

# Product Environmental Management<sup>1</sup>

## I. The Relationship Between Sustainable Production and Consumption and Product Environmental Management

### A. Overview of Topic

In order for Canada to meet the objectives of Agenda 21, national policies and strategies are needed to change our current patterns of consumption and production. Although efforts by individual organizations and industry have met with some success, a collaborative effort involving diverse stakeholders is needed to drive society toward sustainability.

Product environmental management is a key component of sustainable production. Companies that take responsibility for their products throughout their life-cycle will bear the true costs of these products and will seek solutions that will minimize this total cost.

This paper provides an overview of product environmental management by examining the concepts of producer responsibility, product stewardship and product policy, along with the specific tools used within these concepts, life-cycle assessment and environmental management systems. Leading-edge examples by government and industry world-wide are provided. Product environmental management in Canada is then discussed by examining initiatives at the national, provincial and industry levels. The barriers and obstacles in moving towards product environmental management in Canada are examined as well as opportunities and issues raised.

---

<sup>1</sup> © IndEco Strategic Consulting Inc. 1997. All Rights Reserved.

This paper was prepared by Cindy Krakower of IndEco Strategic Consulting Inc. as a background paper for Environment Canada's workshop on *Sustainable Consumption and Production* which was held in Ottawa, 25-27 May 1997. Comments on the paper may be directed to us at [pem@indeco.com](mailto:pem@indeco.com), or by mail to IndEco Strategic Consulting Inc., Suite 302 - 2 Pardee Avenue, Toronto ON Canada M6K 3H5. Prior to finalizing the paper, it was reviewed by Diana Cartwright of the Delphi Group, Kevin Brady and Andie Paynter of Environment Canada, and members of Environment Canada's advisory group. Their input is acknowledged.

## **B. Definition of Terms**

### **Extended Producer Responsibility (EPR)**

Traditionally, manufacturers have focused their efforts on bringing products to market in the most cost-effective manner possible. Products competed on cost and quality and a manufacturer's responsibility for its products ended with their purchase by the consumer. Today, a new view is emerging amongst both consumers and producers; the responsibility of a manufacturer should not end with the production of goods. Manufacturers should be responsible for the environmental impacts of their product over its entire life-cycle including its end-of-life.

This trend in corporate environmental responsibility has had a number of driving forces, such as the regulatory environment, financial considerations, corporate image and commitment to environmental protection. Companies have begun to "green" their products over the entire life-cycle. This move towards extended producer responsibility (EPR) has led to the concept of product environmental management.

### **Product Stewardship and Product Policy**

Product environmental management is a broad term that includes the concepts of product stewardship and product oriented environmental policy. Product stewardship focuses on making environmental issues a priority for manufacturers of products over the entire life-cycle. One aspect of product stewardship is product takeback. Although product takeback initiatives are still not prevalent in North America, there are numerous programs in place in Japan and throughout Europe for a wide range of industries. Many of these programs are voluntary initiatives between industry and government and benefit not only the environment, but also the company's bottom line.

Product oriented environmental policy (product policy) is the implementation of measures within a company that are capable of changing the habits of both producers and consumers, moving them in a direction that is more favourable environmentally, or more sustainable. This progressive widening of producer responsibility for the entire life-cycle of the product is known as extended producer responsibility (EPR). This concept implies that manufacturers bear some responsibility for the environmental impacts of their products throughout the product's life-cycle including end-of-life.

### **Effective product policy**

Product policy addresses the entire life-cycle of the product, attempting to decrease the product's impact on the environment. Effective product policy changes both producer and consumer habits. It spurs producers to look for new ways to plan and design their products taking into account the product's environmental impacts in the producing, using, and throwing away stages. Effective policy also influences consumer preferences

in that they are made aware of the environmental impacts of the products they consume and are therefore able to choose products with a lesser environmental burden.

In order for product policy to change the way an organization approaches its product management, changes must occur throughout the organization. These changes include new practices, culture and organizational programs brought about by designing and introducing new policies, technologies, and levels of education. Organizations change slowly and if they are to move towards sustainability, not only must new practices be introduced, but these must be accompanied by a shift in the underlying culture of the organization.

## **II. Background and Overview**

### **A. *The Tools for Product Environmental Management***

In order to achieve sustainable consumption and production in Canada, decision-makers must be equipped with the necessary tools to effectively manage the environmental impacts of a product. Life-cycle assessment (LCA) and environmental management systems (EMS) are two key tools used by industry and government to influence policy.

#### **Environmental Management Systems (EMS)**

An environmental management system (EMS) is a structure or framework within an organization designed to measure environmental impacts. It is defined by the ISO as:

“that part of the overall management system which includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.”

The key steps in EMS development are:

- 1) Environmental policy
- 2) Plan
- 3) Implement
- 4) Measure and evaluate
- 5) Review and improve

These steps must be accompanied by a commitment to compliance and continual improvement and involve both communication and documentation.

