

Fact Sheet: “Recycle” By Mail Is A Major Climate Fail

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You may have seen the promise on the plastic bag, the foil pouch, the toothpaste tube offering to recycle the item if you mail it back to the company or a third party. At first glance, it may seem like a good solution but, unfortunately, there’s more to this scheme than meets the eye.

Companies selling and serving plastic packaging and products are promoting [false “solutions”](#) to fool the public, from [chemical recycling](#) to the mail-back and downcycling of poorly designed plastic products.

These false solutions have negative environmental impacts, stifle innovative designs and effective solutions, and slow the adoption of refillable systems and reusable products. Unfortunately, what many of these programs *do* achieve is positive “greenwashing” publicity for the companies that enable the companies to claim that they are doing their part by meeting their voluntary plastic pledges.



Many companies have pledged to make their products and packaging reusable, recyclable or compostable by 2025. Unfortunately, many companies are not investing in actually redesigning or eliminating their poorly-designed and polluting plastic products. Instead, these companies are promoting schemes to collect and “recycle” (though technically they are downcycling) their plastic products and packaging that are not accepted by curbside recycling programs via mail-back programs. Afterwards, the plastic is unfit for another round of downcycling and will end up in a landfill or incinerator. The mail-back scheme does not actually result in replacing the production of those products from new plastic.

Right now these programs are not widely used, partly because companies sometimes limit the number of participants in the programs due to the high cost of mailing back millions of products. However, if scaled up to collect a serious amount of plastic waste, these mail-back programs would be a climate disaster. This is unlike local reusable container return programs, [such as refillable beverage bottles](#), that effectively reduce waste and carbon emissions by using the container again for its original purpose.

This fact sheet demonstrates that long distance mail-back programs for plastic products and packaging have significant environmental impacts that outweigh the meager benefits of downcycling the plastic products into picnic tables or park benches. The table below shows some of the impacts from just four types of plastic products were they to be mailed back in cardboard boxes at scale nationwide.

By The Numbers: Impacts of Selected Plastic Mail-Back Items

* The United States (U.S.) Federal Trade Commission (FTC) [Green Guides](#) require 60% acceptance of a product in established systems to claim an item as “recyclable.”

Item	# Required To Be Sent Back To Qualify As Recyclable*	Products Per Box	<u>Cardboard</u> <ul style="list-style-type: none"> # of Boxes Tons of Cardboard CO2 Emissions of Cardboard Use # Cars Equivalent 	<u>Truck Transport</u> <ul style="list-style-type: none"> # of Truckloads CO2 Emissions of Trucks # Cars Equivalent
Fast Food Condiment Packets from One Maker	6.6 billion	50	<ul style="list-style-type: none"> 132 million boxes 16,500 tons 92,000 metric tonnes CO2/yr 20,015 cars 	<ul style="list-style-type: none"> 16,425 truckloads 12,154 metric tonnes CO2/yr 2,642 cars
Snack Chip Bags from One Maker	9.6 billion	8	<ul style="list-style-type: none"> 1.2 billion boxes 262,500 tons 1,464,750 metric tonnes CO2/yr 318,424 cars 	<ul style="list-style-type: none"> 1,621,753 truckloads 1,200,048 metric tonnes CO2/yr 260,880 cars
Plastic Cutlery	21.6 billion	138	<ul style="list-style-type: none"> 156.5 million boxes 19,565 tons 109,174 metric tonnes CO2/yr 23,733 cars 	<ul style="list-style-type: none"> 19,476 truckloads 14,412 metric tonnes CO2/yr 3,133 cars
Plastic Cups	38.4 billion	30	<ul style="list-style-type: none"> 1.28 billion boxes 160,000 tons 892,800 metric tonnes CO2/yr 194,087 cars 	<ul style="list-style-type: none"> 159,272 truckloads 117,856 metric tonnes CO2/yr 25,621 cars

Trucking billions of cardboard boxes or big plastic envelopes of used condiment packets, food and drink pouches, plastic cups, and other plastic products thousands of miles across the country to a sorting warehouse would not only require a vast amount of cardboard but would also generate significant carbon emissions and packaging waste (see the following section for calculation details.)

