



Analysis of Educational Messaging on Pharmaceutical Disposal in Missouri

October 14, 2020

Below are our general findings about Missouri’s educational messaging and resources on the topic of pharmaceutical disposal. Table 1 (below) contains a more detailed summary of the variety of educational resources we found. Table 2, which follows, contains contact information for each of the entities described in Table 1.

- **Intended Audience:** Typically, all MO residents are the target audience of these educational resources. In some cases, the resources are directed at patients, youth communities, or healthcare providers.
- **Major commonalities:** Almost all organizations highlight the fact that improper disposal of medication can lead to public health concerns (e.g., accidental and purposeful consumption by others in the house) and environmental problems, namely water pollution. There is consensus that bringing medication to a take-back location or event is the preferred method of disposal.
- **Mention of take-back programs:** All resources instruct residents to use take-back kiosks or events to dispose of unwanted medication. The DEA events and the MO Prescription Pill and Drug Disposal (P2D2) drop-off locations were frequently mentioned. Some, but not all, resources provide a link to a list of collection locations. Others directed residents to ask their local pharmacist about medication take-back programs. An added benefit of this research was that it helped identify medication drop-off locations within Missouri, which contributed to PSI’s development of the drop-off location database.
- **Mention of take-back events/days:** Several resources mentioned that residents can bring unwanted medication to DEA take-back events. These events are useful for creating awareness about drug take-back options. More information can be found at <https://takebackday.dea.gov/>.
- **Guidance on when to dispose of medication in the trash:** All of the resources highlighted take-back programs as the best method for disposal. However, many organizations and local governments suggested disposal in household trash as a legal, but less desirable, alternative. Specifically, they instruct residents to first take the medication out of its original container and then mix it with an undesirable substance before putting it in the trash.

- **Guidance on when to flush medication:** The most noticeable inconsistency between messages is on the topic of flushing. There is mixed opinion about whether flushing is an acceptable last resort option for disposal; eight resources identify situations where flushing might be appropriate, whereas other resources indicate that residents should never flush medication. It appears some organizations avoid taking a stance on flushing by not mentioning it at all. Of the 26 educational resources PSI analyzed, 11 instruct residents to never flush medication down the toilet or sink; 6 resources instruct users to only flush if the medication is on the FDA flush list or the patient information says to do so; 2 instruct users to only flush in an emergency or as a last resort; and 7 resources make no direct mention of flushing at all. It was not clear what constitutes an emergency, which is an important clarification and definition. The organizations most likely to condone flushing as an acceptable last resort disposal option were those organizations focused on youth, the opioid crisis, and overdose prevention.
- **Guidance on disposal pouches:** Only three resources mentioned disposal pouches as an alternative option for at-home disposal of medication. None of the resources specifically discourage the use of these pouches. PSI believes consumers should not rely on these pouches or other similar products to dispose of leftover household medication because there is no publicly available scientific evidence that the products are safe or effective. Furthermore, the U.S. Drug Enforcement Administration and U.S. Environmental Protection Agency do not have performance standards for their use and have not reviewed or approved these products.
- **Messaging on safe storage:** Eight out of the 26 educational resources mentioned safe storage practices. The majority of these resources instructed residents to store prescription medications away from children and pets in locked locations and in the packaging that the prescriptions came in.

Table 1: Summary of educational resources on the disposal of pharmaceuticals in Missouri.

