

# Considerations for Safe, Secure, Environmentally Sound Disposal of Opioids and Other Medications Used in the Home

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# Disclosure of Employment and Consulting Relationships on Household Medication Disposal and Pharmaceutical Waste Regulations

## Consulting Clients

### Local & State Governments:

San Francisco Department of the Environment

Skagit County Health Department

Snohomish Health District

Tacoma-Pierce Health Department

Whatcom County Health Department

Oregon Department of Environmental Quality

### Associations:

Association of Washington Cities

Washington State Medical Association

Washington State Nurses Association

### Non-Profit Organizations:

California Product Stewardship Council

Zero Waste Washington

### Government Affairs:

Ecoconsult for public health technical analysis  
commissioned by Los Angeles County

## Past Salaried Positions

King County Local Hazardous Waste Management Program (2008-2015)

Snohomish Health Department (2015)

# Safe & Environmentally Sound Medicine Disposal

Reduces Availability for Misuse, Addiction, and Overdose

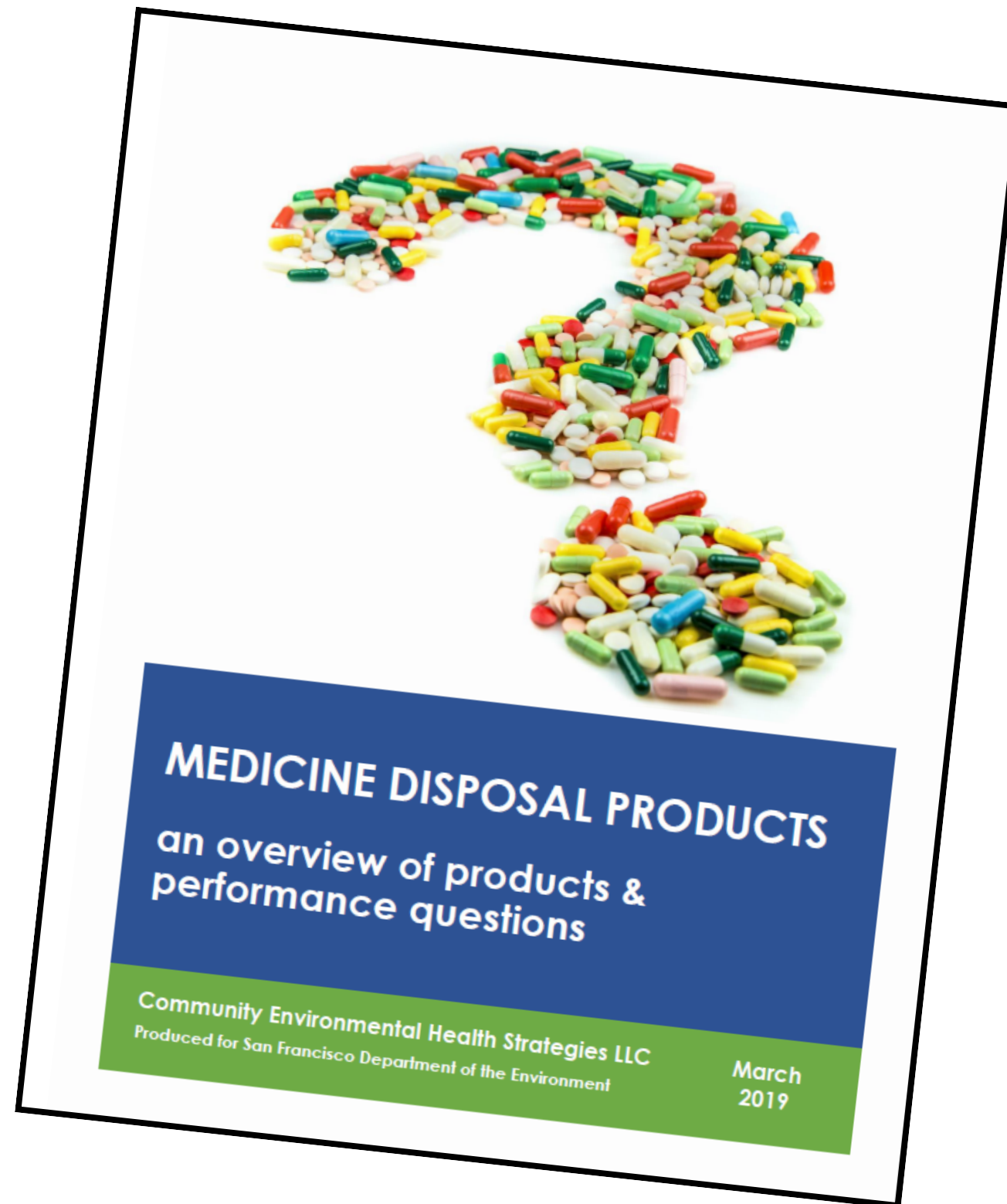
Helps Prevent Unintended Poisonings

Prevents Pollution from Waste Medicines





# 2017-2019 Review of Medicine Disposal Products for San Francisco Department of the Environment



Safe For User?

Drugs Made  
Undesirable?

Drugs Made  
Non--Retrievable?

Safe For Solid  
Waste Disposal?

2019 report available from San Francisco Department of the Environment's website  
<https://sfenvironment.org/safe-medicine-disposal-policy-resources>

# Safe For User?

Are product ingredients safe?

Does the product as sold contain any hazardous chemicals?

Are users protected from exposure to active pharmaceuticals when using the product?

Are instructions easy to follow and warning labels complete?

## Minimal and Incomplete Ingredient Disclosure.

One clearly poses chemical exposure risk to strong oxidizing agent.  
Some have noxious chemical smells.

Drugs must be dissolved in water or unknown solvent of products.  
No warnings about avoiding dermal exposure to liquid drug mixture.

## Risks of Spills, Splashes, Foaming But No Spill Clean-Up Instructions Provided.

Several product labels state foam or gas may be produced when drugs added.  
Ziplock bag-like pouches do not stand up; can tip over when filled with water.  
Seal on ziplock bag-like pouches may not close completely and can leak.  
Products in bottles or products that rely on Rx bottle can tip over.

Examples of Ingredients.  
Ingredients vary by product.

Many unidentified.

activated carbon

