

Difficult to Manage Waste Stream Analysis

Purpose

This analysis evaluates existing programs R3Source offers for managing restricted wastes and difficult to manage wastes in the residential sector. In addition, this analysis assesses the need to expand, change, or create new programs based on need and feasibility.

Definitions

Electronic Waste: Discarded electrical or electronic devices destined for reuse, resale, salvage, recycling, or disposal.

Household Hazardous Waste (HHW): Leftover household products that contain corrosive, toxic, ignitable, or reactive ingredients. Products, such as paints, cleaners, oils, batteries, and pesticides, which contain potentially hazardous ingredients or require special care when you dispose of them.

Scrap Tire: Any unwanted or discarded tire, regardless of size, that has been removed from its original use.

Yard Trimmings: Also referred to as yard waste. Includes any grass clippings, leaves, brush, or wood resulting from residential yard maintenance.

Overview of Current R3Source Programs: Scrap Tires

Many communities in Hamilton County face issues with illegal dumping of scrap tires. In 2020, Hamilton County Public Health and Cincinnati Health Department conducted a combined 111 inspections of open dumps or nuisance cases where scrap tires were involved. These health departments also inspect businesses managing scrap tires either annually or every two to three years depending on the classification system and the health department. Table 1 details each health department's tire-related open dump inspections and total businesses managing scrap tires in 2020.

	Open dumps with tires inspected	Businesses inspected managing scrap tires
Hamilton County Public Health	15	59
Cincinnati Health Department	96	98

Residents' options for disposing of tires include:

1. Private outlets (e.g., Tire Discounters) for a fee
2. Curbside pickup in some communities
3. Community tire collection events

R3Source estimates that in 2020, 28 of the 48 communities did not provide tire recycling programs (see Figure 1). Some of these communities report that this service is not needed for their residents because there is no illegal dumping and residents are unlikely to change their own tires. Other communities do not have the staff resources to plan and manage such a program. A few did not offer their regular program because of the COVID-

19 pandemic. Residents can recycle their scrap tires with a few private businesses for a fee. R3Source maintains a list of these outlets on our website.

Figure 1: Scrap Tire Programs in Hamilton County Communities 2020



Keep Cincinnati Beautiful Scrap Tire Partnership

Every year R3Source partners with Keep Cincinnati Beautiful (KCB) to hold scrap tire drop-off events throughout Hamilton County. R3Source grants \$19,000 to KCB who coordinates tire collection containers for delivery to a community site. The communities organize and carry out the collections.

In 2020, this program recycled 47 tons (4,673 tires) and supported:

- 17 collections in 14 communities
- 15 collections outside of the City of Cincinnati
- 2 collections within the City of Cincinnati

These events predominantly focus on residentially collected and dropped off tires, either from individuals or through community cleanup efforts. Unlike most of R3Source’s programs, these tire drop-offs are often community specific and are not open to all Hamilton County residents. Fourteen of the 48 communities accessed this program for their tire drop-off events.

Communities using KCB scrap tire partnership program in 2020 are as follows:

- | | | |
|--------------------------|----------------|--------------------|
| • City of Cincinnati (2) | • Harrison Twp | • Springfield Twp |
| • Deer Park | • Mt. Healthy | • Sycamore Twp (2) |
| • Evendale | • North Bend | • Symmes Twp (2) |
| • Forest Park | • St. Bernard | • Woodlawn |
| • Golf Manor | • Springdale | |

Environmental Enforcement Program

In 2018, R3Source worked with the Hamilton County Sheriff’s office to create a full-time Environmental Enforcement officer position. One of the primary goals of this position is to investigate scrap tire dumping and other related crimes. This program will be analyzed in depth in the Special Programs Analysis.

Comparing to Other Solid Waste Management Districts’ Programs

Butler County held two tire amnesty collection days in the fall for Butler County residents. In 2020, they collected 206 tons or 20,600 of tires at a cost of \$39,973 (including grant funds).

Clermont County did not hold tire amnesty events due to the unavailability of the 2020 Ohio EPA Scrap Tire Amnesty Grant. Clermont County has a permanent collection spot at the Clermont County Engineers for cleanups of larger quantities of illegally dumped tires. Clermont County accesses the Ohio EPA scrap tire remediation program for this service. Clermont County spent about \$17,000 (including grant funds) on tire collections in 2020 and collected 11.75 tons or 1,175 tires.

Cuyahoga County conducts a scrap tire roundup every September or October by partnering with local communities to hold tire collection at their community garages. In 2020, they collected 211 tons of tires (21,100 tires) and spent \$54,857 on the program.

Program costs and tire tonnages for these selected SWMD programs are summarized in Table 2.

