



Recycling 101

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OVERVIEW



HEADQUARTERS

Phoenix, Arizona

47

States

Fortune 500 company
42k employees

1000+ Locations
Landfills, 75 recycling centers,
hauling fleets, compost facilities,
environmental companies,
and rail services

Municipal contracts, open market
areas and UTC certificates

Types of waste:

Garbage

- Mixed materials
- Styrofoam
- Plastic film/bags
- Household items



Recyclables

- Paper/Carboard
- Plastic bottles, tubs, & jugs
- Metal
- Glass



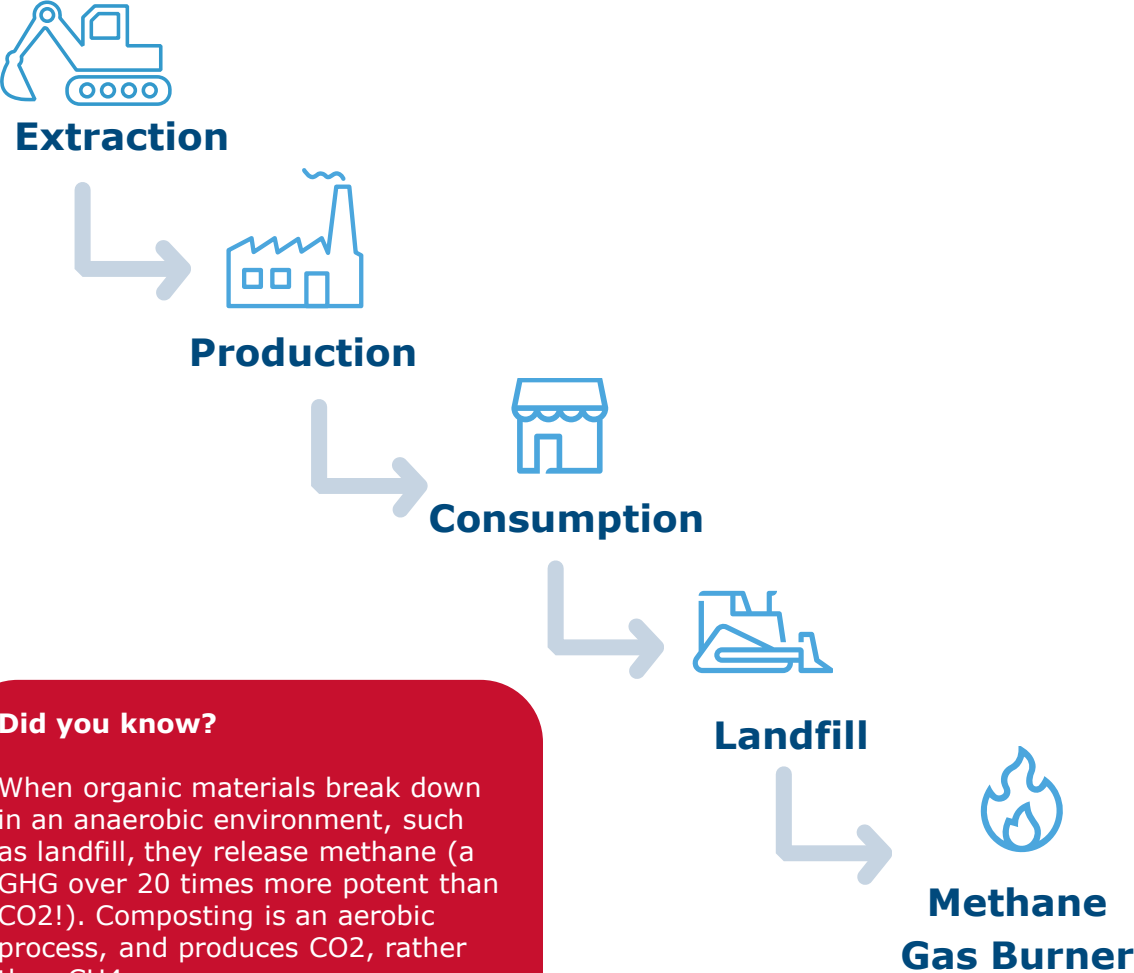
Organics

- Yard waste
- Fruits and vegetables
- Leftover food
- Food soiled paper



LINEAR VS CIRCULAR DISPOSAL

LANDFILLING

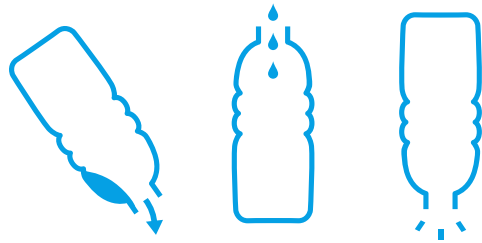


RECYCLING/ORGANICS



WHAT IS "RECYCLING"?

