

2018 Post-Consumer Plastics Recycling in Canada

July 2020

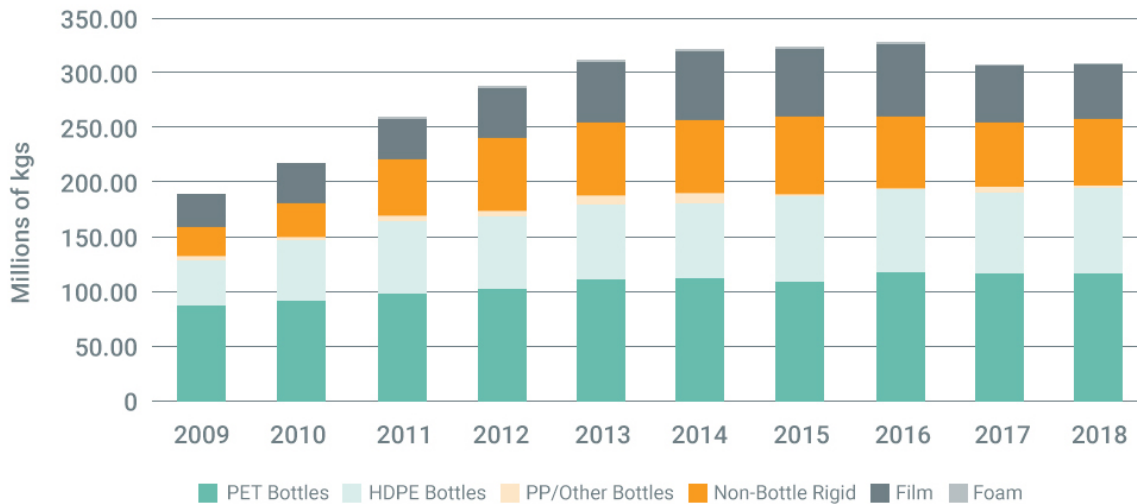


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This is the tenth annual study documenting the amount of post-consumer plastic recovered in Canada for recycling. This report details how much Canadian post-consumer plastic was collected and reclaimed by Canadian or U.S. reclaimers and how much was sold to overseas markets. This study was conducted by More Recycling (MORE) and sponsored by the Canadian Plastic Industry Association (CPIA). It is made possible by the many businesses that cooperate by generously providing their data.

In 2018, a minimum of 306.6 million kilograms of Canadian post-consumer (including commercial) plastic material was collected for recycling.¹ This represents a one percent decrease compared to 2017. The category with the largest increase was HDPE bottles and the largest decrease was in film.

Figure 1. Canadian Post-Consumer Plastic Recycled²



As was the case in 2017, most of the material collected in Canada for recycling remained in North America rather than moving to overseas markets. Ninety-two percent of the material reported was reclaimed in Canada or the U.S., which is a four percent increase from 2017. Among the remaining material collected, seven percent was exported overseas, and the remaining one percent had a destination unknown.

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, 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 Polyethylene Terephthalate (PET), High Density Polyethylene (HDPE), Polypropylene (PP)

Table 1. Summary of Canadian Post-Consumer Plastic Recycled in 2018

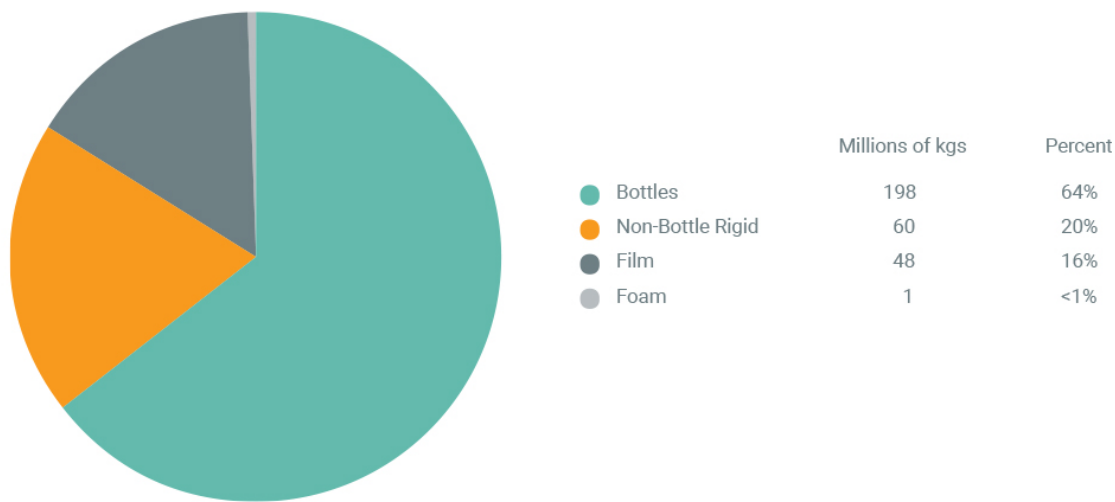
Post-Consumer Plastic Category	2018 Collection	Change In Collection 2017-2018	2018 Material Processed in Canada	North American End Markets
Millions of kgs				
PET Bottles	116.1	-1.4	143.1	fiber, food & beverage bottles, film & sheet, strapping, non-food bottles
HDPE Bottles	78.0	3.5	103.3	bottles, pipe, film & sheet, automotive applications, lawn & garden products, lumber & decking
PP/Other Bottles	3.5	1.1	N/A	For PP: automotive applications, crates & buckets, caps & closures, lawn & garden products
Non-Bottle Rigid Plastics	60.4	-0.7	84.2	automotive applications, crates & buckets, lawn & garden products, pipe, film & sheet, fence posts, consumer & household products
Film	47.9	-4.5	28.9	film & sheet, pipe, automotive applications, lawn & garden products, pallets, lumber & decking, crates & buckets
Foam	0.7	0.1	N/A	protective packaging, building products, picture frames

The PET Bottle, Non-Bottle Rigid, and Film categories decreased while HDPE Bottles, PP/Other Bottles and Foam categories increased in 2018 compared to volumes reported in 2017. The amounts reported here are based on a voluntary survey and therefore represent the minimum that is known to have been recovered and processed for recycling.

This report's findings are based on data from two surveys: 1) a post-consumer plastic recycling survey of export markets for all post-consumer plastic categories and all domestic markets (except for PET bottle reclaimers) conducted by MORE, and 2) a separate survey of PET bottle reclaimers conducted by the National Association for PET Container Resources (NAPCOR). Data gathered during the survey was cross-checked with data available from Canadian provinces and territories and other recycling industry information.