Solid Waste District	Tons of Tires Collected	Cost of Tire Program(s)	Cost Per Ton
Butler County	206	\$39,973	\$194
Clermont County	12	\$17,000	\$1,417
Cuyahoga County	211	\$54,857	\$260
Hamilton County	47	\$17,187	\$366

Comparison with Reference Year in Current Plan (2014)

Compared to the reference year program for the current plan (2014) and the previous plan (2009), the 2014 tire collection program was the largest as shown in Table 3.

	2009	2014	2020
Tires Collected	7,166 tires (72 tons)	10,017 (102 tons)	4,673 (47 tons)
Scrap Tire Costs	\$23,000	\$25,251	\$17,187
Cost Per Ton	\$319	\$248	\$366

The COVID-19 pandemic caused a lower-than-average number of communities offering tire collection programs. The partnership with KCB for the Scrap Tire Collection Program in 2020 was conducted similarly to the program in the last plan reference year of 2014, however R3Source received supplemental funds from Ohio EPA in 2014 for scrap tire collection.

Scrap Tire Gap Analysis and Solutions

Table 4: Strengths and Weaknesses of R3Source Scrap Tire Programs	
<p>Strengths</p> <ul style="list-style-type: none"> • Communities consistently use most or all of the funding. • Provides collection containers to encourage cleanup of scrap tire piles. • Partnering with KCB and communities reduces staff time. • Helps alleviate public health issue. • Communities provide all event staffing. • Saves communities money. • Cleans up blighted properties. • Tires are recycled. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • KCB accountant is only in one day per week which can delay invoicing. • Participating communities may not realize the KCB Partnership is funded by R3Source since it is operated by KCB. • Same communities use the program every year. • Community specific; not open to all HC residents. • No reduction in tires collected over the life of program.
<p>Opportunities</p> <ul style="list-style-type: none"> • Operate program internally or have invoices sent directly to R3Source. • Ask communities to accept from all Hamilton County residents. • Give funds directly to community to administer their own tire collection programs. 	<p>Threats</p> <ul style="list-style-type: none"> • Not all communities are aware of program. • No R3Source control over how it is promoted. • Promotion must be specific to eligible audience.

- 1. Improve existing scrap tire fee system.** Currently, residents are required to pay an Ohio EPA fee of \$1 per tire when they purchase a new tire. To dispose of a tire at retail tire stores, there is a recycling fee between \$2 and \$3 per tire. This cost discourages some residents and tire scrappers from properly recycling the tire and adds to the significant scrap tire dumping problem seen in Hamilton County and throughout the state of Ohio.

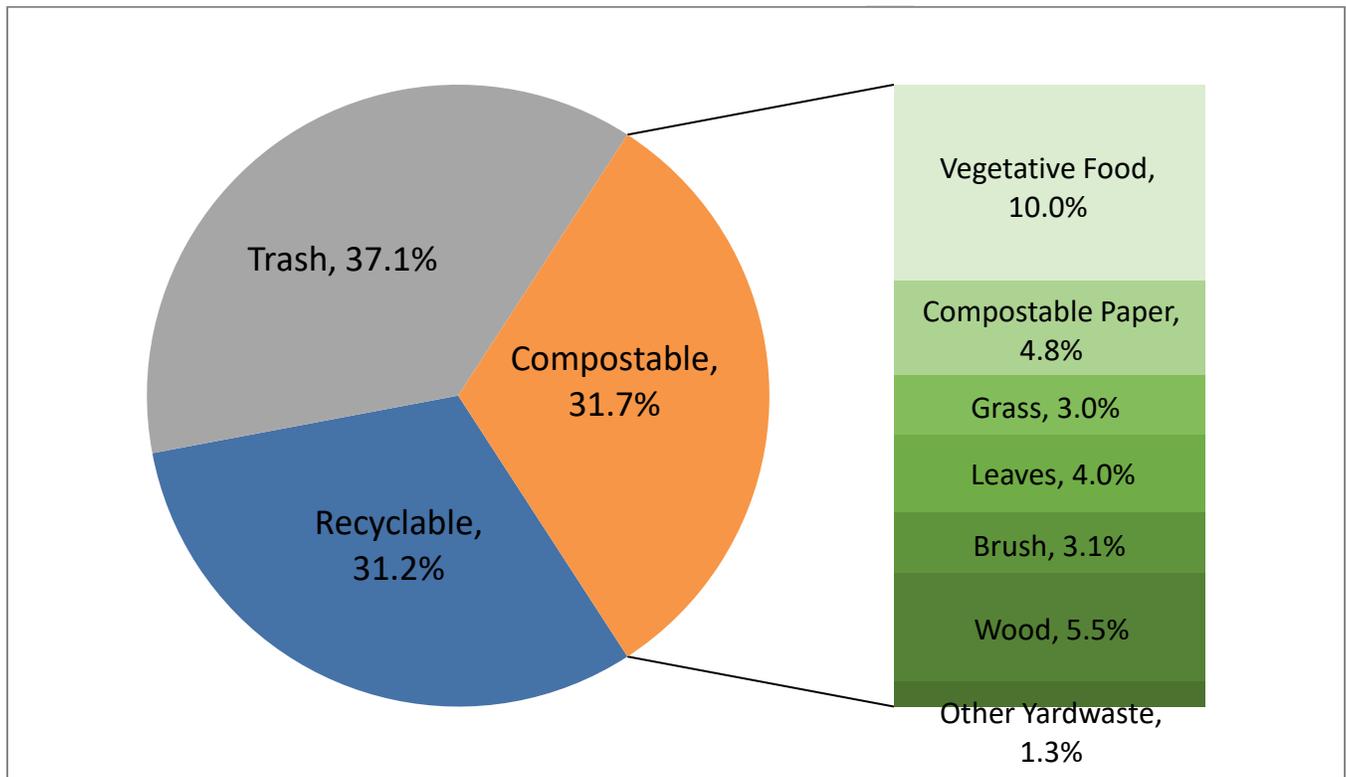
 - R3Source could continue working with Ohio EPA and other statewide partners to change the statewide program to encourage proper recycling of scrap tires and discourage illegal dumping.
- 2. Create community partnerships.** Fourteen communities held 17 scrap tire collections through the KCB partnership in 2020.

