

BC Refrigeration Units Stewardship Plan

2013 Annual Report

Submitted to the British Columbia Ministry of the Environment by:
Canadian Beverage Association
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Introduction

The Canadian Beverage Association is the national industry association representing the broad spectrum of brands and companies that manufacture and distribute the majority of non-alcoholic liquid refreshment beverages consumed in Canada.

The association represents more than 60 brands of juices, juice drinks, bottled waters, sports drinks, ready-to-serve iced teas and coffees, new-alternative beverages, carbonated soft drinks, energy drinks, and other non-alcoholic beverages.

In 2012, CBA submitted a Stewardship Plan in accordance to Part V of British Columbia’s (BC) Recycling Regulation, for beverage refrigeration units, including coolers, vending machines and beverage dispensing systems, which exhibit their branding or are owned outright by the beverage company. The Stewardship Plan was approved by the Ministry of the Environment on December 27th, 2012.

This report is the first annual report of the Stewardship Plan and includes our program performance and recovery rates for the year of 2013.

The products covered under the Stewardship Plan include the following CBA member owned and branded refrigeration units:

Product Type	Further Description
Beverage Coolers	Countertop 1 door units 2 door units 3 door units
Beverage Vending Machines	72” and 79” high machines that distribute cans and/or PET bottles
Beverage Dispensing Systems	Bar guns Counter units Drop-in units Combo units

Program Performance and Recovery Rate:

The tables below show highlights of the Stewardship Plan for the year of 2013. Overall it was very successful year for the Stewardship Plan with an overall recovery rate of 98% and recycling rate of 86% for units sent to end of life management.

Table 2 shows the total number of refrigeration units at the start of Quarter 1 2013 compared to the end of Quarter 4 2013 in-trade. The change in the number of units from Quarter 1 and Quarter 4 is due to the following: the number of new units installed in-trade; the number of refurbished/ retrofitted units installed in-trade; the number of units removed from in-trade for retrofitting/ refurbishment; the number of units removed from in-trade for end-of-life management; the number of units lost in-trade; and the number of units sold to third parties.

Table 2: Number of units' in-trade at start of Q1 2013 and at the end of Q4 2013

	Number in-trade: start of Q1 2013	Number in-trade: end of Q4 2013
Beverage Coolers	23,759	24,780
Beverage Vending Machines	8,947	8,841
Beverage Dispenser Systems	6,448	6,725
Total	39,154	40,346

Table 3: Recovery rate of units' in-trade for the year of 2013

	Number in-trade: start of Q1 2013	Number in-trade: end of Q4 2013	# of Units Lost in Trade (2013)	# of Units Sold to 3 rd Party	Recovery Rate
Beverage Coolers	23,759	24,780	222	264	98%
Beverage Vending Machines	8,947	8,841	99	99	97.7%
Beverage Dispenser Systems	6,448	6,725	92	24	98.3%
Total	39,154	40,346	413	387	98%

Table 3, above shows the recovery rate of units in trade. Due to the closed loop nature of steward's tracking system, where stewards each have a process in place to effectively manage 100 per cent of all units that are destined for EOL management, the recovery rate refers to the percentage of units which remain in-trade at the end of the year and will be recovered for management by stewards when they reach their end-of-life.

Therefore, the recovery rate is calculated by subtracting the total number of units removed from steward's tracking system (lost in trade or sold to 3rd party) by the total number of units in trade by the end of 2013, then dividing this number by the total number of units in trade by the end of 2013.

Within Table 4 below, the number of units sent for end-of-life management between Quarter 1 and Quarter 4 2013 are shown. This table also displays the amount of tonnes of material recycled and sent to landfill in 2013 from these units, as well as the Stewardship Plan's recycling rate.

