PACKAGING FLOW IN THE MRF

The material mix at the MRF is constantly changing. We studied how materials flowed through the MRF to help improve recovery.

GOALS

Flow
Where do packages end up?

Selection
Why do packages flow to commodities?

Processes
What changes to sort processes could improve recovery?

MRFS TESTED (5)

Locations
Midwest, Northeast and Southeast

Type
One dual stream and four single stream

Size
2 lg. (35 tph), 2 med. (25-30 tph) and 1 sm. (10 tph)

Equipment manufacturers
4 different companies

Optical sorters
Ranged from 0 to 5

METHODOLOGY

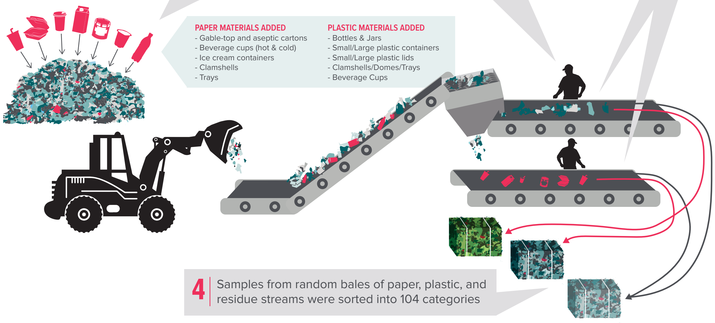
1 Materials added to standard incoming recyclables

2 Sorters trained to sort new materials, but left to flow naturally

3 System run for 3 hours

PAPER MATERIALS ADDED
- Gable-top and aseptic cartons
- Beverage cups (hot & cold)
- Ice cream containers
- Clamshells
- Trays

PLASTIC MATERIALS ADDED
- Bottles & Jars
- Small/Large plastic containers
- Small/Large plastic lids
- Clamshells/Domes/Trays
- Beverage Cups



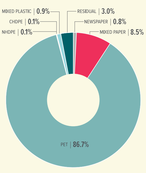
4 Samples from random bales of paper, plastic, and residue streams were sorted into 104 categories

WHERE DID THE MATERIAL END UP?

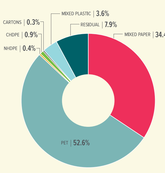
DESTINATIONS:

Mixed Paper | PET | CHDPE | Mixed Plastic
Newspaper | NHDPE | Cartons | Residual

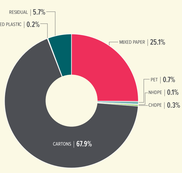
Small, regular weight PET beverage bottles



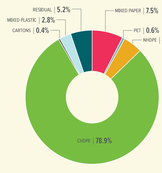
Small PET containers



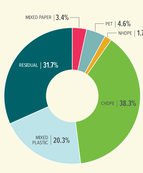
Cartons



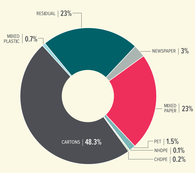
All CHDPE bottles



CHDPE containers (all non-bottle containers and tubs, <10" diameter)



Paper beverage cups



WHAT DID WE LEARN?

2D/3D SEPARATION IS KEY TO HIGH RECOVERY

Overall loss rates of containers to paper commodities varied from 3% to 12%

PACKAGE FORM INFLUENCES FLOW

Materials that held their shape had a higher tendency to flow to the container line than those that flattened

OPTICAL SORTERS CAN HELP IDENTIFY PACKAGING

Increasing benefits as stream evolves into being more diverse and lightweight

FACTORS IMPROVING A PACKAGE'S RECOVERY

Size + Shape:
Dimensions make a difference - items tend to flow with similarly sized and shaped materials across materials

Stiffness:
Holding the 3D shape improves likelihood of moving with containers

Common:
More prevalent form/resin combination will increase ability to target with dedicated optical or manual sorters

COMMISSIONED BY

Carton Council · American Chemistry Council · NAPCOR · APR · FPI

PREPARED BY

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