



Empowering Pennsylvanians to
keep our communities clean and beautiful

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Keep Pennsylvania Beautiful

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Comprehensive Litter Study Provides Key Information to Develop Strategies to Reduce Littering Behavior

- Visible Litter Study
- Public Attitude Survey
- Municipal Litter and Illegal Dumping Cost Study
- Litter Summit November 2019



BURNS & MCDONNELL.

PENNSYLVANIA LITTER RESEARCH STUDY

JANUARY 2020
SUBMITTED TO:

 **pennsylvania**
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

 **pennsylvania**
DEPARTMENT OF TRANSPORTATION

 **KEEP PENNSYLVANIA
Beautiful**
KEEP AMERICA BEAUTIFUL AFFILIATE


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BEAUTIFUL**

BURNS & MCDONNELL.

THE COST OF LITTER & ILLEGAL DUMPING IN PENNSYLVANIA

A STUDY OF NINE CITIES
ACROSS THE COMMONWEALTH

JANUARY 2020
SUBMITTED TO:

 **KEEP PENNSYLVANIA
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Overview of Visible Litter Survey Protocol

- Pull over at a safe distance from the road with NO barriers or hazards.
- Fill out the *Survey Site Overview* as completely as possible.
- From the end of the pavement, measure and mark the ends of the 300 x 15 foot full sampling area and the 15 x 15 sub-sample area.
- Perform a “meander count” of the 300 x 15 foot area to tabulate the items that are four inches or larger.
- Perform a “cross section sub-count” of the sub-sample area to tabulate items that are less than four inches.
- Photograph the sample site.



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Visible Litter Survey Sample Allocation

ROADWAY TYPES

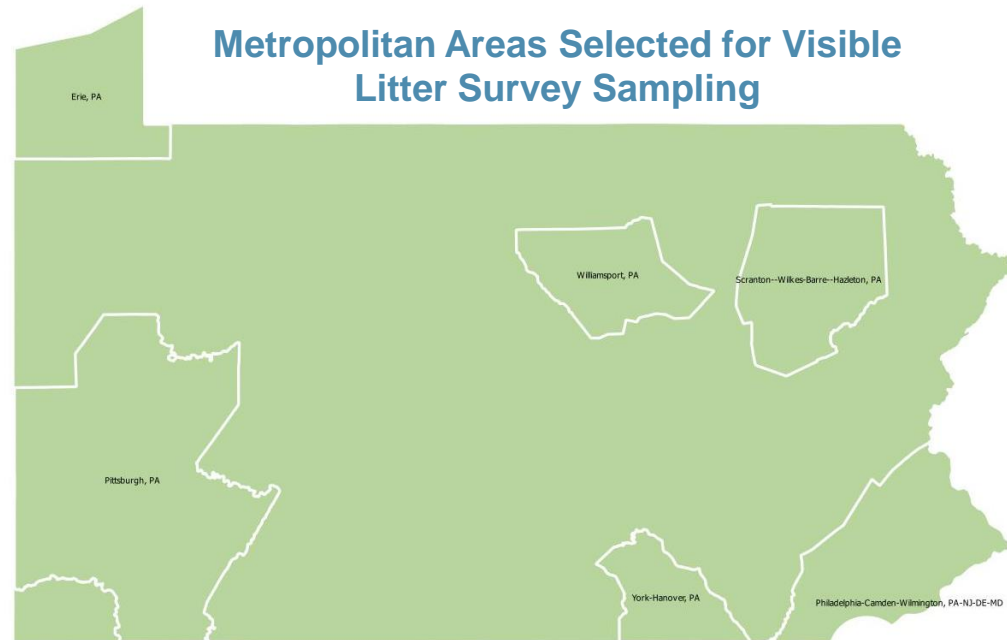
- Interstates and Other Freeways & Expressways
- Other Principal Arterials and Minor Arterials
- Major Collectors and Minor Collectors
- Local Roads

REGION

- Urban
- Rural

OWNERSHIP

- PennDOT
- Other Agency



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Over 500,000,000 Pieces of Litter on Pennsylvania Roadways

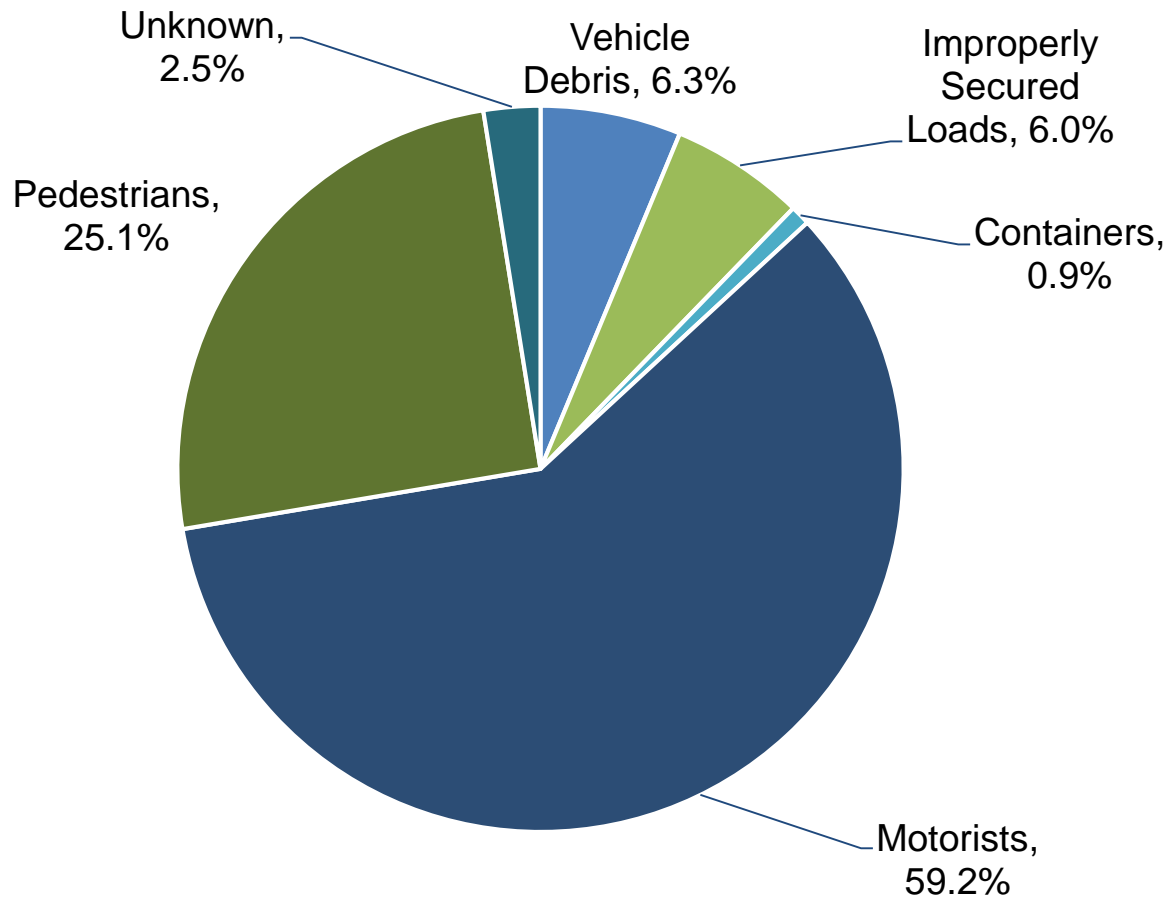
Roadway Type	Average Items per Mile	PA Road Shoulder Miles	PA Litter (Two-sided)
Urban Roads	2,585	50,206	259,543,023
Rural Roads	1,635	74,268	242,924,751
Subtotal	2,018	124,474	502,467,774
Interstate Roads	7,523	4,960	74,630,772
Arterial Roads	5,107	14,616	149,283,766
Collector Roads	2,570	20,066	103,156,199
Local Roads	1,034	84,832	175,397,037
Subtotal	2,018	124,474	502,467,774

