

BOTTLED WATER: Know the Facts



Why do we need water?

Water has several essential roles:

- Water is present in all tissues.
 - Blood is 92 percent water.
 - Muscles are 75 percent water.
 - The brain is 75 percent water.
 - Bones are 25 percent water.
- Water Helps:
 - Regulate body temperature. When a person is too hot, the body sweats. When sweat evaporates, it lowers the body temperature.
 - Absorb nutrients and then carry nutrients and oxygen to all cells in the body.
 - Moisten oxygen for breathing. The lungs require approximately 2 glasses (16 ounces) of water a day to function properly.
 - Protect and cushion vital organs and joints.
 - Remove waste products from the body. Some waste products are toxic or can impair physical performance (i.e. urea and lactic acid) if they are not removed from body tissues and fluids.

Water also is a preferred beverage choice because it is readily accessible; contains no calories, fat, or cholesterol; and is low in sodium.

How much water do you need?

The body can survive for up to 6 weeks without food but it can last only 1 week without water. The Dietary Reference Intake (DRI) for water was released in 2004. According to the DRI, the majority of healthy people can adequately meet their daily water needs by letting thirst be their guide; however, some groups cannot rely on thirst to maintain adequate hydration—specifically athletes and older adults.

Athletes or physically active individuals have elevated water requirements. Additional water is needed to provide a medium for reactions to release energy, transport nutrients, cool the body, lubricate joints, and remove waste products.

In the case of older adults, water needs are not increased. Older adults are at risk for dehydration because their thirst mechanism may not be working optimally, and some voluntarily abstain from drinking due to concerns about incontinence.

Dietary Reference Intakes: Daily Water Recommendations

Life Stage Group	Males Liters/8 oz cups	Females Liters/8 oz cups
9-13 years	2.4 L / 10 cups	2.1 L / 8.75 cups
14-18 years	3.3 L / 13.75 cups	2.3 L / 9.5 cups
19+ years	3.7 L / 15.5 cups	2.7 L / 11.25 cups

Healthy individuals need 10 – 15 cups of water each day!

About 80 percent (8 to 12 cups) of our water intake comes from drinking water and other beverages. Most recent NHANES data (2019) suggests men and women are consuming 12 and 10 cups of beverages per day, respectively. Research suggests caffeine does not consistently cause fluid loss (diuresis) as previously thought. Therefore, caffeinated beverages do contribute to total fluid intake. The remaining 20 percent (2 to 3 cups) of our water intake comes from eating foods, such as fruits and vegetables. As much as 70 to 90 percent of some fruits and vegetables, such as lettuce or watermelon, are water.

The more active you are the more water you need

Feeling thirsty is more than a simple signal that your body needs water. Thirst is one of the first signs of dehydration. Research suggests that thirst will only replace 50 to 70 percent of actual fluid needs in physically active individuals. Water is the best fluid for activities lasting less than 60 minutes of continuous duration. For activities lasting longer than 60 minutes, a fluid replacement drink that contains carbohydrate, sodium, and potassium should be used.

The following guidelines should be followed to ensure adequate replacement of fluids lost due to exercise:

- Drink >16 ounces of fluid 2-3 hours prior to exercise
- Drink 8 ounces of fluid 10-15 minutes prior to exercise
- Every 10-15 minutes during exercise, drink 6-10 ounces of fluid
- Replace every pound lost during exercise with 2-3 cups of fluid

Bottled versus tap?

According to Beverage Industry, sales of bottled water has surpassed carbonated soft drinks for the past two years. Per capita intake of bottled water in 2017 exceeded 42 gallons while intake of carbonated soft drinks fell to 37.5 gallons. Most consumers choose bottled water for convenience, taste, and/or perceived health benefits. Marketing campaigns, advertisements, and package labels showing pristine glaciers and crystal-clear mountain springs have created a public perception that bottled water is “purer” and “healthier” than tap water.

