FACTS TO ACT ON
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PRODUCT STEWARDSHIP IN BRITISH COLUMBIA

By Kelly Lease

Extended Producer Responsibility (EPR) or manufacturers retaining responsibility for products after their sale, has become a hot topic internationally. EPR policies have been enacted from Europe to Japan to Canada and Latin America. With the exception of bottle bills, the U.S. has not followed suit. This fact sheet examines EPR policies in British Columbia (B.C.), Canada (1996 population: 3,724,500; land area: 925,186 square kilometers).

British Columbia's Ministry of Environment, Land and Parks (MELP) refers to its EPR programs as "Industry Product Stewardship" and defines it as "a management system based on industry and consumers taking life-cycle responsibility for the products they produce and use." B.C. has enacted industry product stewardship programs for beverage containers and products that contribute to household hazardous waste (HHW).

The stewardship program for beverage containers is based on a deposit-refund system. A key advantage of this system is that beverage container recycling costs are borne largely by industry and consumers of packaged beverages rather than by society at large. Unfortunately, container recycling fees established in early 2000 send confusing price signals to consumers. For example, consumers pay a one-cent fee for aluminum cans, but no fee for drink boxes.[1] The fee does not reflect lifecycle costs of the two container types. Rather, it reflects that drink boxes are returned at a lower rate than aluminum cans allowing industry to retain a greater share of deposits paid on boxes.

B.C.'s stewardship programs for HHW are based on networks of drop-off sites. The stewardship regulations prohibit charging consumers at the time of product returns. Such charges could act as a disincentive to proper disposal. Consumers either pay a non-refundable fee at the time of purchase to cover disposal costs or industry internalizes the costs. On the negative side, because fees are non-refundable, consumers do not have a financial incentive to deliver materials to a depot.

B.C.'s stewardship programs have successfully diverted materials from disposal. For example:

- In 1999, MELP reported that the beverage industry has achieved a province-wide recovery rate of over 84% of containers covered by the program.
- B.C. residents divert approximately 80% of the estimated 50 million liters of lubricating oil available for recovery each year.
- From 1994 through June 1999, B.C.'s stewardship agencies collected nearly 12 million equivalent liter containers of paint.[2]
- In 1998, B.C. residents delivered nearly 130,000 equivalent liter containers of other HHW to collection points.

Beverage Container Program

Canadian brewers voluntarily introduced a deposit-return system for refillable domestic beer bottles in 1962. Most major Canadian brewers do not distribute beer in non-refillable bottles within Canada.[3] Producers of other beverages gradually began switching to non-refillable containers during the 1950s and 1960s.

In the 1960s policy makers in B.C. considered banning non-refillable bottles due to the proliferation of litter. Instead, B.C. became the first jurisdiction in North America to establish a mandatory deposit-refund system for soft drink and beer containers with the enactment of its 1970 Litter Act. Deposits encourage consumers to return containers instead of discarding them as trash or litter and are critical for achieving high return levels for refillables and recyclables.

During the 1990s, local governments found that management of beverage containers not covered under the Litter Act was becoming a burden on taxpayers. By the mid-90s the Society Promoting Environmental Conservation, the Recycling

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Council of British Columbia (RCBC), and bottle depot operators joined local governments in support of expanding the deposit-refund system to include wine, spirits, juice, teas, and water. In 1995, RCBC sent an 18,000-signature petition supporting new legislation to Victoria.

The soft drink industry mobilized all other beverage producers in opposition to expanding the deposit system, and pushed for increased community recycling instead. B.C.'s juice industry lobbied against the proposed system, and threatened to move operations to the U.S. if expanded deposits were implemented.[4] The B.C. Liberal Party also opposed the expansion because of concerns that the new system would result in lost jobs and higher prices.[5]