 - Work with communities lacking the staff to hold tire collection events to partner with neighboring communities. For example, perhaps St. Bernard could allow Elmwood Place residents to use the event.
 - Consider providing extra funding to those events to cover the host community's increased cost.

Overview of Current R3Source Programs: Yard Trimmings

In 2018, R3Source conducted a characterization study of residential waste entering Rumpke Sanitary Landfill¹. Yard trimmings comprised 16.9% of the total waste residents landfilled (or approximately 42,419 tons). Figure 2 shows the percent of material that could have been composted through backyard composting, including the portion that was yard trimmings.

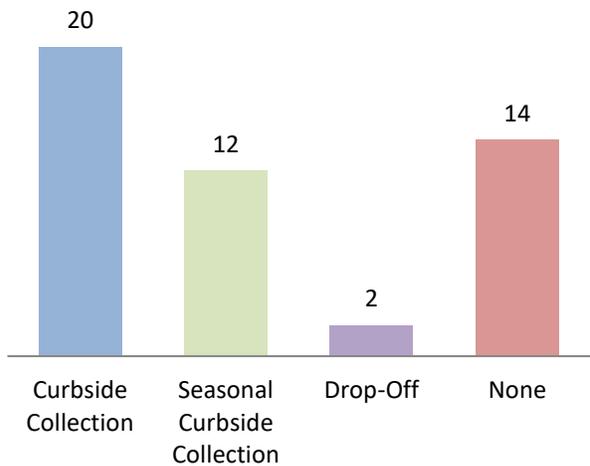
Figure 2: Yard Trimmings Landfilled by Hamilton County Residents in 2018.



Community Curbside and Drop-Off Programs for Yard Trimmings

Of the 48 communities within R3Source boundaries, 20 have curbside collection of yard trimmings for most of the year, 12 have seasonal curbside collection, and 2 have drop-offs. Fourteen communities offer no collection of yard trimmings. Fall leaves and/or Christmas trees comprise much of the seasonal collection. Figure 3 gives a breakdown of community yard trimmings programs.

Figure 3: Hamilton County Community Yard Trimmings Programs



The 14 communities with no yard trimmings programs are:

1. Village of Addyston
2. Anderson Township
3. City of Cheviot
4. Village of Cleves
5. Colerain Township
6. Delhi Township
7. Green Township
8. Harrison Township
9. Village of Lincoln Heights
10. Miami Township
11. City of Mt. Healthy
12. Village of North Bend
13. Springfield Township
14. Whitewater Township

R3Source has two programs targeting yard trimmings, both residential in focus. One is the annual Yard Trimmings Drop-Off Program which began in the early 1990s, and the other is the Get the Dirt on Backyard Composting seminar series which began in 2012.

Yard Trimmings Drop-Off Program

R3Source operates three residential drop-offs for yard trimmings via contracts with outside providers. The sites open in March and close in early December, with two days in January for Christmas tree composting. All contractors compost or mulch dropped off materials. In 2020, the Yard Trimmings Drop-Off program is summarized as follows:

- Cost \$231,886
- 9,076 households participated
- 3,870 tons of yard trimmings composted
- Cost per ton diverted: \$59.90

The Covid-19 pandemic likely affected the 2020 number of households participating. The East-side location did not count residents and the West-side location did not open until June 6, 2020.