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Motorist and Pedestrians are the Primary Sources for Litter

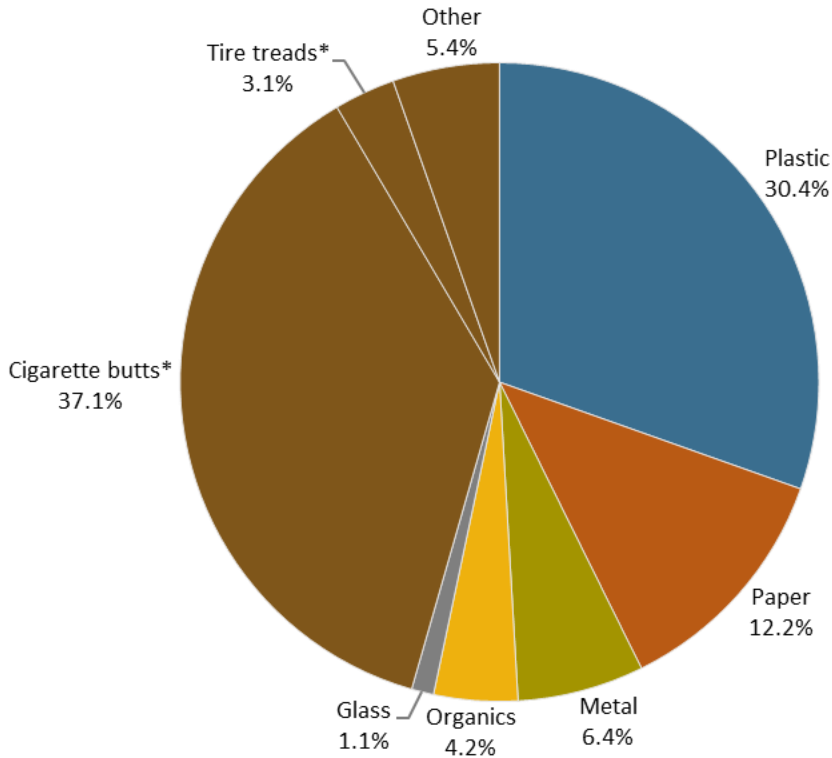


In partnership with:

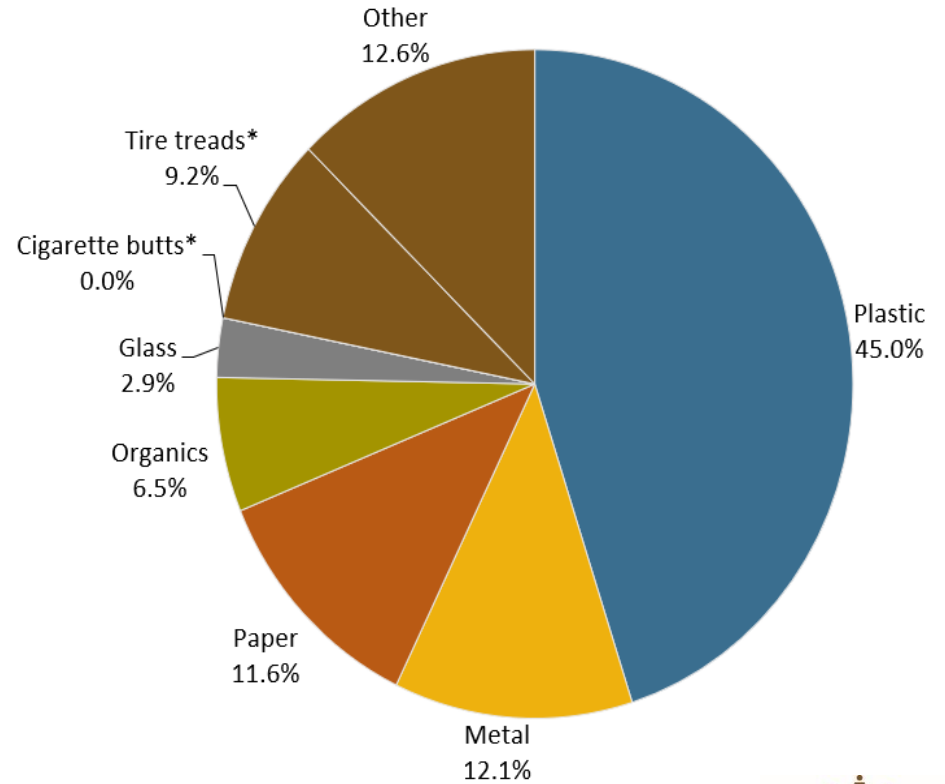


Litter in Pennsylvania

**AGGREGATE COMPOSITION OF LITTER
(ALL PENNSYLVANIA ROADWAYS)**



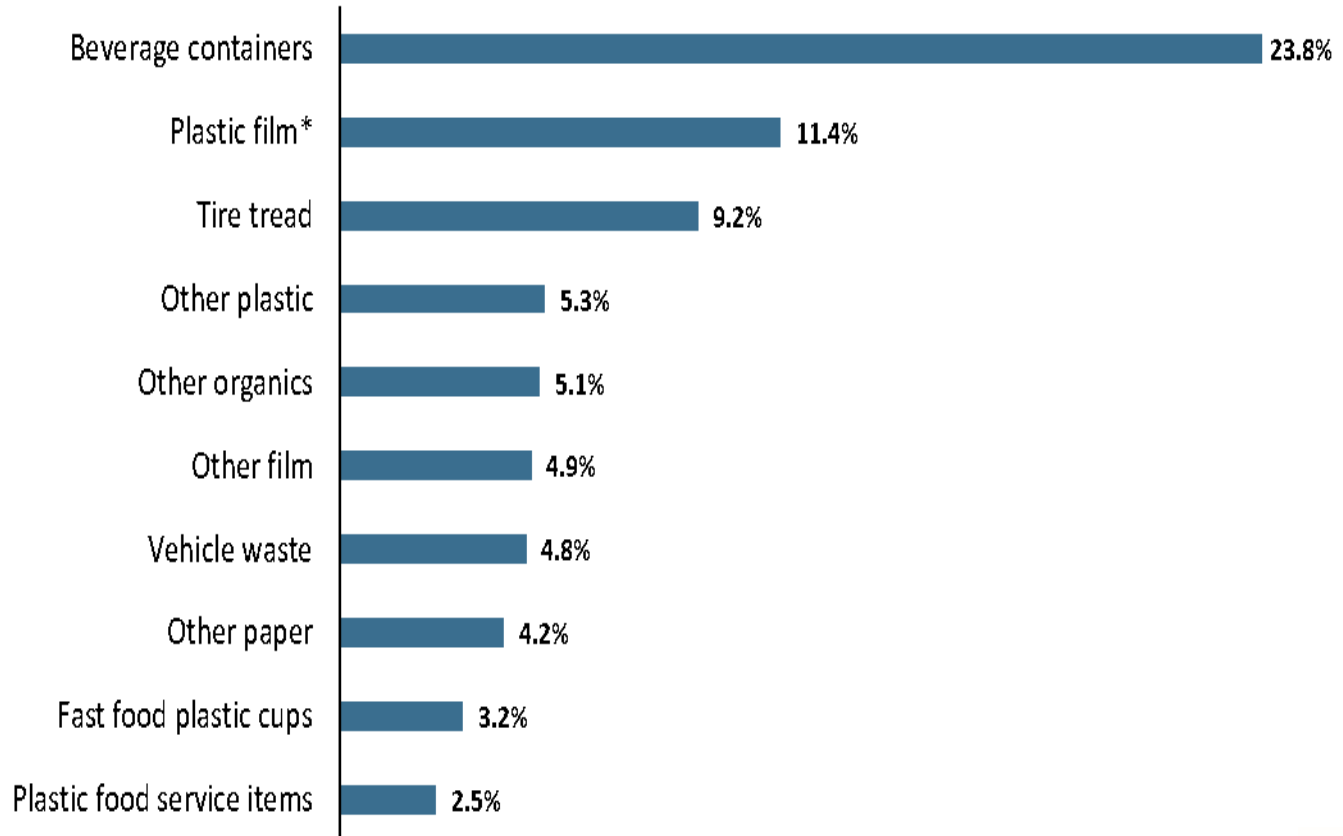
**TYPES OF LITTER 4-INCH PLUS
(ALL PENNSYLVANIA ROADWAYS)**



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Top 10 Aggregate Litter Items 4-Inch Plus Litter by Count (All Roadways)