AGENCY/ ORGANIZATION	TYPE OF ORGANIZATION	MAIN MESSAGE	MESSAGING ON FLUSHING	MESSAGING ON TAKE-BACK PROGRAMS	ADDITIONAL MESSAGING
MO DEPARTMENT OF HEALTH AND SENIOR SERVICES (DHSS)	State health agency	“How to Dispose of Medications in Your Home” → links to FDA recommendations for mixing medication with an unappealing substance and throwing into household trash.	Specifies that some medicines (those on the FDA flush list) should be flushed.	Has information on DEA National Drug Take-Back day. Also has list of pharmacy disposal box locations (updated 6/29/20)	No messaging on storage.
MO DEPARTMENT OF NATURAL RESOURCES	State environmental agency	The main message is to discourage flushing of meds, and instead either dispose of in trash following their instructions (remove from original container and place contents in a hard plastic container, add dark or acidic cola to dissolve medicine, mix with a thickening/undesirable substance, seal container and place in trash just prior to pick-up) or to find a take back program.	“Do not flush medicines!” Explains that flushing meds can cause problems for wastewater treatment facilities and groundwater/wildlife. Does not mention the FDA flush list as acceptable – so the two state messages (DHSS and DNR) are inconsistent.	Encourages residents to use programs offered by local law enforcement (and sponsored by the DEA). Take-back and trash disposal are shown as equally acceptable options.	Specifies tips for disposal of blister packages vs. solid and liquid meds. Solid and liquid meds should be disposed of according to the instructions in the main message column. Blister packages should be wrapped with duct tape, placed in a hard plastic container, and then sealed and placed in the trash. No messaging on storage.

<u>ADAIR COUNTY HEALTH DEPARTMENT</u>	Local health department	To protect other people and the earth, you should not flush medications but instead use a take-back program, preferably, or follow the instructions to mix with undesirable substance and dispose of in the trash.	“DON'T: Flush expired or unwanted drugs down the toilet or drain unless the label or accompanying patient information specifically instructs you to do so.” This is referring to the <u>FDA flush list</u> .	Take-back is the more desirable option and lists the address of a permanent take-back location in the county.	If take-back is not an option, follow detailed instructions to dispose of meds in the trash. No messaging on storage.
<u>CITY OF CREVE COEUR POLICE</u>	Law enforcement	Describes the <u>Prescription Pill and Drug Disposal Program</u> (P2D2) and encourages residents to drop off their medications at drop-off locations in the area (though not in the city itself) or at an annual DEA drug take-back event.	Does not mention flushing but does say that responsible disposal ensures water quality.	Provides a <u>detailed list of take-back locations</u> in the area.	Mentions the annual DEA-sponsored drug-take back event in the city and provides a link to more information. No mention of medication storage.
<u>CITY OF COLUMBIA, MO</u>	Local government	The primary message is to avoid disposing of meds by flushing, because it can harm aquatic life and contaminate tap water; instead, Columbia encourages residents to pursue safe disposal.	“NEVER dispose of medications in the toilet or drain!”	Encourages residents to use drop-off at the municipal Household Hazardous Waste Facility.	If residents cannot get to the drop-off, Columbia encourages them to dispose of meds in the trash according to detailed instructions. No messaging on storage.

CITY OF SPRINGFIELD, MO

Local government

Do not flush meds unless directed to do so on the label. Instead, dispose of prescription drugs by mixing them with an undesirable substance and then dispose in the trash according to the instructions.

“Do not flush prescription drugs down the toilet or drain unless the label or accompanying patient information specifically instructs you to do so.”

Directed to call a hotline to learn when the next municipal take-back event is, though this is not described as the preferred/first option for residents.

Second page describes how to sanitize medical sharps using bleach, place in a detergent bottle, tape, advise your waste hauler and then dispose of in the trash. No messaging on storage.

CITY OF JEFFERSON CITY

Local government

References drug take-back boxes installed by the [Council for Drug Free Youth](#). States that if those cannot be used, medications should be disposed of in the trash (mix with an undesirable substance, place in a sealed container, thrown in trash, scratch out identifying information and dispose of original container).

N/A

[Gives the locations for local drop-off locations.](#)

The Council for Drug Free Youth does not provide any additional guidance on the take-back boxes but does have several resources on drug use. No mention of medication storage.

CITY OF INDEPENDENCE, MO

Local government

Drug take-back events and programs are the best way to dispose of medication for people and for the environment. If you cannot use those programs, dispose of medications in the trash according to FDA

Does not explicitly mention flushing with regards to medications but does state that sharps should not be flushed and that medications should not get into the water supply because they

A drug take-back program is the best option for people and for the environment, so check with your local pharmacy.

