

*Oregon Department of Environmental Quality  
Waste Prevention Strategy – Background Paper #8*

# **Product Stewardship and Extended Producer Responsibility**

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**As a Policy Approach for Waste Prevention**

Prepared by



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# Product Stewardship and Extended Producer Responsibility As a Policy Approach for Waste Prevention

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## **Introduction and Overview**

The purpose of this background paper is to summarize the key aspects of product stewardship (PS) and extended producer responsibility (EPR) programs and policies. Even though PS and EPR have become established principles of environmental policy in many countries, to date, they have seen limited use in the United States. In the scheme of waste management policies PS and EPR are relatively new, first conceived in Sweden in the early 1990's. Many PS and EPR policies and programs are still in the early years of implementation and there is little definitive research data and information available on the measurable impacts that PS and EPR policies have on waste prevention and waste prevention related activities.

Overall, based on documentation reviewed, PS and EPR policies are more relevant to and have a stronger impact on reduced resource and environmental impacts and sustainability through "upstream" design and manufacturing actions and limited impact on "downstream" waste prevention, primarily through reuse and dematerialization. Most of the downstream policy impacts center on resource recovery and recycling.

## **What is Waste Prevention?**

In the context of the Oregon Department of Environmental Quality (DEQ) Waste Prevention Strategy, 2006 – 2016, waste prevention means:

- Reducing consumption (and wasting) of goods outright without substitution.
- Extending the life of products already in use (and by extension, delaying purchase of replacement items).
- Shifting purchases from disposable or single use products to products that are more durable, repairable, or reusable.
- Purchasing used products in lieu of new products.
- Shifting purchases from material intensive products to products that are less material intensive (dematerialization).
- Shifting consumption from goods to services so that needs and wants are satisfied in a different manner.

## **What are Product Stewardship and Extended Producer Responsibility?**

PS and EPR are similar policy approaches to address the environmental and public health impacts of products throughout the entire life cycle of the product. PS and EPR policies shift part or all of the responsibility for the end-of-life management of a product from traditional waste management entities, including rate payers, local governments and waste management companies, to the product manufacturers. The primary aim of these policy approaches is to encourage the manufacturers of products to reduce environmental and health impacts across the entire life cycle of the product. The main distinction between the two terms is that PS includes the concept of shared responsibility systems and polices that include roles for government,

environmental groups, retailers, non profit organizations as well as the product producers/manufacturers. EPR is traditionally refers to pure producer/manufacture responsibility for their products at end of life. Commonly, and in the case of this paper, these terms are often used interchangeably and policies and programs under both concepts have common elements.

There are a variety of different policy tools that are employed under the general concept of PS and EPR. Several of them together usually work in some combination to establish the framework for a PS or EPR program aimed at a particular product or group of products. They include:

- Producer take-back programs, collective and individual (example RBRC/batteries);
- Legislative mandates on the producer to restrict or identify materials in products (example RoHS [Restriction of Hazardous Substances], product labeling);
- Disposal bans (example CRTs);
- System financing mechanisms that incent the producer (example ARF, producer pays, taxes);
- Recovery rate goals for the producer; and
- Deposit-refund systems (example bottle bill).

PS and EPR policies and programs tend to be used for products that have specific types of characteristics and not necessarily for all products. Examples include:

- Products with toxic constituents that may become a problem at end of life. Examples include: batteries, electronics, used oil, pharmaceuticals, paint, mercury containing products, pesticides, radioactive materials.
- Products that because of their size are not easily and conveniently thrown in the garbage. Examples include: carpet and other building materials, TVs, Computers, appliances, tires, propane tanks/gas canisters.
- Products with multiple material types that make them difficult to recover in the traditional recycling systems. Examples include: packaging, electronics, vehicles.

### **Relationship between Product Stewardship and Waste Prevention and Possible Applications**

PS and EPR policy approaches aim to impact the environmental effects of a product throughout its life cycle. Consequently, information that links PS and EPR policies directly to waste prevention or reduced waste generation is extremely limited or only vaguely make that connection. PS and EPR focus on and drive environmental and waste management system results and not necessarily reduced consumption of products or reduced generation of waste. This review concludes, based on current research and reports, PS and EPR policy approaches are best applied in the context of the broader goals of sustainability and reduced life cycle environmental and toxicity impacts rather than focused specifically on waste prevention and reduced waste generation. Waste prevention and reduced waste generation in some cases will be a result, among several, of a PS or EPR policy application but should not be the driving factor for using such policy applications. That conclusion aside, the review identifies the following waste prevention methods that can be associated with various PS and EPR policies and programs:

1. *Product Design Change* – dematerialization, product durability and upgradeability. Policy examples that encourage this type of waste prevention include light-weighting of products or packaging driven by system funding mechanisms that are established through manufacturer licensing or registration fees based on weight of the product or packaging.
2. *Reuse* – Legislative goals by product type, primarily seen with packaging, that mandate both reuse and recycling goals. For example, Austria mandates goals for refillable beverage containers. In the EU reuse and recycling goals are mandated for automobile manufacturers. However, it appears that the goals are combined so it is difficult to distinguish which portion is reuse and which is recycling. The situation is similar for electrical and electronic equipment (EEE) in the EU.
3. *Upstream reduced waste generation in the manufacturing process.*

### **Summary of Policy Tools and Factors Affecting Results**

PS and EPR approaches usually involve a combination of policy tools rather than one single tool, such as product take-back. Many of these policies are familiar and have been used over the years as solid waste management policies to achieve various purposes. The experience and literature now evaluates them in a PS and EPR context, which includes impact on product design and reuse as well as other over impacts throughout the life cycle of the product. Some of the common policy tools used in PS and EPR are described below.

1. *Product Take-Back* – producers are assigned the responsibility of taking back their products at the end of their useful life.
2. *Advance Disposal/recovery Fees* – A tax or fee is charged on the product when it is sold. The fee is set to reflect end-of-life waste management costs of the product. The fee can be visible or invisible to the consumer when they pay it. The producer or retailer is responsible for collecting the fee but may have no other responsibility for the product's end-of-life management beyond that point.
3. *End-of-life Waste Management Fees* – Consumers are charged a fee by the handler at the point of disposal or recycling that covers the cost of managing the product they are throwing away.
4. *Deposit/Refund* – A deposit is paid by the consumer at the time the product is purchased and is refunded when the product or its packaging (depending on which material is targeted) is returned by the consumer for reuse, recycling or disposal. Producers, or someone else in the products life cycle chain, may be responsible for collecting the deposit and for end-of-life collection and refund.
5. *Tax on Virgin Materials or Subsidy/Tax Credit for use of Recycled material* – A manufacturer is required to pay a tax on certain virgin materials used in the manufacture of their product or conversely the manufacturer can claim a tax credit for the use of certain recycled materials in the manufacture of their product.
6. *Reuse Recycling, Reduction Goals or Rates* – Laws are established that mandate goals for specific products or materials for producers.
7. *Landfill/Disposal Ban* – Specific product, product component is not allowed to be disposed.

The chart below summarizes the application of the various policy tools.

	<b>Product or Waste Stream</b>	<b>Stage in Product Chain</b>	<b>Direct Response to policy</b>
<b>Take-back</b>	Product and waste streams	Disposal with strong signals to resource extraction and design stages	Reuse, recycling, some source reduction and design
<b>ARF/ADF</b>	Product	Recovery/disposal	Recycling and some reuse
<b>EOL Management Fees</b>	Waste Stream	Disposal	Possible illegal disposal, recycling
<b>Deposit/Refund</b>	Product	Recycling and disposal	Recycling, reuse, and some design
<b>Materials Tax</b>	Product (specific materials inputs)	Resource extraction and design	Reduced use/inputs of targeted materials and design
<b>Disposal Ban</b>	Product and Waste Stream	Disposal and recycling	Recycling and some design
<b>Product Toxic Reduction Requirements</b>	Product	Design and disposal	Design, reduced use of target materials
<b>Product Recycled Content Requirements</b>	Product	Design	Design, reduced raw/virgin material input

In addition to the policy tools themselves there other factors that can have an impact on how the policies are implemented and how successful they can be. These factors are described below.

- Cooperation of consumers is important and effected by financial incentives, convenience, awareness of programs and impacts, size of product.
- Amount of hazardous substances in the product that disposal problems and increased end-of-life management costs.
- Value of materials in the products.
- Potential for product design changes that can reduce material use and the cost of recycling at end-of-life.
- Complexity of the product composition making it more difficult to costs of design changes and recovery of the product.
- Shorter product life-span reduces issues related to orphan and historic product in the system.
- Mandatory programs are proving to be more effective than voluntary programs.
- Manufacturer responsibility can be physical and/or financial, depending on how system is set up and what the product is.
- Individual manufacturer responsibility is more effective than collective responsibility in generating design changes in product.
- Goals or target rates for collection help establish collection infrastructure. Recycling and reuse goals and rates help drive technology and design changes.

- Number of producers and distributors in the market place determine if collective or individual system responsibility is used or is effective. Large number indicates collective third party organizations are useful. A small number lends itself more to individual responsibility.

### **Summary**

There appears to be no conclusive or overwhelming evidence so far indicating that PS and EPR policy tools have a major and direct impact on pure waste prevention as we have defined it for the purposes of the DEQ Waste Prevention Strategy. However, it is clear that PS and EPR policies can directly and positively influence reduced environmental impacts and overall sustainability related to the entire life cycle of a product. Given this information, it appears that PS and EPR policies can be considered as part of the Strategy but will likely be dependent on the identification of specific products that may need addressing and will more closely relate to life cycle impacts of the product or material rather than to pure waste prevention or reduced waste generation.

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