The Vinyl Institute
A Division of The Society of The Plastics Industry, Inc.

Robert H. Burnett
Executive Director

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TO; VIGOR

RE: German Green Dot System

The Council on Packaging in the Environment (COPE), has developed the attached white paper updating the status on the DSD program.

In reality, the situation may be worse than summarized in this overview. We can anticipate that environmental groups will seek to impose a similar system here in the United States.

Bob Burnett

RHB/pmb
cc: VI Executive Board
J. Svalander, ECVM
R. Buhl, EVC
M. Matsui, JPA

CTL006660

Wayne Interchange Plaza II • 155 Route 46 West • Wayne, NJ 07470 • (201) 890-9299 • Fax # (201) 890-7029

COPE WHITE PAPER

POLICY APPROACHES TO MANAGING PACKAGING DISCARDS: THE GERMAN DUAL (GREEN DOT) SYSTEM

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The Council on Packaging in the Environment
1001 Connecticut Ave., N.W.
Suite 401
Washington, DC 20036

PART I: INTRODUCTION

Packaging discards from residential households in Germany have historically been managed as a part of the municipal waste stream, but new governmental policies are being implemented that specifically target the packaging category for special waste management consideration. The intent of the policy is to limit the flow of packaging discards to disposal facilities, and to reduce the use of natural raw materials to manufacture packaging, through mandatory industry recycling incentives. Developments in Germany should be followed closely to determine whether their approach has any applicability to packaging waste management policy and practices in the United States.

THE PACKAGING ISSUE

Packaging discards are clearly the most visible part of the consumer or residential municipal solid waste stream. Hardly a product today is sold without some form of packaging to protect the merchandise during delivery from the original manufacturer through the distribution chain to the final consumer. When the package has fulfilled its intended primary functions, it becomes a discarded material which can have some residual value for reuse or recycling or, if valueless, must be disposed of in a manner which protects public health and the environment at an acceptable cost.. In the United States, Germany, and many developed countries around the world, packaging of all types in the consumer/residential, institutional, and commercial sectors accounts for about 25 to 30 percent of the municipal solid waste stream (excluding building and construction debris, automobile hulks, and certain other items). Historically, packaging that hasn't been collected for recycling, or returned to be refilled, has been handled by either a public or private waste management organization. The waste management infrastructure varies by country, and within the country, particularly in consideration of cultural factors and demographics. Generally, packaging that isn't recycled, along with all the other durable and non-durable goods, food and yard waste, is landfilled, incinerated (often with energy recovery), and/or composted.

Recently, approaches have been initiated in several countries to establish a different philosophy for managing packaging discards. While the environmental, economic, and social impacts of these initiatives are largely unknown at this point, the premise is that if the business entity responsible for providing the package to the consumer is required to pay for managing the package discard, greater material efficiencies will be realized by virtue of increased recycling, reuse, and reduction. Since these approaches are in the early stages of implementation or recommendation, it is suggested that packagers and policy makers in the United States carefully monitor them to determine their overall effectiveness regarding waste management policy and practices, as well as environmental and economic impacts.

THE "TÖPFER ORDINANCE"

A German packaging law was passed in June 1991, which dramatically changed the manner in which packaging discards are managed. Often referred to as the "Töpfer Ordinance" (for Klaus Töpfer, Minister for the Environment, who was a key architect), the law is based on two premises: first, discarding packaging into the traditional municipal waste stream is, in effect, wasting resources, and, second, the entity which places the package in commerce should be responsible for taking back the package.

According to the strict letter of the law, a retail establishment is required to accept back from its customers any package sold. This obligation extends from the retailer as the first in line to the distributor, manufacturer, importer, or filler all the way back to the package supplier and raw material producer. In order to cope with the impracticalities of thousands of retailers and suppliers throughout the packaging chain taking back only those specific packages they placed in commerce, and then managing the packaging waste according to strict reuse and recycling provisions in the law, businesses throughout the entire packaging chain have been allowed by the law to create a system to separately manage sales or primary packaging discards.

PART II: SCOPE OF THE LAW

Under the law, all packaging is covered and is categorized as either sales, secondary, or transport packaging. Whether the package is a beverage container, a toothpaste tube, a grocery sack, packing-fill material, or a wood pallet, manufacturers along with distributors and retailers are obligated to ensure that packaging discards are recovered and recycled.