Plastic bottles continued to make up the majority of the recycled plastic collected. PET bottles remained the highest volume plastic product segregated by resin but the total reported decreased by 1.4 million kilograms in 2018. Colored HDPE bottles remained the second largest category segregated by resin, with an increase of 4.2 million kilograms and Natural HDPE Bottles followed as the third largest category with a decrease of 0.7 million kilograms in 2018.

Figure 2. Canadian Plastic Recycled by Major Category in 2018

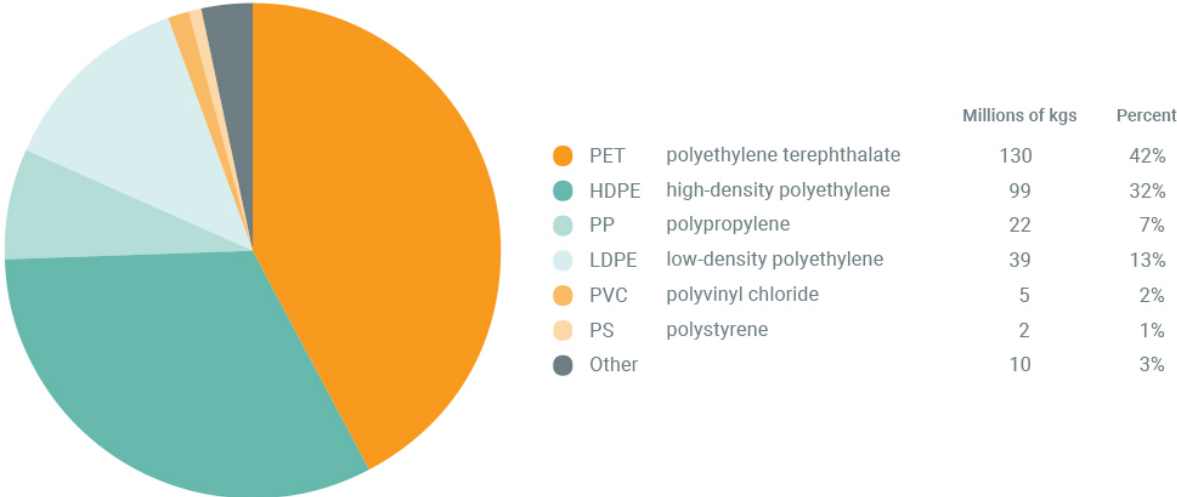


By category, non-bottle rigid plastic recycling decreased by nearly 0.8 million kilograms in 2018, as compared to 2017. Counter to the last two years, mixed rigid bales saw a marked increase in purchases by domestic markets, increasing the amount of non-bottle plastic recycled. However, that increase was dampened by a decrease in commercial non-bottle rigid plastic reported for 2018.

In total, the film category was down by 4.5 million kilograms, or nine percent, from 2017 to 2018. PE Colored Film had the largest decrease, followed by MRF Curbside Film, PE Agricultural Film, and Other Non-PE Film. PE Clear Film increased by 4.4 million kilograms while PE Retail Bag and Film and Other PE Film increased slightly in 2018 compared to 2017.

The majority of the foam reported was foam polystyrene (PS), which was predominantly from protective packaging for durable products as it was in 2017. This is a relatively small category and has continued to increase marginally since its decrease in 2016.

Figure 3. Canadian Post-Consumer Plastic Recycled by Resin in 2018



When evaluating plastic recycling by resin, PET and HDPE made up the majority of post-consumer plastic recycled in Canada. The majority of the PET was from bottles—89 percent, down two percentage points from 2017—with the remaining 11 percent consisting of non-bottle rigid PET. For HDPE, 79 percent of the volume reported consisted of bottles, an increase of two percentage points from 2017, with non-bottle rigid staying the same at 14 percent and film decreasing from nine to seven percent since 2017. The third largest resin source collected for recycling was LDPE, nearly all of which was film at 99 percent, with one percent LDPE rigid from mixed resin rigid bales. For PP, 86 percent of collection consisted of non-bottle rigid material with a decrease of five percentage points since 2017, due to a decline in commercial material reported. The remaining 14 percent consisted of bottles at 12 percent and film at two percent of the PP reported.

MORE conducts the Canadian survey simultaneously with the annual U.S. Plastic Recycling Survey. The survey gathers data on all Canadian and U.S.-sourced plastic, except plastic purchased by PET bottle reclaimers in Canada or the U.S. As previously mentioned, those data are provided by a study conducted through NAPCOR. 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, film and other plastics.

THE FOLLOWING STEPS ARE TAKEN TO PREPARE THE REPORT

- MORE continually updates its markets database to include current exporters, reclaimers, and other handlers of plastic scrap;
- MORE conducts an electronic survey of market participants in plastic recycling to collect data; and
- MORE undertakes a follow-up step for survey-collected data, to help check the accuracy of the data through follow-up calls, conversations with industry contacts, and reviews of other sources of recycling industry information.

DATA COLLECTION AND ANALYSIS

MORE continually updates a proprietary database of plastic exporters, processors, reclaimers, and key brokers to help ensure that the survey reaches the key plastic scrap buyers of North American plastic.³

MORE uses a custom-designed, web-based survey system to gather data. Although the overall methodology has not changed since the first report, MORE continually seeks ways to improve the completeness and timeliness of the survey responses. These changes allow for better material flow tracking and assist with prevention of double counting. For example, MORE continues to expand questions related to non-mechanical recycling, as technology emerges in this space.

The survey is distributed by sending an email with a unique link to each survey contact, including both U.S. and Canadian reclaimers, export buyers for all post-consumer plastic, 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, MORE 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 MORE 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. All data is kept confidential and aggregated to ensure company data is protected.⁴

³ Through its project work in the industry and on the websites it manages—PlasticsMarkets.org, RecycleMorePlastic.org, and PlasticFilmRecycling.org— MORE regularly engages with companies and new contacts in this sector. MORE also identifies potential buyers through published market databases and conversations with suppliers, such as material recovery facilities (MRFs) and key reclaimers.

⁴ MORE 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 that do not include at least three companies reporting.

Commodity categories from commingled collection⁵ may be a mixture of resins, or some combination of bottles, containers, bulky items, and other non-bottle rigid plastic. Some are further segregated by resin and others are intentionally a combination of both resin and product type.

