



STINA™

2021 Canada Post-consumer Plastic Bottle Recycling Data Report

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**Prepared by Stina Inc. with a contribution from:
Environment and Climate Change Canada (ECCC)**

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Introduction

This is the eleventh report documenting the amount of post-consumer¹ bottles recovered for recycling in Canada in 2021.² A full study on post-consumer plastic recovered in Canada for recycling, which included bottles, was last completed in 2018. All comparisons mentioned in this report will be the 2021 study data compared to the 2018 study data. This report covers Canada sourced post-consumer plastic bottles both reclaimed in North America and exported overseas.³ This report is a technical summary of the study findings.

This report's findings are based on data from two surveys: 1) a plastic recycling survey of export markets for all plastic categories and all North American reclaimers (except for PET bottle reclaimers) conducted by Stina Inc., and 2) a separate survey of PET bottle reclaimers conducted by the National Association for PET Container Resources (NAPCOR). A [U.S. Post-consumer Plastic Recovered for Recycling Data Report](#) is also produced.

Only the categories for which funding was available received extensive follow up and were included in this report. With additional funding, the Canada report can again cover all categories for post-consumer plastic as previous reports: bottles, non-bottle rigid, film and other plastic.

The 2021 Study, conducted by Stina Inc., was made possible by those that respond to the survey, collaboration with the Association of Plastics Recyclers (APR) and NAPCOR, and through a contribution from the Environment and Climate Change Canada (ECCC) to provide data on bottles recovered for recycling in Canada.

1. Throughout this report, the term "post-consumer" refers to plastics that have been used for their intended purpose by consumers and businesses. Commercial materials that have met their intended use are often recovered outside of curbside or drop-off collection programs and include items such as totes, pallets, crates, stretch wrap, poly bags and other commercial packaging. This report does not cover the recycling of post-industrial (pre-consumer) materials, which the U.S. EPA defines as materials that are generated in manufacturing and conversion processes, such as scrap and trimmings.

2. In the context of this report, plastic recovered for recycling refers to the gross kilograms of post-consumer plastic commodities (baled or otherwise consolidated) acquired by markets for recycling.

3. The U.S., Canada, and Mexico, as main North American destinations for recycled plastic, are referred to as North America in this report and are distinct from material exported overseas. Imports by reclaimers in Mexico of Canada sourced material have not been reported to date.

Methodology

Data on recovered post-consumer plastic are collected through a voluntary, annual plastic recycling survey that gathers data on post-consumer bottles, non-bottle rigid plastics, film and other plastics acquired by North American reclaimers and overseas export markets. Additional data from collaborators also contribute to the findings for this report.

STEPS TO GATHER THE DATA UTILIZED IN THIS REPORT

- A proprietary markets database is continually updated to include current exporters, reclaimers, and other handlers of scrap plastic.
- Data collection is conducted through an electronic survey of market participants in plastic recycling.
- To ensure accuracy of the data provided, follow-up with responders and other industry contacts is conducted and other sources of recycling industry information is reviewed.
- The survey primarily targets reclaimers and exporters for the most accurate and efficient data capture of pounds acquired for recycling.
- Aggregated data for total PET bottles and thermoforms recovered for recycling in North America are received and incorporated from NAPCOR, which conducts a separate PET reclaimer survey.

Data Collection and Analysis

Stina regularly updates a proprietary database of plastic reclaimers, other processors, exporters, and brokers to help ensure that the survey reaches the key plastic scrap buyers of North American plastic.⁴ Stina focuses survey follow up for data capture based on the scope of the current year study.

Stina uses a custom-designed, web-based survey system to gather data. Although the overall methodology has not changed since the first study, Stina seeks ways to improve the completeness and timeliness of survey responses with each iteration to allow for better material flow tracking and assist with prevention of double counting.

Stina is involved in the plastic recycling industry's work to harmonize commodity categories and the terminology used by the industry. Updates to categories are reflected in the annual survey tool and in the other tools and resources for the recycling industry that Stina maintains. This is critical in order to report on the key materials, to avoid misunderstanding, and to further support harmonization of terminology used in the industry. The model plastic bale specifications, maintained by the Association of Plastic Recyclers (APR) and updated in collaboration with Institute of Scrap Recycling Industries (ISRI), are a key resource in this process.⁵ The 2021 study for plastic bottles recovered for recycling in Canada included the following categories:

- PET Bottles
- HDPE Bottles (Natural, Colored and Mixed)
- PP and Other Bottles
- Mixed Resin Rigid Plastics (where commodities are typically a mix of bottle and non-bottle plastic, e.g., 3-7 Bottles and Small Rigid Plastics or Tubs and Lids)

4. Through other research projects and resources that Stina maintains to support the recycling value chain, Stina regularly engages with companies and new contacts in this sector.