Provides instructions on how to dispose of medical sharps (a sharps collection program and then if not, in a puncture resistant container with words do not recycle, tape, place

		instructions (take out of original containers, combine with water and mix with undesirable substance, put into sealed container, thrown in trash, conceal personal information).	can harm the environment.		in trash) and how to dispose of medications in the trash. Mentions proper storage of sharps, but not of medication.
<u>ST. CHARLES COUNTY</u>	Local government	Instructs residents to dispose of unwanted medications in a kiosk located in a police station.	Mentions that flushing medications can harm aquatic life.	<u>Provides list of law enforcement drop-off locations for multiple counties.</u>	Provides list of what medications are accepted at the collection kiosks. No mention of medication storage.
<u>LAKE SAINT LOUIS, MO</u>	Local government	Encourages residents to dispose of drugs in the P2D2 disposal boxes or participate in the DEA National Prescription Drug Take Back Day. In doing this, residents will reduce the risk of drug abuse and accidental poisoning as well as protect the environment.	“Flushing medicines down the toilet sends them to wastewater treatment plants and then into our rivers and streams.”	Provides a link to the <u>Missouri P2D2</u> site for more information about take-back, as well as the take-back day information.	Provides a detailed list of what can and cannot be disposed of in the take-back boxes. No mention of medication storage.
<u>CITY OF ELLISVILLE, MO</u>	Local government	Encourages residents to participate in the DEA drug take-back day, and if they cannot attend, to use the newly installed P2D2 drug take-back box at the police department.	N/A	Provides information on the drug take-back day and on the drop-off box at the police department.	Provides detailed guidelines on what to dispose of in the take-back box. No mention of medication storage.

<p><u>ST. LOUIS COUNTY PUBLIC HEALTH (RESOURCES ON OPIOIDS SITE)</u></p>	<p>Local government</p>	<p>Encourages healthcare providers and other people to store and dispose of medications properly in order to protect people from opioids and other meds from being misused. They first describe take-back programs as the preferred method but give trash and flushing disposal as other options if absolutely necessary.</p>	<p>“Opioids may be flushed down the toilet when there is no other option in accordance with the FDA flush list.”</p>	<p>Directs people to visit the DEA website to find take-back programs.</p>	<p>Gives other resources for harm reduction when it comes to opioid misuse and sharps disposal. Mentions that medications should be safely stored (without any specific instructions), but emphasizes that unused opioids should be disposed of rather than stored in the home.</p>
<p><u>P2D2 MISSOURI PRESCRIPTION PILL AND DRUG DISPOSAL</u></p>	<p>Non-profit</p>	<p>The Prescription Pill and Drug Disposal Program is a collaborative effort among communities, police departments, city officials, students, and more in St. Louis County. Primary message is to encourage the use of the drug disposal program to keep one’s family safe, as well as to protect the environment.</p>	<p>Explains that drop-off locations should be used instead of flushing to protect the environment by helping to keep medications out of rivers and streams.</p>	<p>Encourages residents to use the P2D2 take-back program and specifies locations for drop-off.</p>	<p>Describes the best places/methods to store meds away from children and pets and the dangers of having old medication in your home.</p>
<p><u>NATIONAL COUNCIL ON ALCOHOLISM AND DRUG ABUSE – ST. LOUIS AREA</u></p>	<p>Non-profit</p>	<p>Main message is to use take-back or other safe disposal methods, but flush in an emergency to keep you and your family safe. Take-back options</p>	<p>“In an emergency, flush medications down the toilet.”</p>	<p>“Drop off unused medications at police stations or pharmacies that participate in take-back programs.”</p>	<p>Encourages people to mix drugs with coffee grounds or kitty litter and throw away. Also mentions at home disposal</p>