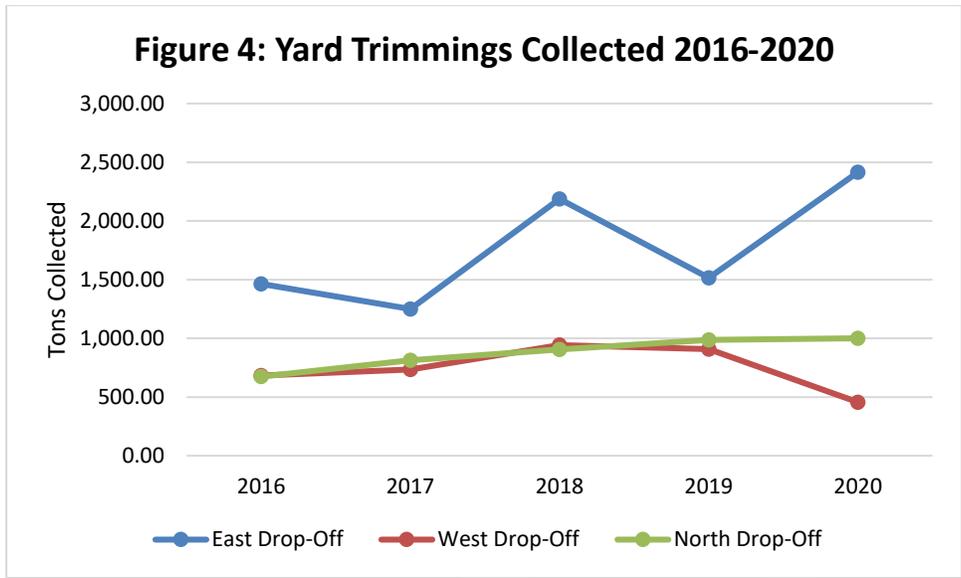


Figure 4 shows the yard trimmings collected and composted by each of the three sites from 2016 to 2020. Participation and tonnage collected in the program is contingent on the weather. A large storm event can dramatically increase the tons collected through the program while a dry summer can lead to less yard trimmings collected.

R3Source intentionally sited the three Yard Trimmings Drop-Off sites to provide convenient access to residents in the northern, western, and eastern areas of the county. Host communities do not provide separate curbside collection of yard trimmings for composting. The sites are located in Anderson, Green, and Colerain Townships.

The Green Township (West) site was relocated in 2020 due to renovations at Kuliga Park. Although Table 5 shows the West location serving the most

Location	Tons Collected	Households	Cost	Cost Per Ton
East	2,414	not counted	\$51,977.56	\$21.53
North	1,000	3,531	\$89,710.75	\$89.71
West	456	5,545	\$76,421.25	\$167.59

households, the East location typically has the most users. As previously noted, due to required social distancing, the East location did not count residents in 2020. The East location received the largest amount of yard trimmings in 2020. Table 5 breaks down the tons collected, number of households participating, and cost of each of the three locations in 2020.

As shown in Table 5, the cost per ton of yard trimmings collected varies widely between the sites. Both the East and North locations operate at the site of an existing business, which may lower the cost per ton of material while the West location has historically operated in a Green Township park moving to an elementary school in 2020. Since the reference year of 2020 was out of the ordinary with the COVID-19 pandemic affecting the operation of the Yard Trimmings site, calculations for the 2019 operation of the three sites were as follows: East was \$27.91 per ton, North was \$109.80 per ton, and West was \$117.06 per ton.

R3Source does not assess user fees for participating in the Yard Trimmings Drop-Off program. Program promotion included the following components:

- Email sent to about 4,400 residents at opening and closing
- Direct mail to community contacts
- Newspaper ads
- Community-level promotion (e.g., websites, newsletters)
- R3Source website
- Social media

Comparing to other SWMD programs:

The only similarly sized Ohio solid waste District that offers a program comparable to Hamilton County’s Yard Trimmings program is the Montgomery County Solid Waste Management District. Montgomery County operates their own yard trimmings drop off location with Montgomery County staff and sells the ground materials to a local mulch company. In 2020, Montgomery County’s yard trimmings drop-off collected 10,510 tons at a cost of approximately \$177,428. This cost includes equipment depreciation on three pieces of heavy equipment, staff cost for three employees, and fuel costs. In 2020, Montgomery County sold the ground materials for \$12 per ton for a revenue of \$126,120. After subtracting the revenue, Montgomery County’s new cost for the program in 2020 was \$51,308.

Solid Waste District	Tons Collected in 2020	Cost in 2020	Cost Per Ton
Hamilton County	3,870	\$231,886	\$59.92
Montgomery County	10,510	\$51,303	\$4.88

Comparison with Reference Year in Current Plan (2014)

R3Source conducts the Yard Trimmings Drop-Off program much the same as in 2014, with three locations and similar levels of promotion. The amount of material collected at the site is largely dependent on weather.