5. Bale specifications maintained by the Association of Plastic Recyclers (APR), <https://plasticsrecycling.org/model-bale-specifications>.

The survey is distributed by sending an email with a unique link to each survey contact, including reclaimers in North America, export buyers, as well as some key players within the value chain, such as MRFs, brokers, and end users. After an appropriate amount of response time has passed, Stina employees send follow-up emails and make telephone calls to retrieve data. The data are entered into the online survey tool, either directly by the company surveyed, or by Stina staff in conjunction with the relevant company. Incoming data are reviewed for accuracy, and follow-up calls are made as needed. After data collection is complete, the data are compiled and categorized based on the detail reported.⁶

Rigid commodity categories from commingled/other collection, typically collected curbside or at a municipal drop-off, may be a mixture of resins, or some combination of bottles, containers, bulky items, and other non-bottle rigid plastic. Some commodity categories are further segregated by resin and others are intentionally reported as a combination of resin and product type. Where the commodities are a mix of bottle and non-bottle or resin, the bottle and non-bottle rigid plastic portions of the mixed rigid bales reported by respondents are calculated for this report by applying the content percentages of resin and product type (specifically related to bottle percentages for the scope of this study) from the *2014/15 Mixed Rigid Bale Composition Study* on primarily U.S. sourced bales with some adjustment given U.S. and Canada industry-provided audit data since that study.⁷ An additional adjustment was made and applied to the 2021 data analysis due to insight from a 2022 bale audit of Canada specific commodities. Since 2016, the 2014/2015 study data has been used for the reports whereas previous reports dating back to 2011 used the 2011 composition study.⁸

Data received from NAPCOR on PET Bottles is incorporated into the analysis. The final data totals are reviewed, analyzed, and reported in as much detail as possible without compromising the confidentiality of the participating companies' individual responses.⁹ In order to determine trends and identify anomalies that may require further vetting, the analysis includes year-to-year comparisons of the totals, material categories, and trends among buyers. This quality control, which often requires follow-up with survey responders, is essential to determining if there has been an actual shift or just an entry error by the responder. Clarification may also be needed to determine whether reported material can be counted as post-consumer/commercial or if it is, in fact, post-industrial scrap. Describing how the data are collected, as well as what is and is not included in the survey, provides readers of this report with the transparency needed to cross-reference the results with other available industry data.

6. Due to rounding, some totals may not correspond with the sum of the separate figures.

7. National Mixed Rigid Plastic Bale Composition Study, Association of Plastic Recyclers (APR), July 2015.

8. National Mixed Rigid Plastic Bale Composition Study & Analysis of Non-bottle Rigid Plastic Available for Recycling, Association of Plastic Recyclers (APR), 2011.

9. Stina conducts the survey and takes steps to maintain the confidentiality of individual responses; including procedures designed so that no individual company data are released, nor are any specific data points that do not include at least three companies reporting.

Data Gaps and Assumptions

Participation in the survey is voluntary and the reported data are based on the responses received. Since there is not 100 percent participation, the presented totals represent the minimum amount of the plastic categories recovered for recycling and sold in the marketplace. Only data provided by North American reclaimers and exporters selling directly overseas, are included in the reported totals, unless Stina determines that data are missing in areas where substantive information from other reliable sources is available. When reclaimers do not provide their capacity directly, an estimate is made utilizing information available, including public data, pounds purchased for recycling, as well as other industry insights. Data provided by brokers and MRFs are primarily used as a reference to better understand the flow of material, but Stina may include their data if enough information is provided that would enable attribution of material sold to a non-responding reclaimer or exporter.

Stina sometimes receives responses from existing companies that did not previously respond. Changes in year-to-year recovery totals are often a combination of changes in actual collection, along with new information about material that was recovered for recycling in previous years, but not reported. When Stina can conclude the nature of an increase (or decrease), the reasoning is indicated. However, it can be difficult to make a reliable determination in any given year, depending on the depth of information Stina receives from plastic handling companies for previous years and while considering the need to protect the confidentiality of the data from individual responses.

The volatility of the overseas export market continues, particularly given ongoing restrictions related to export overseas and a focus on keeping material in North America. Players in the export market historically have come and gone, and even established exporters may change the type or mix of materials they purchase based on market conditions. These dynamics make tracking export buyers challenging. Stina gathers additional industry insight where possible and tracks exporters' purchases of plastic through key industry resources.