Once an EMS is in place, it can help a company identify the environmental impacts of its products and help set targets and objectives to reduce these impacts. There is an increasing focus on developing an EMS that is integrated into an organization's ongoing

business planning process and management framework. As well, policy makers, financial institutions and the courts are starting to emphasize the importance of an EMS as a means of limiting potential environmental liabilities.

Within the ISO 14000 series, EMS (ISO 14001) is one of the management-related standards along with Environmental Performance Evaluation. There are also product related standards (Environmental labelling, LCA, and Environmental Aspects of Product Standards) that can be used as tools when implementing an EMS and reducing the impacts of a product.

### **Life-Cycle Assessment (LCA)**

The life-cycle management concept underlies many of the concepts dealing with product environmental management such as EPR, products stewardship and environmental management systems, as well as other environmental aspects such as eco-efficiency, industrial ecology, pollution prevention, full cost accounting and green design. Many voluntary initiatives, such as ISO 14000 and the Responsible Care Program, also contain life-cycle components.

A life-cycle assessment (LCA) is the specific tool used to apply life-cycle management to business operations. An LCA provides a precise view of a product's environmental impacts from "cradle to grave". It is a systematic approach that analyzes each stage including:

- raw material extraction and acquisition;
- materials processing and manufacture;
- product distribution;
- product use or consumption; and
- product disposal, reuse or recycling.

This systematic analysis of each stage of the product life-cycle provides manufacturers and other key players with a framework to account for the entire set of environmental impacts beyond the traditional "inside the fence" boundaries. At a policy level, this integrated framework helps bring a systems perspective to the policy process. It also provides a strong foundation for manufacturers, designers and engineers to initiate and implement product development strategies that incorporate environmental concerns at the earliest possible stage. LCA may also influence the downstream use of products; providing energy profiles of finished goods may allow consumers to make informed purchasing decisions based on the environmental impacts of a product.

## **B. Leading Edge Practices by Industry Worldwide**

### **Siemens Nixdorf's product take-back program**

In Europe, many companies are facing the prospect of both national and European Union-level product take-back legislation for electronics. In order to be ready for this future legislation, companies are creating programs to reuse and recycle old hardware. The problem many companies are facing however, is that parts are complex and have not been designed for this purpose. Siemens Nixdorf has developed a product take-back system for its own products that first evaluates opportunities for reuse, and then recycles the non-reusable components.

When Siemens and Nixdorf merged in 1991, both companies had already been taking back their products for a decade. It started off however, as a program for profit; old computers were simply remarketed and no disassembly was involved. By 1988, both companies realized the need to recycle and started thinking about "closing the loop". By the time of the merger, both companies had already started thinking about product design for reuse, recycling, and disassembly. Siemens Nixdorf built a centralized facility in Paderborn, Germany to handle computer recycling. This plant was built near one of the three research and development facilities in order to allow for information flow from the disassemblers to the designers. At each of Siemens Nixdorf's three design facilities, there is a recycling liaison who relays to designers any new information gathered during the recycling process. This has helped the company make design changes. For example, new computer housings are no longer painted because the paint renders the plastic non-recyclable.

In 1995, Siemens Nixdorf got back 5,400 tons of equipment, 17% of which was reused, 69% recycled and 14% sent to landfill. In 1988, 65% of the company's end-of-life products went to landfills. The company's objective is to reduce the amount to landfill to 10% by the year 2000.

### **S C Johnson Wax's product policy in practice**

In 1975, SC Johnson's Wax became the first international company to voluntarily remove CFC aerosol propellants from all of its products. This decision was made three years before U.S. legislation and 13 years before the Montreal Protocol. Since then, SCJ has undertaken a variety of environmental initiatives. In 1990, SCJ decided to integrate environmental concerns into decision-making throughout the company. In order to achieve this, the company established an Officer of Environment and Safety Actions Worldwide who reports to the CEO. They also set corporate goals for waste reduction, packaging reduction, reduction of VOCs, etc. These goals are specific, measurable and have been published.

Communication has played a critical role in this integration of environmental concerns into everyday decision-making. The rationale for setting environmental goals had to be shared throughout the corporation. This required effectively communicating senior management's commitment to the environment so that employees at all levels understood the importance of these goals and the methods for achieving them. SCJ estimates that it took at least three years for the environmental goals to become ingrained as a regular part of the business practice for employees.

These goals have led to a number of successes. By the end of 1992, total worldwide waste had been reduced by 39% from 1990. Fifty products had been identified for reformulation to reduce VOCs. By 1994, half of these had been successfully reformulated and were in production. Eight target chemicals had also been successfully removed from all SCJ products.

### **C. Government Policies Worldwide**

#### **Product policy in Japan**

In Japan, aspects of product policy are found in three separate laws: the Waste Management Law, the Recycling Law, and the Basic Environmental Law.