	2014	2020
Tons Collected	2,642	3,870
Households	37,582	9,076
Costs	\$134,565	\$231,886
Cost Per Ton	\$50.93	\$59.90

Strengths	Weaknesses
<ul style="list-style-type: none"> • Drop-offs located in communities that do not have access to curbside yard trimmings collection. • Effective in diverting material from landfill. • Fulfills need in community. • Creates jobs and feedstock for commercial products. • Collects clean material with little contamination. 	<ul style="list-style-type: none"> • High cost. • Sites may not be in most populated areas. • Residents may not identify as a R3Source program. Branding is not clearly visible on signage. • Limited control over site location. • Limited variety in bidders. • Limited control of what happens to material. • Disincentive to communities to start program. • Not easily accessible to elderly, residents without vehicles, and residents who work weekends.

	<ul style="list-style-type: none"> No way of communicating with residents participating.
<p>Opportunities</p> <ul style="list-style-type: none"> Encourage participants to backyard compost. Help fund community collection infrastructure. Brand with R3Source not just “Hamilton County”. Reach out to landscapers as potential vendors. Incorporate food waste into program. Partner with Butler County or Great Parks. Conduct promotional campaign about yard trimmings. Request that vendors collect emails. Promote other outlets outside the program. Incorporate into a CHaRM facility 	<p>Threats</p> <ul style="list-style-type: none"> Dependent on two vendors wanting to continue. Lack of opportunities or lack of knowledge of opportunities on west side. School could pull host location.

Backyard Composting Promotion

R3Source prioritizes educating residents about backyard composting. When residents compost material in their backyards, local governments have no energy or other costs associated with the transportation and composting of the material. Residents can use that material to improve soil in their lawns and gardens. R3Source reaches residents with the backyard composting message primarily with three programs:

- Seminar: conduct an annual seminar series titled “Get the Dirt on Backyard Composting”. In 2020, 428 residents attended the one-hour seminar, which R3Source held virtually on four different dates.
- Compost Bin Sale: in 2019, R3Source brought back the popular Backyard Compost Bin Sale, holding events in 2019 and 2020. In 2020, residents purchased 600 compost bins at the sale.
- Blog: R3Source writes a composting blog to encourage residents to compost in their backyards. In 2020, the blog received 77,200 page views.

Community Yard Trimmings Grant Opportunities

Since 2018, under the current Solid Waste Plan Update, communities can claim organics collected and composted in the Residential Recycling Incentive (RRI) program. In 2020, 26 communities claimed yard trimmings composted or mulched representing 17,238 tons.

In addition, in 2019 R3Source offered communities a Yard Trimmings Infrastructure Grant to help offset the startup costs for Yard Trimmings programs. In a survey where 37 of the 48 communities responded, 20 communities said they would be very interested in an infrastructure grant and nine said they might be interested. Despite this, only two communities, Amberley Village and North Bend, applied and both received funds through this grant.

Yard Trimmings Gap Analysis and Solutions

1. **Encourage communities to maintain or adopt curbside collection of yard trimmings.** Use of the three yard trimmings drop-off sites is limited to those residents with vehicles large enough to transport materials, whereas curbside collection receives a much higher participation.
 - Shift funding away from the yard trimmings drop-off sites and to communities to operate yard trimmings program on the community level.
 - Reinststitute the Yard Trimmings Infrastructure Grant program to help fund community collection programs. Fund could be used to purchase carts for yard trimmings collection or other equipment.
2. **Decrease cost of Yard Trimmings Drop-Off program.**
 - Condense the yard trimmings sites to one central site similar to Montgomery County.
 - Find a business on the west-side of Hamilton County, such a landscaping business, to host a site with mutual benefit similar to the east side location.

Household Hazardous Waste (HHW)

In the 2018 waste characterization study at Rumpke Sanitary Landfill, household hazardous waste (HHW) comprised 0.5% of the residential waste landfilled.¹ Although a small percentage, this equates to about 1,378 tons of automotive fluids, non-latex paint, lead-acid batteries, and other HHW in 2020.

HHW Drop-Off Program

Historically, R3Source has offered a variety of programs to help residents recycle or dispose of HHW. These range from one-day events to promoting permanent outlets to holding a semi-permanent program. Table 9 gives an overview of the results of the one-day events and the semi-permanent program by year. In years not listed in Table 9, R3Source did not hold an event but promoted permanent outlets for materials.