In August 1997 the provincial government created a 19-member Interim Beverage Container Management Board (BCMB).[6] The board allowed representatives from industry, public interest groups, local government, and bottle depot operators to have input in the drafting of the 1997 Beverage Container Stewardship Program (BCSP) Regulation. Creation of the BCMB helped create an open process for working out the terms of the regulation. The resulting regulation required all brand-owners of ready-to-drink beverages (except milk, milk substitutes, liquid meal replacements, and infant formula) (1) develop and implement by October 1, 1998 a stewardship plan creating a province-wide collection system for deposit containers, (2) set an 85% minimum recovery goal for beverage containers by 2001, and (3) required that redeemed containers be refilled or recycled.[7] The regulation also provided for reduced retail involvement in the return system once depots provided an equally convenient alternative.[8]

The beverage industry designated three agencies to fulfill their responsibilities under the BCSP Regulation. These agencies and their areas of responsibility are:

Encorp Pacific (Canada)	Non-alcoholic beverage containers
Liquor Distribution Branch (LDB)	Wine and spirit containers; non-refillable beer, cider and cooler bottles, except those produced by Molson and Labatt
Brewers Distributor Ltd. (BDL)	Domestic beer in refillable glass and all alcoholic beverages in aluminum cans

Encorp contracts with operators of over 160 return depots for collection of non-alcoholic beverage containers. Some of these depots also accept alcoholic beverage containers, but depot operators may discount the refund to cover costs because the beer industry will not pay handling commissions.[9]

In addition to acting as a stewardship agency, the LDB is the provincial government agency responsible for sales and distribution of alcoholic beverages. The LDB accepts containers at retail outlets and stores and at 45 depots. BDL provides for returns at LDB retail outlets, cold beer and wine stores, and 21 depots.

Results

Over 1.3 billion containers are covered under B.C.'s deposit-refund system each year. In 1999, MELP reported that the beverage industry has achieved a province-wide recovery rate of over 84% of containers covered by the program. MELP did not require reporting of container recovery amounts prior to the implementation of the BCSP, so recovery levels from this time can only be estimated. Dave Douglas of MELP reported that while the recovery rate of beer containers has not significantly changed, recovery of soft drink containers smaller than two liters has risen dramatically from the approximately 50% level achieved before the BCSP began.[10] Furthermore, B.C.'s expanded deposit-refund system covers 300 million more containers each year than the former system.

Estimated 1998 Alcoholic Beverage Container Recovery in B.C.

Container Type	Units Sold	Recovery Rate
Non-refillable glass	77,587,571	71%
Refillable glass	194,439,928	96%
Cans	381,016,789	92%
PET	6,834,178	49%
Other	1,596,504	22%
Total	661,474,970	90%

Source: Clarissa Morawski, "Alcohol Beverage Container Recovery in British Columbia," Solid Waste and Recycling, August/September 1999.
Note: Refillable glass accounts for 29% of alcoholic beverage container sales in B.C. because Canadian brewers distribute bottled domestic beer in refillable bottles only.

Costs

Industry/Stewardship Agencies: Non-alcoholic beverage containers: Encorp generates revenue for its stewardship program through unredeemed deposits, recycling fees paid by brand owners, and revenues from the sale of recovered materials. It charges brand owners a fee for service for each container sold. The fee includes both a deposit and a recycling fee. Brand owners pass these fees onto retailers (as part of the wholesale cost) who in turn pass them onto consumers. Encorp calculates the recycling fees to cover its costs for material management on a commodity-by-commodity basis, taking into account unredeemed deposits and revenues from the sale of recyclables.[11]

Encorp's costs include handling fees paid to retailers and depots, deposit refunds paid to consumers, container transport and processing, and marketing and administration. Encorp is a non-profit organization, whose annual revenues must match its annual expenditures.

In 1998 B.C. brand owners received Can$42.3 million in revenue from container deposits and paid Encorp Can$44.5 million in fees, for a net cost to brand owners of Can$2.2 million.[12]

Alcoholic beverage containers: LDB generates revenue for its container recovery programs through unredeemed deposits on the containers under its jurisdiction, small price increases on products based on container type, handling fees paid by BDL for BDL containers returned in the LDB system, service and handling fees paid by brand owners for all alcoholic beverage containers sold in the province, and revenue from sales of recovered materials.[13] LDB reports these revenues do not cover the program costs. Remaining costs are reflected in reduced profits of the LDB retail system.[14]