Table 4: EOL tonnages and units for Q1-Q4 2013¹

	Number of Units Sent for End-Of-Life Management (2013)	Recycled Tonnes (2013)	Landfilled Tonnes (2013)	Percentage Recycled
Beverage Coolers	997	126	20	86%
Beverage Vending Machines	233	68	11	86%
Beverage Dispenser Systems	253	11	3	79%
Fluorescent Bulbs*	N/A	1	0	100%
Circuit Boards*	N/A	TBD	TBD	TBD
Lexan Boards*	N/A	1	0	100%
Any other removed parts*	N/A	TBD	TBD	TBD
Total	1,483	207	35	86%

Recycling Rate for All Refrigeration Units	86 %
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*To be expanded upon through continuous improvement in reporting through 2014-2015

Stakeholder Engagement and Educational Materials/Strategies:

CBA will continue to post our Stewardship Plan and the plan's annual reports on our website. The link to the website is the following, <http://www.canadianbeverage.ca/environment/stewardship/>.

In addition, CBA will continue to place a notification sticker on all refrigeration units if sold to a third party to direct the third party to contact the CBA for instructions on where the unit can be properly disposed of at its end-of-life.

Collection/Processing Locations:

Units are collected for EOL management and refurbishment at four collection locations depending on the steward of the unit. Three collection locations are located in Greater Vancouver Regional District. Two of these locations are CBA member's own facilities, with the third location being the facility of a distributor who manages units on behalf of the steward. The fourth location is located in Brampton, Ontario, where only a small number of units are collected and managed on behalf of a steward.

¹ Results within Table 3 are shown to 0 decimal places.

Four processing facilities are used by stewards for EOL management and 3 of these facilities are located in the Greater Vancouver Regional District with the exception of one location which is located in Brampton, Ontario. Processing facilities in British Columbia include the following locations:

Larcan Industry Limited
9710-187th Street, United#202
Surrey, BC V4N 3N6

Pacific Metals Recycling International
8360 Ontario Street, Vancouver, BC V5X 3E5

ABC Recycling
8081 Meadow Avenue
Burnaby, BC V3N 2V9

Product Life Cycle Management/Continuous Improvement:

A detailed overview of product life cycle management as well as continuous improvement efforts was outlined in the Baseline Study Report, CBA conducted in late 2013. For the excerpt of the report which describes the product life cycle management and continuous improvement processes, please see the appendix below.

Verification of non-financial information:

The process is currently on-going and is to be included in an updated annual report when it becomes available.



Canadian Beverage Association
Association canadienne des boissons

	<i>Product Life Cycle Management in appendix below)</i>					
Pollution Prevention Hierarchy	Target all products for collection and management according to the PPH.	Target all products for collection and management according to the PPH.	Target all products for collection and management according to the PPH.	Target all products for collection and management according to the PPH.	Target all products for collection and management according to the PPH.	Target all products for collection and management according to the PPH.

Appendix: Product Life Cycle Management and Continuous Improvement
(Excerpts from 2013 Baseline Study)

Product Life Cycle Management

Product Life Cycle

Beverage coolers, beverage vending machines and beverage dispensing system units are owned by beverage companies and placed in commercial facilities for use. CBA members are responsible for the maintenance and end-of-life (EOL) management. Therefore, if a unit breaks down in use the machine will either be repaired on-site, or removed to a member’s off-site triage facility to be repaired. When the equipment is removed, it is replaced with either a used machine or a new machine. For further information relating to off-site repairs please go to “Lifecycle Extension: Retrofits and Refurbishment”.

The average lifespan of these types of machines tends to be extensive, although maintenance and servicing is required to ensure longevity and developments in technology have increased the lifespan of machines. Table 1 shows the average lifespan of the different types of refrigeration equipment.

Table 1: Average lifespan of different types of refrigeration equipment

Product Type	Average Product Lifespan
Beverage Coolers – Small (countertop)	3-6 years
Beverage Coolers – Larger	13 -15 years
Beverage Vending Machines	9 - 12 years
Beverage Dispensing Systems	7 – 9 years

Members operate a closed collection network and any maintenance or refurbishments (parts replacements etc.) are undertaken by the beverage company or its local distributor. Therefore, when a unit requires retrofitting or refurbishment it is collected and transported by the member or distributor to their facility for further triage and maintenance.

