

Stewardship of Plastic Packaging in Manitoba: A Multi-stakeholder Model

By
Lisa Quinn

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Submitted to the Faculty of Graduate Studies
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THE UNIVERSITY OF MANITOBA
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**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of
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Abstract

Plastics comprise one of the fastest growing material commodity markets. Over the last twenty years the sale of virgin plastic resin in Canada has increased threefold, with the primary end-use being packaging. While the popularity of plastics has increased dramatically, policies and programs to ensure the proper management of this material, or the waste it creates, have not developed at an equal pace. Instituting policies and programs which embrace the principles of packaging stewardship, a concept in which producers assume responsibility for the impact their packaging has on the environment throughout its lifecycle, is one possible way to diffuse the negative impact of plastic packaging on the environment.

The purpose of this thesis was to explore the different options for the stewardship of plastic packaging in Manitoba, with the final product being a model to guide the implementation of packaging stewardship in the province. The objectives set for this study were: to review the use of both regulatory and voluntary packaging stewardship initiatives adopted in other jurisdiction (Germany, Sweden, Austria, Australia, Ontario, Nova Scotia and British Columbia), to assess the potential advantages and disadvantages of implementing these initiatives in Manitoba, and to gain feedback from industry stakeholders regarding the concept of packaging stewardship and a proposed model for implementing packaging stewardship in Manitoba. In order to achieve the objectives of the study, four activities were conducted - a literature review, a packaging stewardship policy and program review, a case study and a workshop.

The literature and program review determined that the benefits of packaging stewardship initiatives went far beyond simply diverting waste from landfills and reducing municipal waste management costs. The benefits also included, improved package design (e.g. less packaging on the market, less material per package, improved recyclability), increased producer and consumer awareness of environmental and waste management issues, advancements in recycling technology and capacity, greater recognition of industry's environmental responsibility, reduced

greenhouse gas emissions, lower energy consumption, decreased dependency on virgin materials, and new economic opportunities. Unfortunately, the study also determined that while a number of Canadian provinces have begun to adopt programs that incorporate elements of packaging stewardship, no Canadian jurisdiction has instituted a full-scale packaging stewardship initiative such as those implemented in Europe. Further, the case study determined Canadian plastic packaging manufacturers and fillers have no plans to voluntarily expand their environmental responsibilities for plastic packaging.

Based upon this information, a model for implementing packaging stewardship was developed for Manitoba. The model recommends the adoption of a full-scale, regulatory approach to packaging stewardship. It requires the participation of a variety of players, including: the provincial, municipal and federal governments, industry, consumers, and the Waste Reduction and Prevention Council (non-government communication and education organization). The research also identified the need for a variety of tools for a successful packaging stewardship initiative. Therefore, the model incorporates a wide array of tools, including: industry take-back regulation; reduction, reuse and recycling targets; levies based on weight, volume and material type; landfill bans and fees; voluntary stewardship agreements; green procurement strategies; and education/awareness campaigns. The hope is that this model will provide a useful starting point for industry, municipalities and the provincial government as they embark upon revisions to the current waste management strategy in the province of Manitoba.

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Acronyms

ARA	Alstoff Recycling Austria AG (Austria)
BBPP	Blue Box Program Plan (Ontario)
BCSP	Beverage Container Stewardship Program (British Columbia)
CCME	Canadian Council of Ministers of the Environment
CSR	Corporations Supporting Recycling
DKR	Deutsche Gesellschaft für Kunststoff-Recycling mBH (Germany)
DSD	Duales System Deutschland (Germany)
EPIC	Environment and Plastics Industry Council
EPR	extended producer responsibility
FCM	Federation of Canadian Municipalities
FPI	Forpackningsinsamlingen (Sweden)
HDPE	high density polyethylene
IPP	integrate product policy
LDPE	low density polyethylene
MPSC	Manitoba Product Stewardship Corporation
MSW	municipal solid waste
NEPM	National Environmental Protection Measure (Australia)
OECD	Organization for Economic Cooperation and Development
PAC	Packaging Association of Canada
PET	polyethylene
PP	polypropylene
PRO	producer responsibility organization
PRO EUROPE	Packaging Recovery Organization Europe s.p.r.l.
PVC	polyvinyl chloride
REPA	Reparegistret AB (Sweden)
RRFB	Resource Recovery Fund Board (Nova Scotia)
WDO	Waste Diversion Ontario
WMR	Waste Management Regions
WRAP	Waste Reduction and Prevention (Manitoba)