bentonite clay (= clay kitty litter)

calcium hypochlorite

"cross-linking polymers"

"denaturing agents"

"organic plant-based powder"

# Recommendations On Safety Concerns for Medicine Disposal Products

Improve consumer safety labeling with better warnings about avoiding exposures.

Disclose product ingredients and identify any chemical hazards.

Provide spill clean-up instructions.

Provide child safe closures and/or packaging.

Add solidifying agents or absorbents for liquid products to prevent spills and leaks in household trash and waste system. Protect solid waste workers.

Clarify non-specific technically complicated instructions such as:

"for non-hazardous drugs only" or

"not for use with drugs known to react with each other"

Most Consumers Are Not Chemists.

Kitchens and Bathrooms  
Are Not Chemistry Labs.

# Drugs Made Undesirable?

Does the product act as a deterrent for medicine abuse or accidental ingestion?

Are medicines disguised or made physically inaccessible?

Are medicines made unpalatable for ingestion?

Some products are likely to make pills less desirable and less palatable due to noxious odors and tastes.

Deterrence impact is unclear for other products that may be edible:

- A product states its ingredients are approved for use in food. Edible?

- A product is described as “plant-based”.

Product with drugs is not disguised in trash.

- Product labels identify containers as containing medicines.

- Exception was one product with plain, unlabeled white bottle.

# Drugs Made Non-Retrievable?

Are medicines recoverable from the product mixture?

Are pharmaceuticals permanently physically or chemically altered?

Does the product's action meet the DEA's non-retrievable standard for disposal of controlled substances?

Testing not publicly available for all products. Full analytical test results not always available.

Testing of several products shows controlled substances are retrievable with brief water wash at room temp.

Time needed for "complete treatment" vary greatly from hours to days.

One product says wait 2 hours before putting into trash. Most instruct to put in trash after use.

Completeness of any physical sequestration or chemical degradation will depend on the amount, type, and dosage forms of medicines that the resident adds.

Generally inadequate research design to properly assess retrievability of pharmaceuticals.

- small number of drugs tested
- in most tests, each drug tested individually, not in any combination
- testing of more stringent extraction processes or conditions mostly not available



# Safe For Solid Waste Disposal?

Is the product-drug mixture in solid or liquid form?