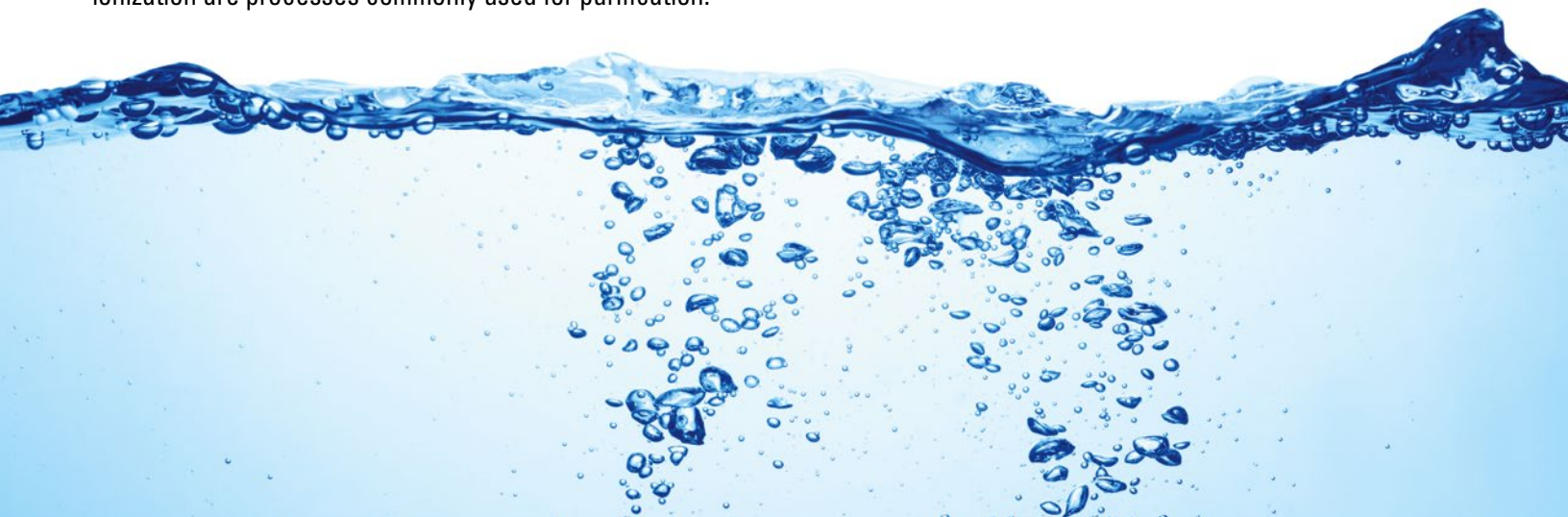
However, the truth is that bottled water sold in the United States is not necessarily cleaner or safer than most tap water. The majority of bottled water sold today (nearly 64%) comes from municipal tap water. The tap water may be treated to meet the purified or sterile standard of the U.S. Pharmacopoeia. Ozonation, reverse osmosis, distillation or de-ionization are processes commonly used for purification.

Because bottled water is considered a food, it falls under the U.S. Food and Drug Administration’s (FDA) Center for Food Safety and Applied Nutrition. Under the FDA, bottled water must also comply with the Current Good Manufacturing Practices (CGMPs). The FDA bottled water quality standards are less stringent than those governing local water treatment plants, which are under the U.S. Environmental Protection Agency (EPA).

Some key differences between EPA tap water and FDA bottled water rules

	Water Type	
	Bottled Water	Municipal Tap Water
Requires disinfection	No	Yes
Testing frequency for bacteria	1/week	Hundreds/month
Requires filter to remove pathogens, or strictly protected	No	Yes
Requires test for Cryptosporidium, Giardia, viruses	No	Yes
Testing frequency for most synthetic organic chemicals	1/year	1/quarter (limited waivers available if clean source)
Must use certified labs for testing	No	Yes
Must report violations to state, Feds	No	Yes
Consumer right to know about contamination	No	Yes

Source: The National Resources Defense Council (NRDC) (1999)



Public health officials also are concerned about the lack of fluoridation in bottled water, which is required of tap water. This difference in requirements may be linked to the growing prevalence of cavities among youth.

Bottled water also has a higher cost to the consumer and the environment. Bottled water costs about \$9.50 per gallon, compared to fractions of a penny (\$0.005) for water from the municipal tap. In addition, limited oil supplies are used to produce and transport the bottles. Bottled water consumption uses about 64 million barrels of oil annually. Gasoline from this oil would be the equivalent to the greenhouse gas emissions from 2.5 million passenger cars. Further, plastics from bottled water consumption would more than fill the Empire State Building each year. Ultimately, 70% of these empty water bottles end up in landfills (Food and Water Watch, 2018).

