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# PLASTICS

RECYCLING UPDATE

## PLASTICS RECOVERY IN CANADIAN EPR

Regulated Canadian extended producer responsibility (EPR) programs have grown in number over the years to the point they are a now well established and manage a wide variety of wastes including various types of post-consumer packaging and plastic containers. Have such programs proven themselves to be a successful means of enhancing the recovery and recycling of plastic resins?

By Duncan Bury

**A**ccording to Statistics Canada's biennial national waste management survey, in 2008 Canadians generated 37,857,559 tons of waste at a rate of 2,273 pounds per capita. Eighty percent of this was disposed of in landfills, and 20 percent was diverted from disposal through recycling programs. Plastics form a small, but significant, part of the materials diverted. In 2008, according to Statistics Canada, 359,133 tons of the total 9,339,663 tons of diverted materials were plastics.

Since the implementation in 1983 of the first Canadian curbside municipal recycling program in Kitchener, Ontario, the rates of diversion of waste from disposal and the tonnages recovered for recycling have steadily increased along with the growth of municipal programs and with the advent and growth of producer responsibility programs. Over the past decade the rates of plastics recovery per capita have been slowly rising from 12.26 pounds per capita in 2000, to a level of 21.05 pounds per capita in 2008.

In general, plastics recovery rates appear highest in provinces which have successfully combined deposit return systems for beverage containers with curbside municipal recycling programs and

other stewardship initiatives. Both Québec and British Columbia, which have the best plastics performance, had recovery rates of over 30 pounds per capita in 2008. In contrast, Ontario, which has a deposit return system for alcohol but not for soft drinks or other beverages and has widely available municipal recycling, the rate was 16.46 pounds per capita. In further contrast, in Saskatchewan, which has beverage deposit return but no municipal curbside programs, the plastics recovery rate was only 10.25 pounds per capita.

A typical mix of plastics collected through municipal recycling programs is well-documented in Ontario. In 2009, Ontario, with a population of 13.2 million, had almost 5 million households with access to recycling. The total recyclable materials collected across the province were 959,257 tons, with paper predictably making up the largest portion at 738,439 tons. Plastics represented 64,174 tons or 6.6 percent of the total recyclable materials collected with the composition shown in Table 1.

### From voluntary to formal EPR

In addition to the private and publicly-driven waste system with its

focus on municipal recycling, there is a well-established system of provincially-mandated extended producer responsibility (EPR) programs, some of which capture plastic materials, largely in the form of containers. EPR is defined as “an environmental policy approach in which a producer’s responsibility for a product is extended to the post-consumer stage of its life cycle” by the Canadian Council of Ministers of the Environment.

There are now over 40 such producer responsibility programs operating in Canada for a wide variety of products including packaging, electronics, used oil, tires, batteries, ozone depleting substances (ODS) and paint. Under these programs producers of products and packaging are legally given, or have accepted voluntarily, both financial and operational responsibility for the end of life management of the targeted product or packaging. Typically, producers and importers come together and form a not for profit producer responsibility organization

(PRO) with the express purpose of raising funds and operating a collection and recycling program. In some cases the PRO acts for itself and directly manages the program, in some it will contract with a third party to manage and operate the program and in others, such as the packaging programs, it will act in partnership with municipalities. EPR regulations typically identify the responsible parties, which products are covered, establish reporting requirements and increasingly, set targets for recovery.

While the vast majority of programs have been established under regulation, there are a number of national programs which originated in voluntary producer action – the Rechargeable Battery Recycling Corporation’s Call2Recycle program, the Crop Life Canada/Clean FARMS pesticide container take back program and the Refrigerant Management Canada program for ODS. In all cases regulations are starting to mandate what was formerly operated as a voluntary program. For example, in 2010 the Clean FARMS pesticide container program in Manitoba, which had been operating for a number of years, was covered under the province’s new packaging producer responsibility initiative. An inventory of EPR programs is available on Environment Canada’s website ([www.ec.gc.ca/epr](http://www.ec.gc.ca/epr)).

