clinics/ Hospitals (7) %
 - 19 zip codes
 - » 41% from Elephant Pharmacy in Walnut Creek
 - » 94595, 94596
 - Events: 27%



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What is it by Therapeutic Category

• CNS AGENTS	21.98 %
• NUTRITIONAL PRODUCTS	15.20 %
• CARDIOVASCULAR AGENTS	9.62 %
• GASTROINTESTINAL AGENTS	9.15 %
• PSYCHOTHERAPEUTIC AGENTS	8.60 %
• DRUG UNKNOWN	8.37 %
• ALTERNATIVE MEDICINES	5.82 %
• RESPIRATORY AGENTS	5.39 %
• ANTI-INFECTIVES	4.58 %
• HORMONES	3.82 %
• METABOLIC AGENTS	3.41 %
• MISCELLANEOUS AGENTS	1.29 %
• COAGULATION MODIFIERS	1.27 %



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- CNS Agents
 - Analgesics
 - Anticonvulsants
 - Antiemetic/antivertigo agent
 - Antiparkinson agents
 - Muscle relaxants



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Green Pharmacy Coalition

- A multi-stakeholder proactive, voluntary holistic stewardship program
 - Stakeholders dispensing pharmaceuticals all must take back all unwanted medications



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Primary Coalition Stakeholders

- Hospitals
- Long-term Care Facilities
- Hospice
- Primary Care Clinics and Health Centers
- Veterinarian hospitals and clinics
- Pharmacies



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Green Pharmacy: Secondary Stakeholders

- Government and Law Enforcement
- Third Party Payers
- Health Care Systems
- Waste Management Agencies
- Public Utilities
- Public Health Organizations
- Environmental Organizations
- Professional Associations
- Consumers



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Hospitals

- Ongoing events
 - Managing Pharmaceutical Waste:
 - A 10-Step Blueprint for Healthcare Facilities
 - Eydie Pines & Charlotte Smith
 - Rx2 Curing Pharmaceutical Waste
 - Catherine Zimmer
 - EPA Inventory request
 - Integrative Approach to Pharmaceutical Waste Management
 - Practice Greenhealth Program
 - Practice Greenhealth Webinars



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Hospice



- Pilot Mail-back program
 - Sutter VNA
 - Sharps Inc.

SHARPS.

TAKEAWAY™
ENVIRONMENTAL RETURN SYSTEM



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Pilot Mail-back program

- 500 prepaid mailers
- Distributed by 26 nurses
 - Initial visit
 - With information
 - Final visit





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Pilot Mail-back program

- Data collected online
 - Date returned
 - Weight per item
 - Overall percentage returned
 - Costs of program
 - Costs per pound
- Final report February 1st 2009

We also help you
dispose of paperwork

SharpsTracer is our proprietary online tracking system for managing certifications, manifests, and providing online proof of destruction.





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Pharmacists

- CE Program November 1st
 - Drugs in the Environment: A Pharmacist's Perspective
 - Touro University
 - Vallejo
- Green Pharmacy Toolkit

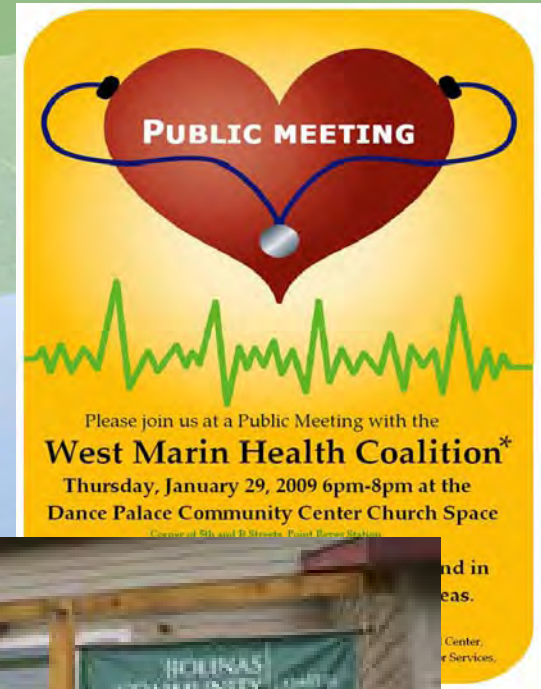




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Coastal Health Alliance

- Three clinics in West Marin
 - On-going take back program
 - paid for by the county
 - Public education
 - West Marin Environmental Health Coalition
 - Clinical staff require patients to bring in their medications on all visits
 - Practice Greenhealth Clinic Program





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Long Term Care Facilities

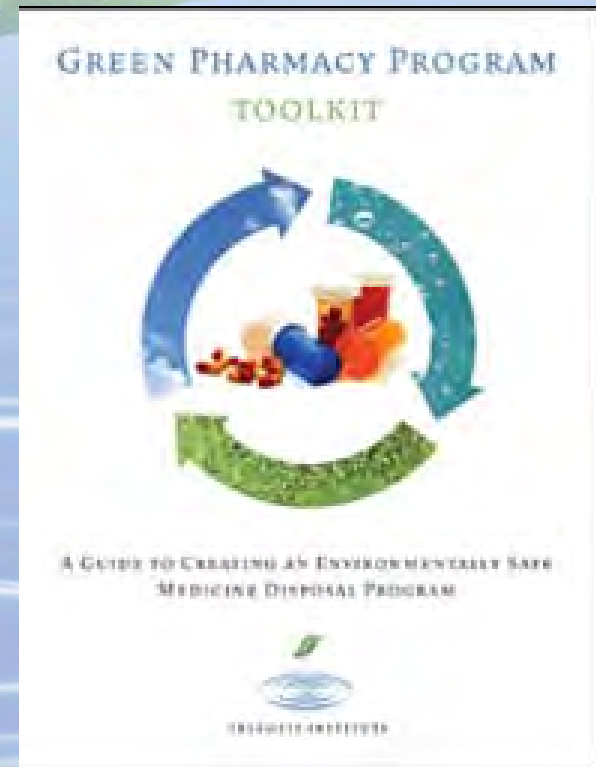
- Piloting electronic dispensing
- Educational Events
 - Reducing and Preventing Pharmaceutical Waste
 - American Society of Consultant Pharmacist November 18, 2009
 - Integrative Approach to Pharmaceutical Waste Management



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Research

- Evaluation and summary of regional take-back programs
- Begins Jan 2009





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