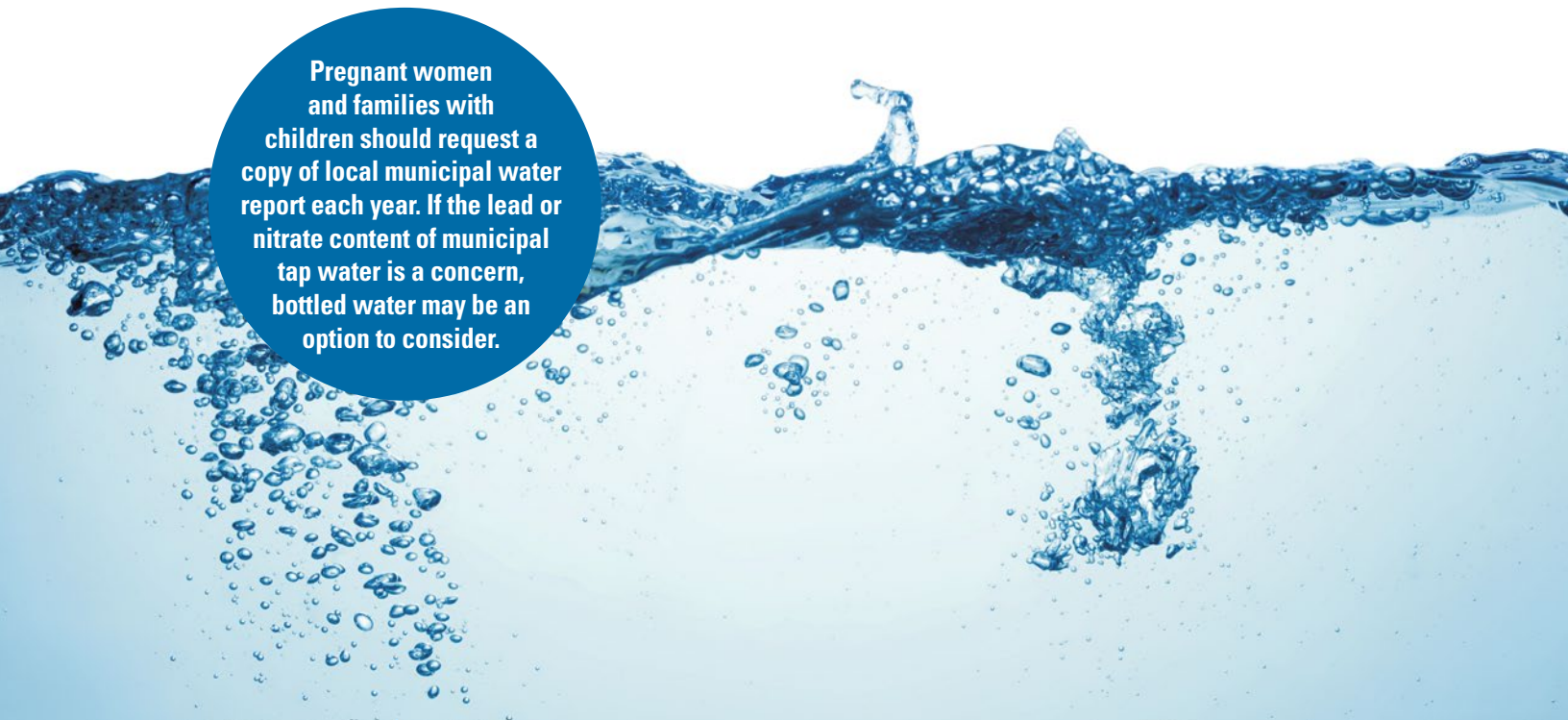
The safety of reusing plastic bottles/containers intended for one-time use has been the subject of many myths as well. Leaching of compounds from bottles containing polyethylene terephthalate (PET) plastic has been suggested. This may occur if the plastic is exposed to high temperatures over a prolonged period of time; however, the concentrations remain quite low. The FDA considers PET (#1 appearing in the recycling triangle on the bottom of the container) containers safe for repeated use. Proper cleaning between uses is the key to the safe reuse of these bottles. Bottles intended for reuse tend to have a larger opening, which makes cleaning easier. Those concerned about the use of bottled water, financial, environmental and health, are encouraged to fill reusable water bottles. Washing reusable bottles in the dishwasher will help prevent bacterial growth.

The FDA defines the following types of bottled water.

