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REDUCING CONTAMINATION IN CURBSIDE RECYCLING PROGRAMS

Mississippi SWANA Chapter/Mississippi Recycling Coalition
Solid Waste Management and Recycling Conference
May 27, 2021



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Upcoming SWANA Events

- **Sustainable Materials Management Summit**
 - Tuesday, June 15, 2021
 - 1:00 p.m. – 5:00 p.m. EDT
 - *Networking 5:00 p.m. – 6:00 p.m. EDT*
- **Landfill Challenges Summit**
 - Thursday, June 17, 2021
 - 1:00 p.m. - 5:00 p.m. EDT
 - *Networking 5:00 p.m. – 6:00 p.m. EDT*



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SWANA Applied Research Foundation (ARF)

- Funded by 46 local government and corporate subscribers
- Subscribers submit and vote on research topics
- Four Research Groups
 - Collection
 - Sustainable Materials Management
 - Waste Conversion and Energy Recovery
 - Disposal.
- Over 50 reports published – free to SWANA members



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FY 2021 Sustainable Materials Management Group Subscribers

<u>Jurisdiction</u>	<u>Representative</u>
Denton, TX	Brian Boerner
Edmonton, Alberta, CA	Hamid Zaman, PhD, PEng.
Fairfax County, VA	Eric Forbes
Illinois Land of Lincoln SWANA Chapter	Eric Fasbender
Mecklenburg County, NC	Joe Hack
Medina County (OH) Solid Waste District	Elizabeth Biggins-Ramer, S.C.
Miami-Dade County, FL	Mike Fernandez
Monterey (CA) Regional Waste Management District	Tim Flanagan
New York State SWANA Chapter	Luann Meyer
SWA of Northern Cook County, IL	Dave Van Vooren
Tucson, AZ	Frank Bonillas

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REDUCING CONTAMINATION IN CURBSIDE RECYCLING PROGRAMS

- Purpose of report
 - Identify and address key reasons for contamination
 - Help Recycling Managers develop more effective anti-contamination programs
- Report available to all SWANA members free of charge – June 15, 2021



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UNDERSTANDING THE CAUSES OF CURBSIDE RECYCLING CONTAMINATION

- **Misunderstanding** of What's Included in Curbside Recycling
- **Different Levels of Commitments** to Curbside Recycling
- **Unintended Consequences** of “Pay As You Throw” Programs



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Misunderstanding of What Recyclables are Included in Curbside Recycling

- Inconsistent Messaging
- Recycling Arrows
- Wishful Recycling



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Are Plastic Tubs/Container Lids Recyclable in Mecklenburg County, NC?

DON'T TANGLE OR CONTAMINATE
RECYCLE MORE
FOR A GREENER STATE



<p>PLASTIC Bottles, tubs, jugs and jars</p> <p>No pumps Empty and rinse</p>	<p>METAL All cans</p> <p>Empty and rinse</p>
<p>GLASS Bottles and jars</p> <p>Empty and rinse</p>	<p>PAPER Paper, cartons and cardboard</p> <p>Flatten cardboard</p>

KEEP THESE OUT!

- ⊗ Aerosol cans
- ⊗ All batteries (car, laptop, etc.)
- ⊗ Ceramic items
- ⊗ Clothing or textiles
- ⊗ Diapers
- ⊗ Disposable cups (plastic and paper)
- ⊗ Electronics
- ⊗ Food-soiled items
- ⊗ Hazardous waste
- ⊗ Household glass
- ⊗ Medical waste
- ⊗ Plastic bags/liners
- ⊗ Scrap metal/wood
- ⊗ Shredded paper
- ⊗ Styrofoam/peanuts
- ⊗ Tangles (cords, hoses, wires, etc.)
- ⊗ Tires
- ⊗ Toys



The Items Listed In The Green Circles Below
Are Acceptable
In Your Curbside Recycling Bin!