Chapter One - Introduction

1.1 Background

1.1.1 Sustainable Development

In 1987, the Brundtland Commission presented a report entitled *Our Common Future* to the United Nations. The culmination of a three-year study, this report determined that the planet could not sustain our current pattern of living, and concluded that changes in our approach to resource consumption, economic development and social interactions were essential. The Commission used the term *sustainable development* to describe this new approach, a notion which they defined as “development which meets the needs of the present without compromising the ability of future generations to meet their needs”. While a relatively novel idea in the late eighties, sustainable development is now a readily recognized concept, playing an influential role in the development of public and private sector policies, programs and projects.

1.1.2 Extended Producer Responsibility

The drive to achieve a sustainable society is behind the advancement of the principle of extended producer responsibility. Extended producer responsibility (EPR) is a concept in which producers assume responsibility for the impact their products have on the environment throughout their lifecycle (Sinclair & Fenton, 1997). Packaging stewardship refers to EPR programs and policies which focus on packaging and packaging waste. Under such initiatives, producers assume a role in the management of the waste generated by the consumption and disposal of their packaging. The goals of such initiatives include: advancing source reduction, encouraging design for the environment, compelling industry to internalize waste management costs, and promoting overall waste reduction.

The stewardship of packaging waste was first legislated in Germany in the early 1990s. Over the last decade many other countries, including the member nations of the European Union, the

Czech Republic, Poland, Hungary, Latvia, Japan, Brazil and Australia have also adopted EPR policies and programs to manage packaging waste. The success many of these nations have had with packaging stewardship goes beyond reducing municipal recycling costs and extending the lifespan of landfills. The achievements of these nations include:

- Increased producer and consumer awareness of environmental and waste management issues;
- Improved processing and recycling capacity;
- Reductions in packaging (e.g. elimination, lightweighting and concentrated versions of products);
- Investments in sorting/recycling technologies and processes;
- Enhanced recyclability of packaging;
- Corporate cultural shift (i.e. greater recognition and acceptance of industry's environmental responsibility);
- Reduced greenhouse gas emissions;
- Lower energy consumption;
- Decreased dependency on virgin materials;
- Improved communication between government and industry;
- Litter abatement;
- New economic opportunities (e.g. new jobs, markets, businesses and facilities); and
- Fairer waste management system (e.g. polluter-pays principle).

1.1.3 Plastic Packaging

Plastics comprise one of the fastest growing material commodity markets. Over the last twenty years, the sale of virgin plastic resin in Canada has increased threefold (Earthbound Environmental Inc., 1999). While the popularity of plastics has increased dramatically, policies and programs to ensure the proper management of this material have not developed at an equal pace. Therefore, in addition to being one of the most popular commodities, plastics are also the fastest growing segment of the municipal solid waste stream (Stevens, 2002).

The largest end-use for plastics is packaging. Plastics are extremely versatile, durable and low in cost, and thus are the material favoured by many package designers (Stevens, 2002). Plastic resins are used to manufacture bottles, tubs, jars, wrap, bags and closures for a wide variety of commercial and consumer products.

There are a number of problems related to plastic packaging and its waste which are not experienced by other packaging materials, including:

- Plastic packaging is a highly visible segment of the waste stream and as such, is often the focus of public criticism;
- Plastic is rapidly replacing other packaging materials, such as paper, glass and aluminum, which can be readily reused and/or recycled;
- Progress in the fields of plastic engineering and polymer science have expanded the possible end-uses for plastics, but have also increased the difficulty of recycling these materials;
- The cost of collecting, sorting and recycling plastics is significantly higher than for other packaging materials;
- The capacity, technology and processes for sorting and recycling plastic packaging are underdeveloped; and
- The end-markets for secondary plastic materials are limited and typically unstable.

Instituting policies and programs which embrace the principles of extended producer responsibility is one possible way to diffuse the negative impact of plastic packaging on the environment. Packaging stewardship encourages producers to consider the life-cycle impact of products during the design process and involves industry in waste management, thereby encouraging the development of recycling capacity and end-markets for secondary materials.

