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1999 REPORT ON POST CONSUMER PET CONTAINER RECYCLING ACTIVITY

FINAL REPORT

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INTRODUCTION

This report is designed to give the reader an overview of the U.S. PET Bottle Industry as well as detailed information with respect to the recycling of post consumer PET bottles. Information contained in this report was obtained through surveys conducted by Robert A. Bennett, Ph.D., Moore Recycling Associates, The Association of Post Consumer Plastic Recyclers (APR), R.W. Beck, Container Consulting, Inc., as well as data generated internally by The National Association for PET Container Resources (NAPCOR). In order to present as accurate a picture of these activities as possible, additional data and information was also obtained through discussions with individual collectors, intermediate processors, reclaimers, converters, brokers, exporters, end users, public recycling officials and key industry members.

PET BOTTLES AVAILABLE FOR COLLECTION

After nine years of sustained double-digit growth, additional market penetration of PET bottles and jars on U.S. shelves did not exceed 9% in 1999. This was largely due to the market stagnation of PET used in carbonated soft drink (CSD) containers. While 20 oz. packaging saw growth of about 9% and the 24 oz. bottle, in it's second year, saw growth in excess of 30%, it came at the expense of ½, 1 and 3 liter sizes. Two-liter sales, long the mainstay of the industry were flat. Overall growth in pounds used for these applications was less than 2%.

Growth in custom containers (applications other than carbonated soft drinks) continued strong with bottles used for still water posting an astounding growth of 30% over 1998. Juice and juice drinks also continued a strong growth rate of 16% while isotonic drink applications finally started to taper off from previous years explosive growth with a 10% increase. While data is not available, significant growth was also seen in 16 oz. milk bottles and wide mouth, hot filled containers for processed foods.

For the first time, 1999 saw slightly more PET resin used in the manufacturing of custom containers than CSD bottles.

NAPCOR has determined that the total number of pounds of PET bottles and jars available for recycling in 1999 was 3.25 billion. This number reflects the total amount of PET bottle resin used by U.S. bottle manufacturers from U.S., foreign and recycled sources less scrap generated and not reused, exported bottles and performs and bottles less than 8 oz. in size. NAPCOR uses this number as the denominator in determining both recycling and utilization rates.

POST CONSUMER PET BOTTLE PURCHASES

The amount of post consumer PET bottles collected and sold in the U.S. increased to 771 million pounds (mmlbs) in 1999. The breakdown of buyers is as follows:

586	- U.S. Reclaimers
183	- Export Markets
2	- Composite Applications
771	- Total Amount of U.S. Material Sold

The 183 mmlbs of post consumer bottles exported includes 23 mmlbs going to Canada, less than 1 million to Mexico, Korea, India and Indonesia and the balance to China. Aggressive export pricing and the inability of some U.S. reclaimers to compete led to the single annual largest amount of post consumer bottles shipped out of the country. This reversed a three-year trend of decreasing exports and began to put extraordinary pressure on U.S. reclaimers to compete for adequate supply. In fact, the 20 U.S. reclaimers that purchased post consumer bottles at one time or another during 1999, used an increased amount of alternate feedstocks (strapping, sheet, film, etc.) in an effort to boost capacity utilization.

Post Consumer Bottles – Gross Weight Purchases (mmlbs.)	1995	1996	1997	1998	1999
A. Purchased by U.S. Reclaimers + Other	605	549	580	656	588
B. Purchased by Exporters	170	148	111	89	183
C. Total U.S. Material Recycled (A+B)	775	697	691	745	771
D. Post Consumer Bottle Imports	46	87	66	101	60
E. Total Bottles Used by U.S. Reclaimers (A+D)	651	636	646	757	648

1999 GROSS RECYCLING RATE

$$\frac{\text{Total U.S. Bottles Collected and Sold for Recycling}}{\text{Total U.S. Bottles Available for Recycling}} \quad \frac{771\text{ mmlbs}}{3{,}250} = 23.7\%$$

Year	Total U.S. RPET (MM lbs.)	Bottles on U.S. Shelves (MM lbs.)	Gross Recycling Rate
1995	775	1,950	39.7%
1996	697	2,198	31.7%
1997	691	2,551	27.1%
1998	745	3,006	24.8%
1999	771	3,250	23.7%

PET BOTTLE BALE MARKETS

The first three quarters of 1999 saw a stagnant market pricewise for PET bottles bales even as exporters began making inroads during the second quarter. While demand was high especially for the vertically integrated reclaimers, low prices for competing raw material (imports, off spec) kept bale prices from moving upward. However, by the fourth quarter, depleted inventories, virgin price increases and intense export pressure combined to force increases for all bale grades, i.e. drop-off, curbside, deposit.