		are listed first but are not indicated to be more or less desirable than trash disposal.		Provides a list of locations.	pouches that can be used. Describes safe storage methods including locking up meds, keeping them away from children and pets, and keeping medications in the packaging that they came in.
ADAIR COUNTY OPIOID COALITION	Non-profit	Use a mail-back, take-back, or DEA-approved collector to dispose of opioids and other prescription drugs.	Explains that if the drug could be harmful to the health of children or pets and you cannot safely dispose of it in the trash or using a take-back program, it is acceptable to flush it.	Directs residents to dispose of opioids and other drugs using take-back programs or finding a DEA collector. Provides a list here. Disposal in the trash should be used absent those primary options.	Lists several drop-off locations. Also links to PSI resource/fact sheet. This PSI resource says never to flush whereas the other information on the site says some flushing may be acceptable. No messaging on storage.
COMMUNITY PARTNERSHIP OF THE OZARKS	Non-profit	Use medication disposal bags, drug take-back boxes, or drug take-back events to dispose of any medication. If those are not available, dispose in the trash using safe methods.	“Unless it explicitly indicates it is safe to do so, DO NOT flush the medications down the toilet. This can allow the medication to get into the water supply and/or the soil.”	Describes drug drop-box programs and take-back events, encourages residents to use them, and provides a list of locations.	Provides link to find take-back events near you. Includes safe storage messaging in another tab stating CDC guidelines including keeping meds in a locked location, in a locked container, away

from children and pets.

SINK OR SWIM

Educational Campaign (primarily serving Stone and Taney Counties)

Responsible disposal of prescriptions is crucial for avoiding drug misuse. Instructs residents to check with pharmacists or local law enforcement about proper drug disposal and take-back events.

“It is no longer recommended that you flush any medications down the toilet or sink. Sewage systems cannot remove these substances from water released into lakes, rivers and oceans”

Provides list of permanent drug drop boxes in Stone and Taney counties.

Mentions that another option for safe disposal is the use of medication destruction packets/pouches. Residents of Stone County and Taney County can access free packets through the organization. Provides instructions for how to safely store medication (lock up prescriptions; keep out of reach of children and pets; keep medication in its original containers; keep an inventory of all prescriptions in the house; do periodic checks to see if medications are missing).

THE ALLIANCE OF SOUTHWEST MISSOURI

Non-profit (serving Jasper, Newton, Barton, McDonald Counties)

Instructs residents to bring unused medications to several drop-boxes in the area in order to help prevent teen drug abuse.

N/A

Provides a list of drop-off locations within the covered counties.

Currently facilitating a “Medicine Cabinet Clean-Out Challenge” which encourages families to clean out medicine cabinets using disposal bags provided by the organization. No mention of medication storage.

NORTHLAND COALITION

Non-profit

Group that works on drug-related issues in the Kansas City area, links to information from [PharmaQuotes](#). Primary message is that disposal is important to protect teens and should be done either through drop-boxes or the trash, presented as equally good options.

No mention of flushing directly on site but links to illustration through a graphic on the PharmaQuotes site that flushing can have a negative impact on the environment, such as fish, water supply, and soil.

Encourages people to use take-back programs and includes list of Rx/OTC locations in the area.

Provides information on how to dispose of medication in the trash, as well as how to dispose of sharps. Encourages people to take medications out of the medicine cabinet and store them in a place that only they know about, or in a locked location.

MYHEALTHKC (ADVENTHEALTH)

Health care system

To keep you and your community safe, bring your medications to the AdventHealth drop box. If you cannot access the collection site, deposit in the trash according to their instructions.

Explains that medications can enter rivers and streams if they are flushed or poured down the drain.

Describes where, when, and how to drop off medications at the AdventHealth drop box.

Offers instructions on how to dispose of meds and needles in the trash at home. No messaging on storage.

**TRI-COUNTY
MENTAL HEALTH
SERVICES**

Health services clinic (serving Clay, Platte, and Ray counties)

Primarily educates residents on National DEA-sponsored Drug Take Back Day and how to participate, but encourages people to take unused medications to permanent drop boxes or dispose of properly in the trash if they cannot get to the take-back day.

“[The Prevention Services Manager] added that improper disposal of [prescription drugs], such as flushing them, can negatively impact the water supply and community at large.”

Provides [a list of permanent and local take-back](#) locations for people who cannot attend the take-back day.

Provides list of the most-commonly abused prescription drugs. Also provides instructions on how to dispose of meds in the trash. Mentions that medication should be carefully stored and monitored, but provides no further instructions.

**ST. LOUIS
CHILDREN'S
HOSPITAL**

Hospital

Unused and expired medications can be dangerous around children and should be disposed of safely, ideally using a take-back program.

Explains that flushing medications is problematic because it impacts rivers and streams.

