

## About plastic

Most plastic is made from oil. The oil is turned into nurdles (pre-production plastic pellets or resin) which are then melted and chemicals are added to give the plastic specific qualities such as flexibility, strength and durability. All plastic contains chemicals which harm our health by triggering autoimmune diseases or causing cancer and other diseases.

## Estrogenic activity (EA)

Chemicals that mimic the action of the hormone estrogen, defined as having estrogenic activity (or EA) have been found to leach from every type of plastic (numbers 1-7) and even from "BPA free" plastic products (Yang et al 2011). These chemicals are released from plastic when the item is exposed to heat such as hot food and drinks, sunlight, microwaving and dishwashing.

## Some of the chemicals in plastic

**Polyvinyl chloride (PVC)**, also called vinyl, is harmful to human health and the environment in all stages of its lifecycle from manufacture, through use and disposal. It is made from vinyl chloride, which is classified by the EPA as a Group A human carcinogen - proven to cause cancer.

**Polystyrene** leaches the chemical styrene which is toxic to the brain and nervous system. Heat causes the release of styrene as does oily and acidic food and drinks.

**Bisphenol-A (BPA)** is a chemical that mimics the action of the human hormone estrogen and is referred to as an endocrine disruptor. BPA is linked to breast cancer, prostate cancer, diabetes and obesity.

**Phthalates** are used to soften PVC products and leach from items including plastic food wrap, children's toys and shower curtains. Phthalates are endocrine disruptors and are linked to male reproductive problems. Phthalates when combined with the flame retardant **polybrominated diphenyl ethers (PBDE)** in car mouldings, cause the "new car smell" which is the plastic off gassing the chemicals. PBDE has been shown to cause liver and thyroid toxicity, reproductive problems and memory loss.

**Polyvinyl alcohol (PVA)** is dangerous to fish and is used to wrap detergent pods for dishwashers and washing machines. Never use pods. Plastic does not dissolve in water.

## Plastic microbeads

Microbeads are found in many personal care products such as toothpaste, scrubs, shampoo and liquid soap. Do not buy products with polyethylene, polypropylene, acrylates co-polymer, acrylates cross polymer or polymethyl methacrylate (PMMA) as this is plastic.

## Safer choices for food and drinks

It is better to use fresh food rather than canned food. Store food, especially hot, oily or acidic food and drinks in glass, ceramic or stainless steel. Avoid heating food or drinks in plastic containers in the microwave because chemicals from the plastic leach out into the food or drink. For take-out food, request containers and utensils made out of 100% compostable vegetable fibres such as sugar cane or bring your own reusable glass, stainless steel or ceramic containers.

## The problems with recycling plastic

The triangular symbol with chasing arrows and a number found on the bottom of plastic products is the "resin identification code." This code indicates the type of resin used in the item. The symbol is misleading because it looks as if the item is recyclable, however few plastics are accepted for recycling and only 1-2% of all plastics are ever recycled. Also different numbered plastics cannot be recycled together because they melt at different temperatures and contain different chemicals. Another problem with recycling plastic is that it can't be recycled without adding a lot of new plastic resin (nurdles) to the old plastic therefore using more fossil fuels.

Do not buy products made from recycled marine debris as plastic in the ocean absorbs **persistent organic pollutants (POPs)** such as DDT, DDE, PCB's and dioxins. POPs have been found to be concentrated up to one million times more on the surface of the plastic than in the surrounding sea water (Mato et al 2001). Therefore marine debris should not be used in consumer goods because it's toxic.

## Harm to the environment

Plastic is an enormous problem on our planet today. We have to stop using it as much as possible as plastic marine debris in the ocean is harming marine life through habitat destruction, ingestion and entanglement. Seabirds and all sizes of marine life in the ocean are eating plastic which causes death through blockages, starvation, dehydration, lacerations and diseases caused by chemicals from plastic.

## Plastic is not biodegradable

There's no such thing as "biodegradable plastic." Any plastic item labelled "biodegradable" is misleading. There are no micro-organisms that breakdown plastic and therefore it is not biodegradable. Plastic photodegrades which means it breaks into smaller and smaller pieces when exposed to UV rays in sunlight, but it never goes away.

## Plastic lasts forever

## How to help

Vote with your dollars and buy products wherever possible that are not made of, or contain plastic. Better materials are glass, metal, paper, natural fibres and natural products (eg. salt scrubs instead of plastic microbeads). By not buying plastic and choosing an alternative material instead, you will help make change possible by encouraging manufacturers to produce items that are safe for our health, marine life and the environment.

## Beach Environmental Awareness Campaign Hawai'i

**(B.E.A.C.H.)** is an all volunteer, non-profit organization that brings awareness and solutions to marine debris through environmental education, plastic reduction/litter prevention campaigns, and marine debris removal and research, in order to inspire actions by individuals and the community that protect Hawai'i's marine life, sea birds and ocean/coastal environment.

