# Plastics and Source Reduction

The most fundamental way to reduce waste is to prevent it from occurring in the first place. Using less material when making a product, or converting from heavy packaging materials to lightweight ones, are just two examples. That's why so many packagers have converted to less expensive and more lightweight materials such as plastic. At the same time, they've reduced the thickness of their packages and trimmed the amount of packaging waste.

Disposing of municipal solid waste is one of today's most pressing environmental concerns. We rely on landfills to handle over 80 per cent of our solid waste. But as our landfills reach capacity and people resist the location of new facilities in their communities, fresh solutions are needed to deal with all that trash. Most experts agree that the waste management problem can only be solved through an integrated approach that includes source reduction, reuse, recycling and energy-from-waste incineration, in addition to landfilling waste which cannot be handled by these other methods.

## Source Reduction – A Front-End Solution

Some people are familiar with the basic concept of source reduction, but many can't really put a finger on the specific activities it implies. Since there isn't a real consensus on the language of source reduction, its definitions are legion. However, they all boil down to one thing – less stuff. Source reduction can be regarded as the design, manufacture and use of products and materials that minimize the amount (weight and volume) of waste requiring collection, handling, processing or disposal.

Everyone, from manufacturing facilities to individuals, can practice source reduction. That's why it stands atop the waste reduction hierarchy. Source reduction is only viable, however, when it can be achieved without compromising product integrity, consumer safety, or sanitary considerations.

## Plastics – Making a Strong Contribution to Source Reduction

In a typical landfill, paper and paperboard make up 34% of the total physical volume, (about 36% by weight) while plastics comprise about 20 per cent of physical volume (7% by weight). Even though plastics may not be the largest component of municipal solid waste they can be a sizable part of the solution. Energy efficient, recyclable and often reusable, plastics can make a significant contribution to source reduction in packaging. They are lightweight, durable, and can be made into extremely thin containers or products, thus reducing the amount of raw materials needed for their production. Plastics'

importance as a packaging material is illustrated by a 1987 West German study which showed that if all
plastics were eliminated from packaging, the volume of packaging waste would more than double, its weight would increase fourfold, and energy use and packaging costs would each double.

## Plastic Pouch Packaging - A Major Opportunity to Reduce Waste

The plastic milk pouch, using a linear low density polyethylene film developed in Canada, was introduced about 25 years ago. Today, about 50 per cent of Canada's fluid milk market is supplied in pouch packaging. The system is now beginning to make inroads into the United States as well, where pouches are gaining popularity in school milk programs. Shelf like is equal to or greater than that for jugs and bottled milk, and any tampering is immediately evident. But the pouch package also has a number of environmental benefits. Its manufacture introduces the lowest emissions into the air and water, it's recyclable, and it dramatically reduces the weight and volume of packaging material when compared to cartons, jugs and bottles (yes, even glass refillables). It's been estimated that waste could
be reduced by 30,000 metric tonnes every year if all the milk consumed in Canada was packaged in plastic pouches. The pouch also saves energy during shipping, since it conforms to the inside shape of
the container and takes up about 40 per cent less space than a bottle.
In Ontario, 75 per cent of all retail fluid milk is packaged in plastic milk pouches, placing Ontario in the unique position of having already reduced the potential amount of garbage generated by milk packaging
by over 70 per cent through the use of pouches rather than other containers. This represents the elimination of 10,000 metric tonnes of waste material annually that now does not require recycling or disposal of any kind. That's equivalent to eliminating the total amount of garbage generated annually by
a town with a population of 6,000 people. At the same time, milk pouches and their outer bags have been recycled for over a year now in Mississauga's Blue Box program. Two other Ontario municipalities, Markham and Lindsay, are now accepting milk pouches in their Blue Boxes as well.
A pilot project co-sponsored by EPIC and the Ontario Ministry of the Environment in Peterborough, Ontario, to recycle milk pouches and their outer bags, along with all other similar plastic films, had very
positive results. Recycling of pouches through Blue Box programs is off to a great start and we expect
to see this increase and spread throughout the province and across other jurisdictions.

## Plastics Design - Technology Reducing Waste

It's been said that source reduction is to garbage what preventive medicine is to health. And plastics technology often delivers just what the doctor ordered. The plastics industry's commitment to source reduction has already produced other technological breakthroughs that greatly reduce the amount of materials used in manufacturing many products:
· A high density polyethylene (HDPE) milk jug weighed 95 grams in the early '70s. Today, a jug of

the same capacity weighs only 60 grams - that's almost a 40 per cent reduction!
· Since the two-litre PET soft drink bottle was introduced in 1977, it has become more than 20 per cent lighter.

· One restaurant chain made its plastic drinking straws 20 per cent lighter and eliminated over 350,000 kilograms of solid waste per year.
· Canadian companies now offer fabric softeners and other consumer products in concentrated form, packaged in plastic pouches. Because the original plastic container can be used again and again, total packaging waste can be reduced by 75 per cent. This alone saves over 400,000 kilograms of plastic resin per year in Canada.
· Substitution of items such as the plastic grocery sack for paper has resulted in substantial savings. Based on equivalent size and use rates, plastic is about 20 per cent of the weight and 25 per cent of the volume of paper.
· Plastic grocery sacks were 2.3 mils thick in 1976; down to 1.75 mils by 1984. In 1989, new technology provided the same strength and durability in a bag only .7 mils thick.
· Plastic fruit and vegetable bags on roll dispensers were 1.05 mils thick in 1970 and are .5 mils today. Trash bags were 2.5 to 3.0 mils in the 1970s and are now 1.0 to 1.25 mils.
· The use of high-density polyethylene (HDPE) resins and modified mold designs have allowed down-gauging of the margarine tub by nearly 30 per cent, diverting about 2500 tonnes of material from landfill. The HDPE pail has been made 10 per cent thinner, saving about 2000 tonnes of resin.
· Shuttle container systems, such as the one recently introduced by Bayer Canada (formerly Monsanto Canada) are replacing non-returnable packaging. Bayer's system has already replaced more than 100,000 non-returnable containers used to ship and store agricultural fertilizers and other chemicals.

## Lightweighting has Actually Reduced Packaging Waste

There is evidence that source reduction has been quietly active for some time. The Environmental Protection Agency in the United States has largely credited "lightweighting" efforts like these with reducing the percentage of containers and packaging in the waste stream in recent years. The plastics
industry is committed to further source reduction initiatives, through packaging design, further substitution of heavier, bulkier packaging materials, and even more efficient manufacturing techniques.
These initiatives are partially spurred on by the high cost and waste savings that come from even minute
reductions in packaging or in manufactured goods. It simply makes sense to reduce!

## Plastics - The Logical Alternative

The continued use of plastics is an important step towards material and fuel source reduction. Compared to other materials, plastics save energy and cut waste. Their unparalleled practicality and convenience, along with their recyclability and reusability, make plastics an important part of the waste

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management solution.

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