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Factory Waste Management Best Practice Guide

The Carton Council of Canada (CCC) is a group of carton manufacturers united to deliver long-term collaborative solutions to divert valuable cartons from disposal. Over the past several years, we have worked to improve the recycling performance of post-consumer cartons. We are now broadening our efforts to offer ideas on how to improve carton recycling within manufacturing facilities. This guide is designed to enable you to consider and implement best practices for the recycling of scrap cartons and other valuable waste materials generated at your facility.

What is Factory Scrap and Why Develop a Recycling Program?

Factory scrap includes unused carton packaging material; other "dry" material like paper rolls, as well as filled packaging material from production waste, and packaging waste from retailer returns. Factory carton scrap is different from postconsumer cartons in that it may consist solely of one type of carton and/or have residual liquid. Similar to post-consumer cartons, factory scrap is valuable material that can be used as a feedstock in manufacturing new products, rather than being disposed. Brokers and end-markets will buy factory scrap that meets their specifications leading to reduced disposal costs at your facility.

For more detailed information about how post-consumer cartons are processed and marketed, see the CCC Carton Recycling Primer.

While your facility may have undertaken initiatives to minimize its scrap generation, it is possible that some is still produced. Developing a scrap recycling program can provide several added benefits, such as contributing to waste minimization and other environmental goals, while minimizing costs.

What Are Cartons and Carton Material Recycled Into?

Cartons and carton material are typically sent to pulp mills to be used to manufacture tissue and toweling products. The poly or poly/aluminum residue from the pulping process can sometimes be sent to markets that manufacture plastic products, such as flowerpots and pallets. Whole cartons, including closures and poly and poly/aluminum coatings, are also used to manufacture building products, such as wallboard, ceiling tiles, and roofing products. More information on the carton recycling process is available on the CCC web site.

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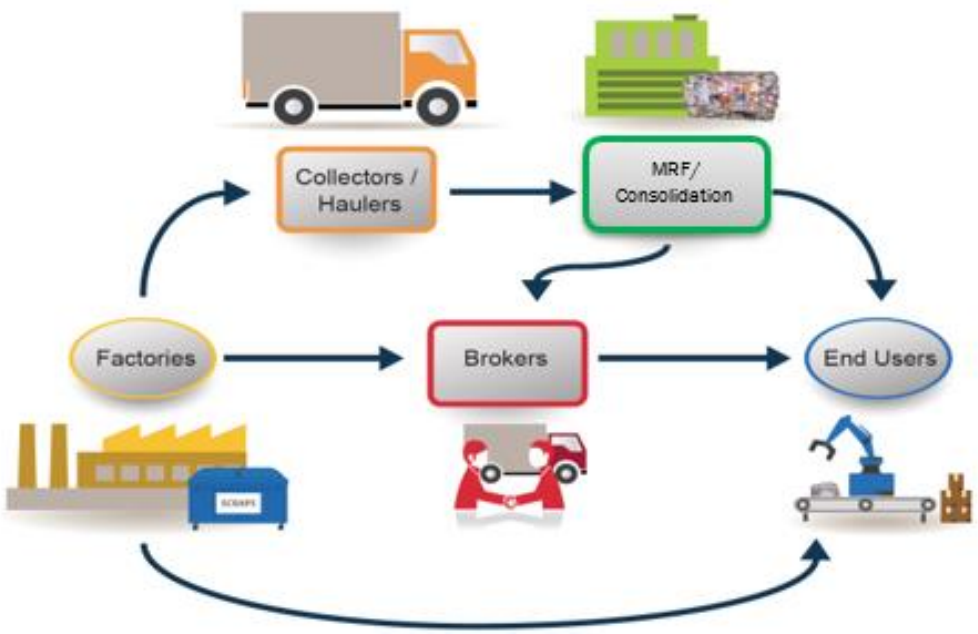
Key Stakeholders Involved

Key stakeholders that move factory scrap from the facility to end markets include haulers, processors/paper stock dealers, and brokers. The figure below illustrates the ways in which factory scrap can move from your facility/factory to recycling end users.



The table below describes the typical role of stakeholders involved in recycling factory scrap.

Volume	Stakeholder	Revenue Paid
Lower ↓ Higher	**Collectors/Haulers** – Collect materials from generators by charging a fee for their service. Most accept clean, unprocessed scrap that is then marketed to a Material Recovery Facility (MRF) or consolidation point or to an end market.	Lower ↓ Higher
	MRF/Consolidation Point – Accept recyclables from generators and sort by type and grade. Materials are then sold to brokers or end markets. Some processors are vertically integrated with haulers, providing both collection and sorting/consolidation services.	
	Brokers – Buy and sell prepared materials, and typically arrange for transport of materials. Some brokers also provide processing services. Sell to end-use markets, and are often able to pay premium prices because they move large quantities of material.	
	End Markets – Purchase material from a number of sources for feedstock use. End markets typically have established channels of supply, each can be different.	

Implementing a Factory Scrap Recycling Program

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Step 1: Estimate Carton Quantities. The following approach will help quantify the amount and type of factory scrap generated at your facility:

- Review historical waste data from your hauler
- Conduct a waste audit to determine the portions of waste comprised of factory scrap
- Consider the impact of seasonal variances based on your production to accommodate peak months.
- Identify the portion of factory scrap that needs to be deliquified (e.g., material that previously held or came into contact with product).

Note: It may be difficult to determine the exact quantity of factory scrap generated on a consistent basis, as some of it is due to unforeseen circumstances.

CCC Facility Scrap Material Calculator
The CCC has developed an Excel-based calculator tool to help estimate the potential cost savings and net revenues of recycling scrap and other commodities from your facility. The tool will also help identify whether it would make sense for your facility to market materials loose or baled. The factory scrap calculator is available on the CCC's web site.

Step 2: Develop Plan for Deliquifying Material. Material that has come into contact with product/liquid can be the single largest issue for marketing factory scrap. The material will need to be adequately deliquified in order to be marketable. Depending on space availability at your facility and the quantities of carton scrap that have come in contact with product, you can deliquify using on-site equipment, or you can send to a third party de-packaging facility to deliquify and recycle the empty cartons.

Step 3: Identify End Markets. CCC can help you identify a broker/end market that will accept your material. It is important to verify that the scrap generated meets the end market's specifications. Brokers/end markets may also request samples and/or photos of materials before making a commitment, or may ask to visit your facility. Pricing for your scrap will generally depend on the availability of end markets and a number of factors, including:

- Volumes of available scrap;
- Contamination and moisture content;
- Consistency in quality and volume generated;
- Baled vs. loose material; and
- Proximity to end market (transportation costs).

Step 4: Identify Quantities and Locations of Factory Scrap Generation. Using the data gathered in Step 1, identify and quantify the amount and type of factory scrap generated in different production zones. This information will help you identify proper point-of-generation containers into which staff will place factory scrap for recycling. Also, consider whether larger containers will be needed to consolidate factory scrap before it is further processed on site or emptied into a larger compactor or dumpster awaiting collection.

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Step 5: Identify space constraints and other equipment needs

Determine the space and staffing availability that can be dedicated to managing your scrap waste. Based on this, work with your service provider to decide on which equipment best meets your needs and where it should be placed.

Step 6: Train and Engage Staff. Be sure staff is clear on their roles and the procedures to be followed. Facility leadership support and promotion of the program will help make it successful.

Step 7: Monitor Performance: Start back at Step 1 after the program is implemented to monitor and continually improve the performance of the program.

For additional assistance in developing a factory scrap recycling program or identifying an end market, contact the Carton Council of Canada:
Email: info@recyclecartons.ca Phone: 647-967-5881