Curbside PET Bale Prices Per Pound Picked Up At Seller's Dock

1999	LOW	HIGH
1st Quarter	$.05	$.10
2nd Quarter	.05	.11
3rd Quarter	.05	.11
4th Quarter	.08	.18

RECLAMATION CAPACITY

At one time or another, 20 plants produced clean PET flake from post consumer bottles during 1999. One plant was retired and another sold for utilization other than PET, leaving 18 plants operating by year-end at a total gross in capacity of 890 mmlbs. These plants consumed total feedstock including post consumer, pre consumer, strapping and other materials of 717 mmlbs from which they produced 592 mmlbs of clean flake for a capacity utilization rate of 78%. Of these plants, 7 were vertically integrated back to product (2 carpet, 2 strapping, 3 bottle) and now total over 50% of the available capacity, accounting for about 60% of U.S. bottles processed last year. This is up dramatically from an estimated 25% in 1997 and reflects the ability of vertically integrated users to compete in what has become a global market.

RPET Clean Flake Production Summary (MM lbs.)	1995	1996	1997	1998	1999
A. RPET Produced from U.S. Bottles	496	438	486	513	457
B. RPET Produced from Imported Bottles	38	70	55	75	47
C. Total Post Consumer Production Available for U.S. End Use Products (A+B)	507	508	541	588	504
D. RPET Clean Flake Equivalent Exported	153	134	92	75	154
E. Total U.S. RPET Produced from U.S. Bottles + Exported Clean Flake Equivalent (A+D)	622	572	578	588	611

UTILIZATION RATE

Clean Flake Produced from U.S. Post Consumer Bottles	457 mmlbs		
+			
Clean Flake Equivalent of U.S. Bottles Exported	154 mmlbs	=	18.8%
÷			
Total U.S. Bottles Available for Recycling	3,250 mmlbs		

Year	Clean Flake Equivalent (MM lbs.)	Bottles on U.S. Shelves (MM lbs.)	Utilization Rates
1995	622	1,950	31.9%
1996	572	2,198	26.0%
1997	578	2,551	22.7%
1998	588	3,006	19.6%
1999	611	3,250	18.8%

1999 END USES

Sixty-three companies reported purchasing and converting RPET into intermediate raw materials or end products in 1999. Volumes were up slightly from 1998, a surprise given the decrease in the amount of material available from U.S. reclaimers. Much of the shortfall continued to be made up by Canadian and Mexican reclaimers, as well as the non-post consumer bottle feedstocks sourced by U.S. reclaimers.

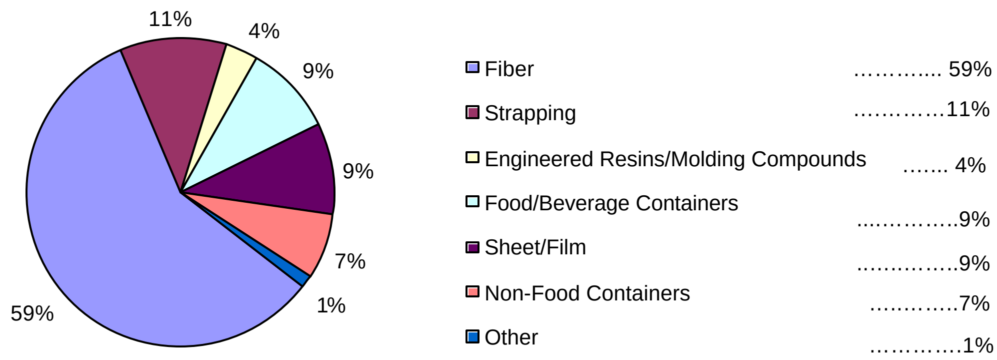
While the strength of the dollar does allow foreign reclaimers to offer attractive pricing to U.S. converters, it is investment and expertise that has given U.S. markets the ability to use the widest range of PET recyclate in the world.

RPET Product Categories

	RPET Used (mmlbs)			
	1996	**1997**	**1998**	**1999**
Fiber	292	320	415	417
Sheet & Film	69	71	89	68
Strapping	66	58	67	80
Engineered Resin	24	26	30	26
Food & Beverage Bottles	24	41	52	68
Non-Food Bottles	71	53	47	50
Other	1	1	7	9
Total US Converter Consumption	547	570	707	718

The percentage of each recycled PET end use category is shown in the following graph:

RPET End Use Products 1999



SUMMARY

Growth of PET resin use for bottle and jars slowed in 1999, reflecting a mature market for CSD applications. However, a plethora of new performance enhancing technologies were introduced which lay the foundation for future growth in PET packaging for beer, processed foods, juice and juice drinks, ready to drink tea and potentially smaller size CSD bottles. Increasing the collection of PET bottles remains the primary concern of all in the industry, while keeping the bottles collected in the U.S. is also of great concern to both reclaimers and end users who have made large investments in PET recycling. At least three expansions in reclamation capacity planned for 1999 were postponed due to uncertainty of supply. In addition, successful market introductions of containers using performance enhancing technologies and non-traditional colors further complicate the recycling picture. Efforts to recover PET bottles consumed away from home increased particularly at special events, stadiums and arenas, but much more is needed. The use of PET beer bottles at these venues could provide the critical mass to allow for better economics and more recycling. Publicly initiated programs such as curbside and drop-off need to be reinvigorated for increased consumer education and recycling promotions to work effectively toward collecting more bottles. The data in this report shows that significant shortfall exists between RPET and demand. This shortfall is understated as all product categories are capable of using additional supply highlighted by fiber applications which could consume twice what they did in 1999 should supply become available.