1.2 Purpose

The purpose of this research thesis was to explore the options for plastic packaging stewardship in Manitoba. The final product of this study is a model designed to guide the implementation of packaging stewardship in the province. The intent of the model is to reduce the environmental impact of all packaging, including plastic packaging.

1.3 Research Objectives

- a. To review the use of regulatory and voluntary packaging stewardship initiatives used by other jurisdictions to reduce the negative environmental impact of plastic packaging.
- b. To assess the potential advantages and disadvantages of adopting the aforementioned initiatives in the Province of Manitoba.
- c. To gain feedback from industry stakeholders regarding the concept of packaging stewardship, the environmental impact of their packaging, and a proposed model for implementing packaging stewardship in this province.

1.4 Research Strategy

In order to satisfy the above research objectives, the following activities were carried out:

Literature Review

- The current literature on packaging stewardship and plastic packaging was reviewed and summarized.

Packaging Stewardship Programs and Policies

- A review of regulatory and voluntary approaches to packaging stewardship adopted internationally was conducted, including those in Austria, Germany, Sweden and Australia.
- An examination of Canadian packaging waste management initiatives in Ontario, British Columbia, Nova Scotia and Manitoba was undertaken.

Plastic Food Packaging Case Study

- Interviews were held with Manitoban food producers and Canadian plastic packaging manufacturers to determine their attitudes towards packaging stewardship and what action the organization had voluntarily taken to reduce the ecological effects of their packaging.
- Provincial and national trade-associations and non-government organizations involved in the promotion of packaging, plastics, or EPR principles were interviewed in order to assess their opinions regarding plastic packaging stewardship.

Options for Plastic Packaging Stewardship Workshop

- A workshop was held with representatives from industry, government and non-government organization to review a packaging stewardship model for Manitoba. This model was developed on the basis of the research material gathered through the literature review, policy analysis and case study.

1.5 Scope

The project focused primarily on means to increase producers' involvement in packaging waste management. Although many programs exist to reduce packaging waste and increase recycling of plastic packaging, such as 'All Bottles Programs' and product bans, these tend to be government run initiatives and are not dealt with in this document. Furthermore, this research concentrated on primary (sales) and secondary (grouped) plastic packaging generated by households, excluding transportation packaging and all waste generated by the industrial, commercial and institutional sectors.

1.6 Thesis Organization

This thesis is divided into eight chapters. Following this chapter, chapter two summarizes the literature related to extended producer responsibility and plastic packaging. Chapter three outlines the research methods used to satisfy the objectives of this study. Chapter four provides a summary of international packaging stewardship policies and programs. Chapter five describes selected packaging waste management programs in Canada. Chapter six compiles the interview data collected during the case study. Chapter seven describes the development of the packaging stewardship model for this province, summarizes the feedback provided by participants of the *Options for Plastic Packaging Stewardship Workshop*, and presents the final *Packaging Stewardship Model for Manitoba*. Chapter eight concludes this thesis and provides a number of recommendations for the further study and development of packaging stewardship.

Chapter Two - Plastic Packaging Stewardship

2.1 Extended Producer Responsibility

Extended producer responsibility is an environmental principle in which producers assume responsibility for the impacts their products have on the environment throughout their lifecycle (Sinclair & Fenton, 1997; Fishbein, 1998). While the concept of EPR encompasses the entire lifespan of a product or packaging, EPR policies tend to focus on the post-consumer stage, meaning the producers must assume a role in the management of the waste generated by their products. Such strategies encourage producers to think beyond simply marketing and selling their goods, compelling them to consider the effect their products may have on the environment after the consumer has discarded them (Friends of the Earth, 1998).

2.1.1 *Current Roles and Responsibilities*

Traditionally the burden has been placed on municipal governments to administer waste collection and disposal programs. Since manufacturers have not been responsible for the financial or physical aspects of refuse management, they have not been too concerned with reducing the amount and type of waste generated by their products. "As long as noncompetitive government agencies use tax dollars to finance the disposal and recycling of garbage, consumer-product companies can choose to market a diamond ring in a refrigerator box and not worry about the consequences" (Hershkowitz, 1993, p.109).

Under the current system, provincial and federal governments are responsible for setting and enforcing general environmental standards and policies for environmental protection and conservation. The provinces set legislation and regulations related to the use of provincial land and natural resources. The provinces' jurisdiction also includes the governance of municipalities, who are responsibility for solid waste disposal. The federal government has jurisdiction over

inter-provincial and international environmental matters, including emissions and effluent expelled as a result of manufacturing processes.