Year	Participants	Waste Recovered (tons)	Cost	No. of Events	Cost/Event	Cost/Ton
1995	7,421	306	\$716,377	12	\$59,698	\$2,341
1996	6,499	517	\$565,091	4	\$141,273	\$1,093
1997	4,854	427	\$440,140	5	\$88,028	\$1,031
2000	1,340	91	\$105,173	2	\$52,587	\$1,156
2003	8,220	534	\$438,574	4	\$109,644	\$821
2004	2,798	146	\$78,031	---	---	\$534
2005	7,606	325	\$173,893	---	---	\$535
2006	10,272	492	\$224,959	---	---	\$457
2007	9,288	525	\$264,480	---	---	\$504
2008	10,511	585	\$299,621	---	---	\$512
2009	9,127	594	\$259,635	---	---	\$437
2010	4,096	132	\$118,987	---	---	\$901
2011	4,044	226	\$93,341	---	---	\$413
2012	5,869	299	\$131,054	---	---	\$438
2013	5,727	341	\$123,131	---	---	\$361
2014	1,597	57	\$94,300	1	\$94,300	\$1,654
2015	1,570	57	\$89,219	1	\$89,219	\$1,565
2018	2,151	75	\$81,692	---	---	\$1,089
2019	3,618	131	\$161,144	---	---	\$1,230
2020	1,610	55	\$134,927	1	\$134,927	\$2,453

As seen in Table 9, the year of highest participation in an HHW program was 2008 with 10,511 participants. This represents about 3.20% of the households in Hamilton County. In 2020, 1,610 households participated representing about 0.47% of the households in Hamilton County. Nationally, HHW events only reach 1% to 2% of the population.

If most households are not using the R3Source program, they likely fall into at least one of four categories:

- They find alternative recycling or disposal outlets.
- They dispose of HHW in the trash or down the drain.
- They store the material in their homes.
- They use up or never purchase hazardous household products.

Figure 5: Breakdown of HHW Collected in 2020

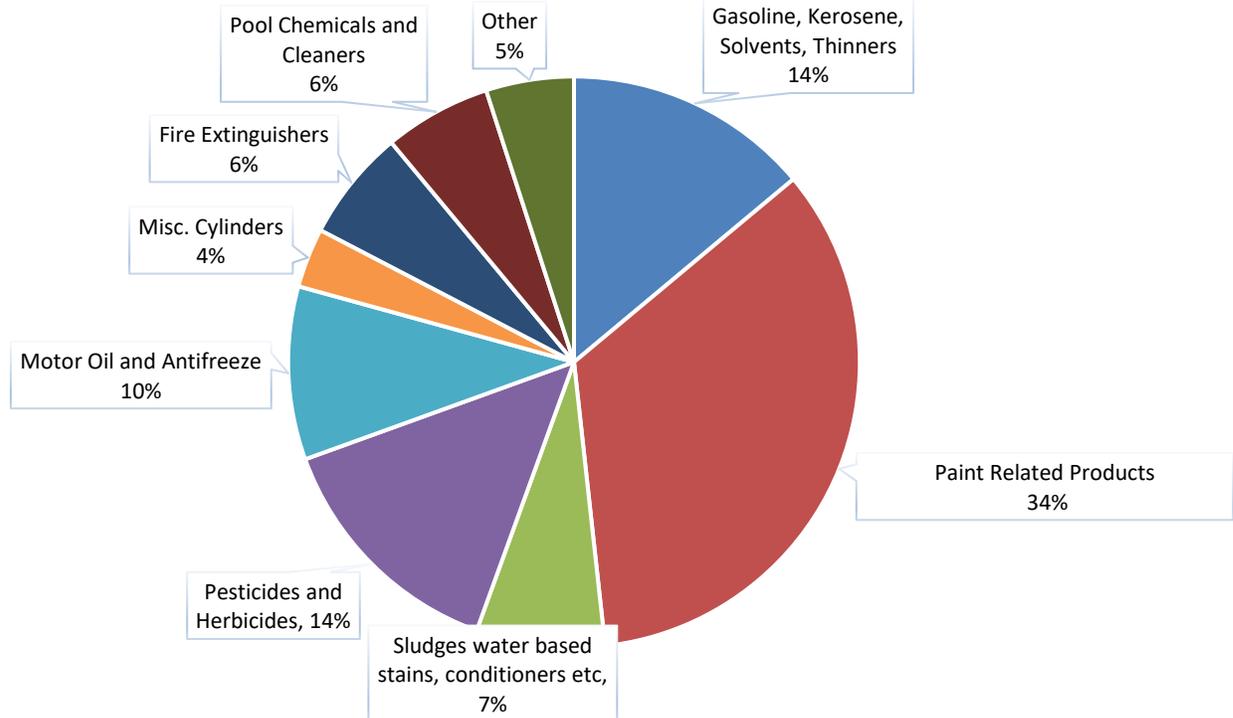


Figure 5 gives a breakdown of the material collected from the 2020 one-day event. Paints and paint-related materials (even though the program does not accept latex paint) consistently rank as the largest category of materials received.

R3Source has never assessed a user fee for this program. In early 2015, R3Source conducted an online survey to determine if residents would be willing to pay a user fee of \$10, \$15, or \$20. Just over 70% of 1,745 respondents said they would be willing to pay a user fee with the most preferred fee being \$10. However, many of the residents surveyed added comments suggesting that both R3Source’s and Hamilton County’s image would be compromised by charging a user fee. Because a \$10 fee would have only raised \$16,000 in 2014 and not nearly covered the full cost of the program (\$94,300), R3Source chose to not consider a user fee in 2015.