Can the product-drug mixture be released in the garbage can or compactor truck?

Is the product-drug mixture toxic or otherwise hazardous?

Does the product-drug mixture meet federal, Tribal, state, and local requirements for solid waste disposal?

Almost all final product-drug mixtures are in liquid, slurry, or wet form. Liquid wastes commonly not accepted in municipal garbage or landfills.

Packaging can, and probably will, split and leak in compactor waste truck and/or in landfill.

Ziplock bags and plastic bottles can split, leak, or fail to seal.

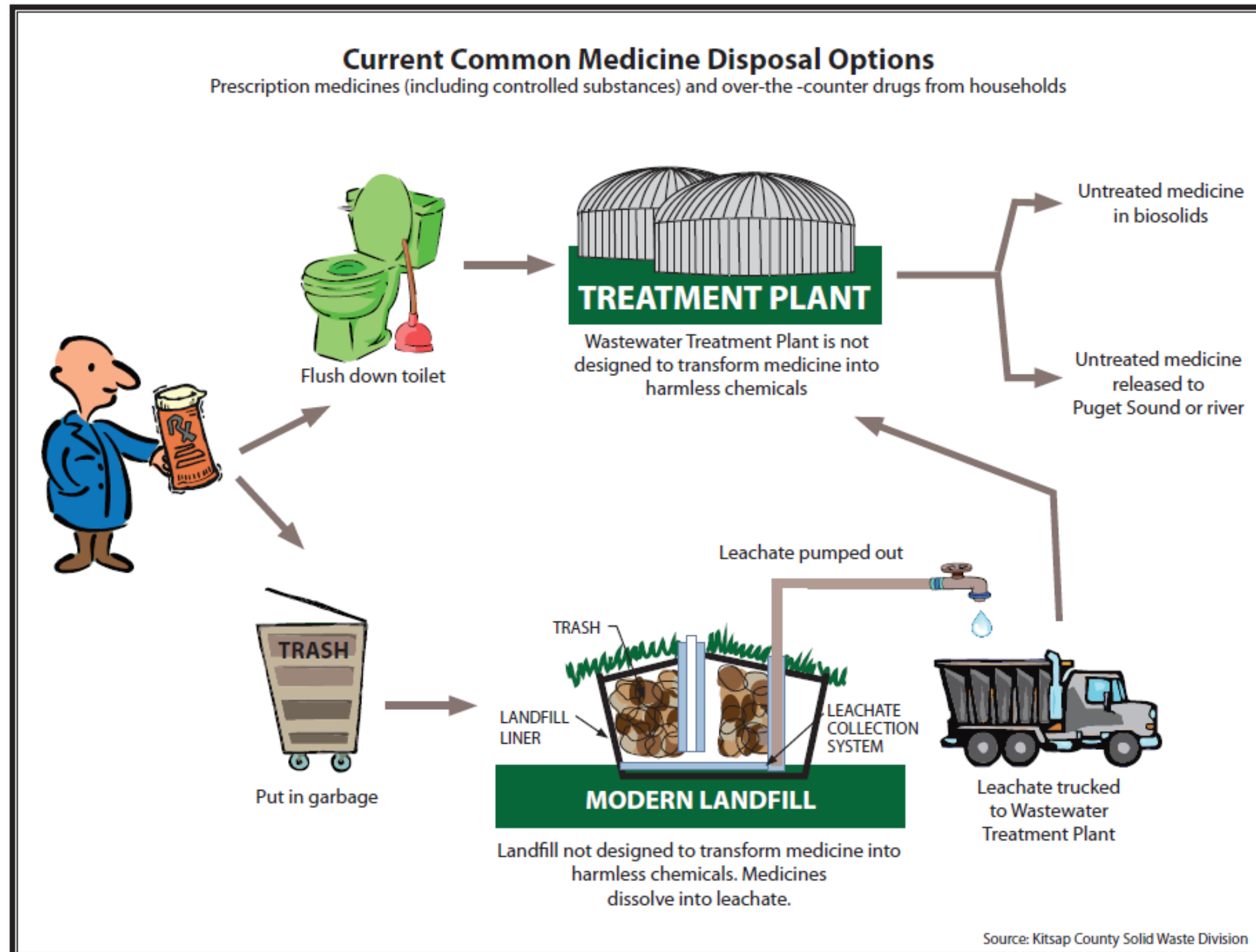
Many landfills truck leachate to wastewater treatment facilities where pharmaceuticals and other chemicals cannot be fully removed or destroyed. Releases into facility outfalls and biosludge.

