

Harwich Prescription Dropbox Location:**183 Sisson Road, Harwich**<https://www.mass.gov/service-details/prescription-dropbox-locations>**What are Pharmaceutical & Personal Care Products (PPCPs)?**

Modern society uses products that contain various chemicals for a wide variety of personal health and hygiene uses, including preventing and combating disease, alleviating symptoms from illness and injury, personal comfort, grooming and cosmetic purposes. Pharmaceutical and Personal Care Products (PPCPs) include medicines, insect repellents, sunscreens, perfumes, soaps, fragrances, and lotions. These products, which can be found in any drug store, have the potential to enter the environment through domestic sewage and other sources. The following are some examples of PPCPs:

Over the Counter (OTC) Pharmaceuticals

- Aspirin
- Acetaminophen (Tylenol)
- Antihistamines (Benadryl, etc.)
- Ibuprofen

Prescription Pharmaceuticals

- Pain medications (Codeine, Vicodin, Percodan)
- Blood Pressure medications
- Heart medications
- Antibiotics

Personal Care Products

- Lotions and creams
- Fragrances (perfumes)
- Sunscreens
- Cosmetics
- Insect repellants (DEET)

What can I do to help minimize my contribution to PPCPs & EDCs in the environment?

Reduce pharmaceutical and personal care waste

- Encourage your health care provider to prescribe only the medication you need at precisely sufficient quantities to be effective. Consider a trial prescription for new maintenance medications so you can find out if they work for you before getting a 30- or 90-day supply.
- Buy Over the Counter (OTC) medications in quantities that can be used before the expiration date, typically two years from manufacture.

Household Solid Waste/Take Back Programs

- Take advantage of community pharmaceutical take-back programs that allow the public to bring unused drugs to a central location for proper disposal. The Town of Harwich Hazardous Waste collection days are as follow:

For additional information regarding these collection days and what other materials may be brought to be disposed of go to <http://www.capecodextension.org/Hazardous-Waste-Water-Quality/Hazardous-Waste-Info-For-Homeowners.html>

- Take unused, unneeded, or expired prescription drugs out of their original containers and throw them in the trash. If possible, make the medicines as unrecognizable and unpalatable as possible to discourage accidental or intentional misuse. Put them in impermeable, non-descript containers, such as empty cans or sealable bags.

Disposal in septic system (flushing)

- Do not flush drugs down the toilet unless the label or accompanying patient information specifically instructs doing so. Many drugs are not degraded in a septic system, and, consequently, are released into the environment.
- The exception to this rule are the medications that the Food and Drug Administration (FDA) advises to be flushed down the toilet instead of thrown in the trash because of their high abuse potential. These medicines include:

Actiq (fentanyl citrate)
Daytrana Transdermal Patch (methylphenidate)
Duragesic Transdermal System (fentanyl)
OxyContin Tablets (oxycodone)
Avinza Capsules (morphine sulfate)
Baraclude Tablets (entecavir)
Reyataz Capsules (atazanavir sulfate)
Tequin Tablets (gatifloxacin)
Zerit for Oral Solution (stavudine)
Meperidine HCl Tablets
Percocet (Oxycodone and Acetaminophen)
Xyrem (Sodium Oxybate)
Fentora (fentanyl buccal tablet)

Pharmaceuticals

Current Pharmaceutical Levels Found Drinking Water on Cape Cod in Silent Springs Testing