Where the commodities are a mix of bottle and non-bottle or resin, the non-bottle rigid plastic portion of the mixed rigid bales reported by respondents is calculated for this report by applying the content percentages of resin and product type from the 2014/15 mixed rigid bale composition study with some adjustment given industry-provided audit data since that study.⁶ The 2017 report also used the 2014/2015 study data whereas previous reports dating back to 2011 used the 2011 composition study.⁷

The final data totals are reviewed, analyzed, and reported in as much detail as possible without compromising the participating companies' confidentiality. 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 export and U.S. and Canadian 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.

SURVEY CATEGORIES

MORE 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 MORE's survey, this report, and in the other tools and resources that MORE manages. 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.⁸ The model bale specifications, maintained by the Association of Plastic Recyclers (APR), are a key resource in this process.⁹

The 2018 survey conducted by MORE included PET bottle exports only as well as reclamation and exports for the following categories:

- **HDPE bottles** (natural, colored, mixed)
- **PP and other bottles**
- **Commingled bottles**

⁵ Typically collected curbside or at municipal drop off sites. Previous reports used "residential" as synonymous with commingled/other collection, but this material can include curbside collection from businesses.

⁶ National Mixed Rigid Plastic Bale Composition Study, Association of Plastic Recyclers (APR), July 2015.

⁷ National Mixed Rigid Plastic Bale Composition Study & Analysis of Non-Bottle Rigid Plastic Available for Recycling, Association of Plastic Recyclers (APR), 2011.

⁸ The Plastic Recycling Terms and Tools resource is intended to help harmonize terminology across the plastic recycling value chain. This resource can be found at <https://www.recycleyourplastics.org/recycling-professionals/education/terms-tools-app/>.

⁹ Bale specifications maintained by the Association of Plastic Recyclers (APR) are in alignment with the Plastic Recycling Terms and Tools, <https://www.plasticsrecycling.org/resources/model-bale-specs>.

- **Mixed resin rigid bales and plastic further segregated by resin from commingled or other collection** (detailed below)
- **Categories for commercial generated/collected non-bottle rigid plastic segregated by resin** (detailed below)
- **Mixed electronic scrap** - Primarily high impact polystyrene (HIPS), acrylonitrile butadiene styrene (ABS), polycarbonate (PC)
- **Film** (detailed below)
- **Foam - Foam PS** (including expanded polystyrene blocks and shapes and foodservice foam PS), EPP (Expanded Polypropylene), EPE (Expanded Polyethylene), Flexible Polyurethane, Rigid Polyurethane, and Other Foam

Mixed Resin Rigid Plastic

- **3-7 Bottles and Small Rigid Plastics** - Bottles are mostly PP (PET and HDPE bottles have mostly been removed) also includes 1-7 containers (tubs, lids, cups, trays, clamshells) and products (non-packaging items like hangers)
- **3-7 Bottles and All Other Rigid Plastics** - Bottles are mostly PP (PET and HDPE bottles have been removed) also includes 1-7 containers, products (see above) and large items (buckets, totes, crates, lawn furniture, carts, storage bins and other large items)
- **1-7 Bottles and Small Rigid Plastics** - All bottles, containers (tubs, lids, cups, trays, clamshells) and products (non-packaging items like hangers)
- **1-7 All Rigid Plastics** - All bottles, containers, products (see above) and large items (buckets, totes, crates, lawn furniture, carts, storage bins and other large items)
- **Mixed Bulky Rigid Plastics** - A mix of large items that are a mix of resins, but mostly PE and PP (buckets, totes, crates, lawn furniture, carts, storage bins and other large items)
- **Mixed Clamshell** - A mixture of PET, PP, PS, and PVC thermoformed containers (trays, cups, clamshells, boxes)
- **Other Mixed Bottle and Non-bottle Rigid Plastic** - A “catch-all” category, defined on a case-by-case basis.

Plastic Further Segregated by Resin

- **PET Thermoforms** - PET packaging not including bottles or jars (includes but not limited to egg cartons, baskets, clamshell containers, cups, lids, cake domes, covers, tubs, deli containers, trays and folded PET sheet containers)
- **HDPE Colored Bottles with Containers** - Pigmented bottles and containers; containers are typically canisters or jars
- **PP Small Rigid Plastics** - PP bottles, containers and products (includes but not limited to prescription bottles, yogurt cups, margarine tubs, ice cream tubs, cold drink cups, tofu tubs, dishwasher safe storage containers, hangers)
- **PP All Rigid Plastics** - PP bottles, containers, products (see above) and large items (buckets, totes, crates, lawn furniture, carts, storage bins and other large items)

- **Tubs and Lids** - Primarily PP and PE non-bottle rigid household containers (yogurt cups, margarine tubs, ice cream tubs, cold drink cups)
- **Tubs and Lids with Bulky** - Primarily PP and PE non-bottle rigid household containers (see above) and large items (buckets, totes, crates, lawn furniture, carts, storage bins)
- **HDPE Injection Bulky Rigid Plastics** - HDPE large plastics (includes buckets, totes, crates, lawn furniture, carts, storage bins), may include some bulky PP and LDPE

Other Categories

- **Mixed Electronic Scrap** - Primarily high impact polystyrene (HIPS), acrylonitrile butadiene styrene (ABS), polycarbonate (PC)
- **Categories for Commercial Generated/Collected Non-Bottle Rigid Plastic Segregated by Resin** - A list of major categories of non-bottle rigid plastic from commercial sources generating these commodities through their course of business or through special collection programs (e.g., PP battery casings). The list is based on categories that respondents have offered in previous surveys (e.g., HDPE injection [drums-buckets-crates], PP hangers, PVC Flooring, and PC CDs). MORE also provides an “other” category for PET, HDPE, PP, PS, PVC, ABS, and PC
- **Other Non-Bottle Rigid Plastic** - A “catch-all” category for non-bottle rigid plastic segregated by resin that is different from the specific resin categories listed above
- **Other Post-Commercial Mixed Rigid Plastic** - A “catch-all” category for mixed resin rigid plastic that is generated from businesses, defined on a case-by-case basis

Film Categories

- **PE Clear Film** - Clear, clean polyethylene (PE) film from commercial sources, including stretch wrap and poly bags
- **PE Colored Film** - Mixed color PE film from commercial sources, including stretch wrap; no post-consumer bags
- **PE Agricultural Film** - Includes clean and dirty agricultural film. Dirty agricultural film has been in contact with the ground and may include up to 50 percent contamination (e.g., mulch film). Clean agricultural film has been used in applications that do not involve contact with the ground and may include up to 10 percent contamination (e.g., greenhouse film)
- **PE Retail Bag and Film** - Mixed color, clean PE film, including stretch wrap and retail collected post-consumer bags, sacks, and wraps
- **MRF Curbside Film** - Post-consumer PE Mixed film collected curbside and sorted at a MRF
- **Other PE Film** - A “catch-all” for PE film that does not fit in any of the categories above
- **Other Non-PE Film** - A “catch-all” for non-PE film that includes polypropylene (PP) and polyvinyl chloride (PVC)

Note: Other PE and Other Non-PE Film are reported as an aggregate category of Other Film for the purposes of this report.