PLASTIC CONTAINERS (with lids only)	CARTONS & JUICE BOXES	EMPTY AEROSOL CANS	ALUMINUM CANS
CEREAL BOXES	CARDBOARD BOXES (FLATTENED)	MAGAZINES	GLASS BOTTLES & JARS
TIN/STEEL CANS	PAPER (BROWN BAGS, HIGH GRADE PAPER)	JUNK MAIL	NEWSPAPER



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Different Levels of Commitments to Curbside Recycling

- Resident's Role in Curbside Recycling
 - Keeping up with program requirements
 - Some extra work required
 - Done on voluntary basis.
- Study Findings
 - Most residents want to recycle right
 - **Those that don't are causing most of the contamination**

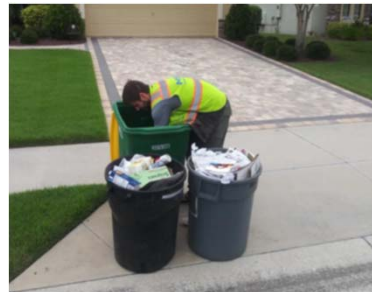
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The TRP/SWACO Study

- Waste/recycling characterization study conducted in 2018.
- During the study, two communities - Gahanna and Reynoldsburg – switched from 18-gallon bins to 64-gallon rollout carts.
- Contents of recycling containers from 80 households analyzed before and after switch from bins to roll-out carts.




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Study Findings

Scenario	Recycling Container	Contamination Rate	% HHs with >25% Contamination
Before Cart Distribution	18-gallon bins	17.4%	23%
After Cart Distribution	64-gallon rollout carts	19.6%	28%

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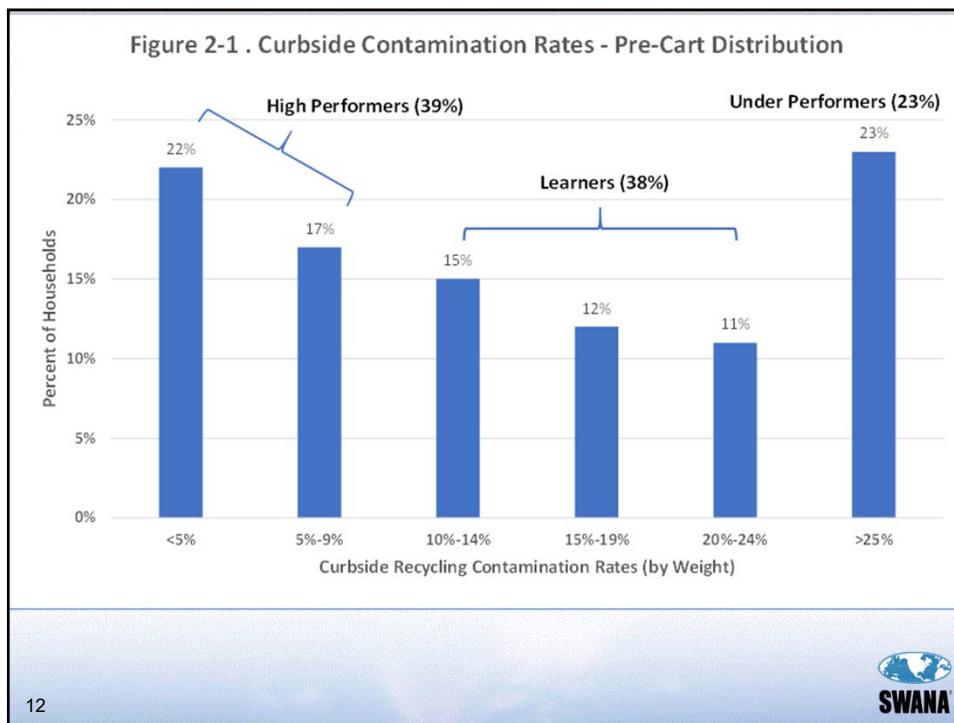
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Contamination – Pre-Cart Distribution

Recycling Group	% of Households	Contamination Range	Contamination Attributable to Each Group
High Performers	39%	<10%	1.8%
Learners	38%	10% -24%	6.4%
<u>Under Performers</u>	<u>23%</u>	<u>>25%</u>	<u>9.2%</u>
Total	100%		17.4%