As of July 2000, LDB was conducting a study of the true costs of handling each container stream in the expanded container deposit program. Once this study is completed, LDB plans to incorporate the total costs of the system in the retail prices of products sold in its stores.[15]

Brand owners pay the LDB approximately Can$4.1 million per year in fees.[16]

Provincial Government: B.C. has not performed a detailed analysis of provincial government costs for oversight and enforcement of its BCSP. All of the provincial stewardship programs are under the jurisdiction of the MELP Pollution Prevention and Remediation Branch, Stewardship Unit. Dave Douglas, the unit head, reports costs to be minimal. The unit employs four full-time staff members to oversee B.C.'s BCSP and HHW Stewardship Programs.[17]

Local Governments: Local governments in B.C.

1999 Non-Alcoholic Beverage Container Recovery in British Columbia

Commodity	Units Redeemed	Tons (2,000 lbs.)	Recovery Rate
Aluminum	350,171,219	5,600	85%
Plastic	125,440,042	6,250	67%
Glass	30,451,259	7,750	48%
Other	2,542,390	350	69%
Drink boxes[1]	6,616,990	200	N/A
Total	515,221,900	20,150	

Source: Encorp Pacific Inc., 2000
N/A = Not available
[1] Drink boxes became part of the deposit-refund system on October 1, 1999; therefore, recovery figures represent only three month's data.

Encorp Pacific (Canada) Fee for Service (Unit Charge), Effective March 1, 2000

Container Type	Size	Deposit Value (Cents Cdn.) (1)	Container Recycling Fee (Cents Cdn.) (2)	Fee for Service (Cents Cdn. Per Unit) (3) = (1 + 2)
Aluminum	0 - 1 L	5.0	1.0	6.0
Plastic[1]	0 – 500 ml	5.0	1.0	6.0
Plastic[1]	501 ml – 1 L	5.0	2.0	7.0
Plastic[1]	> 1 L	20.0	5.0	25.0
Glass	0 – 500 ml	5.0	3.0	8.0
Glass	501 ml – 1 L	5.0	3.0	8.0
Glass	> 1 L	20.0	7.0	27.0
Bi-Metal	0 – 500 ml	5.0	No recycling fee	5.0
Bi-Metal	501 ml – 1 L	5.0	No recycling fee	5.0
Bi-Metal	> 1 L	20.0	4.0	24.0
Bag-in-a-Box	> 1 L	20.0	4.0	24.0
Drink Box	0 – 500 ml	5.0	No recycling fee	5.0
Drink Box	501 ml – 1 L	5.0	No recycling fee	5.0
Drink Box	> 1 L	20.0	No recycling fee	20.0
Gable Top	0 – 500 ml	5.0	No recycling fee	5.0
Gable Top	501 ml – 1 L	5.0	No recycling fee	5.0
Gable Top	> 1 L	20.0	No recycling fee	20.0
Drink Pouch	0 – 1 L	5.0	No recycling fee	5.0

[1] "Plastic" containers include PET, HDPE, PVC, and polystyrene cups.
Source: Encorp Pacific (Canada), 2000.

do not incur costs for the BCSP. In 1995 a study estimated costs of an expanded deposit-return system. The study indicated B.C. communities could reap Can$7 million in savings from avoided disposal costs.[18, 19]

Consumers: Consumers pay for the BCSP when they do not redeem container deposits and through recycling fees for non-alcoholic beverage containers. Unredeemed deposits on all beverage containers totaled approximately Can$16.0 million (Can$8.9 million from non-alcoholic beverage containers and Can$7.1 million from alcoholic beverage containers) in 1998, for an average of Can$11 per household.[20] This figure is somewhat misleading, though, because the costs are spread out unevenly among households. The costs are borne only by those who purchase packaged beverages and most heavily by those who do not redeem deposits. Thus, in B.C. the polluter pays for the impact of beverage containers, rather than all of society paying through municipal solid waste programs.

HHW Programs

B.C.'s HHW stewardship program covers four main product types: (1) used motor oil; (2) unwanted industrial and post-consumer paints; (3) solvents, flammable liquids, domestic pesticides, and gasoline; and (4) pharmaceuticals.