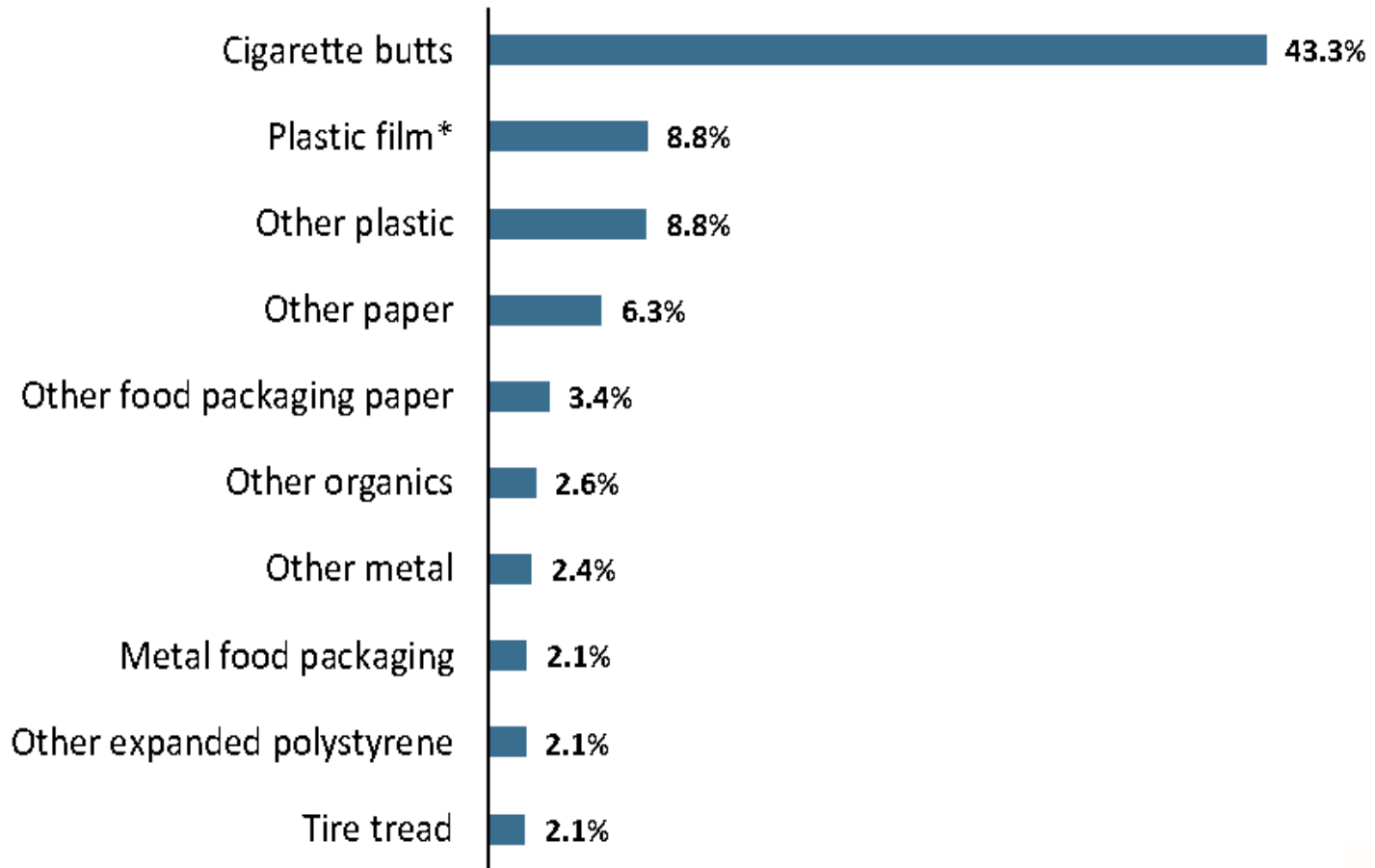


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Top 10 Aggregate Litter Items

4-inch Less Litter by Count (All Roadways)

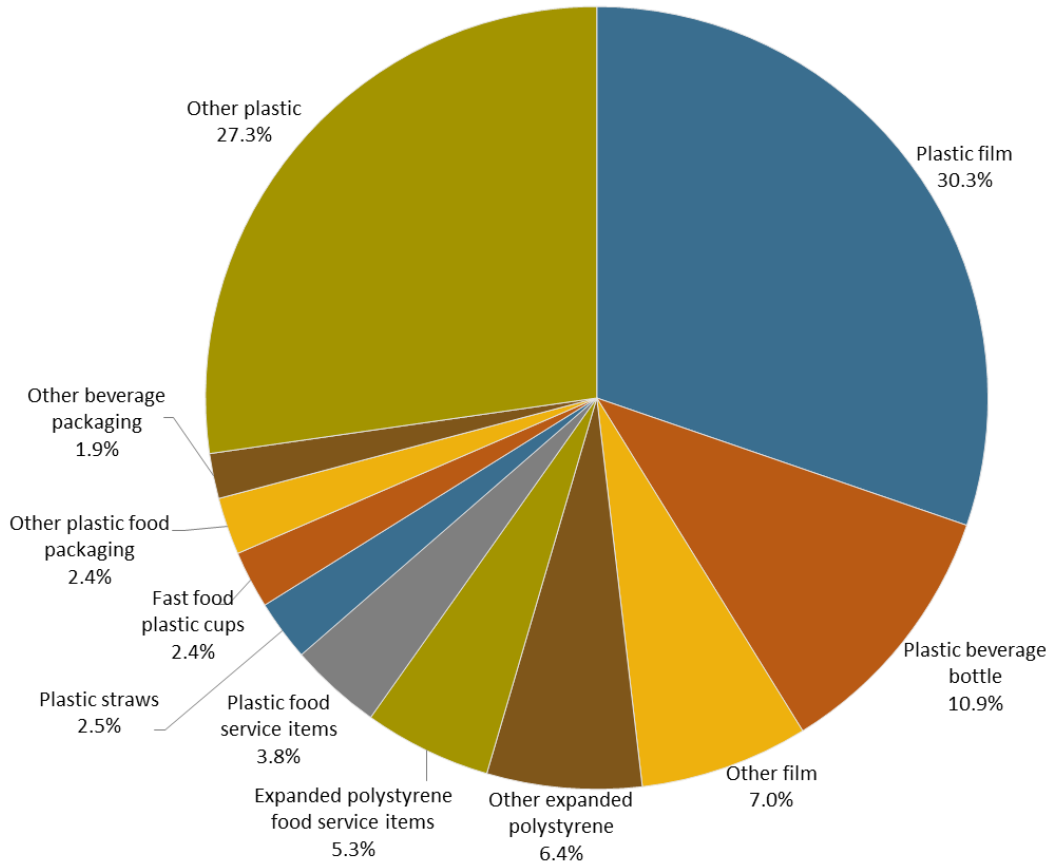


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Plastics: Key Findings

COMPOSITION OF PLASTIC LITTER BY MATERIAL CATEGORY (ALL PENNSYLVANIA ROADWAYS)



- Plastic represents over 30 percent (152.9 million) of all litter found on Pennsylvania roadways.
- Plastic film including plastic trash bags, other plastic bags and food packaging film was the most prevalent plastic items found littered on Pennsylvania roadways followed by other plastic and plastic beverage containers.

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Aggregate Composition of Plastic Litter by Material Category (All Pennsylvania Roadways)

