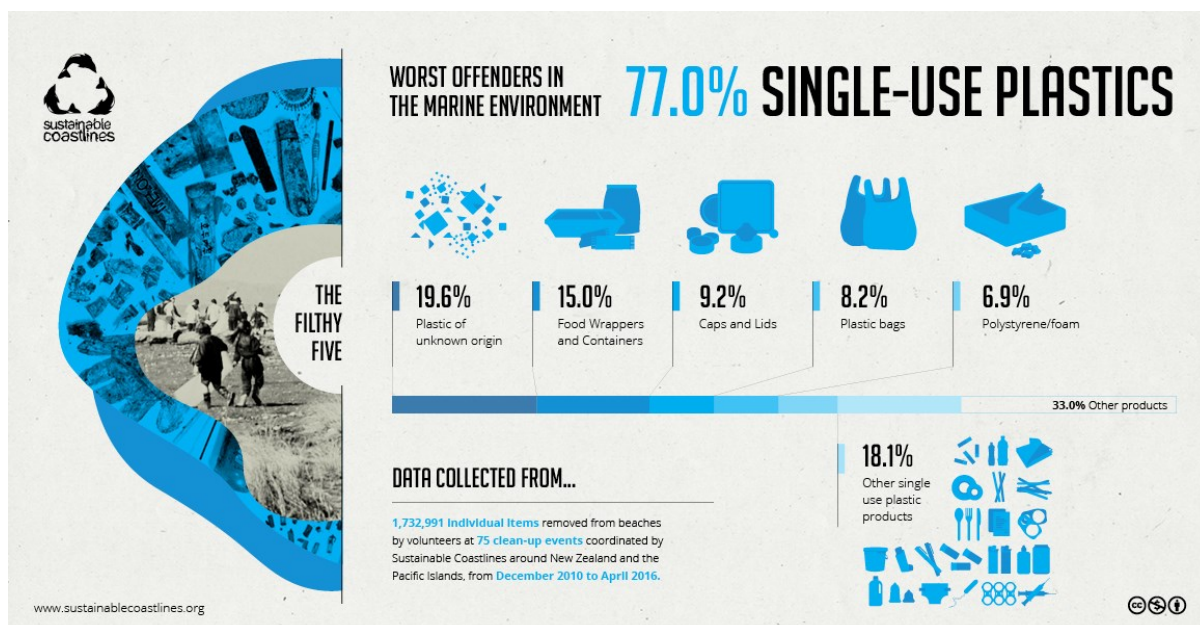


# Waste & Recycling

## Part 3d – Material Fact Sheets

### Plastic Bottles and Containers



As Sustainable Coastlines NZ tell us in this shared poster, plastic waste is spreading everywhere and is now common in the ocean and on beaches.

### What are Plastic Bottles and Containers made from?

Most plastic is a polymer made from fossil fuels, oil and gas, which have taken millions of years to form and are a non-renewable resource which we cannot replace. Approximately 4% of the world's annual oil production is used as a raw material for making plastic, while a further 4% is used as energy to produce plastic. A few plastic polymers are being made from corn starch or wood fibres, as alternatives to oil.

### What Happens to the recycled Plastic Bottles and Containers?

In our City/District, plastic containers are usually recycled in three ways:

#### 1) Via the kerbside recycling collections.

Plastic bottles and containers placed in either clear recycling bags or wheelie bins are taken to a transfer station by the Council's contractor.

#### 2) Through the transfer stations.

Plastic bottles and containers can be recycled free of charge at transfer stations.

#### 3) Via public recycling bins.

Plastic bottles and containers placed in the recycling bins are

taken by the Council to the nearest transfer station.

Plastic bottles and containers collected in our City/District are recycled. Typical sorting facilities can separate code 1 (PET) and code 2 (HDPE) plastics from a flow of mixed plastics. Sorted plastics are more valuable.

## What are the Different Types of Plastic?

There are several different types of plastics and once recycled these have different uses. Each of the primary types of plastic has a number inside a recycling symbol to identify it. Just because plastic has a recycling code symbol on it does not mean that it all gets recycled in all places. Check the kerbside collection criteria.

**PET 'Polyethylene Terephthalate' Plastic – Coded 1**, includes transparent drink bottles and fruit juice bottles made from PET plastic. When recycled this becomes new bottles, polar fleece fabric, strapping and even carpet fibres. There is some debate over the long-term value of plastic bottle conversion to fibres as they create long-lasting indigestible micro-fibre pollution each time the fabrics are washed, which ends up in rivers and oceans and enters food chains. See <http://storyofstuff.org/movies/story-of-microfibers/>

**HDPE (or PE-HD) 'High-Density Polyethylene' Plastic** - Milk bottles, oil bottles and some detergent bottles are made from HDPE plastic. This is **coded 2** and is the most valuable plastic, as it can be recycled into any colour and a wide range of durable items: compost bins, garden furniture, water butts, pipes, pallets or fence posts.

**Mixed Plastic** – This includes the following, using codes designed for industry use:

PVC – coded 3  
Polyvinyl Chloride 'vinyl'

LDPE – coded 4  
Low-Density Polyethylene

PP – coded 5  
Polypropylene

PS – coded 6  
Polystyrene / Styrofoam

Other – coded 7  
Polycarbonate, Polylactide, Nylon & Acrylic



Photo: Bales of mixed plastic are ready to be sent for processing. Mixed plastics are 'low grade' and not as valuable as separated ones.