There are also additional environmental impacts (more carbon emissions, more material waste) of further transport of collected materials around the country and downcycling of these poorly designed products that are cause for concern.





Instead of participating in these harmful misleading schemes masquerading as real solutions, brands should adopt local refill programs and create reusable products.

If that is not possible, companies should redesign their products to be truly recyclable or compostable through existing curbside recycling and composting programs and local processing that does not require millions of truck miles, billions of cardboard shipping boxes, and millions of plastic bags.

[Life cycle assessments \(LCAs\)](#) that calculate the environmental advantages of product recycling are all based on curbside collection and local processing within a few hundred miles.

Hidden Impacts: Carbon Emissions & Packaging Waste

This fact sheet focuses on the initial send back step because it is a major flaw of the mail-back recycling model. Below we have broken out these hidden impacts by four types of common single-use plastic items eligible for mail-back recycling programs.

Single-Serve Condiment Packets

An estimated [11 billion condiment packets](#) are distributed from one ketchup maker each year. Based on the mail-back of 60 percent of (6.6 billion) packets:

- 50 condiment packets per box (9 inches by 7 inches by 4 inches or 0.15 cubic feet)
- 132,000,000 boxes/yr
- 33 million lbs/yr of cardboard would be used (0.25 lbs cardboard/box)
- Carbon emissions from the cardboard use would equal about 92,070 metric tonnes/yr (equal to 20,015 cars on the road each year),
- Carbon emissions from the truck transport would equal about 12,154 metric tonnes/yr (equal to 2,642 cars on the road each year),
- 3.3 million lbs/yr of plastic bag waste would be created. (0.025 lbs plastic/bag). If the contaminated plastic bag waste is incinerated, another 2,219 metric tonnes/yr of carbon would be emitted (equal to another 463 cars/yr) based on [U.S. E.P.A. WARM Model Emissions Factors](#).



Figure 1: Box Containing 50 Condiment Packets

Snack Chip Bags

An estimated [16 billion snack chip bags](#) are sold by one major brand each year in the U.S. Based on the mail-back of 60% (9.6 billion) of these bags:

- 8 bags per box (11 inches by 7 inches by 8.5 inches or 1.58 cubic feet)
- 1.2 billion boxes/yr
- 525 million lbs/yr of cardboard would be used (0.44 lbs cardboard/box)
- Carbon emissions from the cardboard use would equal about 1,464,750 metric tonnes/yr (equal to 318,424 cars on the road each year),
- Carbon emissions from the truck transport would equal about 1.2 million metric tonnes/yr (equal to 260,880 cars on the road each year).



Figure 2: Box Containing 8 Large Snack Chip Bags

Plastic Cutlery

An estimated [36 billion pieces of plastic cutlery](#) are distributed each year in the U.S. Based on the mail-back of 60% (24 billion pieces) of cutlery:

- 138 pieces per box (9 inches by 7 inches by 4 inches or 0.15 cubic feet)
- 156,521,739 boxes/yr
- 39.1 million lbs/yr of cardboard would be used (0.25 lbs cardboard/box)
- Carbon emissions from the cardboard use would equal about 109,174 metric tonnes/yr (equal to 23,733 cars on the road each year),
- Carbon emissions from the truck transport would equal about 14,412 metric tonnes/yr (equal to 3,133 cars on the road each year).



