

## **Plastics Recycling - Did You Know?**

While some materials have been with us for hundreds of years and recycled for the past 40, plastics were only introduced in large quantities during the Second World War. That's a big reason why plastics recycling technology is at an earlier stage in its development process. Nevertheless, certain types of plastics packaging - particularly soft drink bottles made from PET, and milk, water and juice jugs made from HDPE - are being successfully recycled in a growing number of communities across the country. And the plastics industry is working hard to increase the recycling of these as well as other plastic packages.

Generally speaking, the recycling process is the same regardless of the type of plastic resin being reclaimed. First, the post-consumer plastics are inspected for quality and washed to remove any residual impurities. Then, they're ground into pieces, dried and processed into pellets or flakes. Finally, the reclaimed materials, in either flake or pelletized form, become feedstock in the manufacture of new products.

Two plastic resins - polyethylene terephthalate (PET) and high density polyethylene (HDPE) - make up about 85-90 per cent of all plastic bottles found in the household. PET is primarily used for soft drink bottles, although it is also found in some other packaging applications such as edible oils and liquor. HDPE is commonly used to make milk, water and juice jugs, detergent and bleach bottles, and motor oil and lubricant bottles.

More than 30 per cent of all PET soft drink bottles are now being recycled. These plastics containers have the second highest "scrap value" of recyclable materials in packaging - next to aluminum. HDPE has the next highest value.

Markets currently exist for PET and HDPE right across Canada. In Ontario, for example, markets exist for all of the PET and HDPE bottles which can be collected.

New products being made from recycled PET include non-food bottles, carpeting, strapping, office binders and folders and fibrefill for ski jackets, outerwear and sleeping bags.

Five recycled 2-litre PET soft drink bottles make enough fibrefill for a man's ski jacket. (It takes 35 to fill a sleeping bag and 36 to make a square yard of carpeting)

In a recent development, the two largest soft drink manufacturers in the U.S. are making new PET bottles with recycled PET. The scrap PET is cleaned, chemically "unzipped" to its basic components, and then reprocessed to return it to the level of bottle-grade resin suitable for food applications. (This process is expected to be commercially available in Canada in 1993).

Recycling of HDPE milk and juice jugs and household detergent bottles is growing at an increasing rate. Because milk containers are not pigmented, they are more valuable to recyclers and may be separated from other pigmented containers such as bleach, detergent and other household cleaning product containers before recycling. It is not essential to sort HDPE by colour, however, since much of this post-consumer recycled material is used to make products such as motor oil bottles, household detergent bottles, pails, construction fencing, and irrigation and drain tubing which are routinely coloured.

One Toronto-area container supplier alone estimates that in 1992 it will consume over one million kilograms of post-consumer (Blue Box) recycled HDPE in bottles ranging from automotive oil to household chemicals. That's the equivalent of diverting about 20 million bottles from Ontario's landfill sites.

New products manufactured from recycled HDPE include detergent bottles, motor oil bottles, trash cans and containers for liquid cleaning supplies.

The plastics industry has introduced a voluntary container coding system that identifies by their principal material resin type. The symbols, which can be found on the bottom of plastic containers, are specifically designed to help recyclers sort these materials.

For purposes of the code, polyethylene terephthalate is denoted by the No. 1 and the letters PETE; high density polyethylene carries the No. 2 and the letters HDPE. Symbols are also provided for containers made of vinyl or polyvinyl chloride (No. 3, V); low density polyethylene (No. 4, LDPE); polypropylene (No. 5, PP); polystyrene (No. 6, Product Stewardship); and other resins (No. 7, OTHER).

New products made from recycled vinyl include drain pipe, office accessories and refuse containers.

Low density polyethylene, such as that found in grocery bags, can be recycled for use in new grocery sacks and trash bags.

About one-third of all supermarket stores in North America now participate in plastic grocery sack recycling programs. An estimated 200,000 Canadian households can also recycle their plastic bags through community curbside collection programs.

Large amounts of polypropylene from used automotive batteries are recycled each year in North America. About 40 per cent of the recovered polypropylene is used in the next generation of batteries. The balance is used for other automotive applications and in consumer products such as wheels for barbecue grills and lawn mowers.



The Canadian Polystyrene Recycling Association opened Canada's first comprehensive recycling facility in Mississauga, Ontario, in October, 1991. The plant is initially recycling up to 6,000 metric tonnes (13 million pounds) of polystyrene annually. Recycled polystyrene is used to make office and school supplies, video cassettes and protective industrial packaging.

It takes nine small foam coffee cups to make a 12-inch ruler. (It takes eight to make a pair of scissor handles and four to make a desk set pen).

Plastics can also be recycled together without sorting. The so-called "commingled" materials are used to make lumber-substitute products such as park benches, picnic tables, fencing, curb stops and marine decking and pilings.

By early 1992, almost 400 Canadian cities and municipalities were collecting plastics for recycling through curbside collection and drop-off programs. In Ontario, Canada's most densely populated province, the collection of plastics other than PET has grown tremendously. Right now, more than one million Ontario households - almost 50 per cent of those participating in curbside programs - may recycle these materials.

## **You Can Help**

Everyone wants to take personal action to address environmental concerns. Here are a few suggestions designed to help improve the level and quality of post-consumer plastics recycling in your community.

The most efficient, cost-effective recycling collection system will fail unless householders understand how to participate. Research shows that one in four Canadians are still confused about what types of plastic they can include in their recycling programs. If you're confused about what plastics your community will accept, or if there are special requirements for preparing your recyclables, please call the agency or department responsible for refuse collection in your area.

While not essential, it will help the plastics recycler if you take a moment to rinse out your plastic bottles and containers before placing them in the recycling container. (It also helps eliminate odours and prevents attracting insects or animals to your recycling box or drop-off site).

It is not necessary to remove paper labels from plastic bottles. If you take the time, however, removing paper labels from pigmented plastic bottles will help the recycler. (Fill the bottle or container with hot water, wait a few moments, and then peel off the paper label).

Remove all caps, lids and pumps and include them separately in your curbside recycling box. Although caps are not considered contaminants, they trap air in bottles and make them more difficult to compact when baled.



Remove all aluminum foil seals, closures and labels from bottles and containers. These contaminate the recycling process.

A growing number of communities, supermarkets and other retail outlets are collecting plastic grocery sacks for recycling. Even small scraps of paper can contaminate a large bale of plastics. Please remove paper, such as sales slips, from your bag by simply turning the bag inside out.

Bottles or containers that have contained insecticides, pesticides, new or recycled motor oil, or any hazardous material, are generally not suitable for curbside recycling. Please check with your community. Dispose of any residue at a toxic waste depot and dispose of the container properly. (A growing number of automotive supply outlets and service stations will accept used motor oil, anti-freeze and other automotive product containers for recycling).

If you have any questions about plastics recycling, or are considering starting or expanding a plastics recycling program in your community, contact the Environment and Plastics Industry Council.