The B.C. Municipal Solid Waste Management Task Force's 1989 report, *A Solid Waste Management Strategy for British Columbia*, identified HHW as an area of critical concern for the province. Consumers and local governments were also turning to the provincial government to address problems created by HHW in municipal waste. In response, in 1990, the province established eight HHW collection depots in the province. The depot program cost an average of Can$1.4 million per year but collected less than 8% of the HHW generated.

In July 1992, the B.C. government created a Waste Reduction Commission to make policy recommendations for the reduction and disposal of hazardous waste. To facilitate discussion among stakeholders, the Commission released a 43-page discussion paper in March 1993. The Commission also held open houses, roundtable discussions, think tank sessions, and stakeholder meetings throughout the province. As a result of this process, the Commission produced a 1994 report, *Greener Homes - Cleaner Communities*,[21] outlining recommendations for the creation of a system to better handle the province's HHW. Key provisions include:

> It is recommended that the Ministry of Environment, Lands and Parks develop regulations under the Waste Management Act, which require retailers and wholesalers of paints, stains and wall coatings to either:
> - accept for recycling or disposal all containers and contents; or
> - designate a depot located within 4 km of point of purchase for the return of paints, stains and wall coatings.
>
> It is recommended that sellers, both retail and wholesale, be responsible for establishing these locations and for collecting the returned material for recycling or disposal.
>
> It is recommended that additional household hazardous wastes be subject to similar industry funded and operated (IFO) systems.
>
> If [sic] is further recommended that, as part of the sequential introduction of different wastes, the priority for wastes following paint be solvents and then pesticides. Other household hazardous wastes should be introduced sequentially.[22]

Also in 1992, B.C. enacted the Return of Used Lubricating Oil Regulation to provide consumers the opportunity to return used oil for recycling. The regulation requires all sellers of oil to take back used oil, at no charge to the consumer. Sellers of oil must either accept oil at the point of sale or arrange for a third party located near the seller to accept it.

Alcoholic Beverage Container Deposit and Service and Handling Fee Levels

Container Type	Deposit (Can$)	Container Service and Handling Fees (Can$)
NR glass ≤ 1 liter (beer, cider, wine, spirits)	$0.10	$0.02
NR glass > 1 liter (beer, cider, wine, spirits)	$0.20	$0.04
Refillable glass ≤ 1 liter	$0.10	$0.0037
Refillable glass > 1 liter	$0.20	$0.0037
Cans ≤ 1 liter	$0.10	$0.0039
Cans > 1 liter	$0.20	$0.0039
PET ≤ 1 liter (beer, cider, wine, spirits)	$0.10	$0.01
PET > 1 liter (beer, cider, wine, spirits)	$0.20	$0.03

NR = non-refillable
Source: Clarissa Morawski, "Beverage Container Recovery in B.C.: Brand Owner Responsibility Increases Recovery Rates, Reduces Taxpayer Subsidies," *Solid Waste & Recycling*, Aug./Sept. 1999

Recommendations from *Greener Homes - Cleaner Communities* guided the legislature in creating its 1994 Post-Consumer Paint Stewardship Regulation and its 1997 Post-Consumer Residual Stewardship Regulation.

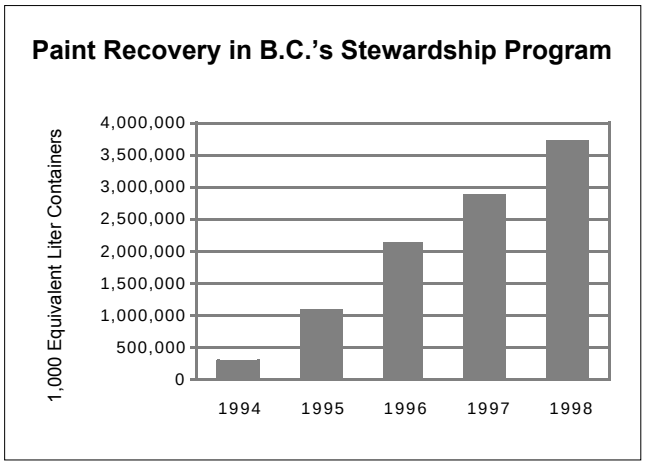
The 1994 Post-Consumer Paint Stewardship Regulation requires producers of consumer paint products to take full life-cycle responsibility for these products. The regulation was amended in 1997 to include paints in pressurized containers. Industry created two non-profit associations to collect and manage leftover paint, Paint and Product Care Association (PPC) and the Tree-Marking Paint Stewardship Association (TSA). PPC established over 100 collection depots throughout the province. TSA established drop-off sites for tree- and road-marking paints and regulated consumer paint products on location at 26 distributors of industrial aerosols.

