

REDUCE THE INCENTIVE TO WASTE

John H. Skinner*

There are two basic goals of the national solid waste management program. The first and primary goal is to ensure protection of the environment from improper waste disposal, that is, to protect the air, surface water, ground water and the land from negative environmental effects that occur when waste is disposed in an improper manner. The second goal is to encourage conservation of resources by reducing unnecessary waste generation and encouraging recycling and recovery of wastes. Environmental protection and resource conservation are two complementary activities. Restricting and regulating disposal creates a motivating force for waste reduction and recovery. Creating opportunities for recovery and promoting resource conservation takes the burden of disposal off of the environment.

In the past decade there has been considerable activity oriented towards improving the economic efficiency, and lessening the environmental and public health impacts of solid waste collection and disposal. More recently systems have been developed and installed to recover materials and energy from discarded solid wastes. However, waste generation rates continue to increase placing a greater and greater loading on the Nation's solid

*Dr. Skinner, who is the Deputy Director, Resource Recovery Division, Office of Solid Waste Management Programs, U.S. Environmental Protection Agency, presented this paper September 8, 1975, at the American Institute of Chemical Engineers, 80th National Meeting, Boston, Massachusetts, Paper No. 7d.

waste management systems with resulting economic and environmental costs. Recognizing this situation, Congress amended the Solid Waste Disposal Act in 1970 to include among other things an investigation of "changes in current product characteristics and production and packaging practices which would reduce the amount of waste."¹ This concept has become known as waste reduction.

Waste reduction (sometimes referred to as source reduction) is defined as the reduction in the generation of solid waste brought about through the redesign of products or through the reduction in the consumption of products or materials. Waste prevention is probably a more descriptive term for this subject. Waste reduction differs from recycling and resource recovery which are activities oriented towards extraction and utilization of materials from solid waste and the conversion of waste into a usable product. Waste reduction simply means producing less waste in the first place.

Some examples may be helpful. Waste reduction includes:

- a. the use of a product with a longer lifetime, such as a 40,000-mile automobile tire rather than a 25,000-mile tire,
- b. the use of reusable products (beverage containers, plates and cups, utensils, napkins, linens, diapers, ...etc.) rather than so-called "disposable" products designed for single use,
- c. reducing the quantity of material used in a product (e.g. smaller and lighter automobiles).

Each of these activities results in a reduction in the quantity of waste generated when the product is discarded.

The need for waste reduction is intuitively obvious. Anyone who has observed a waste disposal operation in a major urban area is awed by the amount of waste generated. Simple inspection of the contents of a household trash can give a sense of too much waste, too many products, wrong product designs, and a general waste and misuse of resources. However, waste reduction is a highly controversial subject since it calls for a shift away from the Nation's past orientation towards random growth and ever increasing consumption patterns. Furthermore, in the extreme, waste reduction implies government intervention into production and consumption choices.

Waste reduction is embraced by the environmental community and many public interest and consumer groups as the vanguard of environmental protection, representing one of the basic changes in lifestyle that is necessary in order to conserve important resource supplies and avoid long-term irreparable degradation of the environment. On the other hand it is fiercely opposed by many industrial and business interests as an oppressive, unnecessary and restrictive intrusion into the free-enterprise market system. Ironically State and local waste management agencies which have no control over the nature or size of the waste stream, yet must ultimately bear the burden of increasing waste generation rates, are concerned that the waste reduction controversy draws public attention away from pressing immediate needs such as regulation of land disposal or construction of resource recovery facilities. It is against this background of controversy and debate that the need for incentives to reduce waste generation will be discussed.

The first question that will be explored is whether there really is a need for waste reduction or whether the solution to our waste disposal problems lies solely in the construction of large scale plants to recover materials and convert waste to energy. This is a concept that is receiving considerable attention today. Second, the basic rationale for governmental programs in waste reduction will be explained. Finally, some of the different legislative measures that have been suggested to reduce waste generation will be reviewed.

Turning to the first issue, it helps to place this subject in some quantitative perspective.

In 1973, 144 million tons of residential and commercial solid wastes were discarded in the United States.² Approximately 9 million tons of these wastes were recycled (mainly paper and paperboard) leaving 135 million tons to be disposed of in dumps, sanitary landfills and incinerators.

Our projections indicate that by 1985 waste discards will grow to over 200 million tons annually. However, resource recovery is also expected to grow. Approximately 20 million tons of waste are projected to be recovered in municipal resource recovery facilities designed primarily to convert the combustible waste fraction into energy. Paper and paperboard recycling is also projected to increase to 15 million tons resulting in a total recovery level of 35 million tons. This would leave approximately 165 million tons to be disposed of.

In other words, solid waste disposal requirements are projected to increase from 135 million tons in 1973 to 165 million tons in 1985 or an increase of 22 percent.

Now let's consider a more rapid rate of resource recovery plant installation such as a doubling the projected level of such plants by 1985. This would mean the construction of 25 to 50 additional plants by that time. Such a rate of resource recovery plant implementation would still leave over 70 percent of the waste stream unrecovered by 1985--or 145 million tons destined for disposal. In other words even with a very optimistic rate of resource recovery plant construction, waste disposal requirements would still increase between 1973 and 1985. Resource recovery would not even keep pace with the growth in the waste stream. This fact in itself calls for investigation of other alternatives.