R3Source promoted the HHW program in 2020 via following techniques:

- Social media
- Email
- Postcards mailed to residents on our mailing list
- Website
- Email to several Jewish schools, synagogues and community centers explaining the Friday option
- Flyer

The 2020 HHW program cost \$84 per household. If just 10% of the households in Hamilton County participated, the cost could run \$2.8 million. An alternative program would have to be devised to allow for greater participation.

Comparison to other Solid Waste District’s Programs

The only solid waste district neighboring Hamilton County that conducts a HHW program is Butler County. They operate a semi-permanent drop-off. Warren County does not offer a HHW program to their residents and Adams-Clermont County offers a voucher that is rarely redeemed by residents.

Cuyahoga County partners with 59 communities in their district to offer local, more frequent, collection events for disposal of HHW. This is possible because many of the communities in Cuyahoga have the staff, facilities, and equipment to conduct these events. Cuyahoga then covers the cost of recycling and disposal of the HHW. Cuyahoga County does not accept latex paint in their HHW program.

Montgomery County collects HHW from residents two days per week all year round at their transfer facility. They contract the collection, recycling, and disposal to a hazardous waste company.

Table 10: Comparison of Solid Waste Management District HHW Program Costs and Tons

Solid Waste District	Tons Collected in 2020	Cost in 2020	Cost per Ton
Hamilton County	55	\$134,927	\$2,453
Butler County	51	\$84,889	\$1,665
Cuyahoga County	185	\$302,227	\$1,634
Montgomery County	382	\$285,417	\$747

Comparison with Reference Year in Current Plan (2014)

As seen in Table 11, participation in the 2020 one-day event was similar to participation in the 2014 one-day event and lower than in the semi-permanent program in 2009.

Table 11: HHW Drop-Off Program 2009, 2014, 2020

	2009	2014	2020
Tons Collected	594	57	55
Households	9,127	1,597	1,610
Costs	\$259,635	\$94,300	\$134,927
Cost per Ton	\$437	\$1,654	\$2,453

Table 12: Strengths and Weaknesses of One-Day HHW Drop-Off Event

Strengths	Weaknesses
<ul style="list-style-type: none"> One-day event encourages people to get rid of HHW now. Clear hierarchy which favors reuse and recycling. Site centrally located. Popular program among communities. Helps prevent pollution to soil and water. Popular among residents who participate. Protects waste haulers. Reduces risk of dumping into sewer system. Promotion increases brand exposure for R3Source. 	<ul style="list-style-type: none"> High cost per ton disposed. Only available one day per year. Low percentage of participation by Hamilton County households. Only available to residents with vehicles. Many residents are unaware of the program. Residents want to use program for latex paint, which is not a hazardous waste. Requires significant staff time. Does not cover disaster events.

<ul style="list-style-type: none"> Addresses a difficult and confusing waste stream. 	<ul style="list-style-type: none"> Because there is no charge, residents don't understand the real cost of disposal of the products they are purchasing. Many of the same residents participate every year.
<p>Opportunities</p> <ul style="list-style-type: none"> Increase educational signage during event. Find partner organization with a facility to conduct a semi-permanent event. No longer accept motor oil to reduce cost. Charge a fee. Create a grant program for communities to conduct their own events (would be more accessible). Have reuse space for products with useful life. Increase spending on education campaign instead. Provide attendees with materials on how much program costs. 	<p>Threat</p> <ul style="list-style-type: none"> Congregating hazardous waste in one location from so many residents could result in an accident. If program is discontinued, residents will be upset and increase in hotline calls. Dangerous material could end up in the landfill or dumped in environment. Setting a precedent that government will pay for HHW disposal. Funds could be used for programs that increase landfill diversion more cost-effectively.

Privately-Provided HHW Recycling and Disposal Options

A large number of outlets exist for residents to safely recycle or dispose of certain types of HHW. Motor oil, antifreeze, batteries, compact fluorescent lights (CFLs), fire extinguishers, fuel, and propane tanks all have outlets, typically at low or no cost. One business exists that will accept HHW from residents for a fee. All of these outlets are listed on the R3Source website: www.hamiltoncountyrecycles.org/297/Household-Hazardous-Products.

Campaign to Reduce HHW

R3Source has partnered with the Hamilton County Soil and Water Conservation District to launch a campaign called TAKE Back Your Home. The idea is to give residents actionable steps to reduce the purchase of products that become hazardous waste and encourage proper storage and disposal. The campaign has several videos and a dedicated website: www.takebackyourhome.org/.