**Incomplete waste characterization to assess if non-hazardous and non-toxic for solid waste system.**

- Tests commonly conducted on product only, without addition of any drugs.
- Inadequate research design to assess if pharmaceuticals or by-products are released, e.g. EPA TCLP screens for a panel of metals and toxic chemicals, but not for release of pharmaceuticals.
- Some jurisdictions would require additional toxicity testing, e.g. aquatic toxicity determinations.

**Lack of consideration of state and local solid waste regulations.** Conflicts with local guidances to residents. Some local solid waste regulations prohibit or discourage any disposal of drugs in trash or landfill.

# Both flushing and trash disposal of leftover medicines send drugs to our wastewater treatment plants, then the environment



Roughly 1/3 of medicines sold to consumers go unused

*a ballpark estimate; study results vary*

Keeping that LARGE amount of waste medicines out of landfills and wastewater is much easier, effective, and less expensive than attempting to remove pharmaceuticals from waste systems, drinking water, or our waterways and oceans.

2011 graphic from Kitsap County (WA) Solid Waste.  
Kitsap County prohibits trash or sewer disposal of any household hazardous wastes.  
Since 2018 Kitsap County has had a comprehensive drug take-back program.

# Recommendations On Performance Testing For Medicine Disposal Products

**Independent Analysis.** Require independent laboratory analysis and full disclosure of analytical reports.

**"Real World" Use Testing.** Test drug mixtures & combinations of different dosage forms to better represent “real world” consumer use. Consumers generally do not just dispose of opioids.

**Comprehensive Analytical Testing.** Use appropriate analytic designs to assess deterrence and to assess non-retrievability of pharmaceuticals.

**Complete Waste Determination Assessment.** Conduct complete waste determination of the product with treated drugs to assess if appropriate for solid waste disposal.

A variety of tests will be required to assess compliance with diverse state, local, and Tribal regulations.

# Define Appropriate Regulatory Oversight for Medicine Disposal Products

Current marketplace for medicine disposal products appears to be largely unregulated.

Who is monitoring for consumer safety?

Who is monitoring for accurate claims on product performance?

Who is monitoring for federal, state, local, and Tribal regulatory compliance?

Who has enforcement authority?

Critical to recognize and respect the authority and role of local, state, and Tribal governments for solid waste and hazardous waste management in their jurisdictions.



# Engage Local Solid Waste and Household Hazardous Waste Experts in Decision-making about Medication Disposal Strategies

County & city solid waste, hazardous waste, and wastewater professionals with experience in household medication disposal need to be consulted.

Local agencies are:

- innovators and problem solvers around safe medication disposal options for their communities
- experts in real world behavior and attitudes of their residents on waste disposal
- knowledgeable about pitfalls and solutions in managing complex waste streams made up of a myriad chemicals and materials
- managing waste systems and facilities that are and will be impacted by federal decisions about household medication disposal

# Questions to Address When Considering "In-Home" Opioid Disposal Systems

Safe For User?

Drugs Made  
Undesirable?

Drugs Made  
Non-Retrievable?

Safe For Solid  
Waste Disposal?

Is it a better solution  
for residents than a  
Comprehensive  
Drug Take-Back Program?

for who?

for what drugs & what dosage forms?

does it complement or counteract drug take-back?

how to align simple messaging for residents?

# What is a COMPREHENSIVE Drug Take-Back Program?

## Utilizes All 3 DEA-Authorized Collection Strategies

### Pharmacy-based Drop Boxes

include every DEA-registered pharmacy that wants to participate.

### Prepaid Return Mailers On Demand & Distributed

- via phone or online request to residents & caregivers
- distributed from pharmacies, libraries, city halls, schools, etc...

