Background

- Pharmaceuticals & personal care products (PPCPs): “product(s) used by individuals for personal health or cosmetic reasons” (EPA)
- Over 70% of Americans take at least 1 prescription drug, 50% take at least 2 prescription drugs, and over 20% take more than 5 prescription drugs each year (Zhong et al., 2013)
- PPCPs are present in surface waters across the globe (Flaherty et al., 2004)
- 57 PPCPs have been found in the effluent entering Lake Champlain (Vatovec et al., 2015)
- Information about people’s attitudes, usage & disposal practices can inform interventions to reduce levels of PPCPs entering Lake Champlain

Objectives

- Determine how residents of Burlington, VT use and dispose of their pharmaceuticals.
- Develop strategies to reduce the levels of pharmaceuticals entering Lake Champlain

Methods

- Surveyed households in Burlington about pharmaceutical use & disposal, July 8 – 27, 2015
- Survey administered online via local forums, social media, listservs & newsletters

Responses

- Total Number of Responses: 139 households
- Complete Responses: 95 households
- Responses analyzed: 90 households
- Approximate number of people captured in the survey: 190 people

Table 1: Pharmaceutical usage and disposal practices of Burlington residents

<table>
<thead>
<tr>
<th>Has your household purchased any medications in the past year?</th>
<th>Over-the-Counter Medications</th>
<th>Prescription Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>97%</td>
<td>84%</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Did your household use all of the medications that you purchased in the past year?

- Yes: 7%
- No - still using: 57%
- No - some leftover: 31%
- Never: 3%

If there was some leftover, what did you do with it? (Check all that apply)

- I still have it: 69%
- I gave it to a friend or family member: 8%
- I threw it away: 22%
- Other: 0%

If you threw medication away in the past 12 months, how did you dispose of it?

- Flushed down the drain: 1%
- Threw in garbage: 41%
- Took to National Take-Back Day: 11%
- Took to a Local Police Station: 3%
- I didn’t throw out any medication: 43%

Table 2: Drug disposal instructions

<table>
<thead>
<tr>
<th>When you get a prescription from your physician, do they typically tell you how to dispose of any leftover medication?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
</tr>
<tr>
<td>When you buy a prescription drug at the pharmacy, does the pharmacist typically tell you how to dispose of any leftover medication?</td>
</tr>
<tr>
<td>Never</td>
</tr>
</tbody>
</table>

Conclusions

- Majority of households use pharmaceuticals on a regular basis
- Many households have leftover pharmaceuticals
- Most participants with leftover drugs held onto them. Those who did dispose of drugs did so through municipal trash
- Health professionals rarely give information on drug disposal
- Many participants reported looking up information on drug disposal, primarily online or by asking their pharmacist
- Although many participants were aware of drug take-back programs, few took advantage of them

Sources of Error:
- Convenience sampling: sample is not representative; those with an interest in the environment likely responded at a higher rate
- Sample size: small, more data are needed

The Next Steps

- Educate health care professionals on proper drug disposal
- Encourage health care professionals to distribute disposal instructions with prescription & over-the-counter medications
- Ensure online drug disposal information is clear & uniform across websites
- Determine how to make drug disposal programs more appealing to the public
- Determine how to decrease pharmaceutical usage in general

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