Type	Definition
Artesian Water	Water from a well tapping a confined aquifer in which the water level stands at some height above the top of the aquifer.
Mineral Water	Water containing not less than 250 ppm total dissolved solids that originates from a geologically and physically protected underground water source. Mineral water is characterized by constant levels and relative proportions of minerals and trace elements at the source. No minerals may be added to mineral water.
Purified Water	Water that is produced by distillation, deionization, reverse osmosis or other suitable processes and that meets the definition of "purified water" in the U.S. Pharmacopeia. As appropriate, also may be called "demineralized water," "deionized water," "distilled water," and "reverse osmosis water."
Sparkling Bottled Water	Water that, after treatment and possible replacement of carbon dioxide, contains the same amount of carbon dioxide that it had at emergence from the source.
Spring Water	Water derived from an underground formation from which water flows naturally to the surface of the earth at an identified location. Spring water may be collected at the spring or through a bore hole tapping the underground formation feeding the spring, but there are additional requirements for use of a bore hole.
Well Water	Water obtained from a water aquifer via a hole that is drilled, hole bored, or constructed.

(For complete regulatory definitions, see 21 CFR 165.110(a)(2).
http://www.access.gpo.gov/nara/cfr/waisidx_03/21cfr165_03.html

Pregnant women and families with children should request a copy of local municipal water report each year. If the lead or nitrate content of municipal tap water is a concern, bottled water may be an option to consider.



Tap water safety

One of the provisions of the Safe Drinking Water Act requires municipal water entities to provide an annual report to customers on contaminants in their drinking water. This annual water quality report, called a Consumer Confidence Report (CCR), is typically distributed by your municipality with your July water bill. You also can ask your local municipality for this report or access your [CCR online](http://www.epa.gov/ccr) (www.epa.gov/ccr).

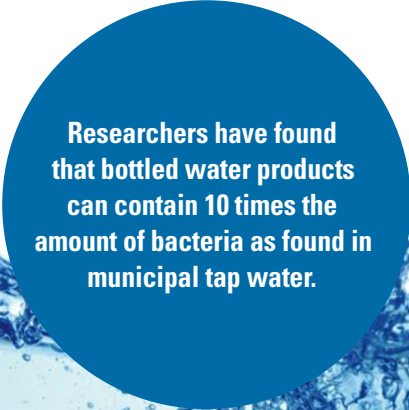
Test your water!

In 2015, nearly ¼ of the US population water came from systems containing contaminated or untested drinking water.

If you have a private water source (well), you are responsible for ensuring your water safety. Test water every year for total coliform bacteria, nitrates, total dissolved solids, and pH levels—especially if you have a new well, or have replaced or repaired pipes, pumps or the well casing. You may contact your local health department to have your water tested for bacteria or nitrates.

For additional tests, you will need to locate a [state certified laboratory in your area](http://www.epa.gov/dwlabcert/contact-information-certification-programs-and-certified-laboratories-drinking-water) (www.epa.gov/dwlabcert/contact-information-certification-programs-and-certified-laboratories-drinking-water) by calling the Safe Drinking Water Hotline at 800-426-4791.

Because the laboratory tests are expensive it is recommended that you limit tests to possible problems specific to your situation. The following table can help you determine which tests may be most appropriate for your situation.



Researchers have found that bottled water products can contain 10 times the amount of bacteria as found in municipal tap water.

When to test your water

Conditions or Nearby Activities	Recommended Test
Recurrent gastrointestinal illnesses	Coliform bacteria
Household plumbing contains lead	pH, lead, copper
Radon in indoor air or region is radon rich	Radon
Scaly residues, soaps don't lather	Hardness
Water softener needed to treat hardness	Manganese, iron
Stained plumbing fixtures, laundry	Iron, copper, manganese
Objectionable taste or smell	Hydrogen sulfide, corrosion, metals
Water appears cloudy, frothy, or colored	Color, detergents
Corrosion of pipes, plumbing	Corrosion, pH, lead
Rapid wear or water treatment equipment	pH, corrosion
Nearby areas of intensive agriculture	Nitrate, pesticides, coliform bacteria
Coal or other mining operation nearby	Metals, pH, corrosion
Gas drilling operation nearby	Chloride, sodium, barium, strontium
Odor of gasoline or fuel oil, and nearby gas station or buried fuel tanks	Volatile organic compounds (VOC)
Dump, junkyard, landfill, factory or dry-cleaning operation nearby	VOC, total dissolved solids (TDS), pH, sulfate, chloride, metals
Salty taste and seawater, or a heavily salted roadway nearby	Chloride, TDS, sodium

Source: www.epa.gov/privatewells/protect-your-homes-water#welltanchor

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