### Periodic Collection Events

in areas underserved by drop boxes

**Conveniently and equitably distributed services** through combination of drop boxes, mailers, and collection events

**Promotion and education** using multiple formats, languages, and focused messaging.

**No cost to user. Adequate and ongoing financing needed.**  
Pharmaceutical industry financing is effective model.

**Government oversight for safety and compliance.**

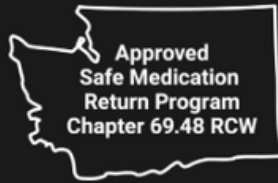


## Where to safely drop off your unwanted medicine in Washington

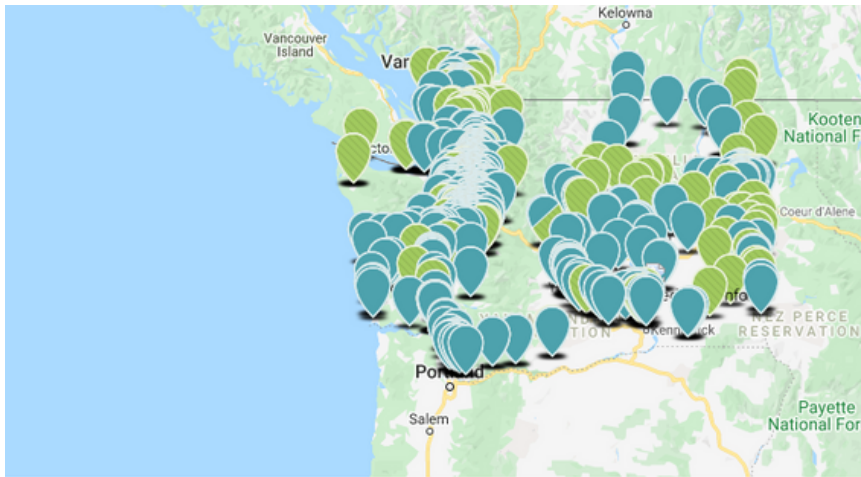
Use the search function below to find convenient locations with secure disposal drop-off locations or where you can obtain mail-back supplies. Call (844) 4-TAKE-BACK or (844) 482-5322 for more information or to order mail-back supplies.