B.C.'s stewardship programs for solvents, flammable liquids, pesticides, and gasoline; and pharmaceuticals were created under the 1997 Post-Consumer Residual Stewardship Regulation. Two non-profit associations of brand-owners of solvents, flammable liquids, domestic pesticides, and gasoline jointly sponsor the Consumer Product Stewardship Program (CPSP). The CPSP established and operates a network of 35 depots and collection points that accept residuals covered by the regulation.

In November 1996, before the enactment of the Post-Consumer Residual Stewardship Regulation, B.C.'s pharmaceutical industry had voluntarily established a stewardship program in which consumers could return unwanted pharmaceutical products to pharmacies for no fee. The Regulation made the program mandatory.

Results

Danny Kelly, Manager of Marketing and Customer Service at Mohawk Lubricants, reported that the 1992 enactment of the Return of Used Lubricating Oil Regulation did not substantially increase oil recovery as recovery programs were already well established.[23] B.C. industry had been recovering used oil well before the 1992 regulation. Since 1978, Mohawk Lubricants has operated the province's only used oil re-refinery in North Vancouver. The facility handles 28 million liters of used oil each year. Two other companies collect oil to be processed outside of B.C.



Source: B.C. Ministry of Environment, Land, and Parks, *Post-Consumer Paint Stewardship Program Regulation Annual Report to the Director*, 1999.

In April 2000, MELP reported that the province's used oil collection and recycling program diverts about 40 million liters of used oil every year. This represents approximately 80% of the estimated 50 million liters of lubricating oil available for recovery each year.

From 1994 through June 1999, PPC and TSA collected nearly 12 million equivalent liter containers of paint. In 1998 PPC reported that 76% of paint returns were recycled, 8% reused, and 16% blended with fuel. TSA contracts with a private company to manage the collected paint.

In 1998, B.C. residents delivered nearly 130,000 equivalent liter containers of product residuals covered by the regulation to CPSC collection points. CPSP disposes domestic pesticides at licensed hazardous waste facilities and uses a contractor that blends flammable materials for industrial fuel use. CPSP hopes to identify better end-use recycling markets in the future.

Costs

The Return of Used Lubricating Oil Regulation does not require the oil industry to report program costs to the government. Under the current stewardship program, all program costs are borne by the oil industry.

The B.C. paint stewardship program is funded by "eco-fees." The fees, assessed at the point of sale, are effectively product price increases; however, they are shown as a separate line item on consumers' receipts. The "eco-fees" for paint products are as follows:

≤ 250 ml	Can$0.10
251 ml to 1 liter	Can$0.25
1.01 liters to 5 liters	Can$0.50
5.01 liters to 23 liters	Can$1.00
Aerosol paint (all sizes)	Can$0.10

From 1994 through 1998, PPC reported revenues of Can$13.5 million generated from eco-fees. During this period, revenues covered the full program costs of Can$8.5 million for operations, Can$3.6 million for administration, and Can$633,000 in capital expenditures.

TSA reported 1998 revenues of Can$47,907 and expenditures of Can$53,884 (Can$5,385 in operating expenses and Can$48,499 in administration costs).