COLLECTION REQUIREMENTS

Specific requirements have been established for three separate categories of packaging:

Transport packaging

All is to be handled outside the public waste disposal system and is to be reused or recycled (examples are barrels, crates, corrugated boxes, shrink and stretch wrap).

Secondary packaging

The retailer or distributor is obligated to accept any package from a customer that can be removed at the point of sale for reuse or recycling (examples include blister-packs, cartons, hangers, hooks, wraps).

Sales packaging

The retailer or distributor is obligated to take back any sales or consumer package placed in commerce (sales packaging is broadly defined as "closed or open containers and wrappers, which the end-user uses to transport goods or to keep them until the point of consumption"; examples range from toothpaste tubes to disposable dinnerware to fertilizer sacks). As an alternative to individual retailer take back programs, the law provides an exemption by allowing manufacturers and distributors to privately finance and administer a plan to use the services of a third-party to meet the collection, sorting, and recycling quotas that have been established for each material category. These quotas refer only to sales or consumer packaging (Table 1).

Table 1.
7/1/93 QUOTAS FOR SALES PACKAGING

MATERIAL	COLLECTION QUOTA*	SORTING QUOTA**	RECYCLING TARGETS***
Glass	80%	90%	72%
Paper/Cardboard	80%	80%	64%
Tinplate	80%	90%	72%
Aluminum	80%	90%	72%
Laminates/Comp	80%	80%	64%
Plastics	80%	80%	64%

*Sales (consumer) packaging only
**Amount sorted of amount collected
***Amount recycled of amount collected

PART III: INFRASTRUCTURE TO IMPLEMENT THE LAW

The DSD (Duales System Deutschland) was established by a broad spectrum of manufacturers and distributors as a not-for-profit company whose mission is to see to it that sales packaging waste from the public is collected, sorted, and recycled to meet the quotas of the law. The "Green Dot" (symbol of DSD) is placed on any package eligible to participate and for which a fee has been paid by the filler. Any consumer package with the Green Dot symbol is placed in a separate yellow household trash container for pickup, or taken to a collective DSD neighborhood bin. The DSD has contracted with private haulers to collect the Green Dot packaging discards, and with businesses who sort the material and prepare it for recycling.

FINANCING THE SYSTEM

Under the DSD, each package is assessed a fee paid by the participating company, and the monies raised are used to administer the DSD and pay for collection, sorting, and related recycling costs. Originally, the fees were determined by the volume of the package or container regardless of material type (for example, a two-liter package made of glass, plastic, or tinplate would each be charged 2 pfennigs). However, the fee structure will be changed (effective 10/1/93) and will be based on the weight and type of packaging material (Table 2).

The Green Dot fee is incorporated in the price of the product/package combination and is not listed on the package as a separate cost item. In theory, retailers absorb the costs and in turn pass them on to consumers. Since retailers may spread the costs through in-store pricing mechanisms, the consumer has no way of determining the dollar amount of the fee. The high fee for plastic packaging, 74 cents per pound, reflects the complexity of collecting/sorting, and processing the many different types of plastics and packages.

Table 2.

PACKAGING MATERIAL	10/1/93 GREEN DOT FEE, US$/lb*	
Glass	0.045	**(0.056)
Paper/cardboard	0.095	
Tinplate	0.16	
Aluminum	0.285	
Laminates	0.47	
Plastic	0.74	**(0.85)

*Exchange rate at US$1=DM$1.6
**DSD may announce a fee increase for glass to $0.056 and plastics will increase to $0.85 to cover unexpected additional costs. See "Status" section.

PART IV: DSD OPERATIONAL COSTS

DSD has estimated total operational costs for 1994 at US$2.6 billion to collect and sort 5.6 million tons (2000 pounds per ton) of packaging discards. The recovery or collection rate in order to calculate these projections is assumed to be 60% (meaning that there are actually 9.5 million tons of packaging entering the consumer market, but the DSD collection system expects to capture in 1994 60% of what's theoretically available). The DSD further breaks down their operational costs by material category (Table 3).

The overall cost of approximately US$0.23/lb(US$460 per ton) of packaging is substantially higher than the cost of collecting municipal waste through the existing public disposal system (landfill or incineration). Costs vary throughtout the country but are generally less than US$200 per ton.