Changes in how responders report pounds in the survey categories can also impact the totals reported year over year. Mixed resin rigid bale commodities often require follow-up and a data quality check due to the inconsistent terminology used in the marketplace to describe these commodities.

Post-commercial material, which is material from the commercial sector that has met its intended use, can be difficult to track because it is often purchased by companies that are also handling industrial scrap. To handle responses from industrial/commercial scrap recyclers, the survey specifically includes a detailed section on post-industrial plastic recycling to help differentiate and track post-commercial separately from post-industrial categories. As responses are received, responders are further engaged to determine if post-commercial material was handled that they may not realize is considered post-consumer.

Findings

Bottles

In 2021, 201 million kilograms of post-consumer bottles were reported as recovered for recycling in Canada. This is an increase of 3.3 million kilograms compared to the 2018 total.¹⁰

Table 1: Summary of Canada Sourced Post-consumer Bottles Recovered for Recycling in 2021

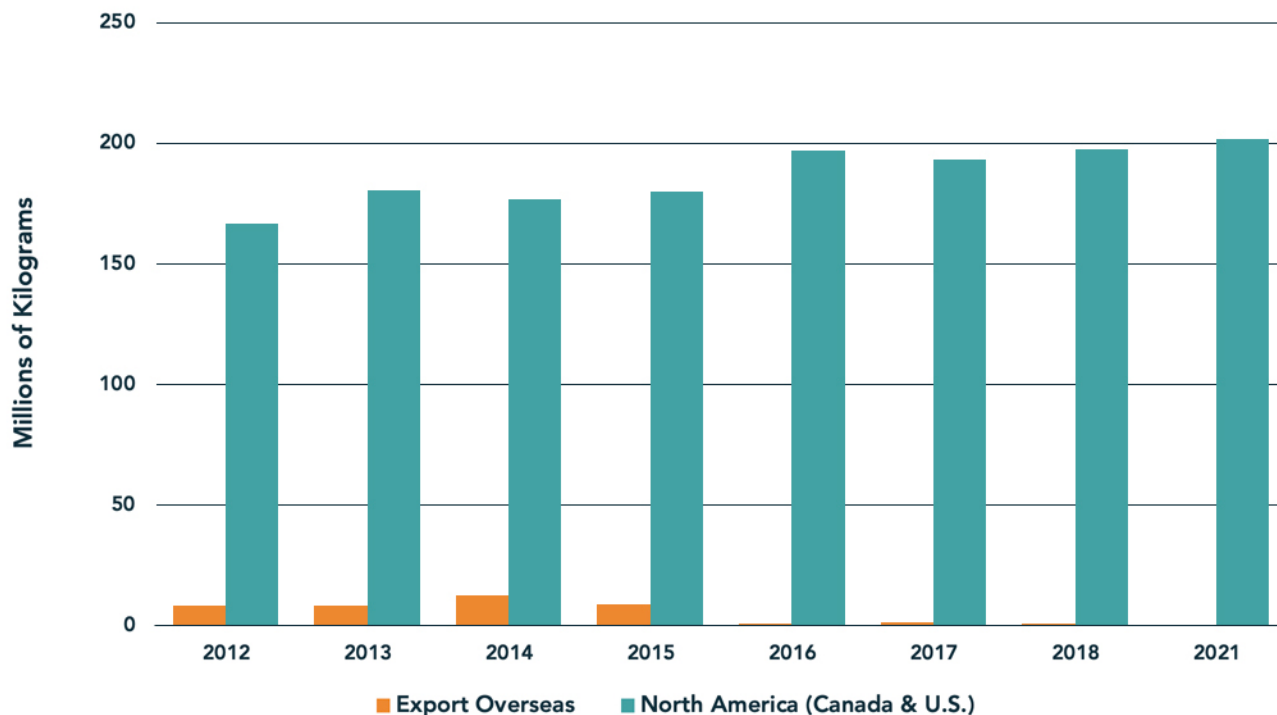
Bottle Type	2021 Recovered for Recycling	Change 2018-2021	Acquired by Canadian Reclaimers	Percent Acquired by Canadian Reclaimers
	Millions of Kilograms			
PET Bottles	111.6	-4.5	91.9	82.4%
Natural HDPE Bottles	35.6	4.2	31.9	89.7%
Colored HDPE Bottles	50.5	3.9	43.7	86.4%
PP & Other Bottles	3.2	-0.3	2.4	73.4%
Total Bottles	201.0	3.3	169.9	84.6%

Due to rounding, some totals may not correspond with the sum of the separate figures.