The Post Consumer Residual Stewardship Program Regulation does not allow brand-owners to charge consumers at the time of return of regulated solvent, flammable liquid, pesticide, and gasoline materials. The gasoline industry internalizes its share of the costs for the stewardship program. As in the paint stewardship program, brand-owners of other HHW in covered by the program have instituted a system of "eco-fees" to pay for product recovery. The "eco-fees" are as follows:

Aerosol solvents	Can$0.10 per container
Other solvents and flammable liquids	Can$0.40 per liter
Up to 1 liter or kilogram of domestic pesticides	Can$0.60
1 – 1.99 liters or kilograms of domestic pesticides	Can$1.20
2 or more liters or kilograms of domestic pesticides	Can$2.40

Industry reported 1998 program costs to be Can$1.48 million of which 29% was dedicated to administration, 47% to operations, and 24% to communications. About Can$150,000 of this expenditure was for the gasoline return program. Eco-fee revenues of Can$1.33 million offset the remaining program costs.

Environmental Benefits of Product Stewardship Programs

B.C. reaps the environmental benefits of decreased litter from beverage containers and of avoiding disposal of over 20,000 tons (40 million pounds) of materials annually.

B.C.'s used oil stewardship program reduces energy use and soil and water pollution. Re-refining used oil completely restores the original lubricating properties at about one-third of the energy consumption of refining crude oil to lubricant quality.[24] Oil released into the environment can contaminate soil, groundwater, the oceans, and the atmosphere.

Recovery of paint removes numerous potentially dangerous chemicals from the environment. Paints can contain flammable ingredients or organic solvents that are carcinogenic, mutagenic, or teratogenic. PPC's paint recovery program also benefits non-profit groups and community organizations by donating reusable paint to these groups at no charge.

Other HHW can have far-reaching environmental effects. When hazardous materials are poured into drains, on the ground, into storm sewers, or disposed with trash they can cause physical injury to sanitation workers, contaminate septic tanks or wastewater treatment systems, pollute bodies of water, and contaminate ground water and surface water.[25] Even materials disposed in state-of-the-art lined landfills pose environmental threats. All landfill liner and leachate collection systems will ultimately fail due to natural deterioration.[26]

Effects on Local Productive Capacity

The BCSP has created new employment opportunities within the province. In a 1997 analysis, the MELP Corporate Policy Branch, estimated the potential employment at bottle depots could increase by as much as 360 new full-time jobs when the expanded beverage container program was fully implemented.[27] LDB reports it has created between 60 and 65 full-time jobs as a result of the expanded beverage container deposit system.[28] Furthermore, an existing Vancouver paper recycling mill was adapted to process polycoat containers, creating new local recycling capacity. Prior to this facility coming on-line, Encorp shipped these containers to the United States and Asia for

processing. PET bottles recovered in the BCSP are sorted and baled at a B.C. company before being shipped to Alberta for secondary processing. The plant manager reports that shipments of PET have increased by 40% since the implementation of the BCSP.[29] Other materials, including aluminum and steel cans, recovered in B.C.'s BCSP are shipped out of province for processing; therefore, job creation may have occurred in the transportation sector although no studies have investigated this.

The BCSP has not disrupted the existing refillables system for domestic beer bottles. Glass bottles in the system are refilled an average of 15 times per container. This system sustains local jobs at bottle washing and refilling plants.

While data on costs are not available for the Used Oil Stewardship program, the fact that used oil recovery programs were well-established before the government legislation was enacted is strong evidence that these recovery efforts are cost-effective for industry. The legislation also supports an existing local industry by ensuring adequate supply of used oil for the province's single oil re-refinery.

On a larger scale, B.C.'s stewardship programs are part of the province's growing environmental industry sector. In 1997, approximately 23,500 B.C. residents were employed in the environmental industry sector, an increase of 24% from 1995. Also in 1997, B.C.'s environmental businesses generated approximately Can$1.2 billion in revenues.[30]

Resources

"An Overview of Industry Product Stewardship in British Columbia," B.C. Ministry of Environment, Lands and Parks Industry Product Stewardship Programs, November 26, 1999 http://www.env.gov.bc.ca/epd/ epdpa/ips/

British Columbia Waste Management Act Beverage Container Stewardship Program Regulation http://www.env.gov.bc.ca/epd/cpr/regs/bcspr.html