##### *The Waste Management Law (1970, 1991)*

The Waste Management Law, as amended in 1991, requires that companies properly manage and dispose of the wastes generated as a result of their activities. As well, it requires that companies try to reduce the amount of waste they generate through reuse and recycling. In order to reduce the problems associated with waste management, companies are required to assess the handling and processing of their products at their end-of-life and provide information on the proper management of the wastes generated. They are also required to co-operate with the national and local governments on waste reduction initiatives.

In 1991, an article was added to the law that allows the Minister of Health and Welfare to investigate municipal waste management practices and identify certain waste products which are creating difficulty in the handling process. Mayors of municipalities are then entitled to demand co-operation of the company manufacturing the difficult to handle product in order to facilitate the waste management process.

##### *The Recycling Law (1991)*

This law promotes the utilization of recyclable resources by identifying products as either a "specified product of first-kind" or "specified product of second-kind". The "first-kind" products are those which have been collected, used or unused, or disposed

of after which all or part of the product is recycled. These include cars and certain home appliances. The “second-kind” products are those which are required to be labelled in advance for sorted collection in an effort to utilize recyclable resources. These include metal containers, such as aluminum and steel cans for beer and soft drinks, and Ni-Cd batteries.

Manufacturers of “first-kind” products are provided by the Ministry with a guideline or manual which helps the manufacturer improve its products in the design stage. Product policy is therefore implemented interactively and co-operatively between government and industry.

### *The Basic Environmental Law (1993)*

A noteworthy provision of this omnibus environment bill is that it requires that corporations be responsible for voluntary efforts to reduce the environmental load<sup>2</sup> generated by their activities. These efforts may include collaboration with public sectors. The law also stipulates that the government will technically assist corporations in their efforts and practices for improving their products and processes using tools such as LCAs, DFE (design for environment), DFR (design for disassembly) and PA (product assessment).

### **Product oriented environmental policy in Norway**

The law governing product policy in Norway, the Product Control Act, is another unique example of a national environmental policy. Its purpose is to prevent products from causing damage to health or disturbance of the environment in the form of pollution, waste, noise or the like. The Act also regulates pollution to air, water and the soil from activities at a specific site.

This law was enacted in response to the increasing amount of attention that certain products were attracting, such as old cars and products that are hazardous to health. As a result, specific measures have been introduced for products that cause pollution during use, and ones that generate large quantities of waste during their disposal. The following are examples of some of these measures.

- **Car tires** - tires are prohibited from going to landfill. The tire industry is required to accept free of charge approximately the same number of tires in return as sold. These tires must then be recycled. The system is financed by a fee on each new tire sold.

---

<sup>2</sup> Defined as any adverse effects on the environment generated by human activities which may cause interference with environmental conservation.

- *Milk cartons* - a system for the collection and recycling of used milk cartons is required. By the end of 1996, 60% of all waste drink cartons will be collected for recycling.
- *White goods* - Ninety percent of used appliances are collected and the metal is recovered for either recycling or reuse. The collection is paid for by the municipality, dealer or consumer depending on where the consumer delivers the appliance. Norway is also considering a system to collect CFCs from refrigerators and freezers.
- *Cars* - All purchasers of new cars pay a fee at the time of purchase. When an old car is delivered to an approved collection site, the fee is refunded. In 1993, approximately 95% of all worn out cars were delivered to collection sites.
- *Product design, content and information* - The cradle to grave principle has been incorporated into the product licensing system. At the production level, a company must document processes and material flows for volume, composition of materials and energy use. The State Pollution Control Authority can demand a technical environmental analysis of a company's production process, and may also demand documentation of alternative or cleaner technologies and alternatives for energy savings.

### **Dutch covenants**

In order to meet national environmental goals established in the Netherlands' 1989 National Environmental Policy Plan (NEPP), covenants between industry and government are being used to determine how specified goals are met. As of November 1995, 85 of the 154 covenants signed concern environmental issues. These cover a wide range of industries and issues from CFCs in aerosols to packaging to emission reduction targets for several toxins in the basic metallurgic industry.

The Dutch government first identified the industrial sectors that were responsible for 80-90% of all pollution<sup>3</sup>. Each sector was then asked to organize itself into a target group, represented by a single trade association. Policy makers set 25 year environmental goals to be achieved by each target group. Individual companies within the target group then create their own environmental plans. Each plan is reviewed to ensure that the aggregated plans meet sector targets.

---

<sup>3</sup> The main groups are agriculture, traffic and transport, industry, energy and refineries, construction, and environmental production.



The covenants are not alternatives to regulation and they do not take precedence over existing law. In some cases, covenants are designed as alternatives to new regulations. Typically, however, covenants do specify that performance under the agreement will be taken into account when the government reviews permit requirements. More traditional command-and-control regulations are imposed on companies that choose not to sign the covenant for their sector.

The objectives of the first product-oriented covenants have in most cases been reached, although it is not clear if this is due to the voluntary agreements or to other factors, such as consumer pressure.

