

## Bottled Water Basics

Bottled water is the fastest growing drink of choice in North America, and has become a multi-billion dollar industry. We all know that safe drinking water is essential to good health. Whether we drink it straight from the tap or out of a bottle, it is important to understand where your water comes from, what is in it, and how it is processed.

Our local drinking water is extracted from the river. It is then ozonated; a process by which ozone gas is injected into the water, eliminating disease causing pathogens. The treated water then goes into settling tanks and through additional chemical processes to separate it from particles. Chlorine and in some communities fluoride is added as a final step before it is piped out and into our homes.

Many people have legitimate concerns about the safety of local drinking water. One local study in 2004 by the National Water Research Institute for Health and Environment Canada, found nine different pharmaceutical drugs in water samples taken near 20 drinking water treatment plants across southern Ontario.

It is unclear whether or not these trace amounts of drugs are completely eliminated by the water treatment process. More studies and research are required to eliminate speculation regarding the long term effects of these small dose pharmaceuticals.

Many people opt for home filtration systems which are said to remove chlorine, heavy metals, and odors while improving taste. There are many systems available in all price ranges. There are whole house, counter top and under counter varieties available.

If you are like the millions of people who have switched to bottled water, you are bound to be confused over the multitude of choices available to you. Many water bottling companies claim to have the safest, cleanest, purist and best tasting H<sub>2</sub>O on the market. It is expected that most drinking water (tap or bottled) contains a small amount of contaminants. All contaminants do not necessarily pose a health risk.

### Know What you are Buying

**Artesian well water:** Water from a well that taps an aquifer--layers of porous rock, sand and earth that contain water--which is under pressure from surrounding upper layers of rock or clay. When tapped, the pressure in the aquifer, commonly called artesian pressure, pushes the water above the level of the aquifer, sometimes to the surface. Other means may be used to help bring the water to the surface. Water from artesian aquifers is often said to be more pure because the confining layers of rock and clay impede the movement of contamination.

**Mineral water:** Water from an underground source that contains at least 250 parts per million total dissolved solids. Minerals and trace elements must come from the source of the underground water. They cannot be added later.

**Spring water:** Derived from an underground formation from which water flows naturally to the earth's surface. Spring water must be collected only at the spring or through a borehole tapping the underground formation feeding the spring. If some external force is used to collect the water through a borehole, the water must have the same composition and quality as the water that naturally flows to the surface.

**Sparkling Water:** Water that after treatment and possible replacement with carbon dioxide contains the same amount of carbon dioxide that it had at emergence from the source. (Soda water, seltzer water and tonic water are not considered bottled waters. They are regulated separately, may contain sugar and calories, and are considered soft drinks.)

Some bottled water also comes from municipal sources--in other words--the tap. Municipal water is usually treated before it is bottled.

Examples of water treatments include:

**Distillation:** In this process, water is turned into a vapor. Since minerals are too heavy to vaporize, they are left behind. This vapor is then cooled to cause the water to condense back into a liquid form without the minerals and contaminants.

**Reverse osmosis:** Water is forced through a semi permeable membrane not allowing any solids to pass through.

**Absolute 1 micron filtration:** Water flows through filters that remove particles larger than one micron in size, such as Cryptosporidium, a parasitic protozoan.

**Ozonation:** Bottlers of all types of waters typically use ozone gas, an antimicrobial agent, to disinfect the water instead of chlorine. Chlorine can leave residual taste and odor to the water.

**Ultra-violet (UV) treatment:** The disinfection process of passing water by a special light source. Immersed in the water in a protective transparent sleeve, the special light source emits UV waves that can inactivate harmful microorganisms. This method of treatment is growing in popularity because it does not necessarily require the addition of chemicals.

**The Plastic bottle controversy**

Most water bottles are made of polyethylene terephthalate (PET). There is wide speculation that PET may leach phthalates (known hormone distributors) into your water. Bis(2-ethylhexyl) phthalate (DEHP) is another probable human carcinogen and is also used as a plasticizer by many bottle makers.

Because eight out of ten water bottles end up in the landfills and can take 700 years to decompose, it is very important to recycle your empty water bottles. When possible, at home or the office, use large 5 gallon bottles that can be conveniently delivered and the empties picked up, cleaned and reused.

We are all aware of the importance of drinking plenty of water each day for proper hydration and optimal health. Armed with the facts about water processes and all the health risks, it may be time to rethink what you drink.