Reclaimers in Canada and the U.S. acquired 100 percent of the bottles reported as recovered for recycling. Reclaimers in Canada acquired four million kilograms less bottles sourced from Canada compared to 2018 for a total of 169.9 million kilograms (84.6 percent of the bottles sourced from Canada). Reclaimers in the U.S. acquired 31 million kilograms (15.4 percent) of Canada sourced bottles recovered for recycling, with an increase of 7.4 million kilograms compared to 2018. There were no reported post-consumer bottles recovered for recycling in Canada going to overseas export markets in 2021.

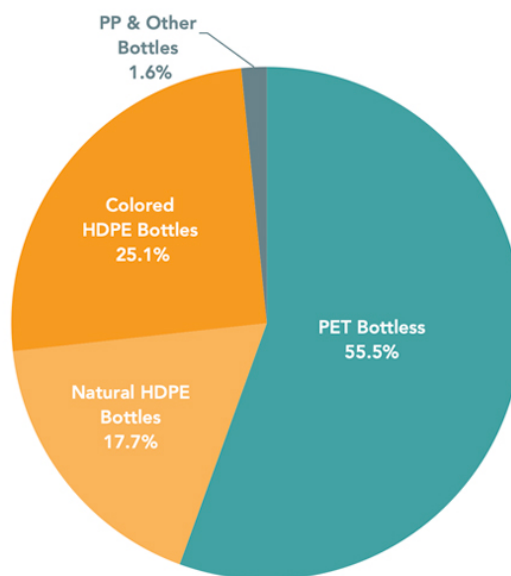
10. The study on post-consumer plastic recovered in Canada for recycling was last completed in 2018; there is a gap in data from 2019-2020. All comparisons mentioned in this report will be the 2021 study data compared to the 2018 study data.

Figure 1: Canada Sourced Post-consumer Bottles Recovered for Recycling by Destination



PET Bottles represent 55.5 percent of total Canada sourced bottles recovered for recycling, followed by Colored HDPE Bottles at 25.1 percent and Natural HDPE Bottles at 17.7 percent; the remaining 1.6 percent is PP and Other Bottles. Other Bottles include LDPE, PVC and other bottles as part of the composition of mixed rigid bales or bottles reported as specific bales, e.g., Polycarbonate (PC).

Figure 2: Percentage of Pounds of Canada Sourced Post-consumer Bottles Recovered for Recycling by Category



Due to rounding, some totals may not correspond with the sum of the Separate figures.

Table 2. Canada Sourced Post-consumer Bottles Recovered for Recycling by Bottle Category

Year	PET Bottles	Natural HDPE Bottles	Colored HDPE Bottles	PP & Other Bottles	Total
	Millions of Kilograms				
2012	103.4	21.9	44.4	4.9	174.7
2013	112.8	24.2	42.5	9.1	188.5
2014	113.1	25.0	44.1	7.2	189.3
2015	110.2	31.4	43.3	3.4	188.3
2016	119.1	32.9	43.2	2.2	197.5
2017	117.5	32.2	42.4	2.4	194.4
2018	116.1	31.4	46.6	3.5	197.6
2021	111.6	35.6	50.5	3.2	201.0

Due to rounding, some totals may not correspond with the sum of the separate figures.

PET Bottles

PET Bottles sourced in Canada continued to be the largest category of bottles recovered for recycling. The amount recovered for recycling in Canada decreased by 4.5 million kilograms compared to 2018 for a total of 111.6 million kilograms in 2021. All of the PET bottles recovered for recycling in Canada were processed by reclaimers in North America, with no Canada sourced PET bottles reported going to overseas export markets in 2021.

Canada reclaimers acquired 133.9 million kilograms of PET Bottles in 2021, sourced from Canada and the U.S. Compared to 2018, Canadian reclaimers decreased Canada sourced PET bottle purchases by 12.3 million kilograms to 91.9 million kilograms making up 82.4 percent of the Canada sourced PET bottles recovered for recycling in 2021. Canadian reclaimers increased purchases of U.S. sourced PET Bottles by 6.3 million kilograms compared to 2018 to 42 million kilograms in 2021. Making up the remaining 17.6 percent of Canada sourced PET bottles acquired, U.S. reclaimers purchased 19.7 million kilograms, an increase of 7.9 million kilograms over 2018. Oversea exports of PET bottles recovered for recycling in Canada was not reported for 2021 compared to a negligible amount reported in 2018.