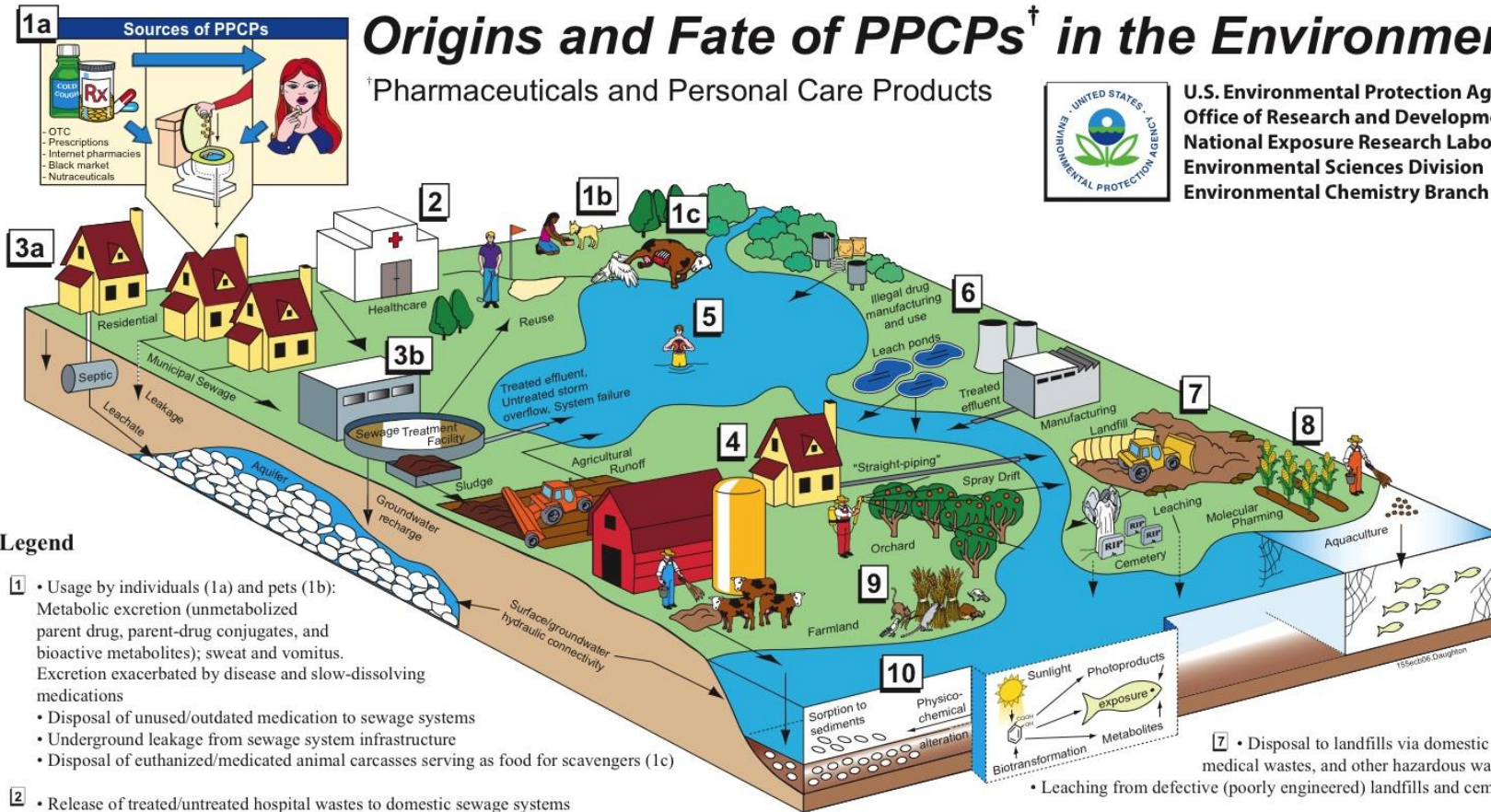
Pharmaceutical	Major uses	Typical daily dose		Maximum level detected (ng/l)	Gallons of Drinking water required to get one dose	8 oz. of drinking water for one dose
		milligrams	nanograms (ng)			
Atenolol	Beta blocker	50	50,000,000	0.8	16,510,756	264,172,100
Carbamazepine	Anti-convulsant (treatment for epilepsy), anti-depressant	100	100,000,000	72	366,906	5,870,491
Dilantin (phenytoin)	Anti-convulsant	50	50,000,000	66	200,130	3,202,086
Gemfibrozil	Lipid regulator (lowers cholesterol)	1200	1,200,000,000	1.2	264,172,100	4,226,753,600
Meprobamate	Anti-anxiety	200	200,000,000	5.4	9,784,152	156,546,430
Sulfamethizole	Antibiotic	500	500,000,000	1	132,086,050	2,113,376,800
Sulfamethoxazole	Antibiotic	400	400,000,000	113	935,122	14,961,960
Trimethoprim	Antibiotic	80	80,000,000	0.7	30,191,097	483,057,554

Origins and Fate of PPCPs[†] in the Environment

[†]Pharmaceuticals and Personal Care Products



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Office of Research and Development
National Exposure Research Laboratory
Environmental Sciences Division
Environmental Chemistry Branch



Legend

- 1** • Usage by individuals (1a) and pets (1b): Metabolic excretion (unmetabolized parent drug, parent-drug conjugates, and bioactive metabolites); sweat and vomitus. Excretion exacerbated by disease and slow-dissolving medications
 - Disposal of unused/outdated medication to sewage systems
 - Underground leakage from sewage system infrastructure
 - Disposal of euthanized/medicated animal carcasses serving as food for scavengers (1c)
- 2** • Release of treated/untreated hospital wastes to domestic sewage systems (weighted toward acutely toxic drugs and diagnostic agents, as opposed to long-term medications); also disposal by pharmacies, physicians, humanitarian drug surplus
- 3** • Release to private septic/leach fields (3a)
 - Treated effluent from domestic sewage treatment plants discharged to surface waters, re-injected into aquifers (recharge), recycled/reused (irrigation or domestic uses) (3b)
 - Overflow of untreated sewage from storm events and system failures directly to surface waters (3b)
- 4** • Transfer of sewage solids ("biosolids") to land (e.g., soil amendment/fertilization)
 - "Straight-piping" from homes (untreated sewage discharged directly to surface waters)
 - Release from agriculture: spray drift from tree crops (e.g., antibiotics)
 - Dung from medicated domestic animals (e.g., feed) - CAFOs (confined animal feeding operations)
- 5** • Direct release to open waters via washing/bathing/swimming
- 6** • Discharge of regulated/controlled industrial manufacturing waste streams
 - Disposal/release from clandestine drug labs and illicit drug usage
- 7** • Disposal to landfills via domestic refuse, medical wastes, and other hazardous wastes
 - Leaching from defective (poorly engineered) landfills and cemeteries
- 8** • Release to open waters from aquaculture (medicated feed and resulting excreta)
 - Future potential for release from molecular pharming (production of therapeutics in crops)
- 9** • Release of drugs that serve double duty as pest control agents:
 - examples: 4-aminopyridine, experimental multiple sclerosis drug → used as avicide; warfarin, anticoagulant → rat poison; azacholesterol, antilipidemics → avian/rodent reproductive inhibitors; certain antibiotics → used for orchard pathogens; acetaminophen, analgesic → brown tree snake control; caffeine, stimulant → *coqui* frog control
- 10** Ultimate environmental transport/fate:
 - most PPCPs eventually transported from terrestrial domain to aqueous domain
 - phototransformation (both direct and indirect reactions via UV light)
 - physicochemical alteration, degradation, and ultimate mineralization
 - volatilization (mainly certain anesthetics, fragrances)
 - some uptake by plants
 - respirable particulates containing sorbed drugs (e.g., medicated-feed dusts)

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<http://epa.gov/nerlesd1/chemistry/pharma/images/drawing.pdf>
from: <http://epa.gov/nerlesd1/chemistry/pharma/>