Recycling Online

Getting cartons into carts

by Roger Guttentag

According to a short Atlantic magazine article from 2012, the gable-top carton design was patented about a century ago to take advantage of another emerging technology, the refrigerator. The idea was to provide an inexpensive solution for preventing milk spoilage. About a half century later, a carton design was developed that added an aluminum layer, which allowed milk that had undergone aseptic processing to be safely stored without the need for refrigeration.

Today, an extraordinary number of products are packaged and distributed in either refrigerated or shelf-stable cartons. However, until recently, this type of packaging was typically not part of the mix that was accepted by municipal recycling programs. In this article, we'll take a look at how the recycling evolution has occurred and what challenges remain.

Adding cartons to collections

The major manufacturers of cartons have established trade organizations that are focused on the promotion of carton recycling to three principal constituencies – residents, local governments and recycling facility operators. The following is a brief description of three major groups operating in North America and Europe.

The Carton Council: The Carton Council membership includes four companies: Elopak, Evergreen Packaging, SIG and Tetra Pak (for more information about the history of the group, see "Calling All Cartons" by Betsy Dorn in the October 2011 issue of Resource Recycling, available at tinyurl.com/Carton-RR). Information provided by this organization is delivered through two websites. The first one primarily provides general information about cartons and carton recycling. The Tools section has downloadable documents that include sample public outreach materials such as ads, notices, door hangers and best-practices guides.

The second site, Carton Opportunities, is aimed at local governments and private recycling operators and has links to a small library of factsheets that discuss the benefits of carton recycling with respect to specific audiences such as elected officials or solid waste managers. The site also has short articles on new developments or milestones affecting carton recycling.

Carton Council Canada: The information provided by this group's site is comparable to what can be found on the Carton Council sites. The biggest difference is that it features discussions of various programs and projects that are being undertaken in Canada, including school carton recycling activities in Ontario and Quebec.

The Alliance for Beverage Cartons and the Environment (ACE): The same companies that founded Carton Council (with the exception of Evergreen) make up the membership of ACE, and the group also includes paperboard suppliers BillerudKorsnäs and Stora Enso. The group's website contains many useful links to information on European carton recycling rates from 2006 through 2013, and it addresses the impact of carton production and recycling on sustainable forest practices and greenhouse gas emissions.

Turning cartons into products

The three main material components of cartons are paperboard, polyethylene and, in the case of shelf-stable containers, aluminum. The recyclability of cartons is therefore dependent on which markets can use one or more of these materials.

Total carton recycling – The ReWall Company, located in Des Moines, Iowa, can use the entire carton to manufacture a diverse line of building materials, such as exterior sheathing, interior wallboard and ceiling tiles. A notable feature of these products is that their manufacture doesn't require adhesives, meaning it will not be a source of volatile organic chemicals from binder outgassing.

Paperboard recycling – According to the Carton Council, the paperboard fraction of cartons ranges from 74 to 80 percent, which makes it the most valuable part of the product by weight. This value as a fiber source was recognized through the creation in 2011 of grade #52 for aseptic and gable-top cartons. A more detailed discussion of this grade and of the markets for cartons as a fiber source can be found in the Pennsylvania Recycling Markets Center webinar on carton recycling that was presented in December 2014. According to the Carton Council, there are four paper mills in the U.S. and 10 in North America that use grade #52 for such applications as tissue products or as a de-ink pulp source.

Recycling of other components – Lecce Pen, an Italian manufacturer, has developed a material called EcoLine that is derived from the polyethylene and aluminum layers that remain after the recovery of carton paperboard layers. A seven-minute video on the company's site shows how recovered aseptic packaging is transformed into the ink housing for pens.

School experience

Any place that includes a food-service operation, particularly schools and higher education institutions, would most likely generate enough carton waste to justify creating or expanding recycling programs to include their recovery.

The Recycling Association of Minnesota recently organized a webinar exploring school carton-recycling programs within that state. Another recommended video on the intersection of carton recycling and education is a short news report produced by the Des Moines public school system, which describes a closed-loop carton-recycling program.

Finally, North Carolina's Charlotte-Mecklenburg Schools received a grant in 2011 to implement a carton-recycling program, and the 2012 final report on this

project is available for review. The report provides data on school participation rates, diversion rates, the economic impact on school costs and some key findings based on project experience.

Unpacking remaining issues

A short article posted on TreeHugger in 2009 ("In What World Would You Call TetraPak Green?") unleashed two criticisms of the campaign being undertaken by carton manufacturers to promote carton recycling. The first issue brought up is that it seemed unfair to call cartons recyclable when there were few opportunities (in 2009) to recycle aseptic cartons. Second, because aseptic cartons can't be recycled back into new cartons, carton recycling was really about downcycling into less valuable products.

The Carton Council and similar organizations have certainly worked hard to address the first criticism by significantly expanding access to carton recycling services within the last six years and committing resources to maintain this effort. According to the Carton Council, more than 63 million U.S. households now have access to carton recycling, meaning the nationwide carton recycling access rate has passed 54 percent.

Treehugger's second carton criticism still has some validity, though it can also be argued that downcycling is a reality in most segments of packaging recycling and represents a better alternative than disposal.

A more substantial criticism of current carton recycling efforts was voiced by Californians Against Waste (CAW) in the 2014 report "Boxed In: A Better Plan for Carton Recycling in California." CAW's assessment of programs and MRFs in California found that while the majority of curbside programs consider cartons acceptable program materials, very few MRFs actually try to recover cartons to form a grade #52 bale.

The CAW study also found MRFs often receive negligible (i.e. unquantified) amounts of cartons in their process streams. CAW's contention is that carton recycling would improve significantly if bottle-bill-like incentives and infrastructure were created for the material. It will be interesting to see if California's legislature takes any action on this recommendation.

Web Address Directory

Alliance for Beverage Cartons and the Environment	beveragecarton.eu
The Atlantic – "The Surprising History of the Milk Carton"	tinyurl.com/Carton-Atlantic
Californians Against Waste – "Boxed In" Report	tinyurl.com/Carton-CAW
Carton Council	recyclecartons.com
Carton Council of Canada	recyclecartons.ca
Carton Opportunities (Carton Council)	cartonopportunities.org
Des Moines Public Schools – "Recycling Milk Cartons to Reduce Waste" (video)	tinyurl.com/Carton-DM
Lecce Pen – EcoLine	tinyurl.com/Carton-Pen
Charlotte-Mecklenburg Schools – Milk and Juice Carton Recycling	tinyurl.com/Carton-NC
Pennsylvania Recycling Markets Center / National Recycling Coalition Webinar – Carton Recycling	tinyurl.com/Carton-PA
Recycling Association of Minnesota – Carton Recycling Project	tinyurl.com/Carton-MN
ReWall	rewallsolutions.com
Treehugger – "In What World Can You Call Tetra Pak Green?"	tinyurl.com/Carton-TH

Roger M. Guttentag is a recycling and solid waste consultant located in Harleysville, Pa. He can be contacted at (610) 584-8836 or rguttentag@comcast.net. Guttentag has a website, recyclingandreuse.com, which houses all of his Recycling Online columns and other resources for recycling professionals of all stripes.