

Drinking Water: Bottled or Tap?

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This publication discusses the regulation and safety of drinking water from various sources.

While most Nebraska residents rely on tap water, an increasing number are using bottled water for their primary source of drinking water. The increase in the popularity of bottled water can be attributed to a number of factors including the taste, color, and odor of tap water, and other real or perceived quality problems with tap water.

While the tap water may be safe for human consumption, the presence of chlorine, iron, manganese, or other dissolved substances may make the water undesirable for drinking to some individuals.

Problems with the water in one municipality, and media coverage questioning the quality and safety of all public water supplies can lead some people to question the safety of their tap water. However, the quality of publicly supplied water is regulated by the Environmental Protection Agency (EPA) and public notification must be made if the water becomes unsafe. The quality of private water supplies is not subject to any regulation.

What is Bottled Water?

Bottled water is defined as water that is sealed in food grade bottles and intended for human consumption. There are several types of bottled water, depending on the type of water provided and the source of the water. This publication will address the type of bottled water most often used to replace tap water.

Some bottled water is carbonated and is called sparkling water. This water has a “fizz” that is usually created by carbon dioxide gas. Water without the added carbonation is still water. Ordinary tap water and most bottled water found in larger containers are examples of still water. Bottled still water is the type of water most often used to replace tap water.

Water has varying levels of dissolved minerals. The mineral content is expressed as the Total Dissolved Solids

(TDS) in the water. Bottled water sold as mineral water usually has a higher TDS content than tap water since people want and expect mineral salts in their mineral water. Distilled or demineralized water has been treated to remove nearly all minerals that occur naturally in the water, making the water taste flat. Natural water is unmodified by mineral addition or deletion. Groundwater will contain the minerals dissolved as the water moves through soil and rock materials. Natural bottled water or mineral water are the types most often used to replace tap water.

Bottled water can come from a variety of sources including groundwater from a well, water from a protected spring, or water from a public water supply. Groundwater comes from an aquifer, an underground zone of saturated sand, gravel, or rock that yields significant quantities of water. In most cases a well is drilled in the ground and cased, and the water is pumped out. Spring water flows naturally to the surface from an underground formation. The source of water for a public water supply can be groundwater, surface water, or a combination. Bottled water from all of the sources mentioned above is used to replace tap water.

How is Bottled Water Regulated?

Domestic bottled water distributed through interstate commerce

Domestic bottled water sold in states other than that in which it was bottled (interstate commerce) is regulated as a food by the Food and Drug Administration (FDA). This water must meet FDA water identity and quality standards. To ensure that FDA standards are met, bottling companies must regularly test their products. The FDA standards may be found in Title 21, Part 165 of the Code of Federal Regulations.

The FDA also requires that bottled water products distributed through interstate commerce comply with its Good Manufacturing Practices. These practices cover the production and packaging of bottled water and provide assurance that bottled water products are processed under sanitary conditions and are clean and safe for human consumption.

Imported bottled water

Imported water also is regulated as a food by the FDA and must meet all FDA water standards. To ensure that those standards are met, bottled water imported from foreign countries is randomly tested at ports of entry.

Water bottled and sold in-state

FDA rules for bottled water exempt water that is packaged and sold within the same state. The quality of water packaged and sold in-state may be regulated by an agency in that state or may be unregulated. These waters are unregulated in roughly one out of five states. In those states where water packaged and sold in the state is regulated, the levels of contaminants allowed may be equal to, greater than, or less than that allowed by FDA. **Water bottled and sold in Nebraska is regulated by the Nebraska Department of Agriculture and must meet FDA bottled water standards.**

Self-regulation by the bottled water industry

The bottled water industry regulates itself through the International Bottled Water Association. The IBWA sets manufacturing requirements, which help to ensure that bottled waters meet FDA health standards. Bottled water producers who are members of IBWA are inspected annually by a recognized independent organization, NSF International. Through unannounced inspections, members are evaluated on compliance with IBWA's performance requirements and FDA Quality Standards. Not all bottled water manufacturers are members of the IBWA. Approximately 85 to 90 percent of the domestic bottled water market and 35 major imported brands are produced by member companies. The label may indicate whether a bottled water comes from a member company.

Vended water

Water vending machines are systems where customers fill containers with water that has been treated in some way. Vended water is not considered bottled water. Vended water typically comes from a public water supply that is regulated by the EPA. Water vending machines are regulated by local authorities. In Nebraska, the Health and Human Services System permits vending machines, and periodic tests are done for coliform bacteria and nitrate.

What is Tap Water?

Tap water is defined as water that is supplied through a water distribution system and intended for human consumption. Tap water can come from either a public or private water supply. A public water supply is defined as a system that provides water for human consumption to at least 15 service connections or regularly serves at least 25 individuals. A private water supply is defined as a system that provides water for human consumption to fewer than 15 service connections or does not regularly serve at least 25 individuals.

How is Tap Water Regulated?