Table 3.

PACKAGING MATERIAL	OPERATIONAL COSTS, US$/LB
Glass	0.051
Paper/cardboard	0.115
Tinplate	0.27
Aluminum	0.49
Laminates	0.77
Plastic	1.16
AVERAGE	US$0.23/LB

PART V: STATUS OF THE DSD/GREEN DOT SYSTEM

The DSD/Green Dot system began operations in 1991 (although the law covering retail sales packaging only became effective at the beginning of 1993), and there are now 600 company members. Country coverage has steadily increased to the point that in 1993 essentially all municipalities have access to the yellow bin collection system. On the order of one hundred material sorting facilities have been set-up.

For some materials, particularly paper and plastics, collected quantities have overwhelmed recycling and processing capabilities within Germany and are being exported. This oversupply situation is causing serious erosion of pricing and is threatening the viability of recycling programs in countries around the world. In early May, Britain, backed by France, Spain, The Netherlands, Italy, Ireland, and Luxembourg, submitted a formal complaint calling for the European Commission to take action.

Furthermore, the DSD is suffering severe financial strains because of higher than anticipated operating costs, and lower revenues from sales of collected materials and Green Dot fees. Even before the new fee structure goes into effect (10/1/93), the DSD may announce that the fee for glass be increased 25% from US$0.045 to US$0.056 per pound due to the glass industries economic difficulties.

The fee for plastics will be increased 15% from US$0.74 to US$0.85 per pound, to help finance a new plastics recycling company (DEKUR Kunstoff Recycling GmbH).

The decision to reorganize plastics recycling was in response to the export situation, and a lack of facilities and markets within the German borders to recycle all the plastics collected. During 1993 and 1994, the DSD has agreed with the Environment Minister Töpfer to "thermally recycle" what cannot be mechanically or chemically recycled using the existing municipal waste-to-energy infrastructure. In some cases, plastics may be landfilled.

PART VI: OTHER FACTORS TO CONSIDER

The law also stipulates that a minimum of 72% of all beverage consumption must be sold in refillable, returnable containers, which has been the historical practice for beer and carbonated beverages. If the rate falls below 72%, mandatory deposits for all non-refillable containers for liquid foods will be applied (about 31 cents for container volumes below 1.50 liters and 62 cents for larger containers).

One of the key guiding principles for the law, according to new German policy, is that the full cost of "waste management" should be included in a product's selling price. The Green Dot fee system, in essence, institutionalizes this policy, but with a critical caveat: the law mandates that recycling is "waste management", and recycling is the most desirable means to manage all packaging discards, regardless of cost or practicality.

PUBLIC/CONSUMER IMPACT

According to DSD projections, the targeted recovery during 1994 of packaging discards will total about 140 pounds per year per capita(population of Germany is approximately 80 million people) as per Table 4.

Table 4.

PACKAGING MATERIAL	POUNDS/ PERSON/YEAR
Glass	70.00
Paper/Cardboard	40.00
Tinplate	9.70
Aluminum	1.60
Laminates/Composites	5.30
Plastics	14.70
TOTAL	141.30 pounds per person.

The cost per capita per year works out to US$32.80, a significant sum to collect 140 pounds of packaging. It is particularly interesting to note that glass containers account for half of the recovery by weight, paper and cardboard almost a third, and the other four material categories only about one-fifth, just 30 pounds per person per year.

The consumer generally brings glass and paper/cardboard to central collection points, and the "light-fraction" packaging is picked up in the yellow bin. This means for a family of four, a yellow bin collection service with just one pick-up a month averages about 8 to 10 pounds.
When the new material-specific fees go into effect (10/1/93), the consumer could experience significant price increases. A 1-liter fabric softener plastic bottle, for example, will see an increase of over five fold as the fee goes from 2.50 to 16.23 pfennigs, and a 500-gram margarine tub will more than double with the new fee at 4.47 versus 2.00 pfennigs (1.6 pfennigs equals 1 US penny).

EC DEVELOPMENTS

The German packaging ordinance is the most visible legislation in Europe, but a number of other countries have initiated their own approaches to deal with packaging discards. In order to understand the reasons for the overwhelming attention on packaging from a waste management standpoint, it is helpful to examine the issue from an historical perspective.

