

Decoding the Plastic Maze

Most plastic products have a number (The resin identification code) molded, or imprinted on the container, usually on the bottom.

This resin identification code is voluntary for plastic manufacturers, but has now become relatively standard to do, on plastic products.

Knowing this code means the consumer then becomes informed of the type of plastic and the health risks related to it. Below the codes are briefly described.

Polyethylene terephthalate (PET or PETE) -



Used in soft drinks, juice, water, beer, mouthwash, peanut butter, salad dressing, detergent and cleaner containers. Leaches Antimony trioxide: workers exposed to antimony trioxide for long periods of time have exhibited respiratory and skin irritation; among female workers, increased incidence of menstrual problems and miscarriage; their children exhibit slower development in the first twelve months of life.

The longer a liquid is left in such a container, the greater the concentration of antimony released into the liquid.

High density polyethylene (HDPE) -



Used in opaque milk, water and juice containers, bleach, detergent and shampoo bottles, garbage bags, yogurt and margarine tubs, cereal box liners. There is no research to reflect negative effects when used generally.

Polyvinyl chloride (V or Vinyl or PVC) -



Used in toys, clear and non-food packaging (e.g., cling wrap), some squeeze bottles, shampoo bottles, cooking oil and peanut butters jars, detergent and window cleaner bottles, shower curtains, medical tubing, and numerous construction products (e.g. pipes, sliding).

PVC has been described as one of the most hazardous consumer products ever created. Leaches *di(2-ethylhexyl) phthalate (DEHP)* or *Butyl benzyl phthalate (BBzP)*, depending on which is used as the plasticiser or softener (usually DEHP).

DEHP and BBzP are endocrine disrupters mimicking the female hormone estrogen; have been strongly linked to asthma and allergic symptoms in children; may cause certain types of cancer; linked to negative effects on the liver, kidney, spleen, bone formation and body weight. In Europe, DEHP and BBzP and other dangerous phthalates have been banned from use in plastic toys for children under three since 1999. Not so elsewhere, including Australia.

Low Density polyethylene (LDPE) -



Used in grocery store, dry cleaning, bread and frozen food bags, most plastic wraps, squeezable bottles (honey, mustard). Negative effects associated to this type of plastic are not discovered.

Polypropylene (PP) -



Used in tomato sauce bottles, yogurt and margarine tubs, medicine and syrup bottles, straws, Rubbermaid and other opaque plastic containers, including baby bottles. There are no known health risks.

associated with this type of plastic, for general use, not heating or freezing.

Polystyrene (PS) –



Used in Styrofoam containers, egg cartons, disposable cups and bowls, take-out food containers, plastic cutlery, compact disc cases. Leaches styrene, which is an endocrine disrupter mimicking the female hormone estrogen and thus has the potential to cause reproductive and developmental problems.

Long term exposure by workers has shown brain and nervous system effects; adverse effect on red blood cells, liver, kidneys and stomach in animal studies.

Also present in secondhand cigarette smoke, off-gassing of building materials, car exhaust and possibly drinking water. Styrene migrates significantly from polystyrene containers into the container's contents when oily foods are heated in such containers.

Other –



This is a catch-all category that includes anything that does not come within the other six categories. As such, one must be careful in interpreting this category because it includes Polycarbonate – a dangerous plastic – but it also includes the new, safer, biodegradable bio-based plastics made from renewable resources such as corn, and potato starch, and sugar cane.

Polycarbonate is used in most plastic baby bottles, clear plastic “sippy cups”, Nalgene brand and other “sports” water bottles water storage containers, metal food can liners, some juice and tomato sauce containers, compact discs, cell phones, computers. Polycarbonate leaches Bisphenol A (some effects described above), and numerous studies have indicated a wide array of possible adverse effects from low-level exposure to Bisphenol A: Chromosome damage in female ovaries, decreased sperm production in males, early onset of puberty, various behavioral changes, altered immune function, and sex reversal in frogs.

Important Note:

Two other types of plastic that all under code 7 are acrylonitrile styrene (AS) or styrene acrylonitrile (SAN), and acrylonitrile butadiene styrene (ABS). Both AS/SAN and ABS are higher quality plastics with increased strength, rigidity, toughness and temperature and chemical resistance.

AS/SAN is used in mixing bowls, thermos casing, dishes, cutlery, coffee filters, toothbrushes, outer covers (printers, calculators, lamps), and battery housing. The incorporation of butadiene during the manufacture of AS/SAN, produces ABS, which is an even tougher plastic.

ABS is used in LEGO toys, pipes, golf club heads, automotive parts, protective head gear. Research into risks associated with AS/SAN and ABS is ongoing.

What does this mean for your plastic use?

You may wish to seriously consider your and especially your children's use of plastic numbered 1,3,6 and 7 (Polycarbonate), all of which have been shown to leach dangerous chemicals.

This does not necessarily mean the others are completely safe, just that they have been studied less up to this point.

So if you have to use plastic, it is safest to stick to numbers 2,4,5 and 7 (other than Polycarbonate) whenever possible.

If an item does not have a plastic code on it, or if the type of plastic is unclear from the code (e.g., with #7, it's likely it will not say it is Polycarbonate), your best bet is to contact the manufacturer and ask them directly what type of plastic was used to make the product.