Encourages people to dispose of meds using the P2D2 program or call a pharmacist to ask about take-back programs in the area.

Residents should follow instructions to dispose of medications in the trash as a last resort if a take-back program is not an option (mix with undesirable substance, pour soda in with meds, place inside bag and wrap tightly with duct tape, place container in curbside bin on pick-up day). Mentions that it is important to store medications in a cool, dry, locked

location away from children and pets.

<p>ST. LOUIS COLLEGE OF PHARMACY</p>	<p>Pharmacy college</p>	<p>Old and unused medications should be disposed for your safety, the safety of others, and the safety of the environment. You should dispose of medications through a take-back program. If that is not available, place in the trash according to the instructions.</p>	<p>“DO NOT FLUSH your old medicines or DO NOT POUR your old medicines down the sink!” Medications can enter the environment and water supplies.</p>	<p>Explains that taking meds to drop-off locations is the safest option for the environment and you should contact local officials or agencies about local take-back programs.</p>	<p>Provides detailed instructions on how to dispose in the trash (add water to dissolve, empty into sealed container, mix in undesirable substance, destroy personal information, place in trash on pick-up day). No messaging on storage.</p>
<p>WALGREENS (MISSOURI)</p>	<p>Pharmacy</p>	<p>Press release describing the establishment of 14 medication disposal kiosks in Missouri. Residents can drop off unwanted, unused, or expired medications which helps ensure that these medications are not used or misused by others</p>	<p>N/A</p>	<p>Describes the Walgreens take-back program available in 14 stores across Missouri. Provides locations.</p>	<p>Explains other efforts by Walgreens to address the opioid epidemic. No messaging on storage.</p>
<p>RECYCLE SPOT</p>	<p>Kansas-city region recycling campaign</p>	<p>Explains that take-back programs are the best way to dispose of medications and lists several take-back programs. This method is safe for protecting both people and water systems. Otherwise,</p>	<p>Describes that when medications are flushed or poured down drains they end up in water systems including streams, lakes, and drinking</p>	<p>“Medicine take-back programs for disposal are a good way to remove expired, unwanted, or unused medicines from the home to reduce the chance that others</p>	<p>Describes how to dispose of meds in the trash. Also explains how to dispose of medical sharps and lists take-back programs. No</p>

		dispose of meds by mixing with an undesirable substance and placing in a sealed container.	water supplies. It is a poor disposal method.	may accidentally take the medicine.” Lists several take-back options including police stations, pharmacies, mail-back programs, and the DEA.	mention of medication storage.
MISSOURI AMERICAN WATER	Water Utility Company	In order to help protect the water supply, residents should not flush medications but should instead use a drug take-back program or dispose of properly in the trash only if a take-back program is not available.	“Don’t flush prescription drugs down the toilet or drain unless the label or accompanying patient information specifically instructs you to do so.”	Instructs residents to reach out to their local government to see if there are take-back programs near them.	Provides detailed instruction on how to mix medications with undesirable substances and dispose of in the trash. No mention of medication storage.

Table 2: Contacts at each organization listed in Table 1.

ORGANIZATION / AGENCY	CONTACT PERSON	ROLE/TITLE	Email	Phone
MO Department of Health and Senior Services (DHSS)	Dr. Randall Williams	Director	randall.williams@health.mo.gov	(573) 751-6001 (Executive Assistant)
MO Department of Natural Resources	Not Found	N/A	https://dnr.mo.gov/contact/waste.htm	573-751-5401 (General office number)