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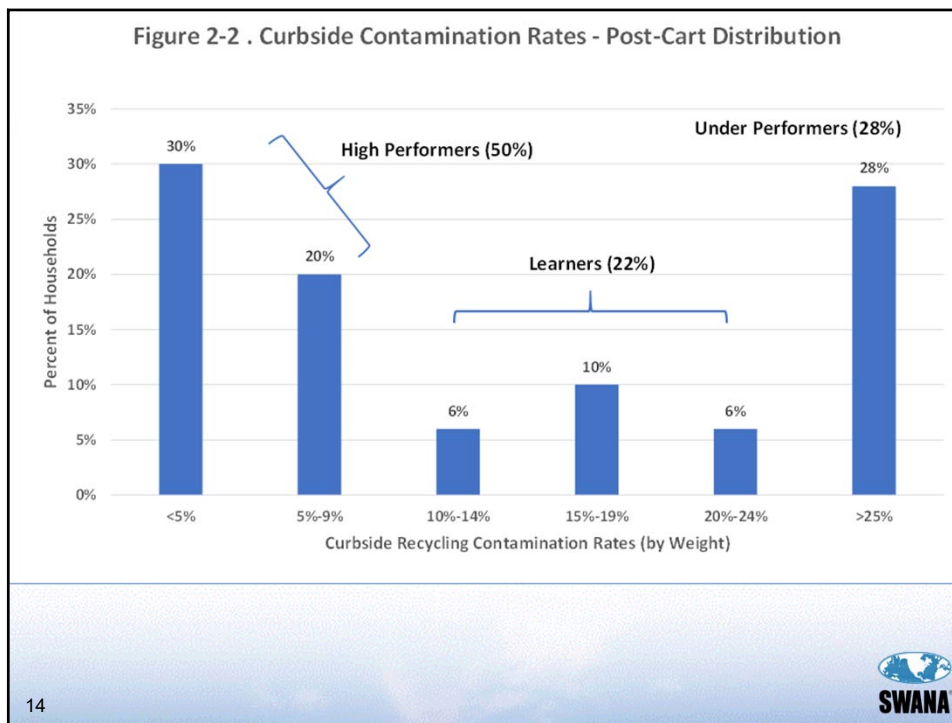
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Contamination – Post-Cart Distribution

Recycling Group	% of Households	Contamination Range	Contamination Attributable to Each Group
High Performers	50%	<10%	2.2%
Learners	22%	10% -24%	3.7%
Under Performers	28%	>25%	13.7%
Total	100%		19.6%

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Different Levels of Commitments to Curbside Recycling - Conclusions

- High Performers
 - May need occasional reminders regarding acceptable recycling items
- Learners
 - Will need educational outreach and occasional cart inspections
- Under Performers
 - More education not likely to be effective
 - Need enforcement mechanisms such as cart removal and/or fines to motivate compliance with recycling rules

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Unintended Consequences of PAYT Programs

- Typical PAYT Fee Structure
 - 96- Gallon Waste Container - \$20/Month
 - 64-Gallon Waste Container -\$12/Month
 - 96-Gallon Recycling Container – No Charge

- Under Performer’s Choice
 - Pay less for 64 Gallon Waste Container
 - Use Recycling Container for Overflow Waste

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TRP Recommendations to Reduce Curbside Recycling Contamination

- Cart Inspection and Tagging
- Do Not Service Contaminated Carts
- Direct Mailers
- General Advertising



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Cart Tagging – Fort Worth Texas

- 30% Contamination Rate
- Net loss of \$1 million in MRF contract in 2019
- “Blue Crew” of six workers
- Cart removal for repeat offenders



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Cart Tagging Program Costs

Single Family Households	291,739
Persons/HH	2.88
Collection Frequency	Weekly
Blue Crew Workers	6
Salary, Including Fringe	\$ 32,448
Total Labor Costs - Blue Crew	\$ 194,688
Cost Per Household	
- Annual	\$ 0.67
- Per Month	\$ 0.06

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Annual Savings Due to Reduced Recycling Contamination

		Contamination Reduction
Parameter	Units	5%
Recyclables Set Out Rate	Lbs./HH/Week	8.8
	Tons/HH/Year	0.23
MRF Processing Costs	\$/Ton	\$82.00
Original Contamination Rate	%	15%
New Contamination Rate	%	10%
Reduced Contamination	Tons/HH/Year	0.011
Processing Cost Savings	\$/HH/Year	\$0.94
	\$/HH/Month	\$0.08

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Enforcement Options for Non-Compliant Households – El Paso, TX

- Cart inspection program started in 2019
- “Oops” tags used to address contamination
- First tag – cart not serviced
- Second tag – warning letter is sent to resident
- Third tag – cart is taken away



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Cart Enforcement – Contamination Fines – Providence RI

- Cart inspection
- First offense – cart is tagged and not serviced
- Repeated offenses - \$50 fine can be issued.
- 3,000 fines issued in 2018



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Conclusions

- **Residential Curbside Recycling Participants**
 - High Performers
 - Learners
 - Under Performers – cause 50% to 70% of contamination
- **Education**
 - Clear, simple and consistent messaging needed
 - Not effective for Under Performers group
- **Cart-tagging/rejection programs**
 - Effective but expensive
 - Costs covered by contamination savings
- **New Curbside Recycling Message?**
 - It's a privilege to recycle
 - This privilege must be earned

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