Producers (brand owners) are the decisions-makers for products and packaging. They determine the raw materials which will be used, the design of the unit, and the production process which will be employed. Traditionally, they have only been responsible for environmental concerns directly related to the production processes, such as the health and safety of employees and the prevention and treatment of harmful effluents and emissions (OECD, 2001).

The public plays a role in both waste production and waste management. As consumers, the public is responsible for waste generation and as taxpayers, the public is charged taxes to support refuse management systems. When products do not include waste management costs in the sales price, and taxes do not reflect the amount of garbage a household generates, there is no financial incentive for the public to reduce their consumption or consider the environment when selecting goods (Santoriello & Block, 1996).

2.1.2 New Roles and Responsibilities Under EPR Policies

Instituting EPR involves transferring the traditional responsibility of waste management from municipal governments and taxpayers to product producers and consumers. The goal of transferring the financial and/or physical management of the waste stream is to encourage producers "...[to] design according to the 3Rs principles, [to] take steps to divert materials from disposal, [to] actively use recovered materials and [to] ensure proper handling in the event of disposal" (Environment Canada, 2001, p.1).

There are four general areas of responsibility which may be transferred to producers:

1. *Physical responsibility* involves the producer engaging in the physical management - the collection, processing, and treatment or disposal - of their products or packaging at the end of the life cycle.

2. *Financial responsibility* entails the producer paying part or all of the costs associated with the physical management of the waste generated by their products or packaging.
3. *Informational responsibility* requires that producers provide information to consumers regarding the environmental impact of their products or packaging. Producers may supply data on the environmental impact of the product throughout its lifecycle, toxic components, appropriate handling and use, or proper disposal techniques.
4. *Legal responsibility* extends a producer's traditional liability for their products or packaging to the post-consumer stage.

(ILSR, 2000; OECD, 2001)

Under EPR initiatives, the role of municipalities in waste management is typically reduced. The nature of their participation is dependant on the policies adopted. Under some EPR configurations, municipalities are contracted by producers to collect and treat waste materials, while under other systems the producer, retailers or contracted private waste collection companies take responsibility for the physical management.

The role of senior governments remains that of policy developers and enforcers. In Canada, either the provincial or federal governments would be responsible for establishing extended producer responsibility policies and ensuring the actors in the product chain fulfill their assigned obligations (Sinclair & Fenton, 1997).

When producers assume responsibility for the packaging, the costs they incur are incorporated in the final price of their goods. By including the environmental costs of production and consumption in the prices of products, consumers become aware of the costs of waste management and are able to make informed decisions regarding the goods and services they purchase (Taylor, Jaccard & Olewiler, 1999; Hershkowitz, 1993). Consumers also play a role in collecting, separating and returning waste materials (Fishbein, 1998).

2.1.3 *Why the Producer?*

Successful EPR programs require all the members in the product chain, including resource extractors, raw material suppliers, packaging producers, fillers, distributors and retailers, consumers, government (municipal, provincial, federal), to take responsibility for their behaviour. However, due to the complexity and range of actors, it is necessary when creating EPR policies and programs to delegate one of the participants with the explicit responsibility for managing the product at the end of its useful life (OECD, 2001).

Producers are in the best position to take a leadership role in the reduction and prevention of product and packaging waste. Producers are in control of the product development process; they are the party responsible for selecting the inputs and approving the final design of the product. Producers have access to the technical experts, control of proprietary information and the greatest understanding of the goods they supply. Thus, this group has the greatest influence over the amount and type of waste being generated. Producers have the knowledge and capacity to develop products that contain less material, disassemble with ease after their useful life, and facilitate re-use and recycling. In addition, because of their central role in the product chain, producers have considerable influence over the other actors in the chain and can use their position to encourage others to accept responsibility for their actions (OECD, 2001).

2.1.4 *Packaging Stewardship*

The concept of extended producer responsibility has been applied to a variety of products, including automobiles, hazardous waste (e.g. paint, solvents, nickel-cadmium rechargeable batteries), tires, oil and oil containers, and electronic equipment (e.g. computers, cellular phones, televisions). However, the focus of the oldest and most ambitious EPR programs has been packaging waste.