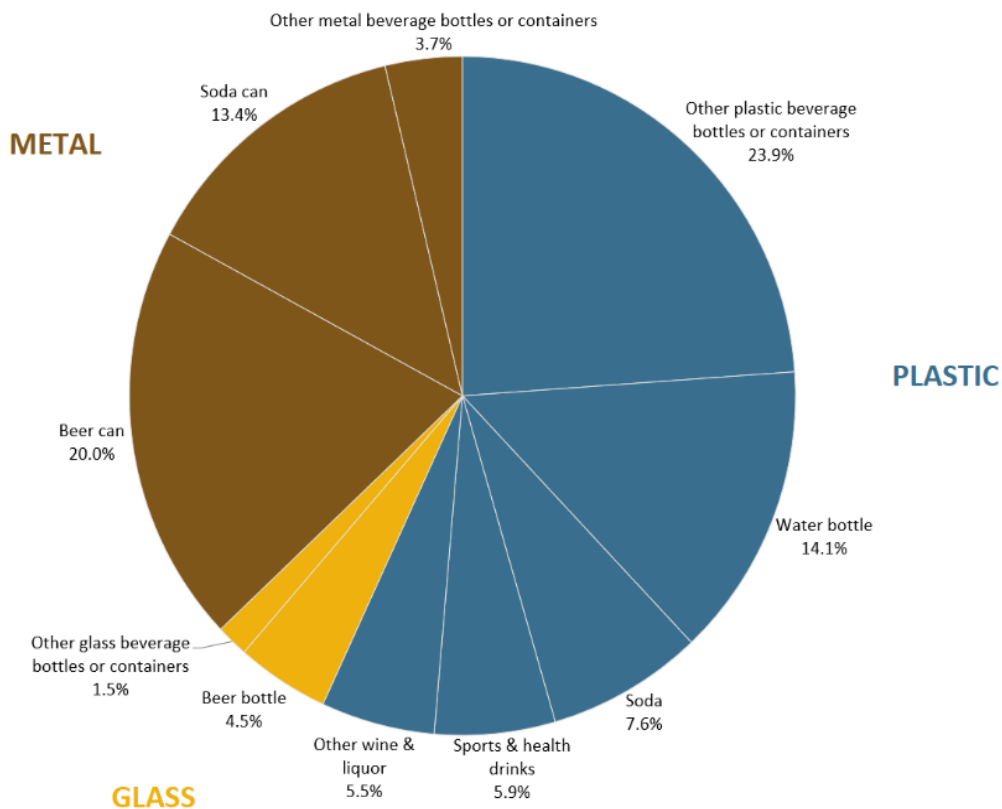
Group	Categories	4-inch-plus	4-inch-less	Total Count	Percent of Total
Plastic	Food packaging film	5,849,242	33,201,193	39,050,435	7.8%
	Other film	3,585,321	7,056,673	10,641,993	2.1%
	Other expanded polystyrene	682,685	9,092,026	9,774,711	1.9%
	Expanded polystyrene food service items	1,236,963	6,820,568	8,057,531	1.6%
	Other plastic beverage bottles or containers	1,024,543	4,929,704	5,954,247	1.2%
	Plastic food service items	1,802,159	4,017,632	5,819,791	1.2%
	Water bottle	3,669,078	455,732	4,124,811	0.8%
	Plastic straws	1,275,175	2,563,218	3,838,392	0.8%
	Plastic trash bags - empty	178,935	3,455,778	3,634,713	0.7%
	Fast food plastic cups	2,306,685	1,322,345	3,629,031	0.7%
	Other plastic food packaging	1,062,208	2,551,807	3,614,014	0.7%
	Other plastic bags - empty	1,944,042	1,366,453	3,310,495	0.7%
	Other beverage packaging	230,245	2,622,543	2,852,789	0.6%
	Soda	2,105,786	111,467	2,217,253	0.4%
	Sports & health drinks	992,569	722,773	1,715,342	0.3%
	Other wine & liquor	6,067	1,613,482	1,619,549	0.3%
	Tea & coffee	287,473	279,819	567,293	0.1%
	Juice	238,986	-	238,986	0.0%
	Single serve wine & liquor	125,710	111,467	237,176	0.0%
	Other plastic bags - full	170,890	-	170,890	0.0%
	Plastic trash bags - full	113,127	-	113,127	0.0%
Other plastic	3,841,673	37,845,592	41,687,265	8.3%	
Subtotal Plastic	32,729,562	120,140,272	152,869,834	30.4%	

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Beverage Containers: Key Findings

AGGREGATE COMPOSITION OF BEVERAGE CONTAINER LITTER BY COUNT (ALL PENNSYLVANIA ROADWAYS)



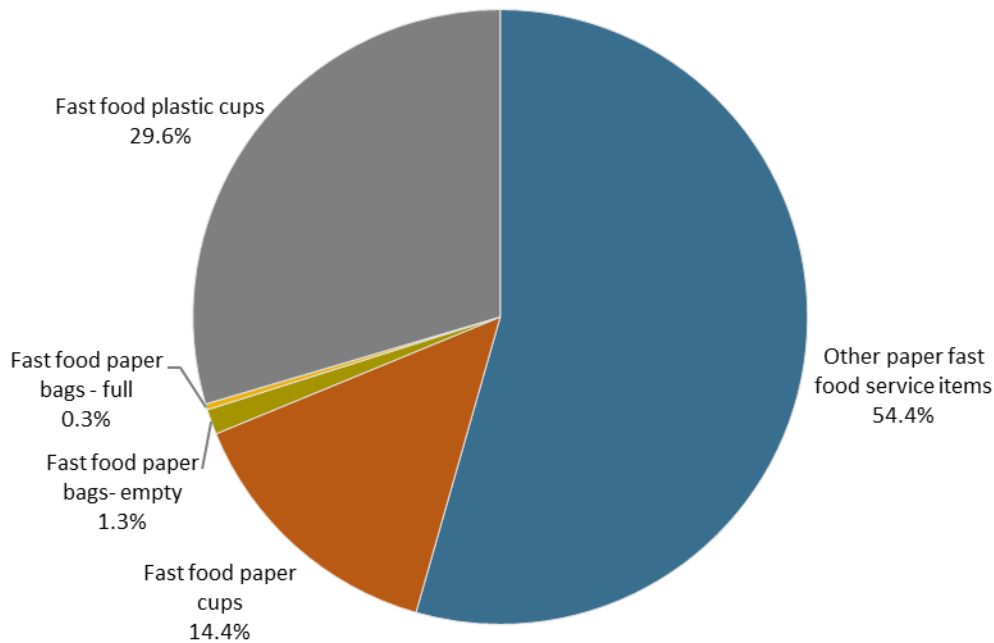
- An estimated 29.3 million beverage containers are currently littered on Pennsylvania roadways.
- 93.9 percent of the beverage containers littered on Pennsylvania roadways are composed of plastic (56.9 percent) or metal (37.1 percent). Three percent are composed of glass.
- There are more than 16 million plastic beverage containers littered on Pennsylvania roadways, including 4 million plastic water bottles.
- There are more than 10.8 million metal beverage containers littered on Pennsylvania roadways including 5.8 million beer cans and 3.9 million soda cans.
- When asked what is the main type of litter in Pennsylvania, 67 percent of Pennsylvania residents said non-alcoholic beverage bottles and cans for water, soda, tea and coffee and 11 percent said alcoholic beverage container bottles and cans.