Find a Location

Order Mail-Back Supplies

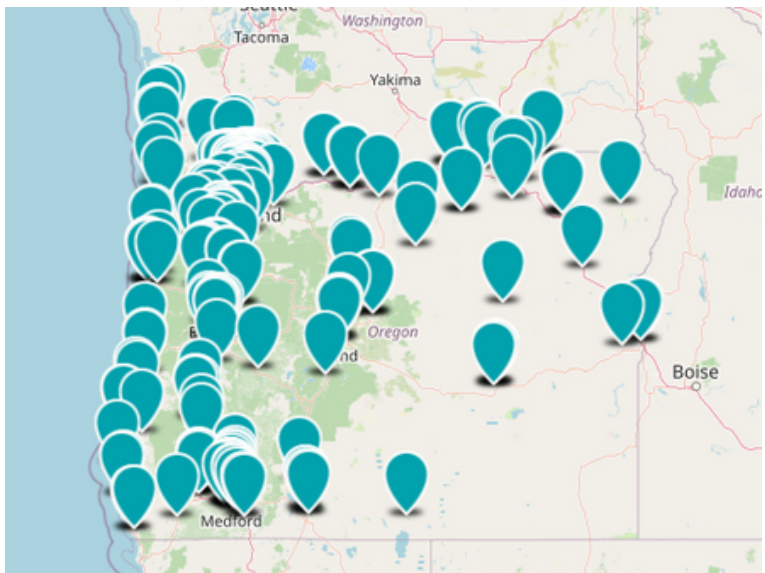


MEDTAKEBACKWASHINGTON.ORG

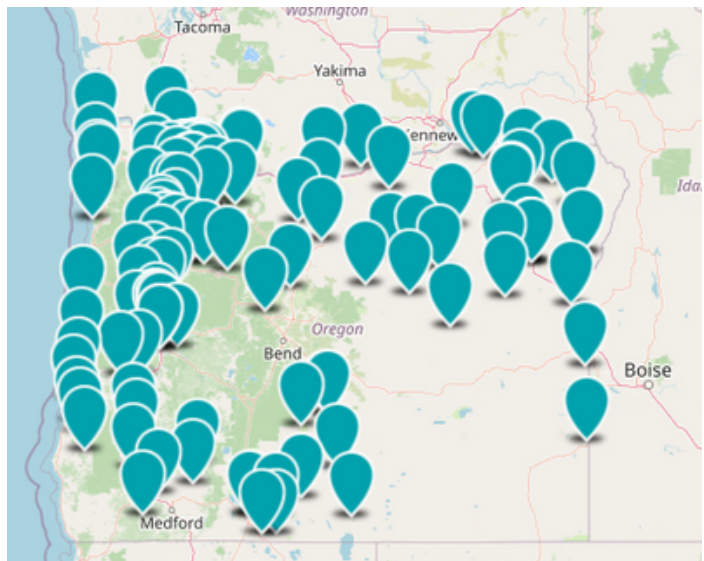


WA drop boxes & mailer distribution  
- MED-Project

Legend:  Medicine Kiosks  Mail-Back Information Sites  Medicine Mail-Back Distribution Sites



OR drop boxes - MED-Project



OR mailer distribution - MED-Project

Images from MED-Project.org, approved program.

Inmar Intelligence's program is also approved program in WA and OR.



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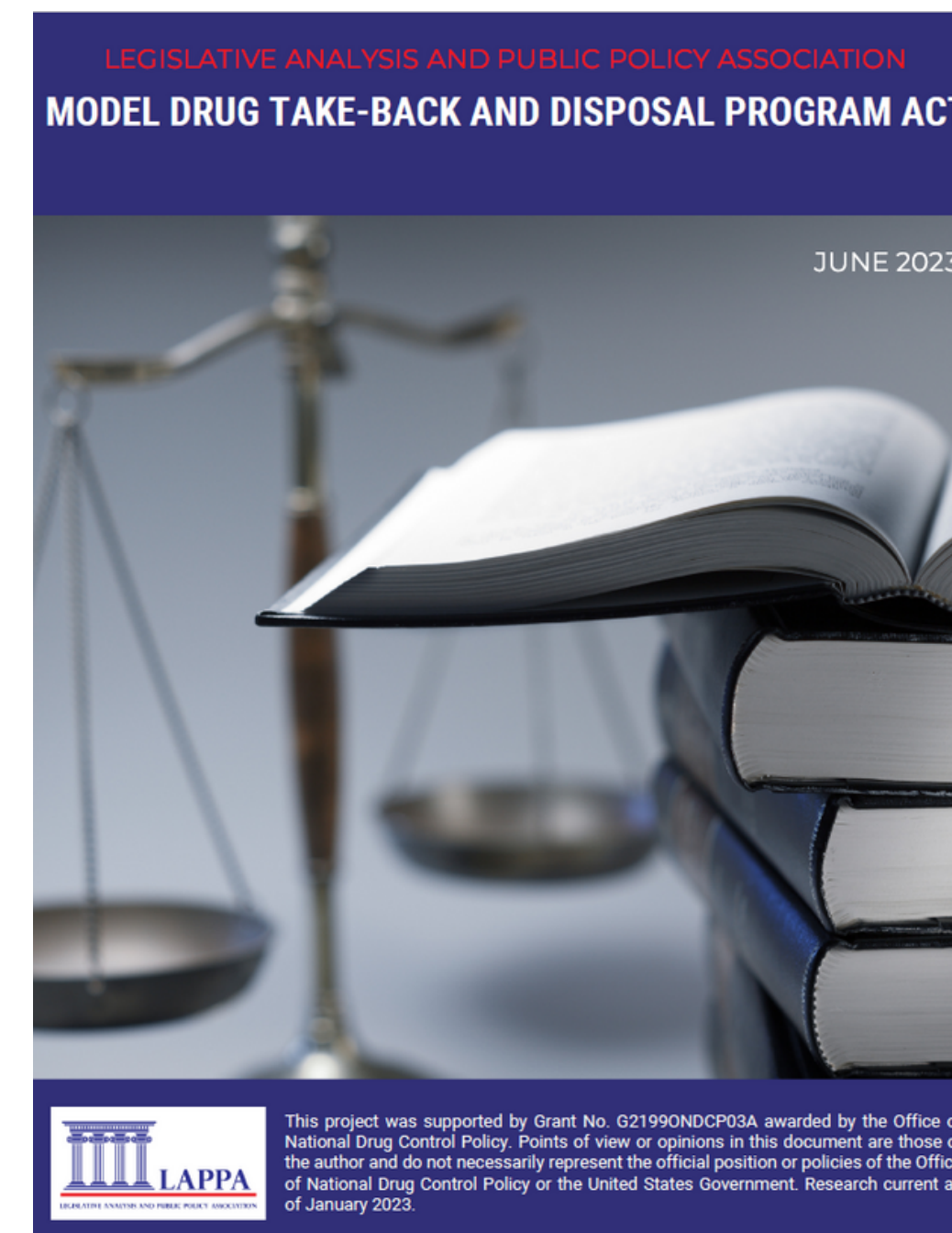
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Framework for state policymakers:  
Pharmaceutical stewardship model law  
based on WA and OR drug take-back laws.