The National Association for PET Container Resources (NAPCOR) conducts a separate, but similar, survey of U.S. and Canadian PET reclaimers. MORE does not survey these PET reclaimers and receives the aggregate data for non-bottle rigid plastic (e.g., thermoforms, cap and label material obtained through the PET bottle reclamation process and some post-commercial data) from NAPCOR. Circular Matters also assisted MORE in obtaining non-bottle rigid plastic recycling data for 2018, with a focus on closed loop recyclers.

Participation in the survey is voluntary and the reported data are based on the responses received. Many companies have limited resources to put towards participation in the survey, and some companies may choose not to respond due to their confidentiality policies. Therefore, because there is not 100 percent participation, the presented totals represent the minimum amount of non-bottle rigid plastic recovered for recycling and sold on the marketplace. Only data provided by North American reclaimers and exporters selling directly overseas, are included in the reported totals, unless MORE determines that data are missing in areas where substantive information from other reliable sources is available. If reclaimers omit their capacity data, MORE uses the pounds purchased for recycling as an estimate of their respective capacities. Data provided by brokers and MRFs are primarily used as a reference to better understand the flow of material, but MORE may include their data if enough information is provided that would enable attribution of material sold to a non-responding reclaimer or exporter.

MORE cross-checked the 2018 data with the latest available provincial collection estimates and also referenced Statistics Canada's estimated national totals. If there were large gaps between the survey responses and other industry data, MORE conducted additional research to ensure that the results represent a reasonable accounting of post-consumer plastic collected in Canada for recycling. For example, as was the case in previous years, the 2018 survey responses from exporters and reclaimers reflected a lower total for curbside film than what the provinces and territories report as recovered in their most recent data. Film totals include the most current provincial film collection data with adjustments based on survey responses and current market situation. The remaining estimate based on provincial data, that was not corroborated by MORE survey data, are attributed to "unknown" market destinations.

Again, since participation in the survey is voluntary, MORE sometimes receives responses from existing companies that did not previously respond. Changes in year-to-year recovery rates are often a combination of changes in collection along with material that was recycled in previous years but not reported. When MORE 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 MORE receives from plastic handling companies for previous years and while taking into account the need to protect confidentiality.

MORE tracks exporters' purchasing of plastic through a number of industry resources. Except for the largest exporters, players in the export market come and go, and may change the type or mix of materials they purchase. Increased volatility in the export market began in 2017 with anticipation of the National Sword policy in China, restricting the import of scrap materials. China's Blue-Sky plan, to curb pollution including plastic waste through continued restrictions on the import of scrap plastic, took effect in 2018 and remains in effect.

In addition to the potential impact of non-responders, changes in how responders report pounds in the survey categories has impacted the totals reported year over year. Mixed 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. In some cases, it is also possible that responders may interchange PE Retail Bag and Film and PE Colored Film in the data they report. Also, responders tend to lump a mixture of film categories in Other Film rather than break out their purchased volumes into the individual PE film categories. It is possible that MORE is either missing a significant amount of commercial film that is being recycled, or material that could be collected and marketed as commercial film is being processed by MRFs and counted as MRF Curbside Film, given its contamination level.

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 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.

As previously mentioned, MORE applied the bale composition results from the 2014/15 study commissioned by the APR, adjusted based on additional industry data, to the mixed resin rigid plastic bale quantities reported by responders to arrive at the non-bottle portion of these bales, separated by resin.¹⁰ Only the plastic portions of the mixed resin rigid bales are included in the quantity totals; the waste is removed, unlike gross quantities that are used for most other recycled commodities. The composition of the mixed resin rigid bales may have begun to shift given the change in export purchasing and increased domestic purchasing.

Based on separately available industry statistics for lead-acid battery and e-scrap recycling, it is likely that MORE did not receive survey responses from some key players in these sectors, and the total reported is less than the actual amount of plastic recycled from these two key recycling efforts.

¹⁰ National Mixed Rigid Plastic Bale Composition Study, Association of Plastic Recyclers (APR), July 2015.

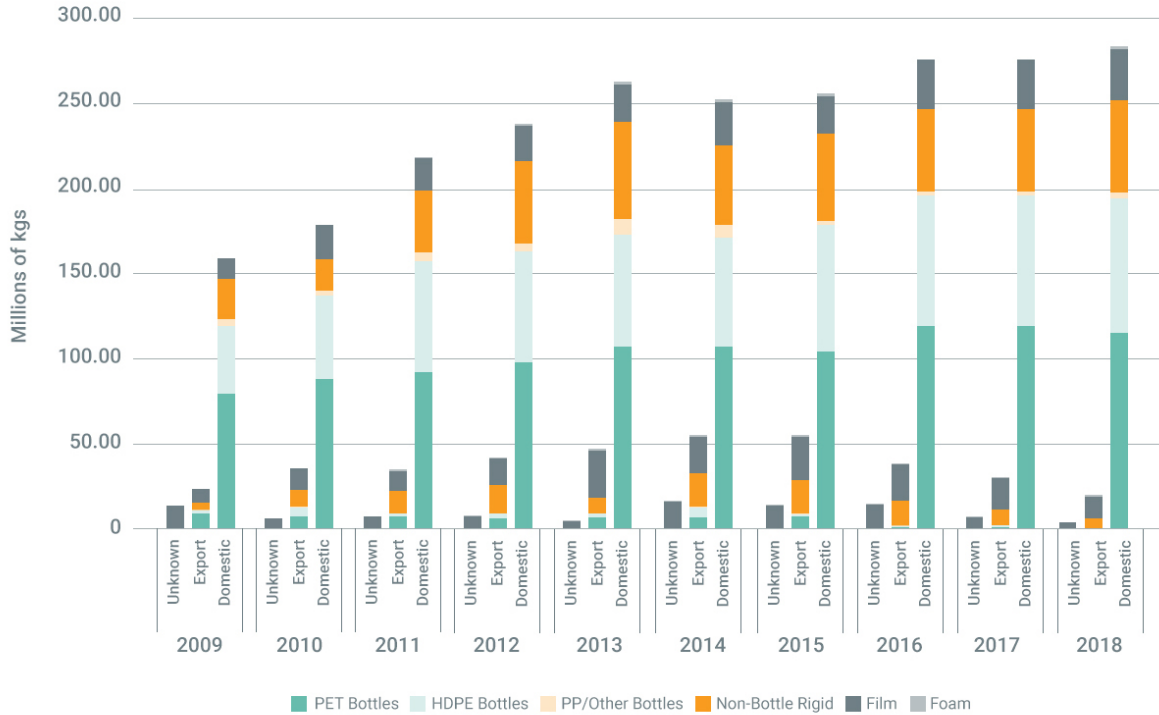
In 2018, a minimum of 306.6 million kilograms of post-consumer plastic were collected for recycling in Canada, a one percent decrease from the amount collected for recycling in 2017. Ninety-two percent of this plastic was reported as recycled in Canada and in the U.S., which is an increase of 11 million kilograms of plastic recycled domestically compared to 2017. Exports continued to decrease, down to seven percent compared to 10 percent in 2017. One percent of collected material was sold to unknown destinations, down from two percent in 2017.