PACKAGING IS A TRADE ISSUE

Originally, beginning in the early 1980's, the focus of packaging regulations was primarily on beverage containers and the growing use of "one-way" cans and bottles replacing the established refillable glass bottle. The ease with which these "throwaway" containers could cross borders, and disrupt traditional markets within a given country, caused competitive problems for some local businesses and industries (often the local brewery). This became a trade issue demanding governmental attention. With individual countries looking to restrict trade to protect local or national industry interests, the EC (European Community) got involved, for their basic role is to harmonize national requirements and eliminate trade barriers.

PACKAGING BECOMES AN ENVIRONMENTAL ISSUE

Indeed, the legal basis for the first EC Directive regarding packaging was based on a trade measure. This 1985 Directive termed "Containers of Liquids for Human Consumption", however, was justified not on trade restrictions but on the basis that "the environmental impact of used containers should be diminished and a reduction in the consumption of raw materials and energy should be encouraged". From a "trade" standpoint, this directive turned out to be unenforce-able, because it was discriminatory to beverage containers, so it was decided to expand the focus to all packaging. Moreover, packaging "waste" from an environmental perspective became the issue rather than "trade", and all recent proposed directives dealing with packaging and packaging waste have come from the EC Council's Commission interest in waste management policy and environmental matters.

PROPOSED EC DIRECTIVE ON PACKAGING

The result is a proposed EC "Directive on Packaging and Packaging Waste" that is similar in scope to the packaging ordinance in Germany, with heavy emphasis on removal of packaging waste from the municipal waste stream. The proposed Directive is being hotly debated by the EC Parliament's environment committee with over 360 amendments already proposed. The core numerical target is for all EC country members, within 10 years, to remove from the waste stream 90% of the total packaging output used in the country. How this is to be done, and the role of the chain of packaging suppliers (as in the German approach), as well as many other issues and details have yet to be resolved. It is unclear whether the EC Parliament will be able to come to an agreement on the proposed Directive, even as modified or amended, during 1993.

THE TRADE ISSUE RETURNS

With the German ordinance primarily an initiative motivated by environmental interests, as well as the EC proposed directive, trade issues are returning to the forefront. Exported materials from the German Green Dot collection system at low to negative prices are causing major problems for recycling programs in other EC countries as well as around the world. A formal complaint has been made to the EC Commission, and it is becoming apparent that ambitious packaging collection programs are providing material streams with little to no value or utility.

ENVIRONMENTAL IMPACTS

The German packaging ordinance and the proposed EC Directive on Packaging seeks to greatly reduce the flow of packaging discards to the public disposal system (waste-to-energy incinerators and landfills) on the assumption that beneficial environmental impacts will result. Whether the dual collection system approach mandated in Germany actually accomplishes this objective is unknown. The separate collection, sorting, and processing of packaging discards for recycling do have environmental impacts which should be taken into consideration. A Life-Cycle Assessment of packaging analyzing overall environmental impacts is warranted.

ECONOMIC IMPACTS

The dual collection system has significantly increased the cost of managing packaging discards in Germany. As the

Green Dot fees work their way through the pricing system to absorb these costs, manufacturers, retailers, and consumers are being affected. The OECD (Organization for Economic Co-operation and Development) Environment Policy Committee in the Spring of 1993 in evaluating Germany's waste policy recommended "...an examination of current economic aspects and overall costs may be needed, especially with regards to costs incurred by high recovery rates. In addition, discussion with industry would enable the Government and the Länder (states) to assess the effect on firm's competiveness of various high-cost measures included in the waste management programme."

FUTURE DEVELOPMENTS IN GERMANY

The German packaging law has revolutionized the manner in which packaging discards are to be managed, and redefined the industry role and responsibility. The DSD/GREEN DOT system is rapidly evolving as industry gains experience with the practical side of collecting, sorting, and attempting to recycle a majority of all packaging discards.

Significant structural changes are already being suggested, and it is expected that a number of additional changes will be implemented. Developments are likely to be rapid, could lead in unexpected directions, and should be closely monitored.

If you have any questions regarding information contained in this paper please contact COPE.

The Council on Packaging in the Environment
1001 Connecticut Avenue, N.W.
Suite 401
Washington, D.C. 20036-5504