Symbol	Description	
 PETE	Clear tough plastic such as soft drink, juice and water bottles.	
 HDPE	Common white or coloured plastic such as milk containers and shampoo bottles.	
 V	Hard rigid clear plastic such as cordial bottles.	
 LDPE	Soft flexible plastic e.g. squeezable bottles such as sauce bottles.	
 PP	Hard but flexible plastic such as microwave ware, takeaway containers, some yoghurt/ice cream/jam containers, hinged lunch boxes.	
 PS	Rigid, brittle plastic such as small tubs and margarine/butter containers.	
 OTHER	All other plastics, including acrylic and nylon. Examples include some sports drink bottles, sunglasses, large water cooler bottles.	

Graphic courtesy of Polymer Innovation

**Plastic Meat Trays** - One problem, until recently has been the creation of a suitable alternative to polystyrene trays, which are difficult to dispose of and are usually landfilled. Meat trays made using PET with some designed-in capacity to hold liquids, have recently appeared in supermarkets as substitutes for polystyrene. These trays are easy to recycle, only requiring a quick rinse.

## Plastic Recycling Facts

- On average, every New Zealander throws away 15kg of plastic a year.
- Plastic thrown away into a refuse bag/bin or disposed of via the transfer station will be sent to landfill, where it will take hundreds of years to physically shatter and then last almost forever in smaller pieces.
- In seawater it shatters more quickly, as plastic tends to be broken down physically by UV light from the sun, but once buried in the landfill it gets no sunlight. Sadly, huge amounts of plastic end up suspended in the oceans and it both releases and accumulates toxic chemicals, which end up in the guts of marine animals: plastic bottle caps and plastic shopping bags are two of the top

five deadliest forms of ocean waste. Many dead seabirds and mammals have been found to have un-digestible plastic in their stomach, displacing food space, so keep plastics off beaches and rivers!

Read more: <http://www.bbc.com/news/science-environment-34108017>

- Not all plastic can be recycled e.g. laminated paper/plastic, 'food wrap' film, potting mix and compost bags, engine oil bottles.
- Consider alternatives to plastics when shopping: stainless steel for buckets, washed and reused plastic plant pots, buy beeswax-sealed cotton as alternative wraps for food.
- Soft plastics have become recyclable in some areas, with collection bins available in supermarket foyers: ask for this service at yours!



## What about Reduction and Re-Use?

- Try to re-use plastic bottles and containers. Convert dry containers into storage units, or even maybe lash bottles together as a boat/float: [http://www.nzherald.co.nz/element-magazine/news/article.cfm?c\\_id=1503340&objectid=11434117](http://www.nzherald.co.nz/element-magazine/news/article.cfm?c_id=1503340&objectid=11434117)
- Larger sized plastic bottles can be re-used and made into many things, ranging from bird feeders to mini glass-houses which protect Spring vege seedlings! You could make a mini compost bin in a large clear plastic bottle, as a learning tool, but keep it out of direct sunlight to prolong its useful life. Multiple bottles strung together could make a greenhouse wall, but not for a windy spot!
- Use cloth bags when shopping or if you can't avoid some plastic carrier bags, remember to re-use them.
- When disposing of plastic, never burn it. Burning plastic releases toxic pollutants, so instead opt to reduce, through being a responsible consumer - purchase groceries in bulk or buy loose fruit and vegetables, and aim to recycle bags you can't avoid acquiring. Reusable mesh fabric bags with drawstring tops are handy for vegetable purchases, and are machine-washable.



## What to Remember when Recycling Plastic Bottles and Containers

- If the Council requests, please remove caps and lids, as in most cases, the plastic used for the bottle is different to the lid. Removing lids before putting bottles in the clear recycling bags, recycling bins or taking them to the transfer stations helps achieve a 'cleaner' material grade and better prices. Some Councils can take lids and will say so on their recycling information.
- Do not leave plastic bottles or containers next to the recycling bins nor outside the transfer station gates.

## Class Challenges

1. Undertake a plastic bottle audit!  
Ask everyone to count up over a week, the types and number of plastic bottles they use at home. Consider as a class whether this number could be reduced and from this calculate how many plastic bottles this would be, used and avoided, over a year?
2. Undertake a project at home or school to identify as many types of plastic as possible. You may be surprised what has a recycling symbol shown on it. Include more durable items made of plastic such as toys, appliances, pens and equipment, car parts, Electronic item cases.
3. Discuss as a class the items you can think of that could be redesigned, to prevent the need to make them from oil-based plastic.
4. Invite a manufacturer or designer to visit, to extend your discussion, and/or write to a manufacturer with the class' views and recommendations on reducing plastics.

## Further Resources

- [www.designrulz.com/product-design/2012/11/45-ideas-of-how-to-recycle-plastic-bottles/](http://www.designrulz.com/product-design/2012/11/45-ideas-of-how-to-recycle-plastic-bottles/) provides some fantastic idea illustrations on how plastic bottles can be re-used decoratively at both school and home.
- Why recycle plastics? – video cartoon from TED:  
<https://www.youtube.com/watch?v=6xINyWPpB8>
- Other videos are available on YouTube: search there for 'how plastic bottles are recycled'.