Table 2. Canadian Post-Consumer Plastic Recycled by Major Category

Year	Bottles	Non-Bottle Rigid	Film	Foam	Total
	Millions of kgs				
2009	132.8	28.1	27.1	N/A	188.1
2010	150.4	29.9	36.8	N/A	217.2
2011	169.3	50.9	37.1	0.8 ¹¹	258.1
2012	174.7	65.5	43.7	1.0	285.0
2013	189.5	66.3	54.0	2.7	311.5
2014	189.3	66.8	61.8	2.9	320.7
2015	188.3	71.6	59.2	3.0	322.0
2016	197.5	63.8	63.3	0.5	325.0
2017	194.4	61.2	52.4	0.6	308.6
2018	197.6	60.4	47.9	0.7	306.6

¹¹ In 2009 and 2010, foam plastic was included in the PS reported as non-bottle rigid plastic. Since 2011, foam collection data has been presented separately in its own section.

Figure 4. Canadian Post-Consumer Plastic Recycled by Major Category



Plastic Bottles exhibited the largest quantity in the plastic recycling stream, followed by Non-Bottle Rigid Plastic. Plastic Bottles had an increase of 3.2 million kilograms, with the largest increase being HDPE bottles which had an increase of 3.5 million kilograms. PP/Other Bottles increased 1.1 million kilograms and PET bottles decreased 1.4 million kilograms from 2017. Non-Bottle Rigid Plastic had a decrease of 0.8 million kilograms from 2017. Film decreased by 4.5 million kilograms compared to 2017, and Foam was essentially flat, with a slight increase of 0.1 million kilograms in 2018.

Table 3. Canadian Post-Consumer Plastic Recycled

Year	Exported Outside North America	Purchased Processing in Canada	Purchased for Processing in U.S.	Unknown Destination	Total
	Millions of kgs				
2009	22.2	N/A ¹²	N/A	8.8	188.1
2010	34.7	149.2	27.9	5.3	217.2
2011	33.9	165.8	51.7	6.7	258.1
2012	41.1	193.6	43.8	6.4	285.0
2013	46.0	212.6	49.6	3.3	311.5
2014	54.1	209.0	42.3	15.3	320.7
2015	54.2	213.4	41.1	13.3	322.0
2016	38.0	218.0	55.7	13.3	325.0
2017	30.2	234.9	36.6	6.9	308.6
2018	20.1	248.3	34.1	4.1	306.6

The majority of recycled post-consumer plastic remains in North America, with Canadian and U.S. reclaimers purchasing 92 percent of Canadian-sourced material, up from 88 percent in 2017. This increase is due largely to increased purchases by Canadian reclaimers but also decreases in total material exported overseas, which decreased from 30.2 million kilograms in 2017 to 20.1 million kilograms in 2018. Post-consumer recycled plastic leaving Canada, either purchased by U.S. reclaimers or exported overseas, totaled 54.2 million kilograms of post-consumer plastic being recycled outside of Canada in 2018; this represented 18 percent of total collection, down four percentage points from 2017. U.S. purchases decreased by 2.4 million kilograms. Overall, purchases by Canadian reclaimers of Canadian-generated plastic increased by 13.4 million kilograms—five percent over 2017—to 248.3 million kilograms or 81 percent of Canadian-sourced recycled plastic. In addition, Canadian reclaimers purchased 114.8 million kilograms of U.S.-sourced plastic in 2018, a 46.5 million kilogram increase over the 2017 U.S. purchases. The material without a known market destination makes up one percent of the total plastic recycled and is comprised solely of MRF Curbside Film. MRF Curbside Film is a relatively small collection category, therefore the four million kilograms going to unknown destinations represents 37 percent of the total MRF Curbside Film recovered in 2018. Given the limited Canadian and U.S. capacity for this category, it is likely that this material was exported.

¹² In 2009, 157 million kilograms of Canadian post-consumer plastic was reclaimed by Canada and the U.S. combined.

Bottles are collected in Canada through municipal curbside programs, as well as at depots and retail drop-off locations as part of beverage deposit systems that are mandated in most provinces and territories. Each province and territory accept different types of beverage containers as part of its program, and each has a unique collection system. Collection efforts in Canada resulted in 197.6 million kilograms of post-consumer bottles being sold into the marketplace for recycling in 2018. Bottles make up 64 percent of plastic collected for recycling in Canada and represents an overall increase in the Bottle category of two percent compared to 2017.

