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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