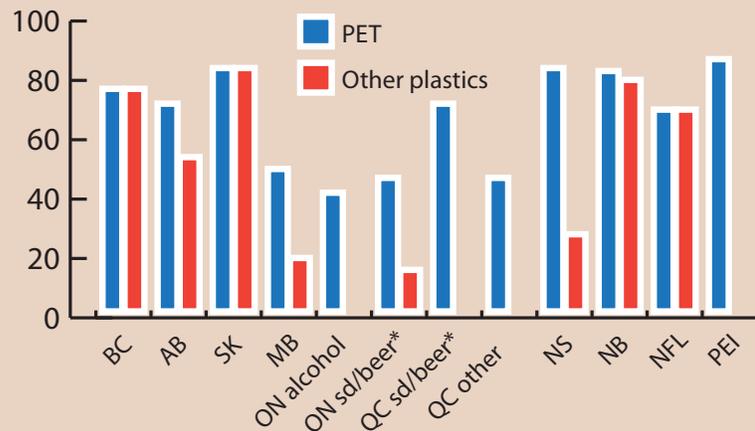
## How stewardship stacks up

Municipal curbside and depot recycling programs trends seem positive, but a brief look at stewardship programs for beverage containers, packaging and other scrap plastic will serve to demonstrate the particular effectiveness of stewardship and EPR programs in the recovery and recycling of plastic containers.

Plastics Type	Tonnage	Percent Total Plastics
PET Containers	25,557	43.9
HDPE Containers	14,641	25.1
Plastic Film	5,209	8.9
Tubs and Lids	7,468	12.8
Polystyrene	992	1.7
Mixed Plastics	4,347	7.6
<b>Total Plastics</b>	<b>58,214</b>	<b>100.0</b>

Source: Waste Diversion Ontario: Residential Blue Box Materials 2009 Data Call

**Figure 1 | Canadian beverage container recovery rates 2009, in percent**



Source: CM Consulting 2010  
\* soft drink and beer

**Beverage containers:** The 2010 study, *Who Pays What? An Analysis of Beverage Container Recovery and Costs in Canada*, by CM Consulting, documented that the national beverage recovery rates across the country in 2009 for all deposit return programs together was 83 percent – but only 41 percent for the non-deposit return jurisdictions of Manitoba and Ontario. The latter province, which relies on curbside recycling for non-alcoholic beverages, had a container recovery rate of only 40 percent, whereas British Columbia with its deposit return system, showed a rate of over 80 percent.

A specific look at the return rates for PET and other plastic containers confirms the pattern (Figure 1).

**Oil containers:** Some of the most successful EPR programs in Canada are programs for the recovery and recycling of

used crankcase oil and the associated plastic containers and oil filters. The vast majority of oil containers are made of HDPE although some oil is marketed in clear PET. The used oil programs in Western Canada (B.C., Alberta, Saskatchewan, and Manitoba) and Québec are financed and operated by a similar group of oil producers, brand owners and importers and they all operate as PROs. The programs are commonly financed through the application, at the point of purchase, of an environmental handling charge, or visible eco fee. The cost to the consumer is in the range of \$1.15 to \$1.30 Canadian dollars for a standard car oil change. Used oil in Ontario is managed through the province’s EPR program for municipal hazardous and special waste and is not part of the same system. In the other provinces regulations treat used oil and con-

tainers as a hazardous waste, and rely instead on an informal collection program largely operated through garages.

In all cases the reported recovery rates for the available used oil, after allowance for oil consumption during use which can be in the order of 30 percent, are consistently high – over 70 percent in 2009.

Used oil container recovery rates in most of these programs are equally as high as the used oil recovery rate. The collected plastics are sent to one of six processors in Canada where they are washed, flaked or pelletized and then blended with other resins and materials to make products like large construction posts, railroad ties or other kinds of composite lumber. Overall, as Figure 2 shows, the recovery rates demonstrate that EPR can be an effective instrument for enhanced recovery.

The used oil programs with their formal structures and legal responsibilities, have also demonstrated consistent and continued growth in recovery rates over the years as the programs have matured, as the collection network has become better established and as communications with the public have taken effect.

**Pesticide containers:** Formerly operated by Crop Life Canada, Clean FARMS is a voluntary non-profit industry stewardship organization made up of 27 pesticide producers and distributors that operate a national EPR program for the end-of-life management of plastic pesticide containers, obsolete pesticides and empty paper pesticide bags. A similar program operates in parts of the US.