British Columbia Waste Management Act Return of Used Lubricating Oil Regulation, http://www.qp.gov.bc.ca/ stat_reg/regs/elp/r64_92.htm

British Columbia Waste Management Act Post-Consumer Paint Stewardship Program Regulation, http://www.qp.gov.bc.ca/stat_reg/regs/elp/r200_94.htm

British Columbia Waste Management Act Post-Consumer Residual Stewardship Program Regulation, http://www.env.gov.bc.ca/epd/cpr/regs/pcrspr.html

Greener Homes, Cleaner Communities: Report on a Provincial Strategy to Reduce and Manage Household Hazardous Wastes and Products, Ministry of Environment, Lands And Parks Waste Reduction Commission, January 1994, available at http://www.env.gov.bc.ca/epd/epdpa/ mpp/ipshhp/ghcc1.html.

Contacts

B.C. Recycling Hotline
Telephone: (604) 732-9253 (Greater Vancouver) or 1-800-667-4321

Recycling Council of British Columbia
#201-225 Smithe Street
Vancouver, BC V6B 4X7
Telephone: (604) 683-6009 Ext 301
Fax: (604) 683-7255
Internet: http://www.rcbc.bc.ca/

Encorp Pacific (Canada)
Telephone: (604) 473-2400 (Greater Vancouver) or 1-800-330-9767 (Rest of BC)
Internet: http://www.encorpinc.com/

Liquor Distribution Branch
2625 Rupert Street
Vancouver BC V5M 3T5
Telephone: (604) 252-3000

Brewers Distributor Ltd.
Telephone: (604) 664-2300

Paint and Product Care Association - toll-free Consumer Information Hotline at 1-800-505-0139 (Lower Mainland 878-8700).

Tree-Marking Paint Stewardship Association
Colin McKean – Secretary
Telephone: (250) 479-0853

Residuals Management Group, Ltd.
313 Warren Avenue
New Westminster, BC, V3L 1L5
Telephone: (604) 726-4141
Fax: (604) 726-4142

Endnotes

[1] All monetary figures in this publication refer to Canadian dollars unless otherwise noted.
[2] Due to safety considerations, handlers do not open containers to determine volume of residual material in each. Reported returns equal the volume of all containers.
[3] Approximately 80% of beer sold in Canada is packaged in refillable glass bottles. The rate is much lower in B.C. – approximately 30%. Greg D'Avignon, Executive Director of the Western Brewers Association, believes the lower usage of refillables in the province is due to circumstances unique to B.C. These include: (1) strikes by beer distributors in the early 1990s resulted in increased imports of canned beer from the

U.S; (2) a Vancouver brewery has one of the most efficient canning lines in the country, and a resulting incentive to market canned beer; (3) under the province's regulated system, retailers have a financial incentive to sell beer in six-packs of cans rather than in cases of bottles; and (4) residents of B.C. tend to be active and engage in outdoor activities and find cans of beer to be more convenient for consuming beer away from home.

[4] Helen Spiegelman, Recycling Council of British Columbia, personal communication, September 22, 2000.

[5] B.C. Liberal Party, "NDP Must Delay Implementation of Expanded Beverage Container System for All Groups," September 10, 1998. Available on Liberal Party website at <http://www.bcliberals.bc.ca>.

[6] The BCMB was reconstituted as a 10-member, self-funded board after its original term expired on December 31, 1998.

[7] Manufacturers marketing polycoat paper containers and gable-top containers convinced the government to give them an extension to implement their recycling plan. These containers became subject to deposit-refund requirements on October 1, 1999.

[8] The regulation allows retailers to limit returns to 6 containers per person per day after stewardship plans have been fully implemented in a regional district. Once the overall diversion rate in the regional district is at least 75% (or a lesser diversion rate as permitted by the deputy minister) for a period of 3 consecutive months, retailers in that regional district are not required to redeem containers. Encorp reported a province-wide 76.47% recovery rate for non-alcoholic beverage containers during the period April 1, 1998, to December 31, 1998. While this is below the target of 85% overall recovery, it meets the level required for reduced retailer involvement in redemption operations.