### **III. Product Environmental Management in Canada**

#### **A. *Initiatives at the National Level***

##### **National Packaging Protocol**

In May 1989, the Canadian Council of Ministers of the Environment (CCME) commissioned a National Task Force on Packaging to develop national policies for the management of packaging in Canada. A task force, comprised of stakeholders from across the country, agreed on a set of guiding principles from which to develop a National Packaging Protocol. The task force agreed that the National Packaging Protocol (NaPP) would focus on industrial, commercial and household packaging and would be developed in consultation with key stakeholders from the various levels of government, industry, environmental and consumer groups.

In 1990, the CCME adopted the NaPP which focused on the management of packaging waste through source reduction, reuse and recycling. The following are the six policies of the NaPP:

- All Packaging shall have minimal effects on the environment.
- Priority will be given to the management of packaging through source reduction, reuse and recycling.
- A continuing campaign of information and education will be undertaken to make all Canadians aware of the function and environmental impacts of packaging.
- These policies will apply to all packaging used in Canada, including imports.
- Regulations will be implemented as necessary to achieve compliance in these policies.
- All government policies and practices affecting packaging will be consistent with these national policies.

Each policy is accompanied by a set of actions. Overall milestone targets were also set for the years 1990, 1992, 1996 and 2000 to reduce the amount of packaging sent for disposal by 50% from the 1988 baseline by December 31, 2000.

In order to achieve these targets, various initiatives have been implemented. For example, the CCME released a guidance document on the preparation of environmental profiles for various types of packaging. An environmental profile is a tool that helps companies better understand the environmental impacts associated with their packaging systems. In the short-term, an environmental profile may help a company improve one or more stages of its packaging life-cycle without completing a full LCA. In the long-term, a more broad assessment will allow a more thorough examination of all the stages and associated environmental impacts of products and packaging.

Based on a 1992 survey, a 21% reduction in the amount of packaging waste sent for disposal was achieved relative to 1988. This exceeds the 20% target. Thirty-six percent of all packaging consumed in 1992 was reused, 23% recycled and 41% sent to disposal. Final results for 1996 are still being collated, but the expectation is that the target will be met.

### **The Canadian Standards Association Environmental Program**

The Canadian Standards Association (CSA) has developed consensus based information for a range of environmental initiatives including EMS, environmental auditing systems, LCA (CSA Z760) and design for environment (CSA Z762). The EMS portion, CAN/CSA Z750-94, entitled "A Voluntary Environmental Management System" is a voluntary program designed to help organizations improve their environmental performance.

This program is based on the premise of prevention rather than end-of-pipe control. The EMS design, much like the specifications in ISO 14001, is a framework based on four general principles: purpose, commitment, capability and learning. These principles allow for an EMS design that enables an organization to identify the significant environmental impacts in their production processes. The EMS system also facilitates corrective actions such as process changes or changes in management practices.

## ***B. Initiatives at the Provincial Level***

### **Product stewardship in British Columbia**

British Columbia has two innovative product stewardship programs in place to deal with used products that are often improperly disposed of. One regulation deals with used lubricating oil and the other with used paint.

### *The Return of Used Lubricating Oil Regulation*

This regulation, which came into effect in September, 1992, makes British Columbia the first Canadian province to require sellers of lubricating oil to provide a return facility, or to contract with a local return facility, for consumers to return their used lubricating oil free of charge. Sellers are also required to display signs explaining how to return used lubricating oil.

The regulation was initiated by the Canadian Petroleum Products Institute with the support of industry wholesalers, distributors and retailers of lubricating oil in an effort to recover the approximately 20 million litres of used lubricating oil entering the environment each year in British Columbia.

### *The Post-Consumer Paint Stewardship Program Regulation*

In September 1994, this regulation became the first product stewardship regulation in North America to place the full financial and operational responsibility for the life-cycle management of paint on the producing industry with no government funding. The regulation requires that the paint brand-owners design and submit stewardship programs for approval that are convenient for the public, cost effective and environmentally sound.

Two different systems have emerged to comply with this regulation. The first is a return to retail system that is offered by Home Hardware and Sherwin-Williams. The second is a system organized by the Paint Care Association which represents the remaining 47 brand-owners. It involves implementing a central depot collection system that works with communities' existing waste collection infrastructure.

As of June 30, 1995, approximately 925,000 equivalent litres of post-consumer paint had been diverted from landfills and sewer systems. This regulation however, also requires that brand-owners not just collect and dispose of the paint, but move up the hierarchy to recycling and ultimately reuse. Home Hardware has a program aimed at consumers in which it separates out its own paint for use in "Earth Care", a recycled paint. Sherwin-Williams, whose two locations are designed to handle large volumes of waste paint from contractors, reuses latex paint in a recycled product. Paint exchanges are also being established in many communities.