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Fast Food Products: Key Findings

AGGREGATE COMPOSITION OF FAST FOOD PRODUCT LITTER BY COUNT (ALL PENNSYLVANIA ROADWAYS)



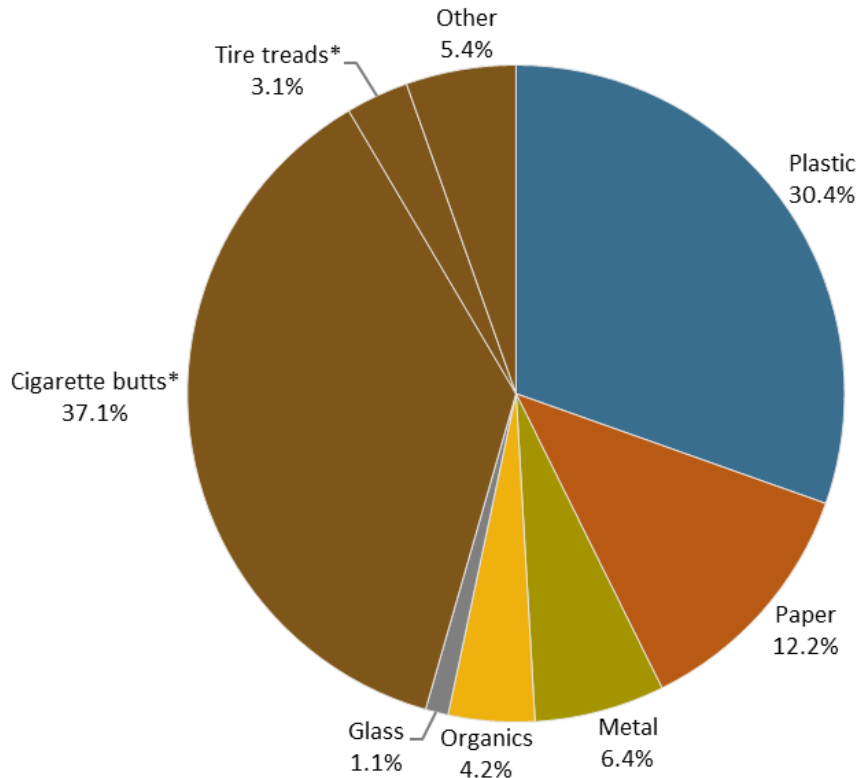
- An estimated 12.3 million fast food products are currently littered on Pennsylvania roadways.
- Fast food products represent .9 percent of litter over four inches and 1.5 percent of litter less than four inches.
- Other paper fast food service items, a category that includes napkins and beverage container holders, and fast food paper and plastic cups represent 98.4 percent of the fast food products littered on Pennsylvania roadways.
- 41.5 percent of Pennsylvanians reported that fast food packaging such as cups, wrappers and bags were the main type of litter in Pennsylvania.

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Tobacco Products: Key Findings

AGGREGATE COMPOSITION OF LITTER (ALL PENNSYLVANIA ROADWAYS)



- There are an estimated 186.2 million cigarette butts littered on Pennsylvania roadways.
- 61 percent of Pennsylvania residents reported that cigarette butts and tobacco packaging were the main types of litter in Pennsylvania.
- 96.1 percent of Pennsylvanians consider cigarette butt to be litter.

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Summary: The Pennsylvania Litter Study

- **Over 500 million pieces of litter can be found on Pennsylvania's roadways.**
- **Cigarette butts and plastic collectively compose the majority of litter items.** Of the total estimated litter, 186.2 million (37.1 percent) were cigarette butts followed by 152.9 million (30.4 percent) pieces of plastic. Plastics represent 45 percent of all visible litter 4 inches or greater.
- **The composition of litter varies by the size of the litter item.** Beverage containers and plastic film, including plastic trash bags, other plastic bags and food packaging film, were the most predominant types of larger litter. Cigarette butts are the most common smaller items.
- **Over 40 million beverage containers and fast food products are littered on Pennsylvania roadways.** An estimated 29.3 million beverage containers and 12.3 million fast food products are currently littered on Pennsylvania roadways.
- **Motorists and pedestrians are leading sources of litter for both small and large items.** For litter items greater than four inches, improperly secured loads also become a factor.
- **Freeways and expressways had the most litter items per mile.** Freeways and expressways had the most litter per mile (7,523 litter items per mile on average). In contrast, local roads had the lowest littered items per mile (1,034 litter items per mile).

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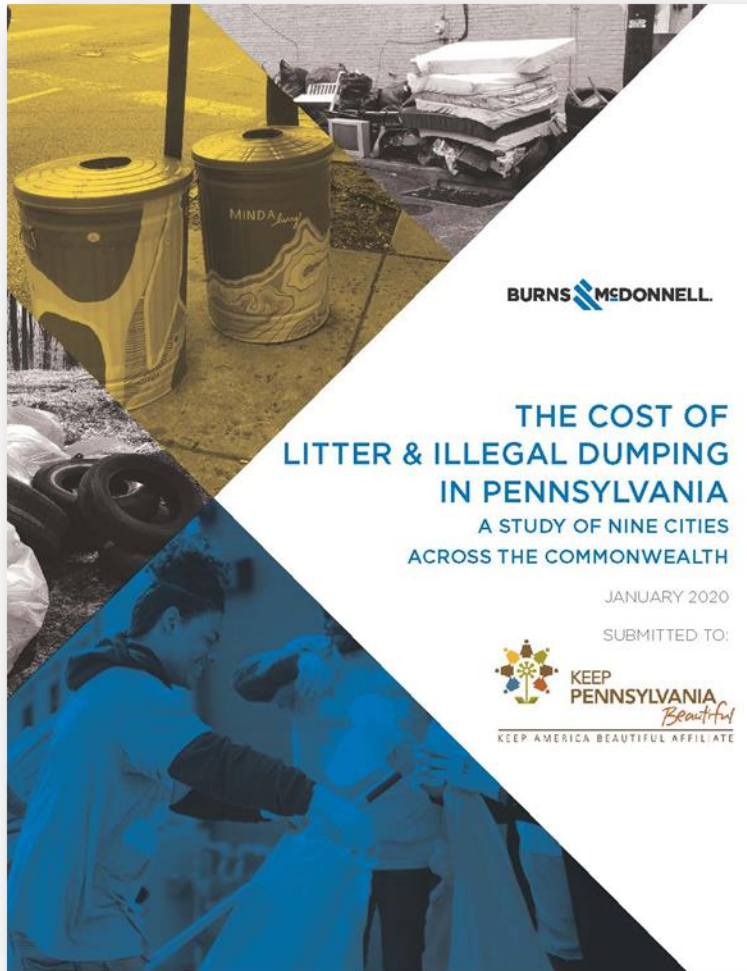
Summary: Public Attitude Survey