Legislative Analysis and Public Policy Association  
[legislativeanalysis.org](http://legislativeanalysis.org)

drug disposal project  
funded by White House ONDCP




# Education & Promotion!

STARTS WITH **one**

OPIOID FACTS   STORAGE & DISPOSAL   CONVERSATION STARTERS   OVERDOSE RESPONSE   RESOURCES   GET HELP   EN ESPAÑOL

ABOUT THE CAMPAIGN

The Starts with One campaign is designed to inform and educate young adults, their parents, and older adults about the dangers of prescription drug misuse and the importance of safe storage, use, and disposal. This campaign is funded by the Washington State Health Care Authority (HCA).



Stop opioid abuse: your choices matter

Watch later   Share

Watch on YouTube

OPIOID FACTS

Find out why opioids are so addictive, and where you can go for help.

MORE

STORAGE & DISPOSAL

Discover practical ways to safely store and dispose of opioids.

MORE

CONVERSATION STARTERS

Get ideas and inspiration for connecting with loved ones.

MORE

OVERDOSE RESPONSE

Learn about overdose risks, signs, and how you can help in an emergency.

MORE

**STARTS WITH ONE** campaign [getthefactorsrx.com](https://getthefactorsrx.com)  
Washington State  
Health Care Authority

*comprehensive opioid messaging that  
supplements required manufacturer education  
about WA drug take-back program*



PROTECT YOUR  
LOVED ONES

Lock up your medications and safely dispose of unused medications at a take-back program near you. Find one at [MedTakeBackWashington.org](https://MedTakeBackWashington.org).

MEDTAKEBACKWASHINGTON.ORG





# Education & Promotion!

**PUBLIC HEALTH**  
Prevent • Promote • Protect  
BENTON-FRANKLIN HEALTH DISTRICT

**WE'RE PARTICIPATING IN WASHINGTON'S  
DRUG MAIL-BACK PROGRAM**

THERE ARE TWO WAYS TO SAFELY  
**DISPOSE OF EXPIRED OR UNWANTED MEDICINES**

**ONE:** Pick up free, mail-back bags to dispose of pills, inhalers and unused syringes.  
*\* Find postage-paid mailers at Benton-Franklin Health District's Kennewick Office, 7102 W. Okanogan Pl.*

**TWO:** Deposit unused meds at one of the kiosks in our area.

*\* Scan QR code for drop off map*

Please DO NOT BRING medications to BFHD.  
Deposit medications into safety envelope, seal and mail.  
Call your local garbage collection service to dispose of used syringes safely.



Benton-Franklin Health District  
in south central Washington

## Educational Need That FDA Could Address Through Opioid REMS Requirement

Require opioid manufacturers to fund and operate a **public-friendly website and toll-free phone number** to connect residents in every state with all available drug take-back services in their area.

FDA's reliance on DEA's online list of authorized collectors and Google Maps' incomplete drug take-back listings is inadequate.

# Things We Know From Years of Experience with Drug Take-Back Programs

**Large quantities of medicines are unwanted and need.  
Residents are seeking secure & environmentally sound disposal.**



Pharmacist showing bag of medicines returned by 1 person after illness and death of family member.

**Residents need to dispose of all kinds of medicine.**



## Some Examples of Collection Amounts

Washington 161,775 pounds 2011 170,288 pounds 2022

Oregon 65,427 pounds July 2021-June 2022





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