Figure 5: Canadian Bottles Recycled by Resin in 2018

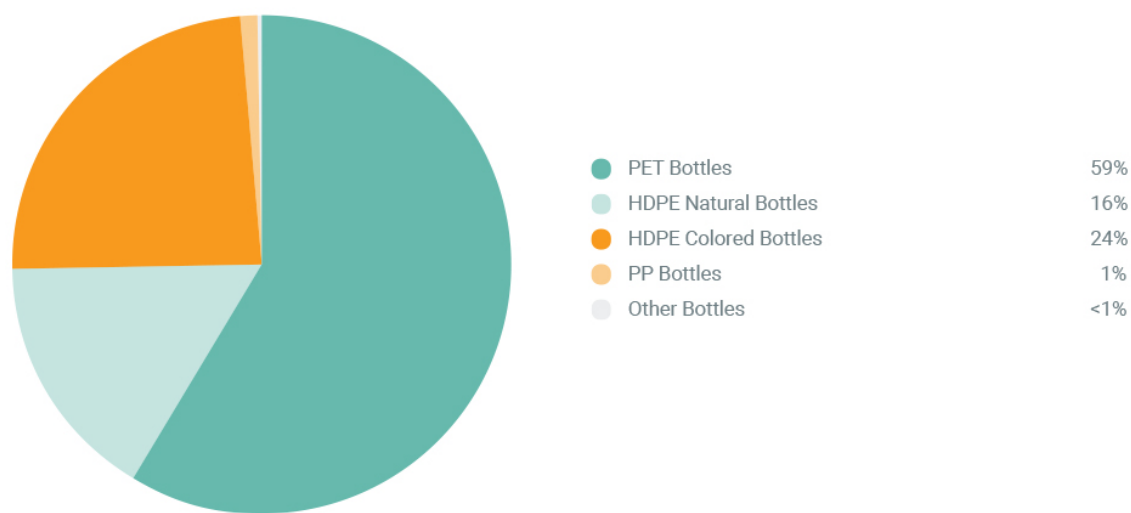


Table 4. Canadian Bottles Recycled by Resin

Year	PET Bottles	HDPE Natural Bottles	HDPE Colored Bottles	PP Bottles	Other Bottles
	Millions of kgs				
2009	88.1	13.3	27.7	3.5	0.3
2010	93.9	18.8	34.8	2.7	0.3
2011	98.1	20.3	46.3	4.5	0.2
2012	103.4	21.9	44.4	4.5	0.5
2013	112.8	24.2	42.5	7.3	1.7
2014	113.1	25.0	44.1	6.6	0.6
2015	110.2	31.4	43.3	2.7	0.6
2016	119.1	32.9	43.2	1.8	0.5
2017	117.5	32.2	42.4	1.9	0.4
2018	116.1	31.4	46.6	2.7	0.7

PET BOTTLES

In 2018, approximately 116.1 million kilograms of Canadian-sourced post-consumer PET bottles were reclaimed in Canada and the U.S., with negligible PET bottles exported overseas. Compared to 2017, Canadian reclaimers purchased 0.5 million kilograms less Canadian-sourced PET bottles and 3.9 million kilograms more U.S.-sourced material. U.S. purchases of Canadian material decreased marginally from 2017.

Capacity and End Uses

Five PET reclaimers continued operations in Canada in 2018, as in 2017 with no capacity changes reported. PET bottle capacity exceeds the PET collection volumes in Canada. In its *Report on Post-Consumer PET Container Recycling Activity in 2018*, NAPCOR reported that fiber remains the dominant North American end use for recycled PET bottles. Food and beverage bottles were the second most common end use of rPET in 2018, followed by sheet and film plastic. Strapping, non-food bottles, and other products also used recycled PET in 2018.¹³

HDPE BOTTLES

An estimated 78 million kilograms of post-consumer HDPE bottles were recycled in 2018, an increase of 3.5 million kilogram from 2017 totals. This increase was due to increased purchasing from Canadian reclaimers. Colored HDPE continued to make up the largest percentage of total HDPE bottles recovered for recycling in Canada, at 60 percent (46.6 million kilograms).

Of the 78 million kilograms of HDPE bottles recovered in Canada for recycling, 66.5 million kilograms were sold to Canadian reclaimers, an increase of 6.8 million kilograms from 2017. Canadian reclaimers also purchased 36.8 million kilograms of HDPE bottles from the U.S. for processing in Canada. U.S. reclaimers purchased 11.5 million kilograms of Canadian-sourced HDPE bottles, down 2.8 million kilograms from 2017. Negligible HDPE bottle material was shipped overseas in 2018 as part of mixed rigid bales exported.

Capacity and End Uses

MORE estimates the 2018 Canadian HDPE bottle reclamation capacity to be over 100 million kilograms. Canadian and U.S. reclaimers continue to report new bottles as the primary end use for reclaimed natural bottles, followed by lumber and decking, and film and sheet. Pipe continues to be the largest end use for colored HDPE bottles in the U.S. and Canada. In 2018, significant volumes of colored HDPE bottles also went to production of the following: new bottles, automotive components, lumber and decking, lawn and garden products and film and sheet.

¹³ Report on Post-consumer PET Container Recycling Activity in 2018, NAPCOR.

PP AND OTHER BOTTLES

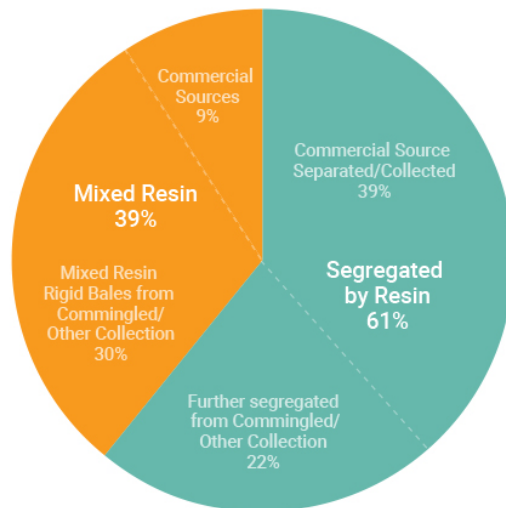
A minimum of 3.5 million kilograms of post-consumer PP bottles were reported as recycled in 2018, which is up from the 2.4 million kilograms reported in 2017, primarily due to the increase in mixed resin rigid bales recycled domestically in 2018. LDPE, PVC, and other bottles comprised 0.7 million kilograms of the total material in this report, which is slightly up from the total of 0.4 reported in 2017. The Canadian reclaimers that handle mixed resin rigid bales can handle non-olefin (PVC or Other #7) minority resin bottles in one of several ways: either disposing of them, selling them (if a domestic or export market is available) or, in some cases, providing the material to waste-to-energy facilities.

Capacity and End Uses

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

In 2018, 60.4 million kilograms of non-bottle rigid plastic were reported as reclaimed or exported. This represents a decrease of one percent from the quantity reported for 2017.