Any meaningful attempt to address the waste disposal requirements of our Nation must move beyond to the construction of energy recovery facilities to include:

- a. programs to reduce the generation of waste in the first place, and
- b. programs to increase the recovery and reuse of paper and other materials.

Turning now to the second issue; to clarify the rationale and basis for governmental efforts in waste reduction. First, it is important to note that product design and consumption trends do affect waste generation. The trend towards the use of disposable products increases the amount of solid waste generated. For example, on a per capita basis, packaging material consumption and waste generation increased by over 40 percent between 1958 and 1971. The point is simply that solid wastes are primarily discarded products and the rate of consumption of such products affects the costs and difficulties of handling solid wastes.

The rationale for a governmental role in waste reduction lies in the realization that although solid waste management costs and problems are in a large part determined by producer and consumer decisions there is virtually no economic incentive for producers and consumers to modify their behavior on this account. A producer bases his decisions on the costs that he directly experiences, not on the costs incurred by another that must dispose of his product. It is very difficult for a consumer to relate his purchase decisions to the costs of product disposal. In many communities solid waste management charges are hidden in general property taxes. The local public agencies and private firms that collect and dispose of solid waste, and directly incur the costs of waste management, have virtually no influence over the quantity of waste produced. As a result waste generation rates increase in an uncontrolled manner.

Similarly production and consumption decisions are not made with full consideration of the long-term limitations on the supply and availability of natural resources. These decisions are generally based upon short-term profit or benefit maximization and the costs to future generations are generally not adequately reflected. In this area certain government policies such as depletion allowances, foreign tax credits, and other favorable tax treatments actually stimulate consumption of natural resources and thereby provide a disincentive for conservation and use of waste materials.

The fact that product design and consumption decisions influence both solid waste management costs and resource utilization costs and that these costs are not reflected into such decisions is an

indication of a market failure. Appropriate cost signals are not reaching the participants who can influence these costs. If such costs were in some way reflected in product prices, producer and consumer decisions would act to limit waste generation rates. The need to correct these market failures is the crux of the rationale for government programs to attempt to stimulate waste reduction. Waste is a byproduct of our production and consumption system, but the system is not accounting for the costs of waste generation.

The extent of the Federal government's role in waste reduction is limited by the authorities legislated by the Congress. The Solid Waste Disposal Act provides for the development and dissemination of information and for Federal leadership and direction. While this is a very important activity in that it provides information to producers and consumers concerning the solid waste management ramifications of their actions, it does not provide any incentive for a change in behavior.

A number of bills before Congress have set forth more active Federal roles in this area of waste reduction. One approach that has been suggested calls for the development of national standards for consumer products based upon criteria such as reusability, useful lifetime, material content, and other factors. This is certainly the most objectionable approach to the business and industrial community in that it involves direct government intervention into product designs. Such an approach could entail high administrative costs if applied to the numerous product categories in the waste stream. Regulation may nevertheless be appropriate for certain select items that result in extremely difficult waste disposal problems or very high disposal costs.

A second approach that has been suggested appears to be more oriented towards direct adjustment of the market failures previously identified. This approach involves providing direct economic incentives or disincentives to the producers and consumers. One specific proposal involves placing a charge equal to solid waste management costs on all consumer products and disbursement of the revenues collected to local solid waste management agencies. A second proposal involves the placement of refundable deposits on items such as beverage containers, to provide an incentive for their return and a disincentive for their disposal or littering. A third involves adjustment or removal of virgin raw material tax benefits. The economic incentive approach has certain advantages in that while it readjusts economic signals to reflect all costs it allows the market system to determine final product choices.

In EPA we are continuing to explore the various options which could be employed to reduce waste generation. Progress in this area is very slow because the concepts are new to us all, and we may be at the forefront of a new perception of how to deal with environmental problems. We must continue to promote conventional approaches to solid waste management. We must strive to control environmentally unacceptable disposal practices. We must accelerate the construction of resource recovery plants. But at the same time we must now begin to face the fact that in the formulation of overall federal solid waste management policy, we must also address the compelling need to reduce waste generation.

REFERENCES

1. The Solid Waste Disposal Act; Title II of Public Law 89-272, 89th Congress, S.306-October 20, 1965, as amended by The Resource Recovery Act of 1970, Public Law 91-512-91st Congress, H.R. 11833-October 26, 1970; by Public Law 93-14-93rd Congress, H.R. 5446-April 9, 1973 (To extend the amended Solid Waste Disposal Act--for one year); and by Public Law 93-611-93rd Congress, H.R. 16045-January 2, 1975 (To amend the Solid Waste Disposal Act to authorize appropriations for fiscal year 1975). Environmental Protection Publication SW-1.3. [Washington], U.S. Environmental Protection Agency, Office of Solid Waste Management Programs, 1975. 14 p.
2. All waste generation and recovery projections are based upon:
 - Smith, F. A. Technical possibilities for solid waste reduction and resource recovery; prospects to 1985. Washington, U.S. Environmental Protection Agency, Office of Solid Waste Management Programs, Dec. 10, 1974. 18 p. (Unpublished paper.)
 - Midwest Research Institute. Base line forecasts of resource recovery, 1972 to 1990; final report. Environmental Protection Publication SW-107c. U.S. Environmental Protection Agency, 1975. 376 p. (Distributed by National Technical Information Service, Springfield, Va. as PB-245 924.)

μσ1268