Working machines can also be removed from customers’ locations when there is a change in a beverage contract, such as a change in contract to a competitor’s. In these examples, the removed equipment is assessed for its ability to be reused in another location. The assessment process includes an overhaul of the equipment, testing and evaluation to determine if the machine can be reused or whether it should be removed as an asset from the company and sent for EOL management.

Lifecycle Extension: Retrofits & Refurbishment

To extend its useful life and fully capitalize on an asset, a CBA member's unit may undergo more than one retrofit or refurbishment throughout its lifecycle. One CBA member estimates that 25 per cent of its installed units have undergone at least one retrofit/refurbishment in their lifetime. Advancements over the years by manufacturers to make equipment systems more modular and therefore easier to replace worn or broken parts rather than scrap the machine, have also improved overall product lifespan. Furthermore, CBA members increasingly use units that depreciate much slower, delaying the need for disposal. Further efforts to reduce their environmental impact include the recycling and reuse of old parts removed from units during the repair stage.

After an on-site assessment at the commercial site, if the unit requires to be taken off-site to be repaired, a member will collect the unit and return it to their own facilities for an assessment. This off-site assessment determines if the unit removed from trade can be retrofitted or refurbished and then returned to trade, or if the unit should be sent for end-of-life management. During this assessment factors such as unit age, model type etc., are taken into consideration. As members are responsible for their own equipment they operate the collection system for machines that are taken out of trade for retrofitting, refurbishment and end-of-life management.

It should be noted that for vending machines, the major beverage companies only conduct a basic level of repair and refurbishment services at their facilities in BC. More complicated repairs are handled on a North American basis and machines are transported to a third party refurbishment contractor located in the United States. From there the repaired machines are put back into service in the United States and are not returned to the BC market.

End-of-Life (EOL) Management

When it has been determined that a piece of refrigeration equipment can no longer be used by the company, a decision is made to remove the equipment as an asset from the company's list of assets and to have the machine "scrapped" by a contracted BC third party.

Prior to the unit being sent for EOL certain components are removed at the member's facilities such as:

- Coolants - all coolants are drained from the units and disposed of responsibly;
- Lexan plastic panels- all panels on the outside of vending machines contain the company's marketing and logos and are removed and recycled;
- Circuit boards- are removed for security reasons and are now being recycled due to the growing electronics scrap recycling;
- Compressors and cooling units- are removed for use in other machines if they are in good working order;
- Fluorescent lamps; are found in machines for backlighting purposes and are removed for recycling.

Although the variety of removed components varies between members, all members remove coolants from their machines before EOL management. Member branding is also removed (such as through the removal of branded lexan plastic panels) or covered up (through painting) from the units before EOL management.

Once the units are ready for EOL management, they are shipped to intermediary local scrap metal processors for preparation of the metal refrigeration units for downstream recyclers. Prior to baling the equipment the intermediary processors ensure all coolants and fluids and fluorescent bulbs are removed. The refrigeration equipment is typically a small percentage of the overall metal being handled that the intermediary processors and therefore during the process the equipment is mixed with other scrap metal such as other major appliances (e.g. washers, dryers, freezers, refrigerators, etc.), car bodies and other light mixed metals that are dropped off or picked up from customers (such as bicycle frames, barbecues, metal sheets and siding, metal doors, shelving, etc.).

The intermediary processors based within BC then sell the baled metal to downstream metal processors where the equipment is shredded to recover the various ferrous and non-ferrous metals. These final processors are based in BC or in the United States (typically Northwest for transportation purposes). There are a number of major processor on the West Coast such as Schnitzer Steel and Sims Metal (formerly Richmond Steel), Metro Metals and Seattle Iron and Metal.