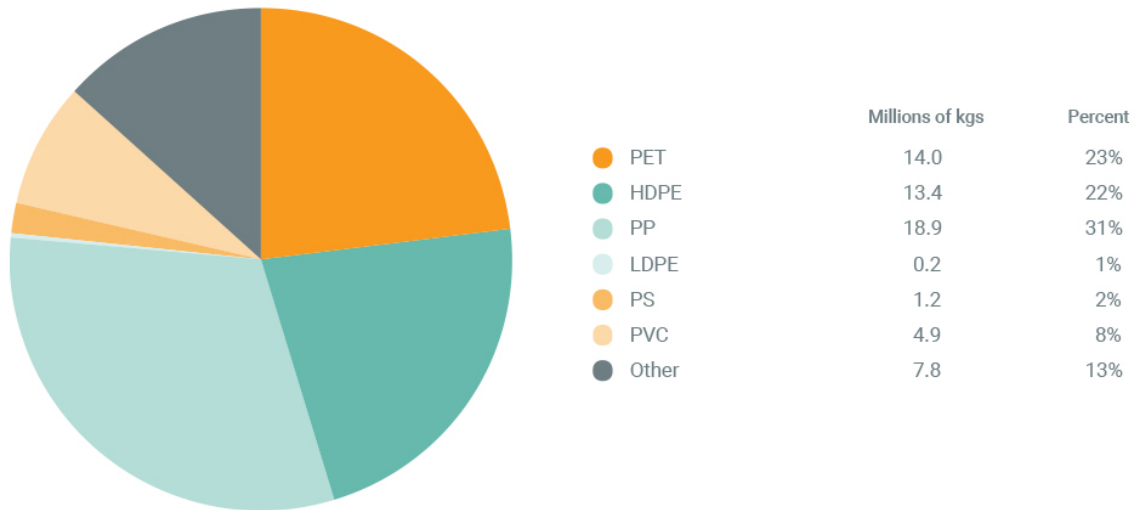
Figure 6: Canadian Non-Bottle Rigid Plastic Recycled by Source



Non-bottle rigid plastic, segregated by resin, comprised 61 percent of the non-bottle rigid material reported with the remaining 39 percent coming from mixed resin rigid material. This was a significant shift from 2017 where non-bottle from segregated sources made up 72 percent of the non-bottle material. This shift is due to an increase in non-bottle material from mixed resin rigid bales purchased domestically and a decline in segregated commercial material in 2018.

For 2018, 90 percent of all non-bottle rigid plastic was reported as purchased either Canadian or U.S. reclaimers, up from 83 percent in 2017. U.S. reclaimers purchases decreased to 6.9 in 2018 from 7.5 million kilograms of Canadian-sourced non-bottle rigid plastic material in 2017, which is a combination of mixed rigid bales and resin-segregated material. The overseas export market purchased 6.1 million kilograms of non-bottle plastic, down by 41 percent from 2017. Of the 6.1 million kilograms, 5.5 million kilograms (2.2 million less than in 2017) was mixed resin rigid material.

Figure 7: Canadian Non-Bottle Rigid Plastic Recycled by Resin in 2018



Similar with previous years, PP makes up the majority of the non-bottle rigid plastic recovered in Canada, followed by PET, both making up 54 percent of the total. HDPE is the next largest at 22 percent of the non-bottle reported. The PET non-bottle material (e.g., clamshells and other non-bottle packaging) comes from both PET bottle bales and mixed resin rigid bales that were reported. PVC made up eight percent of the non-bottle total in 2018 and the “Other” category comprised 13 percent of total collection, both representing the same percentages as in 2017. “Other” consists of other mixed rigid plastic material that was reported without the detail needed to break it down by resin; it also includes the other resins from mixed rigid bales.

Table 5. Canadian Non-Bottle Rigid Plastic Recycled by Resin¹⁴

Plastic Resin	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Millions of kgs									
PET	0.5	1.7	5.1	5.7	12.9	12.7	14.9	12.2	11.8	13.9
HDPE	10.8	10.3	12.8	22.1	21.9	17.7	16.7	15.1	13.7	13.4
PP	10.8	6.9	21.8	23.2	24.8	25.3	27.7	22.7	21.8	18.9
LDPE	0.4	0.3	0.2	0.5	0.5	0.3	0.3	0.3	0.1	0.2
PS	0.9	1.2	0.3	0.8	0.9	1.3	1.3	1.2	1.1	1.2
PVC	0.9	1.4	0.3	1.3	1.4	0.7	0.6	2.5	4.7	4.9
Other	1.9	8.2	10.5	11.8	3.9	8.9	10.1	9.8	8.0	7.7

Among the resin categories, PS, PVC and LDPE increased just slightly from 2017 to 2018 and PET increased by 2.2 million kilograms. PP non-bottle rigid plastic had the highest decrease among the non-bottle categories, dropping by approximately 2.9 million kilograms from 2017 to 2018, followed by Other an HDPE, with the same decrease of 0.3 million kilograms.

Capacity and End Uses

MORE estimates the 2018 Canadian non-bottle rigid plastic reclamation capacity has increased to over 100 million kilograms. It should be noted that this capacity does not include all commercial/industrial scrap grinding and compounding capacity. End uses for non-bottle rigid plastics are automotive products, crates, buckets, pallets, lawn and garden products, and other relatively thick-walled injection molded products. A small portion of the non-bottle rigid plastic recovered is used in plastic lumber, rail ties other extruded products.

¹⁴ Data from the report 2014/2015 National Mixed Rigid Plastic Bale Composition Study performed by MORE for APR were applied to arrive at the resin quantities for 2016. The 2015 report was the first year to use the 2014/2015 study data whereas previous years used data from the 2010/2011 National Mixed Rigid Plastic Bale Composition Study.

In 2018, a minimum of 47.9 million kilograms of post-consumer film and bags (including film collected from the commercial sector) were collected for recycling, representing a decrease of 4.5 million kilograms or 9 percent compared to 2017. PE Clear Film continued to make up the largest portion of film recycled in Canada at 55 percent compared to 42 percent from 2017 with an increase 4.4 million kilograms in 2018 from 2017. MRF Curbside Film made up the second largest portion at 23 percent and had a decrease of 3.6 million kilograms in 2018. PE Colored Film had the largest decreases of 4.1 million kilograms in 2018 compared to 2017, followed by MRF Curbside Film with a decrease of 3.6 million kilograms and PE Agricultural Film with a decrease of 1.4 million kilograms. PE Retail Bag and Film had a small increase and Other Film decreased slightly from 2017 to 2018.