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RECYCLED PAPER ECO-FRIENDLY INKS










# a guide to Plastics



[WWW.B-E-A-C-H.ORG](http://WWW.B-E-A-C-H.ORG)

# A GUIDE TO PLASTICS AND BETTER ALTERNATIVES

SYMBOL	TYPE OF PLASTIC	WHAT IT'S MADE INTO	CHEMICALS AND HARM	SOLUTIONS - WHAT YOU CAN DO TO HELP
	<b>PETE or PET</b> polyethylene terephthalate	clear plastic bottles (for water, juice, soft drinks, mouthwash, salad dressing), clear plastic food containers, lids for take-out drink cups, microbeads in personal care products	<ul style="list-style-type: none"> <li>contains the chemical antimony, a suspected carcinogen</li> <li>leaches chemicals having estrogenic activity (EA)</li> <li>recycled into fleece clothing and bedding which releases plastic microfibrils when washed. The microfibrils are not able to be collected and end up in the ocean.</li> </ul>	Buy items in glass. Use reusable drink bottles. Check all personal care products for microbeads (including scrubs, toothpaste, sunscreen, liquid soap) and don't buy them. Buy bar soap wrapped in paper instead of liquid soap. Choose clothes made of natural fibres such as bamboo.
	<b>HDPE</b> high density polyethylene	opaque plastic bottles (for juice, milk, shampoo, conditioner, laundry detergent, bleach), drink bottle caps, plastic bags, buckets	<ul style="list-style-type: none"> <li>leaches chemicals having estrogenic activity (EA)</li> <li>plastic bags are eaten by sea turtles and other marine life</li> <li>plastic caps are ingested by sea birds</li> </ul>	Bring your own reusable bags everytime you go shopping or if you forget, hand-carry or ask for a cardboard box. Buy drinks such as juice in glass bottles.
	<b>PVC</b> polyvinyl chloride	bottles for cooking oil, cling wrap, vinyl shower curtains, rain coats, exercise balls, toys (such as pool toys, rubber duckies), pipes, upholstery, wire insulator, vinyl fences, window and sliding door frames, louvers, vinyl flooring, vinyl siding	<ul style="list-style-type: none"> <li>cancer causing dioxins are released into the atmosphere during PVC production</li> <li>contains phthalates which cause cancer</li> <li>leaches chemicals having estrogenic activity (EA)</li> <li>the most toxic plastic and known as the "poison plastic"</li> </ul>	Use reusable bees wax wraps to cover your food instead of cling wrap. Buy PVC free shower curtains. Never install PVC fences - use wood, rock or other natural materials instead. Buy doors and windows made of metal or wood instead of PVC plastic. Use bamboo, wood, slate and other natural materials on floors instead of vinyl.
	<b>LDPE</b> low density polyethylene	bags (for newspapers, groceries, dry cleaning, bread, frozen foods, produce), plastic wrapping around products, six-pack rings, caps and lids	<ul style="list-style-type: none"> <li>leaches chemicals having estrogenic activity (EA)</li> <li>plastic bags are eaten by sea turtles and other marine life</li> <li>six-pack rings are an entanglement hazard to marine life</li> </ul>	Bring your own reusable produce bags to buy fruit and vegetables at the store and farmers' market. Avoid buying drinks with six-pack rings.
	<b>PP</b> polypropylene	containers (for yogurt, soup, margarine, syrup), rigid caps and lids, food storage containers, straws, bottles for vitamins, medicines and supplements, microbeads, fake grass	<ul style="list-style-type: none"> <li>leaches chemicals having estrogenic activity (EA)</li> <li>plastic caps are ingested by sea birds</li> <li>microbeads are ingested by marine life</li> <li>plastic grass is harmful to the environment and health</li> </ul>	Use your own glass or stainless steel straw or say no thanks to straws. Choose glass bottles of vitamins where possible. Use glass food storage containers. Use real grass or native plants, never install plastic grass.
	<b>PS</b> polystyrene	"styrofoam" cups, plates, bowls, clamshell containers, egg cartons; styrofoam packaging, plastic cutlery, CD cases, lids for take-out coffee cups, styrofoam roof shingle inserts, clear plastic take-out food containers, air soft pellets	<ul style="list-style-type: none"> <li>leaches styrene, a known carcinogen into hot, oily and acidic food and drinks</li> <li>leaches chemicals having estrogenic activity (EA)</li> <li>breaks easily and pieces are ingested by marine life</li> </ul>	Bring your own glass, stainless steel or ceramic cups, bottles and containers for take-out food/drinks. Buy eggs in cardboard cartons instead of styrofoam. Don't allow styrofoam inserts in metal roof construction.
	<b>OTHER</b> includes polycarbonate, bioplastics (plant based), other plastics that don't fit in 1 - 6 and mixed plastics.	polycarbonate 5-gallon water dispensers, "sport" water bottles, inner linings of canned food and drinks, bicycle helmets, white dental fillings, coffee pods such as K cups, bioplastics including compostable cups, plates and bowls	<ul style="list-style-type: none"> <li>polycarbonate plastic leaches chemicals having estrogenic activity (EA) including bisphenol A (BPA), an endocrine disruptor, into food and drinks. BPA is linked to breast cancer, prostate cancer, diabetes and obesity</li> <li>"biodegradable" plastic labels are false and misleading as the item is made of plastic with a small amount of starch</li> </ul>	Use a water filter at work instead of a plastic water dispenser. Use reusable drink bottles made of glass or stainless steel. Buy fresh food rather than canned food. Buy drinks in glass rather than plastic or cans. Use paper coffee filters instead of plastic coffee pods. Do not buy "biodegradable" plastic items.