### **OMMRI/CSR and the Blue Box in Ontario**

Ontario Multi-Material Recycling Incorporated (OMMRI) was formed in 1986 by Ontario soft drink manufacturers and distributors and their suppliers. The purpose of the organization was to help the provincial government and municipalities build a recycling program in Ontario to deal in part with the growing amount of waste generated by the soft drink industry. The soft drink industry raised money to pay for

one third of the cost of buying recycling trucks, Blue Boxes, processing equipment for recyclable materials and processing facilities.

In 1990, OMMRI was expanded to include grocery product manufacturers and suppliers, grocery distributors, the plastics industry, packaging manufacturers and suppliers, and newspaper publishers. These new members pledged to support the Blue Box and were designated OMMRI-2. The original soft drink members were designated OMMRI-1.

In 1994, OMMRI-1 changed its name to Beverage Recovery in Canada (BRinC). Their focus was to support beverage recovery through curbside recycling programs. In 1996, OMMRI-2 changed its name to Corporations Supporting Recycling (CSR) and committed to working in partnership with Ontario municipalities on cost effective recycling programs.

In order to ensure that municipalities were not bearing the cost of recycling soft drink containers, the soft drink industry instituted “top up” grants in 1992. If the cost of recycling the containers was greater than the revenues received for the materials, the soft drink industry paid the difference. In 1994, when the industry converted from steel to the higher valued aluminum cans, no “top up” grants were necessary. The soft drink industry has however, said they are committed to top up grants if they are necessary in the future.

Instead of being directly responsible for their products throughout the life-cycle, the soft drink industry chose to pay a third party to dispose of the beverage containers. This form of product stewardship shifts the direct responsibility of dealing with the end-of-life of the product from the manufacturer, the soft drink industry, to Ontario municipalities.

### **C. Initiatives at the Industry Level**

#### **Canadian Chemical Producers’ Association Responsible Care Program**

In 1989, the Canadian Chemical Producers’ Association (CCPA) started the Responsible Care Program in response to public concern over the manufacture and use of chemicals. It was quickly adopted in the United States and has now spread to 39 other countries. In Canada, the program represents 63 companies which account for more than 90% of the chemicals manufactured in Canada.

Responsible Care is a means by which member companies fulfil their commitment to managing their products responsibly throughout their life-cycle. As a condition of membership, companies must make a formal commitment to a set of principles and codes of practice. Member companies commit to:

- improve performance in health, safety and environmental quality;

- listen and respond to public concerns;
- assist each other to achieve optimum performance; and
- report their progress to the public.

Under Responsible Care, companies improve performance by focusing on six sets of guidelines called Codes of Management Practices that contain 152 separate elements. One set of guidelines focuses on product stewardship and states that companies will strive to make health, safety and environmental protection a priority in all stages of a product's life from design to disposal. Other sets of guidelines include pollution prevention, process safety and distribution. All codes are based on life-cycle management principles which means that companies are required to manage each chemical responsibly from initial concept through R&D, manufacturing, shipping and ultimate disposal.

The Responsible Care program has led to a number of environmental successes in Canada. An example is Imperial Oil's Sarnia Paramins plant. Under the Responsible Care program, Imperial Oil made a commitment to the 3Rs. Now, 86% of all wastes are recycled. Filter cakes are sent to cement manufacturers, plastic pails are sent to a plastic recycler and cardboard boxes are returned for reuse. As well, close to 100% of the used oil is also recovered for reuse. Not only has this program had a positive effect on the environment but it also generates between \$200,000 and \$300,000 in savings annually.

### **Sustainable Forest Management**

Although there are no internationally recognized standards for sustainable forest management, industry and governments worldwide have undertaken various initiatives to promote sustainable forest management. According to the Canadian Council of Forest Ministers, the goal of sustainable forest management is:

“to maintain and enhance the long-term health of our forest ecosystems for the benefit of all living things, both nationally and globally, while providing environmental, economic, social and cultural opportunities for the benefit of present and future generations.”

In 1992, at the UNCED in Rio de Janeiro, Canada committed to implementing a set of Forestry Principles at a national level. A National Forest Strategy was then developed to define a vision and set goals for Canadian forests. The result was the Canada Forest Accord which was signed by a wide range of organizations in the Canadian forest sector. This accord led to the development of 10 large-scale model forests across Canada.

By 1993, Canadian industry realized the need to develop Sustainable Forest Management (SFM) standards certification. A group of 23 organizations representing virtually all of the industry formed the Canadian Sustainable Forestry Certification

Coalition. This was the first time in the history of the Canadian forest industry that a single issue had led to such a unified effort.

In 1994, the Coalition asked the CSA to develop SFM standards for Canada which are compatible and consistent with the ISO 14001 EMS standard. In September of 1996, the Standards Council of Canada approved the SFM system standards as National Standards of Canada. This made Canada the first country in the world to have national SFM system standards that are compatible and consistent with ISO 14001 but also require public participation and audits that verify performance. The two documents are “CAN/CSA-Z808-96, A Sustainable Forest Management System: Guidance Document” and “CAN/CSA-Z809-96, A Sustainable Forest Management System: Specifications Document”.