Recycling is turning waste material into something new and valuable.



Empty. Clean. Dry.

**Quality
over
Quantity**



✓ Cardboard



✓ Paper



✓ Metal Cans



✓ Plastic Bottles

Materials that are commodities in the market:

- ✓ Metal
- ✓ Plastic
- ✓ Paper

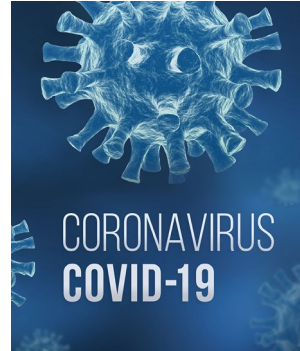
Recycling reduces extracting limited natural resources, such as metals, petroleum, trees and water, to make products. Eventually, we would run out of those raw materials.

Impacts since 2017 in the Recycling Industry



China Sword

- Recycling banned
- New expansion and partnerships in North America
- Technology investments to improve our product for higher value



COVID Pandemic

- Impacts to supply chain
- Impacts to moving goods – driver shortages
- Increased operation costs – gas, labor, energy, parts
- Employee safety procedures
- Staffing shortages



National Labor Challenges

- Hiring shortages for CDL drivers and technician driving wages up

The recycling and waste industry is far from “normal”. We continue to navigate multiple unanticipated headwinds.

Material Recycling Center MRF

- **Largest** in WA
- 2017-2020 invested **\$7.2 million** in new technology
- Volume: 55 tons per hour (110,000 lbs per hour) = **2 Boeing 747s** in one day



Seattle, WA

Collection

Commercial and Residential Trucks



Material Drop-off



The truck first stops on the scale to weigh before dumping.

After dumping, it will weigh again.



Trucks back up and a blade pushes the material out on the tipping floor.

Next, a front loader scoops up a pile and drops it in the hopper.

RECYCLING PROCESS

- ✓ Sorters pull tangles (grocery bags, cords, textiles)
- ✓ Paper floats over disk rollers
- ✓ Metal is captured by magnets or Eddy current
- ✓ Optical lasers identify plastics



RECYCLING PROCESS



- ✓ Baled
- ✓ Inspected

- ✓ Loaded
- ✓ Transported



WHAT CAN I RECYCLE?

If it isn't on this list, it's likely not recyclable at our MRF.



Glass

Bottles and jars



Metal

Cans and tins



Plastics

Bottles, tubs
and jugs



Paper and Cardboard

GLASS - ALL COLORS ARE OK

- ✓ Glass bottles
- ✓ Food or beverage jars
- ✓ All colors accepted

- ✗ Household dishes
- ✗ Canning jars
- ✗ Mirrors
- ✗ Light bulbs

*Removing labels is not necessary. Remove caps/corks.



WHAT DO OUR RECYCLED MATERIALS BECOME?

GLASS -

All colors of food and beverage glass containers can be recycled into:

- ✓ New glass containers
- ✓ Aquarium gravel
- ✓ Sandblasting medium
- ✓ Landscaping and roadbed
- ✓ Drainpipe bedding
- ✓ Asphalt paving



METAL – FERROUS AND NON-FERROUS

- ✓ Tin cans
- ✓ Aluminum containers
- ✓ Scrap metal
- ⊘ Aluminum foil/trays
- ⊘ Batteries
- ⊘ Electronics
- ⊘ Empty hazardous material containers (paint cans, oil cans)

*Removing labels is not necessary. Secure sharp lids.



An aluminum can could be back on the shelf in 60 days!

WHAT DO OUR RECYCLED MATERIALS BECOME?

METAL -

Same applications as raw material.

- ✓ Soda cans
- ✓ Bicycles
- ✓ Construction material

Recycling aluminum uses 95% less energy than producing it from its raw materials.