Capacity and End Uses

Although Canadian PET bottle reclaimer capacity decreased in 2021 compared to 2018, PET bottle capacity continues to exceed the PET bottles recovered for recycling in Canada. In 2021, Bottles (Food & Beverage and Non-food) were the largest North American end use markets for recycled PET bottles, with Fiber the second largest category, and the remaining going into other non-bottle end uses (sheet & film, strapping and other).

Source of the above PET Bottle recycling detail is [NAPCOR's Report](#) on Post-Consumer PET Container Recycling Activity in 2021.

HDPE Bottles

HDPE Bottles, the second largest bottle category, increased overall by 8.1 million kilograms, for a total of 86.1 million kilograms recovered for recycling in 2021 compared to 2018. There was an increase in Natural HDPE bottles recovered for recycling of 4.2 million kilograms to 35.6 million kilograms. Colored HDPE bottles recovered for recycling also increased, up 3.9 million kilograms to 50.5 million kilograms for 2021 compared to 2018. Reclaimers in North America processed 100 percent of the HDPE bottles recovered for recycling in Canada with no HDPE bottles reported as going to overseas export markets in 2021, compared to a very small amount in 2018.

Canada reclaimers acquired 110.5 million kilograms of HDPE Bottles in 2021 sourced from Canada and the U.S. Of the 86.1 million kilograms of HDPE bottles recovered for recycling in Canada, 75.6 million kilograms (87.8 percent) was purchased by Canadian reclaimers, an increase of 9.1 million kilograms. U.S. reclaimers purchased 10.5 million kilograms (12.2 percent), a decrease of one million kilograms compared to 2018. Canadian reclaimers also purchased 34.9 million kilograms of HDPE bottles from the U.S. for processing in Canada, a decrease of 1.8 million kilograms compared to 2018.

Capacity and End Uses

Canadian HDPE bottle reclaimer capacity increased in 2021 compared to 2018 and continues to exceed the HDPE bottles recovered for recycling in Canada. In 2021, the primary end uses for recycled HDPE bottles were new bottles and pipe, with lawn/garden, automotive applications, construction products, film/sheet, and plastic lumber/decking as other notable end uses. The vast majority of Natural HDPE Bottles went into new bottles with pipe, lawn/garden and plastic lumber/decking as other notable end uses. The largest end use for Colored HDPE Bottles was pipe, followed by bottles, with construction products, lawn/garden products, automotive applications, film/sheet and plastic lumber/decking as other notable end uses.

PP & Other Bottles

PP and Other bottles recovered for recycling in Canada in 2021 totaled 3.2 million kilograms, down from 3.5 million kilograms in 2018. PP bottles made up 94.1 percent of all PP and Other bottles recovered for recycling in Canada. Of the PP and Other bottles recovered for recycling in Canada, 73.4 percent was acquired by reclaimers in Canada with the remaining 26.6 percent being acquired by U.S. reclaimers. PP bottles end in Colored HDPE bottle bales and mixed rigid bales; they are also traded to a lesser degree in segregated PP bottle-only bales. LDPE, PVC, and Other bottles are primarily found in mixed rigid bales, but also can be source separated bales, for bottles like LDPE and Polycarbonate (PC). Where these bottles can be collected and source separated, they are likely recycled, but in some cases there are too few of these bottle to be sorted and reconsolidated to make it to a recycling market that can recycle them.

Capacity and End Uses

Due to limited data sources, information on PP and Other Bottles reclamation capacity is not available. Recycled PP is typically used to manufacture automotive components, crates and buckets, caps and closures, household items, and items such as lawn and garden furniture.

Additional information

The 2021 report on bottles recovered for recycling in Canada was made possible through a contribution from the Environment and Climate Change Canada (ECCC).

[Environment and Climate Change Canada \(ECCC\)](#) informs Canadians about protecting and conserving their natural heritage, and ensuring a clean, safe and sustainable environment for present and future generations.

[Stina Inc.](#), previously d.b.a. More Recycling, is a mission-based research and technology company with recognized expertise in plastic recycling. Stina has conducted the annual plastic recycling study for over 10 years for the United States and Canada. Confidentiality and neutrality are the cornerstones to this research, analysis, and reporting. Stina supports the recycling industry by creating tools that support greater connectivity and recognition of leaders in circularity. Such tools include www.PlasticsMarkets.org, www.BagandFilmRecycling.org and www.RecycledProductsDirectory.org, which can be found on www.CircularityinAction.com, a platform designed to connect users with the relevant tools to support the transition to circularity, provide opportunities to recognize successes in recycling, and share the state of recycling in the public domain.

Disclaimer

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