#### **IV. The Move Towards Product Environmental Management**

In order for Canada to move towards sustainable consumption and production, changes must occur in the way in which government, industry and the consumer approach and view the consumption of products. The following are some of the barriers and opportunities that exist in moving from our current approach to product management to one that takes into account the environmental impacts of the product throughout its life-cycle.

##### **A. Barriers and Obstacles in Canada**

###### **How do you get consumers involved in product stewardship?**

Product stewardship is not just tied to sustainable production, but is also linked to the consumption side. In order for product policy to be effective, it must not only change the way manufacturers approach their products, but also change consumer behaviour. The following are some of the key issues surrounding the role of consumers in product stewardship.

- **Public perception of environmental labels:** In order for consumers to make an informed purchasing decision, they must be provided with information about the environmental impacts of the products they are considering. This information may come from labelling programs such as the Environmental Choice program or from the producers themselves. One problem however is with the advertising industry which sometimes tries to “greenwash” products confusing the consumer or reducing the impact of environmental advertising.
- **Willingness to pay:** Waste management programs, such as “pay-to-throw” programs encourage consumers to take part in product stewardship by charging

them to dispose of their waste. The issue here is how much are consumers willing to pay and what is the optimal fee to change consumer behaviour. Too low a fee may not discourage consumers from purchasing unnecessary packaging or encourage them to recycle and reuse. Too high a fee may cause consumers to find alternative ways of disposing of their waste, such as dumping it illegally.

- **Consumer participation in source separation:** In order to get consumers involved in source separation programs, they must be sufficiently motivated and be comfortable with the collection system. This has been shown by a Swedish study that correlated the ease of use and increased collection amount. Some municipalities in Sweden have introduced lower fees for less waste in order to encourage citizens to source separate their waste. Canadian municipalities that have introduced user-pay systems for waste disposal have also noted an increase in source separation of waste.

## **B. Opportunities**

Product environmental management can provide companies with many opportunities to improve their overall efficiency, thus reducing their consumption of natural resources and the amount of waste produced. This is a key step in moving towards sustainable production.

Implementing an EMS or performing an LCA requires that companies examine each step of their production process and identify areas for improvement. This may include capturing waste to reuse the raw materials, changing a production process to reduce the amount of raw materials used or changing the design of a product to allow for reuse or easy disassembly. These changes may also lower material costs and reduce a company's waste management costs.

One significant opportunity that has emerged from the move towards product stewardship is the way manufacturers have changed how they view their business. Since companies are trying to take responsibility for their products over their entire life-cycle, many have changed the nature of their business in order to do this effectively.

### **The move from product to product services**

Initially, when the concept of EPR gained recognition, many companies and governments focused only on the end-of life portion of the life-cycle. Now, as companies and governments are starting to look at the entire life-cycle of a product, recognising the importance of reducing environmental impacts at every stage, a new approach is emerging. Some producers are maintaining ownership of the product, choosing to sell the service only. This "leasing" of products to consumers may help ensure that EPR can be maintained. This passage from the product to the service alters the relationship between the consumer and the product and therefore the nature of the

products themselves. This movement from consumption to utilization may help promote durable and long-lasting products.

### *Safety-Kleen*

Safety-Kleen is an example of a company that has transformed a product into a service. The company specializes in the recovery and recycling of waste fluids, including the collection and re-refining of used motor oil. Safety-Kleen reclaimed more than 210 million gallons of contaminated fluids in 1995 making them the world's largest recycler of automotive and industrial fluid wastes.

Safety-Kleen provides customers with a written disclosure of the techniques and facilities used to handle customers' waste output. Their closed-loop distribution system allows for total control of the process and provides their customers with liability protection.

The oil recovery division for example, collects used oil from service stations and industry throughout North America. They then re-refine the used oil and produce re-refined oils to be sold back to customers. These re-refined oils meet the highest regulatory and quality standards in the market. Through this closed-loop distribution system, Safety-Kleen is able to return 100% of all used oil collected back to the consumer.

## **V. Issues Raised**

### **A. *Voluntary Agreements Versus Mandatory Obligations***

#### **Voluntary agreements and product stewardship**

Voluntary standards are usually developed by consensus which encourages their use by companies. Since the development process includes industry, voluntary agreements may produce more practical tools than a regulatory process. As well, because they are not imposed by government, many industry groups and governments feel that voluntary agreements are more effective than legislation in promoting product stewardship and EPR. There are however, some key issues that have been raised as to the effectiveness of voluntary agreements.

#### *Lack of accountability*

Since voluntary programs do not have legal standards, they may lead to less accountability from industry because they are not enforceable. As well, voluntary programs often do not require that the public be given all the information they need to make an informed choice. Without mandatory reporting requirements, there is no control over what information is made available to the public.



