

The truth about plastic water bottles Setting the record straight

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It seems everyone is asking me about plastic water bottles lately. For the most part people are concerned about the safety of drinking out of plastic bottles. Some of my patients, friends, family and even colleagues have certain beliefs that simply aren't true.

Here are a few of the *beliefs* people have about plastic water bottles.

1. If you don't heat plastic water bottles then it is ok to drink out of them.
2. Freezing plastic bottles is what makes them bad.
3. The problem is only in water bottles not plastic soda or juice bottles.
4. Plastic water bottles are only harmful to children and babies.
5. You need to avoid numbers 3, 6, and 7
6. You need to avoid numbers 1 and 5

Confused? Well you are not alone. There has been a lot in the news recently about the safety of water bottles. It is time to set the record straight so you can make an informed and educated decision as a consumer and take control of your health.

When talking about plastic water bottles we must talk in general about plastic bottles. It doesn't matter if it is water or soda or juice that is inside. Plastic bottles are made with chemicals known as plasticizers. Their purpose is to make plastic strong and flexible. There are two main forms of plastic that make up plastic water bottles: Polyvinyl chloride plastics (PVC) and polycarbonate plastics. PVC contains the most common used commercial plasticizer known as phthalates. Polycarbonate plastics contain a chemical called bisphenol-A (BPA).

Both phthalates and bisphenol-A are known hormone disrupting chemicals, often called hormone mimicking compounds. Studies show that both phthalates and BPA have adverse health effects in humans and are linked to infertility, premature puberty, asthma, allergies, menstrual cycle irregularities and breast cancer and prostate cancer.

But what is in the average plastic beverage bottle. Some bottles are soft and flexible and crunch when you squeeze it when empty. Some are hard and firm and sturdy and sound hollow when empty. Are they all the same? Do they all have these harmful chemicals? The answer is complicated but the number on the bottom of the bottle can be used as a general guide as to what chemical plasticizer is in the bottle.

Flip that bottle over to find out what it is made of.

#1 **PETE** or **PET** (polyethylene terephthalate) - used for most water and soda bottles. The ingredients include resins made from methane, xylene and ethylene combined with the chemical ethylene glycol and other chemicals. These have flame retardants and UV stabilizers added.

#2 **HDPE** (high density polyethylene) - used for cloudy milk and water jugs and opaque food bottles. Resins made from ethylene and propylene resins and have flame retardants added. When burned these release formaldehyde and dioxin if chlorine was used during manufacturing.

#3 **PVC** or **V** (Polyvinyl chloride)- used in some cling wrap, soft beverage bottles, plastic containers, plumbing pipes, children's toys, vinyl windows, shower curtains, shades and blinds and many other items. They create toxic by-products when burned such as PCB's and dioxins. Made from petroleum resins and have flame retardants added.

#4 **LDPE** (low density polyethylene) - used in plastic grocery bags, plastic wrap, bubble wrap, dry cleaning bags, and flexible lids. Resins made from ethylene and propylene resins and have flame retardants added. When burned these release formaldehyde and dioxin if chlorine was used during manufacturing.

#5 **PP** (polypropylene)- used in yogurt cups, some baby bottles, screw-on caps, toys, drinking straws. Resins made from ethylene and propylene resins and have flame retardants added. When burned these release formaldehyde and dioxin if chlorine was used during manufacturing.

#6 **PS** (polystyrene)- used in egg cartons, foam meat trays, clear take out containers, plastic cutlery, toys, cups, CD containers. Resins made from ethylene and propylene resins and have flame retardants added. When burned they release styrene and polyaromatic hydrocarbons.

#7 **Other** (usually polycarbonate) - used in 5 gallon water bottles, some baby bottles, and lining of metal food cans. They create toxic by-products when burned such as PCB's and dioxins. Made from petroleum resins and have flame retardants added.

In general, polystyrene plastic leached the solvent styrene, polycarbonate plastic leaches bisphenol-A, polyvinyl chloride and polyethylene terephthalate leach phthalates. This accounts for #1, #3, #6, and #7.

The remaining plastics, #2, #4, #5 may leach chemicals too but there are no studies to show that they leach chemicals known to cause hormone disruption in humans.

In terms of recycling, #1 and #2 are the most commonly recycled plastics by most cities. Keep in mind that both the production and incineration of all types of plastic creates toxins that contribute to air pollution

Hopefully this helps answers some questions. Many of my patients ask which plastic bottles I use. The answer is either glass or metal.

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