Figure 8: Canadian Film Recycled by Source in 2018

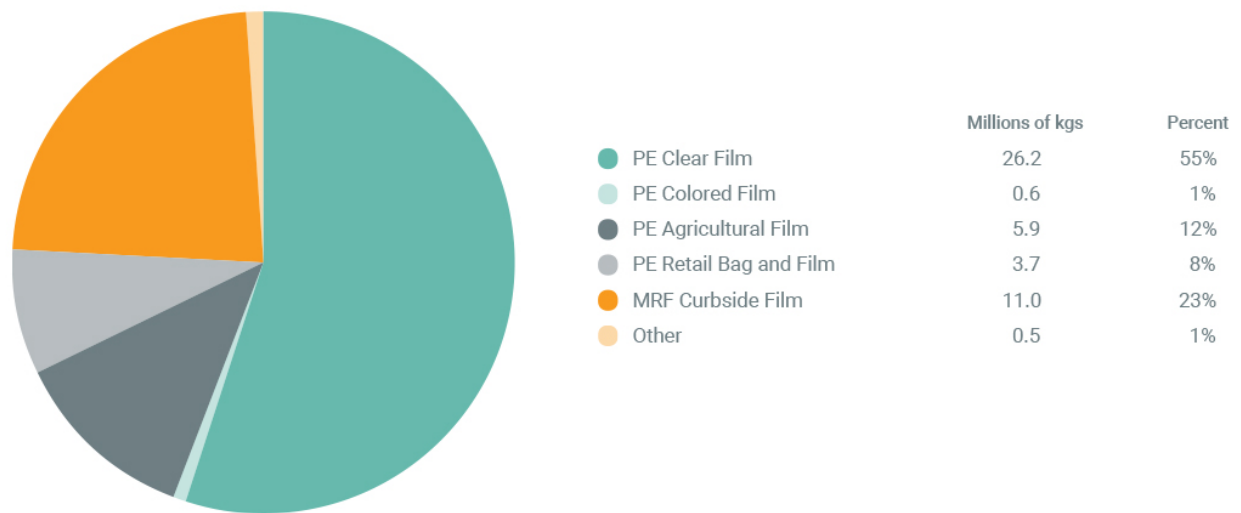


Table 6: Canadian Film Recycled by Source¹⁵

Year	PET Clear Film	PE Colored Film	PE Ag Film	PE Retail Bag and Film	MRF Curbside	Other Film
	Millions of kgs					
2009	6.9	6.4	1.7	N/A	12.2	0.04
2010	13.5	7.1	1.0	N/A	12.4	2.9
2011	13.8	3.3	5.6	1.0	13.2	0.2
2012	15.7	5.5	4.3	3.1	14.4	0.8
2013	23.8	4.1	4.3	4.2	16.7	1.0
2014	25.7	4.9	5.7	3.0	22.4	0.2
2015	20.7	8.5	5.5	2.7	21.0	0.7
2016	24.6	6.3	8.5	2.7	20.5	0.7
2017	21.8	4.7	7.3	3.1	14.6	0.8
2018	26.2	0.6	5.9	3.7	11.0	0.5

The reported data indicates that 63 percent of recovered post-consumer film was processed by Canadian or U.S. reclaimers, up from 52 percent in 2017. U.S. reclaimers’ purchases of film plastic from Canada increased to 3.9 million kilograms from 2.7 in 2017. Canadian reclaimers’ purchases of U.S. material increased by 1.9 million kilograms from 2017 to 2018.

The export market has historically been a major buyer of film coming out of the U.S. and Canada. In 2018, a minimum of 28 percent of the recovered film was exported overseas, down 4.8 million kilograms and seven percentage points from 2017. The largest category exported in 2018 by volume was PE Clear Film at 39 percent or 10.2 million kilograms exported, followed by PE Retail Bags and Film at 41 percent or 1.5 million kilograms. As previously mentioned, given that few reclaimers in Canada can process the MRF Curbside Film, it is likely that a fair amount of this material—included as unknown with no reported market destination—went to export markets.

Capacity and End Uses

MORE estimates the 2018 Canadian film reclamation capacity to be over 50 million kilograms. A large portion of the capacity in Canada is for clean, clear commercial film, with less available for post-consumer retail, curbside film or ag film. The major end use for recycled film in Canada was new film and sheet, with pipe the next most common market. This is unlike the U.S., where the lumber and decking market continued to be the largest consumer. Additional end uses reported in 2018 for Canada and the U.S. were automotive components, crate and buckets, and lawn and garden products.

¹⁵ Beginning with the 2011 survey, Mixed Film was divided into PE Colored Film (no post-consumer bags) and PE Retail Bag and Film (includes post-consumer bags, sacks and wraps). The amount of PE Colored Film reported above for 2010 and 2009 was previously reported under Mixed Film and may include some post-consumer bags.

Sources of recycled Foam PS included commercial generators, depot operations (both municipal and private), and curbside collection programs. In 2018, 0.7 million kilograms were reported as recycled representing a slight increase since 2017. The majority of what was reported was foam polystyrene (Foam PS), predominantly from protective packaging, which is made from expanded polystyrene (EPS). There are still a number of companies that do not respond to the survey, therefore the total reported as recycled is likely under-reported.

Capacity and End Uses

Foam PS is recycled into fire protection products, crown moldings, and decorative frames for mirrors, pictures, and wall hangings. Due to the limited number of reclaimers responding about the domestic reclamation of Foam PS, no additional information is available to report.

Post-consumer plastic collected in Canada for recycling decreased one percent overall to a total of 306.6 million kilograms. The increases in bottles and foam were offset with the decreases in non-bottle rigid and film recycling as reported. Year over year, the data continues to show that the vast majority of material collected for recycling in Canada has stayed in Canada for reclamation and remanufacture.

The Canadian Plastics Industry Association (CPIA) provides resources to communities, businesses, and consumers to assist in increasing awareness and education about the recycling of plastic packaging and diversion from Canadian landfills. For information about plastics recycling and to find all current and past recycling reports, visit www.plastics.ca.

For information on markets for post-consumer plastic, visit www.PlasticsMarkets.org and for more information on the circular value chain visit www.CircularityInAction.com.

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