PAPER – 2 TO 5 MONTHS TO DECOMPOSE

- ✓ Newspaper
- ✓ Flattened cardboard
- ✓ Paper tubes
- ⊘ Shredded Paper
- ⊘ Aseptic containers
- ⊘ Mixed materials
- ⊘ Receipts



Shelf-stable Carton
(aseptic container)

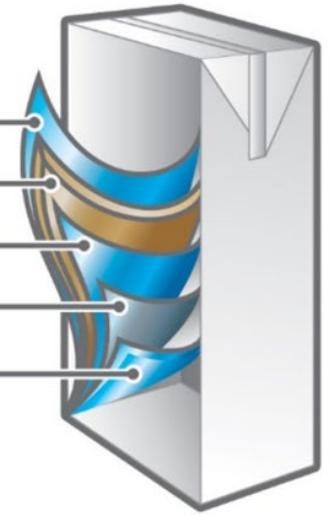
Outer Polyethylene Coating
(Liquid Barrier)

Paperboard
(Stability)

Middle Polyethylene Coating

Aluminium
(Light, Odor & Oxygen Protection)

Inner Polyethylene Coatings
(Liquid Barrier)

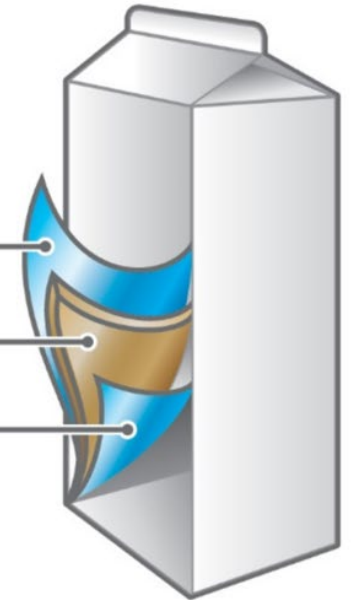


Refrigerated Carton

Polyethylene

Paperboard

Polyethylene



WHAT DO OUR RECYCLED MATERIALS BECOME?

PAPER -

Different types of paper have varying fiber strength and turn into different things.

- ✓ Newspaper → Egg Cartons, paper plates, or construction paper
- ✓ Magazines → Newspaper
- ✓ Junk mail & Copy paper → tissues, toilet paper
- ✓ Cardboard → Paper bags, cardboard, paperboard



PLASTIC – MAY NEVER DECOMPOSE

- ✓ Bottles
- ✓ Tubs
- ✓ Jugs
- ⊘ Small items (<the palm of your hand)
- ⊘ Plastic film
- ⊘ Items that previously held HHW
- ⊘ Polystyrene foam
- ⊘ Household items (like garden hoses, CD's, etc.)

*Removing labels is not necessary. Twist caps back on.



WHAT DO OUR RECYCLED MATERIALS BECOME?

PLASTIC -

Traditionally, plastic has been downcycled due to loss in quality during the refinement process.

- ✓ Plant pots
- ✓ Clothing
- ✓ Carpet
- ✓ Composite wood
- ✓ Electronic parts



REPUBLIC SERVICES POLYMER CENTERS

- ✓ However, now there is a fully circular solution to recycled plastics, meaning they no longer need to be downcycled. A plastic water bottle can be turned back into a plastic water bottle!
- ✓ Through innovation and investment in our new Polymer Centers, Republic Services is advancing circularity for plastics. This will allow us to manage the plastics stream from collection to delivery of high-quality recycled content for consumer packaging—making us the first U.S. company to do so.

Let's watch our Polymer Centers in action →



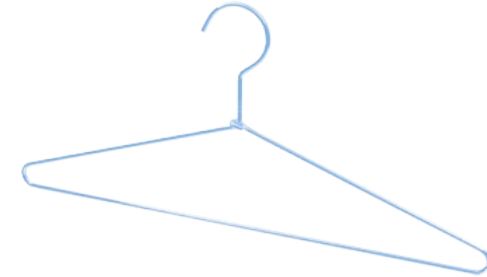


REPUBLIC
SERVICES

Polymer Center Located in Las Vegas, NV

NON-RECYCLABLE = TRASH

- ✓ Tanglers
- ✓ Too small
- ✓ More than one material
- ✓ Wrong shape



DO NOT PLACE IN THE RECYCLE CART OR DUMPSTER

Search: King County What do I do with...



Styrofoam™
styrorecycle.com



**Paint or
Paint Cans**
Paintcare.org



**Lightbulbs
or Tubes**
lightrecycle.org



Shredded Paper
atg.wa.gov/community-shred-events



Sharps



Plastic Bags



Batteries



Medicine Bottles
TakeBackYourMeds.org



Clothing



**Hazardous
Chemicals**

REPUBLIC SERVICES FUTURE PLANS

- ✓ Electric fleets - Currently EV trucks in TX, NC, CO, OR & ID
- ✓ Polymer Center regional network – demand for high post consumer content in packaging
- ✓ Compost facility expansion – water treatment, anerobic digesters (CA SB1383 and WA HB1799)
- ✓ Expanding Renewable Biogas – Archaea Energy Houston
- ✓ Environmental Services – emergency/spill response, disasters, biohazardous decontamination



Questions?

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RepublicServices.com/Municipality/Washington

RecyclingSimplified.com