### *Lack of public participation*

Over the past two decades in Canada, laws governing environmental protection have increasingly included mechanisms for public participation. Governments are now required to consult the public when undertaking major regulatory initiatives. Voluntary agreements and self-regulation remove the public from the process and do not allow for their input. The majority of voluntary agreements are negotiated behind closed doors, not allowing for input from environmental groups and other concerned stakeholders.

### *Dutch covenants*

Since the Dutch government instituted covenants as a means to manage environmental impacts, there has been much discussion as to their effectiveness. There have been many covenants that have not been met. For example, in 1991, the packaging industry agreed to a 10% reduction in packaging materials compared to 1986 levels by 1996. Over that period however, 27% more packaging material was used and only one third of all companies involved actually strove towards fulfilling the agreement.

The Dutch government views voluntary agreements as an effective way of reflecting the joint responsibility of the government and industry for environmental improvement. Consultation with industry provides the government with a thorough understanding of the opportunities and barriers to environmental improvement in industry and to adapt goals, legislation and support in a more realistic and effective manner. Since voluntary agreements are based on mutual consent, once an agreement is made, it should theoretically be implemented faster, be more flexible and possibly more cost-effective than traditional legislation. Industry is generally supportive of voluntary agreements because the most practical and cost-effective means of achieving the objectives can be used. As well, the cost burden can be spread among all the firms in the target sector.

In the new NEPP-2, the Dutch government states that covenants should be seen as transitional measures. They are temporary instruments that are used until other measures can be implemented or the situation changes.

#### **For discussion:**

- Are voluntary agreements effective in promoting product stewardship?
- Do voluntary agreements effectively reflect joint responsibility between government and industry?
- Should voluntary agreements just be used as a stepping stone to future legislation or are they an effective long-term solution?

### **Management system performance versus environmental performance**

As ISO 14000 gains in popularity and acceptance as a voluntary environmental standard, the issue of management system performance versus environmental

performance is emerging. Voluntary environmental management system standards are meant to assist companies that are committed to the responsible management of environmental issues. Commitment to this goal must exist within the company especially at the senior management level.

ISO 14000 is intended to be flexible so that it can be used in a variety of situations. This wide applicability is possible because the standards do not specify environmental performance targets. Instead, the standards set the goals of continual improvement and regulatory compliance. Therefore, ISO 14001, the EMS standard, is only a baseline that provides a company with a framework to manage environmental impacts. It does not ensure environmental performance but does provide a consistent baseline.

**For discussion:**

- Will companies use the ISO 14000 framework to improve environmental performance and move towards sustainability or will companies merely meet the minimum certification requirements?
- Will ISO 14000, and in particular ISO 14001, lead to confusion among the public i.e. does ISO 14000 certification provide the public with enough information to effectively evaluate a company's environmental performance?

**B. International Standards**

**Sector specific standards**

The ISO 14000 series is designed for any organization, regardless of the size or type. This allows the standards and guidelines to be applied and accepted across all sectors of the economy. The disadvantage however, is that some sectors may feel that the standards do not meet all of their specific needs or concerns and want sector specific-standards or guidance. The argument against sector-specific guidance is that the proliferation of standards and related documents will only dilute the influence of the core documents. ISO's technical committee on environmental management has decided that consideration of sector-specific ISO EMS standards should be deferred until there has been more experience with the ISO 14001 standard.

**For discussion:**

- Is the ISO 14000 series enough or is there a need for sector specific-standards?

**Differences between countries**

International standards, such as the ISO 14000 series, may create problems because of legal and cultural differences between countries. For example, the Environmental

Labelling Standard was intended to harmonize these differences and address other issues such as third party certification programs and manufacturer self-declaration. Exactly what information is to be contained in the ecolabels is an area still of significant debate. As a result, this standard has not progressed as far as others. The LCA standard specifies the use of the life-cycle tools in product evaluation to improve environmental performance. Some specific concerns to this standard include the cost of implementation, non-recognition by regulating agencies, application to under-developed countries, trade barriers and disclosure of audit information during certification.

**For discussion:**

- Will international standards ever be able to overcome differences between countries or will they be lowered to meet the needs of the countries with the poorest environmental performers or those with the least stringent environmental regulations?

**National versus international standards**

As we move towards a global economy, the need for international standards increases. There is however still a need for national standards although the role of these standards is changing. In the global economy, the marketplace is placing more emphasis on international standards so suppliers are having to meet these standards. Industry has realized the importance of standards, as have public and private authorities. There is also an increasing reliance on private sector voluntary standards, such as ISO 14000, to meet environmental needs.

International standards have also gained importance with respect to international trade. Local companies are not just competing with foreign companies abroad but are competing with them locally as well. The creation of the World Trade Organization (WTO) has reduced the ability of nations to use tariffs, regulations and non-regulatory technical barriers to trade to limit foreign competition.