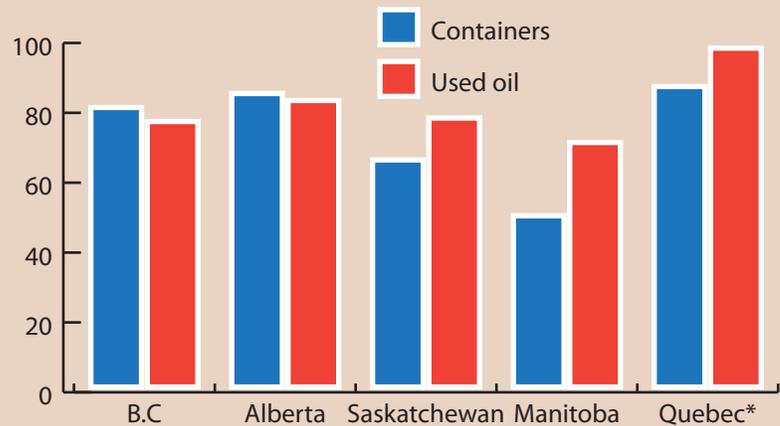
The program operates on the EPR PRO model and accepts full financial and operational responsibility for the collection and recycling of the plastic containers. There is no visible eco-fee applied to the purchase of farm pesticides and the costs of the program are borne directly by the producers.

Similar to the used oil programs, Clean FARMS, has an impressive plastic container recovery rate (Figure 3), supported by a national network of 1,100 farm retailers, distributors and collection depots. Recovered containers are shredded, washed and made available for recycling and manufacture into products such as drainage tile for use back on the farm.

## Taking action

It can be clearly said that EPR programs do successfully manage end of life plastics and other products and materials with high rates

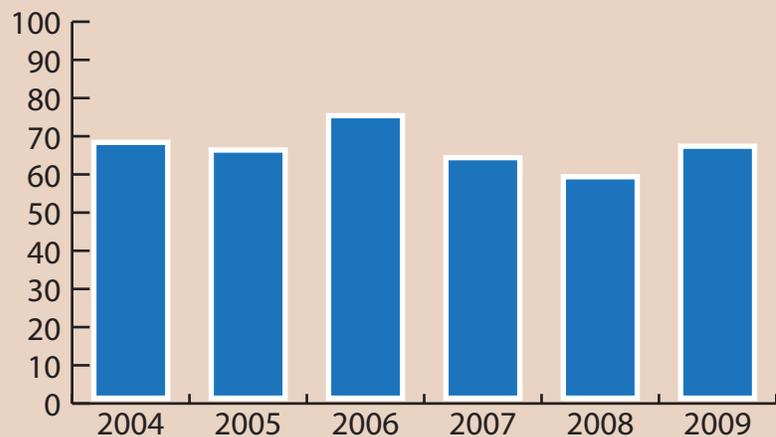
**Figure 2 | Canadian EPR used oil and container recovery rates 2009, in percent**



Source: National Used Oil Management Association (NUOMA), 2009

\* The very high rate of recovery of both oil and containers in Québec is explained by the Société de gestion des huiles usagées (SOGHU) in its 2009 annual report by the slower market in 2009 relative to 2008 and the recycling in 2009 of containers that were sold in 2008. However, the rates for 2008 are equally impressive – 89 percent of the available used oil, and 91 percent of the containers.

**Figure 3 | Canadian pesticide container recovery rates 2009, in percent**



Source: Clean FARMS: The Year in Review 2009/2010

of recovery. The success of the programs described, and the success of other EPR programs for other products, has convinced governments in Canada that EPR is an effective instrument for environmental management. This is confirmed through the CCME Canada-wide Action Plan for EPR which sets out a clear direction for the continued evolution and growth of EPR

programs in Canada. Plastics will be affected by this commitment.

The Action Plan commits governments to working towards nationally consistent and harmonious EPR management of packaging, printed materials, mercury containing lamps and other mercury containing products, electronics and electrical products such as appliances, household hazardous

and special wastes and automotive products (oil, batteries, tires, refrigerants, anti-freeze, brake and transmission fluids) by October 2015. The Action Plan makes no distinction between residential and non-residential sources, treating both similarly, and plastics of various kinds are bound to be caught by many of these programs, particularly those that in any way address packaging.

The Action Plan also includes a second list of product categories for action by October 2017 – construction materials, demolition materials, furniture, textiles and carpet, and appliances, including ozone depleting substances. Because less is known about these product areas governments have committed through the plan to publishing,

by October 2011, a more detailed list of products and materials.

In conclusion, in Canada there is no longer any debate about the merits of the EPR approach. Discussion is instead focused on program operational efficiencies, funding mechanisms, improving environmental benefits beyond just recycling, and performance measurement. Plastics are clearly part of the list of targeted materials and products and many producers and users of plastics already have an established track record of producer responsibility. This experience and the history of successful recovery will auger well for the continued evolution of plastics stewardship and plastics recovery rates. **PRU**

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