After the bales of mixed metal are shredded, ferrous metals are recovered from the stream through magnetic separation. This accounts for approximately 70 per cent of the inbound material. Then the remainder of the shredded material goes to a non-ferrous recovery plant where a number of separation technologies are used such as eddy-current systems, optical sorters and air separators, to recover these non-ferrous metals.² The shredded non-ferrous metal recovered accounts for approximately 5 per cent of the material. From the shredded non-ferrous metal recovered two main mixes are created:

- A shredded non-ferrous mixture of metals which mainly consists of aluminum;
- A shredded non-ferrous mixture of metals which is rich in stainless steel.

The remaining estimated 25 per cent of the material from the shredded equipment cannot be recovered and is commonly referred to as shredder fluff. The shredder fluff includes primarily non-recoverable mixed materials such as plastic (e.g. interior liners, plastic parts, etc.), insulation (e.g. foam insulation wire insulation, etc.), rubber products (e.g. seals, gaskets) and glass (e.g. glass doors, shelving). This shredded material also consists of approximately 1 per cent of non-recoverable ferrous and non-ferrous metals such as strips of copper or aluminum that are wrapped around parts of the equipment or metals imbedded in the insulation or plastic materials. This material cannot be recovered and is therefore landfilled.

Baseline Study Performance

CBA members each have a process in place to effectively manage 100 per cent of all units that are destined for EOL management. All of the beverage companies have agreements in place between themselves as the owner of the equipment and the customer.

However, a small number of machines each year are “lost in-trade” where the equipment cannot be accounted for any number of reasons (e.g. equipment has been removed from site without the members’ knowledge, customer goes out of business and equipment cannot be retrieved from premises, etc.). This equipment is written off as an asset from a financial or accounting standpoint.

² <http://www.metalspass.com/metaldoc/paper.aspx?docID=90>

However, this is equipment is now being tracked through tracking processes set-up as part of this baseline study.

Some CBA members sell a very small number of machines to a third party prior to EOL destruction. In these cases, the equipment asset is sold outright to another party and all branding (e.g. asset tags, brand identification, etc.) is removed.

Baseline Study Methodology

The CBA members were interviewed about their individual processes and procedures, and site visits were conducted of their operations in BC to confirm material flow. Following that, it was determined that a common tracking tool could be used by the member companies to track the overall flow of equipment (units) in BC.

The overall flow of equipment in units has been converted to weight based on manufacturers' data on the average weights of various types and sizes of equipment.³

Some CBA member manufacturers were able to confirm the percentage of ferrous and non-ferrous metal contained in coolers and vending machines; approximately 85 per cent and 83 per cent respectively. The non-metal components include various plastics, insulation, glass, and rubber.

Based on metal processors interviewed, approximately 1%-2% of the metal is non-recoverable and was deducted (as per the industry average) from the percentage of metal contained within coolers and vending machines. These percentages were then applied to the total weights of the units sent for end-of-life management to determine the amount of recycled tonnes. The recycling rate applied to beverage dispensing systems was 75 per cent which was indicated verbally by a manufacturer and matches the industry appliance average.

Added to this is the separation and recycling of materials such as lexan panels, circuit boards and fluorescent bulbs, which is undertaken by members and their intermediary processors prior to be sent to the final processors.

This study has introduced more consistent reporting processes for members to report their units and removed parts to CBA. This information is now tracked on a quarterly basis to meet requirements for the stewardship report.

Continuous Improvement

There are a few areas of continuous improvement that CBA and its members will undertake. First, is to improve the collection and reporting of material recovery of plastics, fluorescent bulbs and circuit boards prior to the EOL equipment entering the metal processing process of baling and then later shredding. The tracking systems that have been introduced as part of this baseline study; request that member companies' record and report this information.

³ To date we have 38 weights for specific member refrigeration unit models, sourced either from manufacturers directly or from manufacturers' websites.

Another area of continuous improvement relates to the manufacturers and beverage companies as a whole. Efforts in the industry to increase the useful life of all refrigeration equipment through enhanced durability and modular systems that can be more easily replaced and repaired will reduce the number of units managed for EOL over time.

While, not directly associated with EOL management, CBA members have been steadily improving the energy efficiency of their refrigeration units through implementation of new energy saving technologies as they become available.

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