Varying national standards are often a hindrance to companies trying to compete in the global marketplace. Manufacturers would like to develop a single version of a product that will meet standards everywhere. National standards are however necessary in certain situations. There may be a requirement that demands a standard that is useful for one nation but not for all. National governments may also have differing ideas about what needs to be standardized. As well, despite the WTO, national standards are often established as a trade barrier against foreign suppliers.

**For discussion:**

- Are there certain situations in Canada where international agreements may not be sufficient requiring the development of national standards?

### **C. Third Party Involvement in Product Environmental Management Versus Direct Involvement**

As seen in the Ontario Blue Box example, product stewardship may involve a third party. In this case, OMMRI, the association representing companies whose products are collected in the Blue Box, is no longer directly responsible for the later stages of its products. This responsibility has been shifted to a third party, namely the municipalities.

#### **For discussion:**

- Is it acceptable for a company to pay a third party to be responsible for the company's management of its products or packaging at their end-of-life?
- Will these companies or associations still be motivated to move towards full product stewardship and sustainability when they are not directly involved in the disposal of their products and packaging?

### **D. Trade Issues**

Under the various international trade agreements, such as the GATT and NAFTA, governments have the right to address their domestic environmental concerns, as well as international issues, such as global environmental problems. The challenge is however, to provide governments with sufficient flexibility to use the most effective and efficient means to achieve environmental objectives, while maintaining an open and non-discriminatory multilateral trading system and promoting sustainable development.

In the GATT, the principle of non-discrimination is embodied in two key concepts:

- most favoured nation treatment: prohibits discrimination among foreign countries in certain trade matters; and
- national treatment: prohibits discrimination between national and foreign products in certain trade matters.

Trade measures may however still be used by countries to restrict certain products. For environmental purposes, the most frequently used trade measures are in conjunction with national product requirements. These national requirements may include environmental labelling or certification to specific standards, including voluntary standards. It is therefore possible to make foreign companies selling products in Canada take responsibility for their products as long as the same rules apply to Canadian companies.

## References

### **Books and Reports**

Business and the Environment, Trends in Corporate Environmental Management, Volume III, Cutter Information Corporation, 1996.

Canadian Council of Ministers of the Environment, Canadian Code of Preferred Packaging Practices, 1992.

Canadian Council of Ministers of the Environment, Environmental Profiles: Guidelines to help industry meet the Goals of the National Packaging Protocol, August 1994.

Canadian Council of Ministers of the Environment, National Packaging Protocol 1992 Milestone Report, June 1994.

Gotoh, Sukehiro, National Institute for Environmental Studies, Japan, in Green Goods, Conference Preparation Document, The Second International Conference on Product Oriented Environmental Policy, September, 1994.

International Institute for Sustainable Development, Global Green Standards: ISO 14000 and Sustainable Development, 1996

Organisation for Economic Co-operation and Development, Trade Principles and Concepts, Paris 1995

Responsible Care 1994: A Total Commitment, An Initiative of the Members of the Canadian Chemical Producers' Association.

Standards Council of Canada, ISO 14000: Can one size fit all? ISO's committee on environmental management faces pressure to develop sector-specific EMS standards, Consensus Volume 23 Number 7, November 1996.

The Swedish Ministry of Natural Resources, Green Goods, Conference Preparation Document, The Second International Conference on Product Oriented Environmental Policy, September 1994.

### **Internet sites**

Berg, E.O., Source Separation. Theory, Methodology and Implementation, <http://www.lib.chalmers/cth/Diss/doc/9293/PerBerg.html>.

British Columbia Ministry of Environment, Lands and Parks, <http://www.env.gov.bc.ca/epd/epdpa/mwr/lar.html>.

Canadian Environmental Law Association, In Defence of Environmental Regulation, <http://www.web.net/cela/indef.html>.

Canadian Soft Drink Association, <http://www.softdrink.ca>.

CMA: Responsible Care, <http://www.cmahq.com/rescare.html>.

Oksala, Stephen P., Why do national standards continue? National Versus International Standards: Products and Processes, GTW Associates,  
<http://www.gtwassociates.com/answers/wsdrev1.html>.

Pollution Prevention Assistance Division, Get Ready... ISO 14000 is Just Around the Corner, <http://www.dnr.state.ga.us/P2AD/iso.html>.

Responsible Care, <http://www.ccpa.ca/respcare.html>.

Safety-Kleen Company Information, <http://www.safety-kleen.com/compinfo.html>.

Sustainable Consumption and Production Linkages Virtual Policy Dialog,  
<http://www.iisd.ca/linkages/consume/norpro.html>.

The Dutch National Environmental Policy Plans (NEPP) and Industry Covenants,  
<http://www.epe.be/epe/sourcebook/2.2.html>.

Understanding the Need for Sustainable Forest Management Worldwide,  
<http://www.sfms.com>.

Voluntary Agreements: The Dutch Example,  
<http://www.rri.org/newswin94/voluntary.html>.