HHW Gap Analysis and Solutions

- Promote HHW reduction.** Applying the reduce-reuse-recycle hierarchy to HHW, R3Source should encourage reduction of HHW first and foremost before promoting reuse, recycling, and disposal. R3Source could conduct more outreach and create more tools to promote smart purchasing of hazardous products (only buy what you need) and promotion of alternatives to hazardous products that have no convenient or free disposal outlet (for example, pesticides and fertilizers).

 - Spend the program budget promoting HHW reduction and less toxic alternatives to the hazardous products being purchased. This could include many paid promotion opportunities such as direct mail, radio, and print advertising.

- Use low- or no-cost promotion techniques such as our website, social media, and email. Solicit community support on their websites and newsletters. Work with retailers to see if they would promote waste reduction in their stores.
- 2. Promote Alternative HHW Outlets.** Many outlets for certain types of HHW exist (e.g., motor oil, CFL bulbs, batteries). R3Source could promote these outlets more heavily instead of conducting a drop-off program. R3Source currently promotes these outlets on our website in list form.
- Spend program budget promoting alternative outlets for HHW.
 - Use low- or no-cost promotion techniques such as our website, social media, and email. Distribute information identifying alternative outlets at events attended by R3Source staff. Include promotion of alternative outlets on any HHW promotion.
 - Create an app for mobile phones that would tell people where they can recycle/dispose of a material.
- 3. Increase awareness of the HHW disposal issue at the state level.** Hamilton County is not the only district struggling to fund HHW collection and reaching only a small portion of the population. If Ohio passed producer responsibility legislation requiring companies to create a safe disposal or recycling outlet if they manufacture hazardous products, then the cost burden of disposal would be on the manufacturer and the consumer choosing to purchase the product. Similar programs usually require outlets at the store of purchase making disposal easy and convenient for residents and achieving greater participation.

Electronic Waste

Residents and businesses in Hamilton County have access to many electronics recycling options. R3Source maintains a web page with updated permanent outlets and events as they arise. R3Source used to hold annual electronics collection and recycling programs but ended the programs in January 2014 because the private sector was fulfilling this need.

Conclusions

During R3Source’s analysis of the difficult to manage waste streams, two areas arose that seem to require legislation or cooperation on a statewide level rather than a district level. Both scrap tires and household hazardous waste could benefit from state-level action. Programs for all these waste streams are costly and result in varying levels of success. As seen in Table 13, the Yard Trimmings Drop-off program, although the costliest, achieves a lower cost per ton and higher participation. Household hazardous waste requires significant staff time, achieves low participation, and has the highest cost per ton of any of the special waste streams.

	Tons Collected	Cost	Cost per ton
Scrap Tire	47	\$17,187	\$366
Yard Trimmings Drop-Off Program	3,870	\$231,886	\$60
Household Hazardous Waste Drop-Off	55	\$134,927	\$2,453

Table 14 summarizes some potential R3Source actions to address the gaps identified in this analysis.

Table 14. Summary of Potential R3Source Actions to Address Identified Gaps				
		Infrastructure Improvement Suggestions	Gap Addressed	R3Source Program
Scrap Tire	1	Improve existing scrap tire fee system	Illegal scrap tire dumping still persists	Work with stakeholders on statewide program
	2	Improve availability of existing drop-offs	28 communities offer no scrap tire program	Work with communities to partner with neighbors Help host communities fund extra cost
Yard Trimmings	1	Encourage community collection of yard trimmings	Many residents do not have access to vehicles capable of hauling yard trimmings to drop off	Shift some funding from Drop-Off sites to community-based programs Reinstate Yard Trimmings Infrastructure Grant Provide yard trimmings drop-off for communities
	2	Decrease cost of yard trimmings drop-off program	Yard trimmings program is costly	Condense to one location Reduce number of sites
Household Hazardous Waste	1	Promote HHW reduction	Little focused effort given to promoting HHW reduction	Budget funds for HHW reduction promotion Promote with low- or no-cost promotion resources
	2	Promote alternative HHW outlets	Little focused effort given to promoting alternative outlets for HHW	Budget funds for HHW alternative outlet promotion Promote with low- or no-cost promotion resources
	3	Increase awareness of HHW at state level	HHW programs are costly and participation is low	Work with state to create producer responsibility legislation

Questions for Policy Committee

- Fourteen communities do not provide some type of separate yard trimmings program. Should R3Source shift funds budgeted for the Yard Trimmings Drop-Offs to encourage more community collection?
- Should some of the carryover funds be used to help communities build yard trimmings collection infrastructure?
- Should R3Source continue HHW collection program in long term given it only reaches, at most, 3% of the population?
- Should we concentrate more efforts and paid advertising to promote HHW reduction and alternative outlets instead of our current HHW drop-off program?

ⁱ See *Hamilton County Waste Composition Study, 2018*. Hamilton County Recycling and Solid Waste R3Source, presented by SCS Engineers (2019).

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