- Over 90 percent of survey respondents reported that litter is a problem in Pennsylvania.
- Fast Food packaging, plastic film, beverage containers and tobacco products are perceived to be the most commonly littered items.
- When asked about the impacts of litter:
 - 93 percent strongly agree or agree that litter reduces property values,
 - 87 percent strongly agree or agree that litter negatively impacts tourism and business,
 - 76 percent strongly agree or agree that litter causes taxes to increase because of cleanup costs

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Municipal Litter and Illegal Dump Cost Study



Study provides an in-depth analysis of the costs incurred by individual municipalities when managing litter and illegal dumping at the municipal level.

Study provides cost averages for the following:

- Litter Prevention
- Illegal Dump Prevention
- Education and Outreach
- Litter Abatement
- Illegal Dump Abatement
- Enforcement

Municipal Litter and Illegal Dump Cost Study



In partnership with the Richard King Mellon Foundation and participating cities.



Municipal Litter and Illegal Dump Cost Study

Sample Case Study: Reading

Summary of solid waste and recycling services in the City

- Provides refuse and recycling for all residential properties with four units or less and includes one bulky item per week.
- Residents can opt-out and hire their own private hauler (of which there are 15 in operation across the City).
- Clean City Crew – collects and recycles electronics and tires at no additional cost to residents, deploys and monitors illegal dumping cameras, routinely cleans up illegal dump sites and more.
- Spring cleaning event in conjunction with Pick Up Pennsylvania.

Summary of related activities

- Waste reduction education to 4th graders since 2007
- Education sessions at public library branches on how and why to prevent illegal dumping in the community.
- Locally led anti-littering task force and social media campaign

Municipal Litter and Illegal Dump Cost Study

Sample Case Study: Reading

Key takeaways

- A combined 89% of expenditures in Reading related to litter and illegal dumping are allocated to abatement
- 55% of Reading citizens speak a language other than English – of that population, 96% speak Spanish.

ACTIVITY	LITTER	ILLEGAL DUMPING
Prevention	\$70,500	\$126,500
Education & Outreach	\$9,400	
Abatement	\$1,437,200	\$404,600
Enforcement	\$29,700	
Total Annual Cost	\$2,077,900	

Municipal Litter and Illegal Dump Cost Study

KEY RESULTS

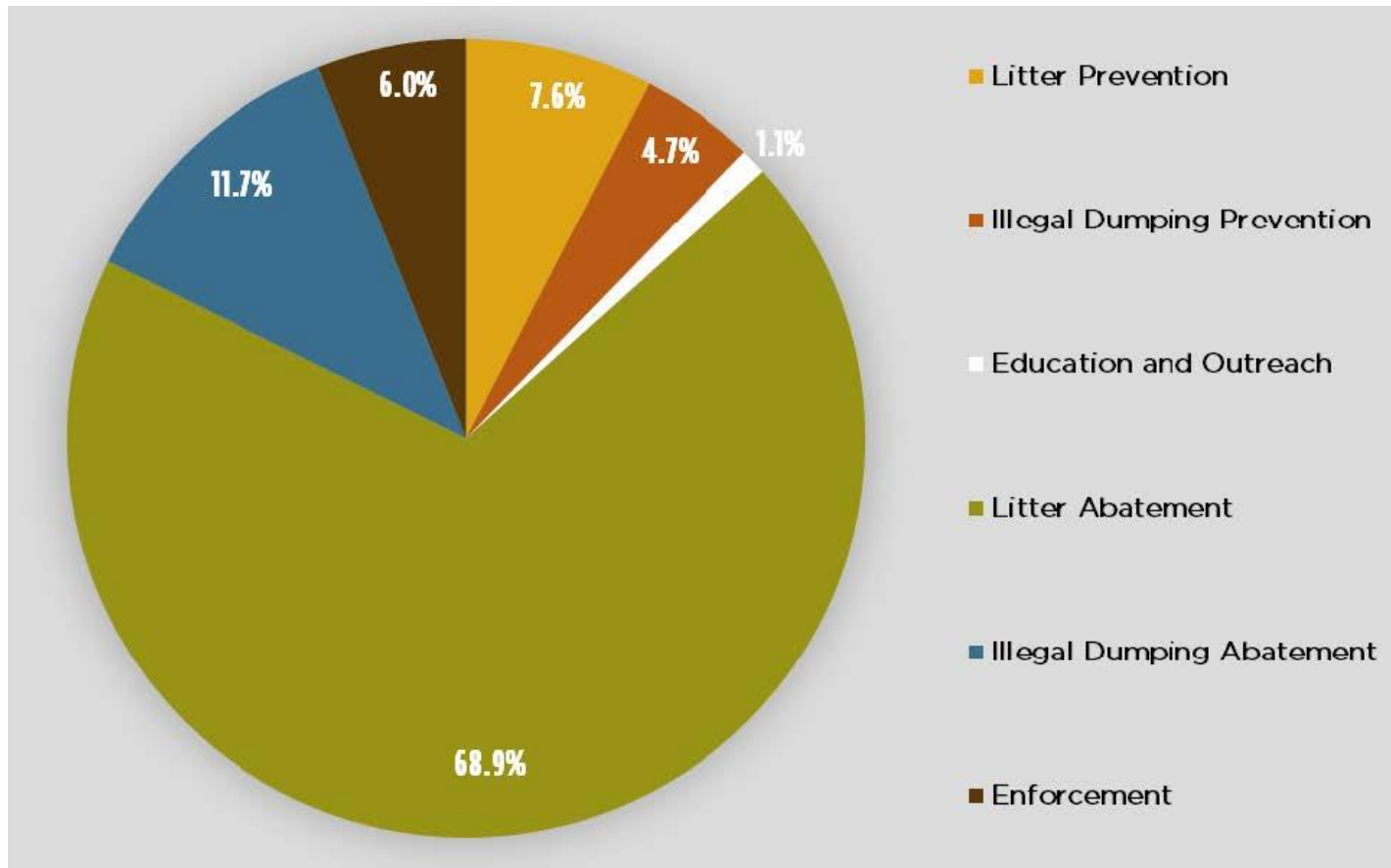
Regardless of size and geography, each of the nine case study cities spend significant sums annually to prevent and clean up litter and illegal dumping. **Together, these nine cities spend more than \$68.5 million annually.**¹