[9] Some of the Encorp depots are also authorized BDL and/or LDB depots. At these depots, operators pay full refund values for all containers.

[10] Dave Douglas, Unit Head, MELP Pollution Prevention and Remediation Branch, Stewardship Unit, personal communication, September 26, 2000.

[11] Before early 2000, brand owners internalized the cost of the recycling fees. In February 2000 Pepsi instructed its retailers to show the recycling fee as a separate item on consumers' receipts. Encorp announced on March 1, 2000, that brand owners would show recycling fees separately on invoices to retailers and that major retailers were expected to start showing the fees on customer receipts within eight weeks. This move created a furore among environmental groups. RCBC charged that the intent of the BCSR was to "internalize the cost of recycling containers as the cost of doing business" and Encorp did not mention plans to pass these costs directly on to consumers in its stewardship plan.

[12] Clarissa Morawski, "Beverage Container Recovery in B.C.: Brand Owner Responsibility Increases Recovery Rates, Reduces Taxpayer Subsidies," *Solid Waste & Recycling*, August/September 1999.

[13] Ibid. and Gordon Zelenika, LDB Beverage Container Recovery Project Manager, personal communication, July 17, 2000.

[14] Gordon Zelenika, personal communication, July 17, 2000.

[15] Ibid.

[16] Clarissa Morawski, "Beverage Container Recovery in B.C.: Brand Owner Responsibility Increases Recovery Rates, Reduces Taxpayer Subsidies," *Solid Waste & Recycling*, August/September 1999.

[17] Dave Douglas, Unit Head, MELP Pollution Prevention and Remediation Branch, Stewardship Unit, personal communication, July 6, 2000.

[18] The government estimated potential cost savings assuming municipalities would save an average of Can$70 per metric tonne in avoided disposal costs for each additional tonne of material recycled under an expanded deposit-return system.

[19] Dave Douglas, personal communication, July 6, 2000.

[20] Clarissa Morawski, "Beverage Container Recovery in B.C.: Brand Owner Responsibility Increases Recovery Rates, Reduces Taxpayer Subsidies," *Solid Waste & Recycling*, August/September 1999. ILSR calculated per household costs based on Can$16.0 million divided by 1.4 million households in B.C. as reported by the 1996 Statistics Canada census. Statistics Canada 1996 census data are available on the Internet at <http://www.statcan.ca:80/english/census96/nation.htm>.

[21] This report is available on the MELP web site at http://www.env.gov.bc.ca/epd/epdpa/mpp/ipshhp/ghcc1.html#toc.

[22] This order of priority was chosen based on an analysis of materials collected at the pilot HHW depots. The analysis revealed that in 1993 paint made up 70%; solvents, thinners, and fuels were 17%; and domestic pesticides comprised 7% of materials collected at the depots.

[23] Danny Kelly, Manager of Marketing and Customer Service at Mohawk Lubricants, B.C., personal communication, July 25, 2000.

[24] U.S. EPA Office of Solid Waste, *Managing Used Oil: Advice for Small Businesses*, EPA530-F-96-004, November 1996.

[25] U.S. EPA Region 9 web site, <http://www.epa.gov/region09/waste/solid/house.htm>, August 2000.

[26] U.S. EPA, "Solid Waste Disposal Facility Criteria; Proposed Rule," *Federal Register* 53(168), 40 CFR Parts 257 and 258 (Washington, DC: U.S. EPA, August 30, 1988), pp. 33314-33422.

[27] "Estimated Employment Impacts of Beverage Container Strategy," MELP Corporate Policy Branch, March 1997. As of July 2000, no studies have documented actual employment gains in recycling depots as a result of the BCSP. In its preliminary study, MELP acknowledged the potential for job losses in the retail sector as a result of shifting bottle handling from retail establishments to depots but noted that no such retail job losses occurred when Alberta implemented its depot system.

[28] Gordon Zelenika, personal communication, July 17, 2000.

[29] Bill Anderson, Vice President of Operations, Merlin Plastics Supply, Inc., Delta, B.C. personal communication, September 26, 2000.

[30] B.C. MELP; *Environmental Trends in British Columbia 2000*, 2000.