Adair County Health Department	Jim Lebaron	Administrator	Jim.Lebaron@lpha.mo.gov	(660) 665-8491 (General office number)
City of Creve Coeur Police	Walter Shultz	Crime Prevention Officer/DARE Officer	wschultz@crevecoeurmo.gov	(314) 274-2117
City of Columbia, MO	Barbara Buffaloe	Sustainability Manager	http://www.como.gov/CMS/WebForms/form.php?formid=13&email=Barbara.Buffaloe@como.gov	(573) 817-5025
City of Springfield, MO	Diana Young	Administrative Assistant – Solid Waste Management Dept.	dyoung@springfieldmo.gov	417-864-1905 (General office number)
City of Jefferson City	Not Found	N/A	https://www.jeffersoncitymo.gov/government/trash_and_recycling/contact_us.php (contact form)	(573) 634-6410 (Trash and Recycling division number)
City of Independence, MO	Not Found	N/A	N/A	816-325-7182 (General health department number)
St. Charles County Police Dept.	Kurt Frisz	Chief of Police	Chief@sccmo.org	636-949-3000 (General department number)
St. Charles County	Ryan Tilley	Division of Environmental Health and Protection Director	environmental@sccmo.org (general dept. email)	636-949-1800 (General dept. number)
Lake Saint Louis, MO Police Dept.	Susan Ochs	Community Relations Officer	sochs@lakesaintlouis.com	636-625-8018
City of Ellisville, MO Police Dept.	Aimee Brand	Police Clerk	abrand@ellisville.mo.us	636-227-7777
City of Ellisville, MO Police Dept.	Steve Lewis	Chief of Police	slewis@ellisville.mo.us (police@ellisville.mo.us – general police email)	636-227-7777

St. Louis County Public Health (Resources on Opioids Site)	None Found	N/A	opioids@stlouisco.com (general email)	314-615-1698 (General office number)
P2D2 Missouri Prescription Pill and Drug Disposal	Brian Russell	Secretary	Brian.Russell@amwater.com (initial email did not go through – outdated?)	(314) 996-2239
National Council on Alcoholism and Drug Abuse – St. Louis Area	None Found	N/A	info@ncada-stl.org	314.962.3456
Adair County Opioid Coalition	None Found	N/A	https://www.opioidsadairco.com/contact-us/ (contact form)	660-665-8491
Community Partnership of the Ozarks	Rikki Barton	Director, Prevention Resource Center	rbarton@cpozarks.org	417-888-2020
Community Partnership of the Ozarks (2)	Brian Mercier	Statewide Opioid Response Grant Specialist	bmercier@cpozarks.org	417-888-2020
Community Partnership of the Ozarks (3)	Anna Jones	Prevention Specialist	ajones@cpozarks.org	417-888-2020
Sink or Swim	Marietta Hagan	CoxHealth Substance Abuse Initiative Project Coordinator	Marietta.Hagan@coxhealth.com	(417) 335-7333
The Alliance of Southwest Missouri	Marissa Diggs	Director of Substance Abuse Prevention	mdiggs@theallianceofswmo.org	417-782-9899 (General office number)
Northland Coalition	Angie Winkler	Board President	awinkler@sphkc.net	Not found
MyHealthKC (AdventHealth)	Shelly Martin, RPh	Pharmacy Manager, AdventHealth	https://www.adventhealth.com/hospital/adventhealth-shawnee-	913-789-3976 (General pharmacy number)

		Shawnee Mission Pharmacy	mission/contact-us-form (contact form)	
Tri-County Mental Health Services	Vicky Ward	Prevention Services Manager	vickyw@tri-countymhs.org	816-877-0411
Tri-County Mental Health Services (2)	Emily Barnes	Community Prevention Specialist	emilyb@tri-countymhs.org	816-877-0400 ext. 383
St. Louis Children's Hospital	Dale Lewis, RPh	Outpatient Pharmacy Manager	Not found	314.454.6123 (general pharmacy number)
St. Louis College of Pharmacy	Amy Tiemeier	Director, Community Partnerships & Associate Director, Experiential Education & Associate Professor, Pharmacy Practice (Specialty – Medication Disposal)	Amy.Tiemeier@stlcop.edu (medicationsafety@stlcop.edu - general email for medication safety information from the college)	314.446.8554
St. Louis College of Pharmacy (2)	Ream Al-Hasani	Assistant Professor, Pharmaceutical Science (Does research on opioid addiction)	Ream.Al-Hasani@stlcop.edu	Not Found
Walgreens (Missouri)	Phil Caruso	PR/Media Relations Manager(?)	philip.caruso@walgreens.com	847-315-2962
Recycle Spot	Matt Riggs	Outreach Coordinator	mriggs@marc.org	816-474-8326 (General office number)
Missouri American Water	Deborah Dewey	President	president.moaw@amwater.com	1-866-430-0820 (General office number)