City	Prevention		Education & Outreach	Abatement		Enforcement	Total	Population ¹
	Litter	Illegal Dumping		Litter	Illegal Dumping			
Allentown	\$ 1,291,700	\$ 8,900	\$ 35,000	\$ 2,192,100	\$ 370,200	\$ 669,300	\$ 4,567,200	121,433
Altoona	\$ 227,300	\$ 151,800	\$ 2,300	\$ 260,700	\$ 26,000	\$ 143,500	\$ 811,600	43,702
Erie	\$ 151,100	\$ 498,600	\$ 17,300	\$ 998,400	\$ 207,900	\$ 345,700	\$ 2,219,000	96,471
Harrisburg	\$ 73,400	\$ 34,700	\$ 102,200	\$ 1,242,700	\$ 235,500	\$ 49,000	\$ 1,737,500	49,229
Lancaster	\$ 20,000	\$ 1,000	\$ 5,500	\$ 1,393,300	\$ 7,200	\$ 704,500	\$ 2,131,500	59,420
Philadelphia	\$ 1,217,000	\$ 2,163,400	\$ 547,300	\$ 36,314,700	\$ 6,376,800	\$ 1,778,300	\$ 48,397,500	1,584,138
Pittsburgh	\$ 2,734,400	\$ 246,800	\$ 57,700	\$ 2,706,900	\$ 232,400	\$ 331,300	\$ 6,309,500	301,048
Reading	\$ 70,500	\$ 126,500	\$ 9,400	\$ 1,437,200	\$ 404,600	\$ 29,700	\$ 2,077,900	88,495
Scranton *	\$ 66,400	\$ -	\$ -	\$ 138,800	\$ 26,000	\$ 38,900	\$ 270,100	77,182
Total	\$ 5,851,800	\$ 3,231,700	\$ 776,700	\$ 46,684,800	\$ 7,886,600	\$ 4,090,200	\$ 68,521,800	2,421,118

* Complete cost data was not available from the City of Scranton for the Study.

Municipal Litter and Illegal Dump Cost Study

Total Measured Costs by Activity Category



In partnership with the Richard King Mellon Foundation and participating cities.

Summary: Litter Summit November 2019

- Motorists and pedestrians are considered the primary sources of litter
- Individuals who litter and local governments should be responsible for abatement of litter
- Resources should be focused on regulations & enforcement (51.7 percent) and infrastructure (37.2%) to reduce litter and illegal dumping
- Participants felt we should increase
 - awareness of litter impacts via education
 - funding for litter initiatives including enforcement personnel and infrastructure
 - solid waste and recycling management and litter prevention infrastructure



In coordination with:



Media Coverage Sample

Cost to pick up litter could feed thousands - Butler Eagle (February 17, 2020)

Follow the Money - MSW Management (February 12, 2020)

Philadelphia Spends Millions on cleaning up Litter. New study suggests there's a better way - News Radio.com KYW 1060 AM (February 8, 2020)

PA, fed up with litter, organizes for new attack - Bay Journal (March 6, 2020)

500 Million Pieces of Trash Found Along Pennsylvania Roads in New Litter Study - WESA 90.5 (February 14, 2020)

More than 2,000 pieces of litter per mile on Pa. roads, report says; price tag's \$2.1M in Lancaster city - Lancaster Newspapers (February 10, 2020)

Pick up after yourself, Pennsylvania - Tribune-Review: Editorial (February 9, 2020)

You may be shocked to learn how much Pennsylvania (and Allentown) spend on litterbugs - Morning Call: Paul Muschick (February 11, 2020)



Next Steps

- State led working groups being coordinated by DEP and PennDOT Policy Offices to develop an Action Plan www.dep.pa.gov/litteringactionplan
 - Education
 - Infrastructure
 - Laws and Enforcement
 - Local Funding
- Litter Caucus co-chaired by Senator Scavello, Senator Street, Representative Peifer and Representative Ciresi - Christine Zubeck at Senator Scavello's Office 717-787-6123 czubeck@pasen.gov.



Resources Available

www.dep.pa.gov/litteringactionplan

- ✓ Research Reports
- ✓ Fact Sheets
- ✓ Photos
- ✓ Social Media Graphics
- ✓ Press releases



In partnership with:



COVID-19: Littering & Illegal Dumping During a Pandemic

Cancelled Community Improvement Events

- ✓ Pick Up Pennsylvania – Spring Campaign
- ✓ Special Collections for Hard-to-Dispose of Items (Tires, Appliances, Electronics, etc.)

Increased litter, illegal dumping and graffiti

- ✓ Littering of PPE (gloves, masks, wipes, etc.)
- ✓ Bulky items and CD Waste Dumped in State Parks & Forests
- ✓ Increase of Litter on Trails and in Local Parks
- ✓ Dumping at Thrift Stores
- ✓ Dumping at Public Drop-offs
- ✓ Increasing reports of graffiti



Top: Naomi Brannan/OceansAsia/ Bottom: Forbes St Forest

COVID-19: Cleanups and Messaging

Key messaging and Calls to Action

1. Take Pride in PA: A Pandemic is no Reason to Litter
2. Leave No Trace
3. “Let everyone sweep in front of his own door, and the whole world will be clean.” - *Johann Wolfgang von Goethe* #SweepPA
4. Report Illegal Dumping and Graffiti (illegaldumpfreepa.org)

Preparing for fall, post-pandemic, litter and illegal dump cleanups

1. Supporting local cleanup efforts through Pick Up Pennsylvania in Support of International Coastal Cleanup- Free Cleanup Supplies but *no Free or Reduced Disposal*
2. Coordinating with state agency partners including DEP, PennDOT and DCNR
3. Inventorying graffiti and illegal dump sites and distributing information to local authorities and partners
4. Loaning surveillance equipment to partner agencies and organizations



Thank You

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