Figure 3: Box Containing 138 Pieces of Plastic Cutlery

Plastic Cups

An estimated [64 billion plastic cups](#) are sold in the U.S. Based on the mail-back of 60% (38.4 billion) of cups:

- 30 cups per box (9 inches by 7 inches by 4 inches or 0.15 cubic feet)
- 1,280,000,000 boxes/yr
- 320 million lbs/yr of cardboard would be used (0.25 lbs cardboard/box)
- Carbon emissions from the cardboard use would equal about 892,800 metric tonnes/yr (equal to 194,087 cars on the road each year),
- Carbon emissions from the truck transport would equal about 117,856 metric tonnes/yr (equal to 25,621 cars on the road each year),



Figure 4: Box Containing 30 Plastic Cups

ASSUMPTIONS

Our estimates are based on the following assumptions:

- 1) **60% Collection Rate Threshold:** The United States (U.S.) Federal Trade Commission (FTC) [Green Guides](#) require 60% acceptance of a product in established systems to claim an item as “recyclable.”
- 2) **One Central Warehouse in Atlanta, GA**
Consumers mail packages in cardboard boxes to one central warehouse located in Atlanta, Georgia. The boxes travel there by UPS truck.
- 3) **Cardboard Carbon Emissions**
The mail-back model requires the use of billions of cardboard boxes compared to curbside recycling which requires zero cardboard boxes. While cardboard boxes are typically recyclable, they would have to be transported (more carbon emissions) to a pulp mill to be reclaimed with significant freshwater use. There is also a [carbon footprint](#) associated with making the cardboard boxes.

The [U.S. EPA Warm Model](#) carbon emissions factor for source reduction of cardboard (5.56 metric tonnes CO₂/short ton of cardboard) is the amount of greenhouse gases associated with making the material and managing the post-consumer waste and is used to calculate the carbon footprint of the cardboard boxes required to send back the plastic products.
- 4) **Geographical Distribution of Boxes**
 - a. 30% from the West Coast (Sacramento, California)
 - b. 25% from the North East (Albany, New York)

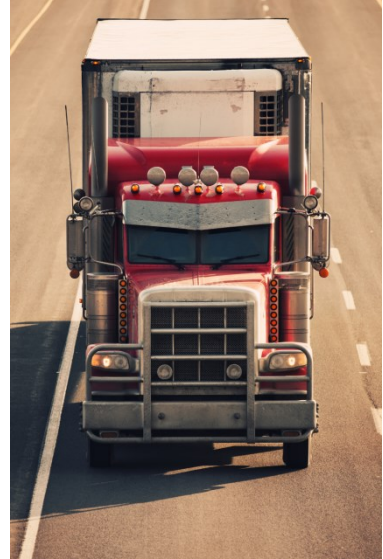
- c. 10% from the Midwest (Chicago, Illinois)
- d. 20% from the South East (Tallahassee, Florida)
- e. 15% from the Gulf Coast (Houston, Texas)

5) Truck Transport Carbon Emissions

[According to the U.S. E.P.A.](#), transportation accounts for roughly 28% of all U.S. carbon emissions and trucks account for 23% of the transport emissions. [EDF estimates that by 2040](#), U.S. freight emissions are on track to increase by nearly 40 percent above current levels.

Transport of most consumer packages, such as boxes of waste plastics, [is constrained by the interior volume of trucks](#) rather than the weight that the trucks can carry. Therefore, carbon emission estimates are most accurate based on volume of packets in boxes, not by weight.

In EDF's "[Green Freight Handbook](#)," the carbon emission factor for all trucks in the U.S. is 597.4 grams of CO2 per TEU-mile (a [TEU is a twenty-foot equivalent shipping container](#) with an internal volume of 1,172 cubic feet.)



ABOUT THE AUTHORS

Beyond Plastics is a nationwide project based at Bennington College in Vermont that pairs the wisdom and experience of environmental policy experts with the energy and creativity of community leaders and activists to build a vibrant and effective anti-plastics movement. Our mission is to end plastic pollution by being a catalyst for change at every level of our society. We use our deep policy and advocacy expertise to build a well-informed, effective movement seeking to achieve the institutional, economic, and societal changes needed to save our planet, and ourselves, from the plastic pollution crisis. <https://www.beyondplastics.org/>

The Last Beach Cleanup volunteers lead catalytic initiatives to move from awareness on plastic pollution to wide-scale action and achievement. We collaborate with diverse stakeholders who share the goal of ending plastic pollution: local and national governments, nongovernmental organizations (NGOs), socially responsible investors (SRIs), individuals and others. <https://www.lastbeachcleanup.org/>