Tap water from a public water supply

Tap water from a public water supply is regulated by the Environmental Protection Agency. All public water supplies are required by the Safe Drinking Water Act to be tested on a scheduled basis for potentially harmful contaminants. There are specific requirements for which contaminants must be checked and for the frequency of checking. Currently, public water supplies are tested for approximately 95 different contaminants. To ensure that EPA Safe Drinking Water Act standards are met, public water suppliers must submit water samples to an approved laboratory for testing.

Tap water from a private water supply

In Nebraska, as in most states, tap water from a private water supply is not regulated. There are no requirements to test for potentially harmful contaminants. As a result, the burden is on the private water supply owner and user to determine if the water is safe to drink. There is no single test to determine the safety of drinking water. There are many contaminants that can present a health risk if present in sufficient concentrations. It would be very costly — and in many cases unnecessary — to test for them all. Tests for nitrate and bacteria often are used as general indicators of the safety of private drinking water. Testing for other contaminants should be performed when a specific contaminant is suspected. For additional information on private drinking water testing, see NebGuide G907, *Testing for Drinking Water Quality*.

How Safe is Drinking Water From Various Sources?

Bottled water

Bottled water is not **pure** water, as nearly all bottled water contains dissolved substances. The FDA regulates the quality of imported bottled water and bottled water distributed through interstate commerce. FDA has established allowable levels for a number of potential contaminants. Bottled water cannot contain more than the allowable level for any given substance. While there are a few differences, the allowable level for various contaminants allowed by the FDA in bottled water is essentially the same as the maximum contaminant levels that the EPA allows in public water supplies. If a bottled water producer is in full compliance with regulations, the water should be suitable for drinking and cooking.

The quality of water bottled and sold in-state may be unregulated, or may be regulated by a state agency. Water bottled and sold within states other than Nebraska may or may not be suitable for drinking and cooking. Water bottled and sold in Nebraska is regulated by the Department of Agriculture and must meet FDA standards for bottled water quality. If a producer bottling and selling water in Nebraska is in full compliance with Nebraska Department of Agriculture regulations, the water should be suitable for drinking and cooking.

The levels of dissolved substances in bottled water varies among different companies depending on source and treatment. You may be able to obtain information about the quality of the water being provided by reading the bottle label and contacting the bottling company. Bottled water must comply with FDA's quality standards, although not all potential contaminants are regulated and there is always some risk of contaminants going undetected between testing intervals.

Bottled water may be treated prior to bottling, and treatment methods can vary from one company to another. Possible treatment includes activated carbon filter to improve odor and remove chlorine, hydrogen sulfide, organics, pesticide and radon; cation exchange to remove dissolved calcium and magnesium; microbiological filter to filter out bacteria, protozoa, parasites and viruses; reverse osmosis to reduce heavy metals, nitrate, sodium and sulfate; and ozonation or ultra violet to disinfect the water, removing bacteria and organic matter. In the case of some mineral waters, water (usually from a public water supply) may be treated to remove nearly all minerals, and a custom mineral mix added to the water.

When using bottled water, good sanitation measures are important to keep the water safe and to control exposure to bacteria.

Vended water

Vended water comes from a public water supply. Since it meets EPA drinking water standards, it is safe for human consumption. Additional treatment may occur to reduce dissolved substances and disinfect the water supply. While you can expect the water from a vending machine to be potable, inadequate cleaning or unsanitary handling of the vending machine or the container used to collect and store the water could result in bacterial contamination. Good sanitation measures are important to keep vended water safe.

Tap water

Tap water is not **pure** water, as all publicly supplied tap water contains dissolved substances. Tap water from a public water supply is regulated by the EPA. EPA has established maximum levels for a number of potential contaminants. Publicly supplied water cannot contain more than the maximum level for any given substance. While there are a few differences, the maximum level for various contaminants allowed by the EPA in tap water are essentially the same as the maximum level the FDA allows in bottled water. If a public water supply is in full compliance with EPA Safe Drinking Water Act regulations, it should be suitable for drinking and cooking. Just as with bottled water, there is always some risk of contaminants going undetected between testing intervals and some potential contaminants are unregulated.

The level of contaminants in publicly supplied water will vary from system to system. The 1996 Safe Drinking Water Act revision required all public water suppliers to provide annual water quality reports, referred to as consumer con-

fidence reports (CCRs), with the first reports distributed to all customers by October 1999 and then on an annual basis. Reports are required to identify any regulated contaminants that are present in the water, their concentration and indicate if they exceed the maximum allowable level. For information on the quality of tap water from a public system, read the CCR or contact the water supplier.

If the water from a public water system violates a Safe Drinking Water Act standard, the local water supplier is required to notify users about the violation and provide information on alternative sources of drinking water. In some instances, if a local water supply has been contaminated, the local water supplier may distribute bottled water to its customers until the problem has been remedied. Any time a situation occurs where there is the potential for human health to be immediately impacted, water suppliers have 24 hours to notify people who may drink the water. Water suppliers must use media outlets such as television, radio and newspapers, post a notice in public places, or personally deliver a notice to customers in these situations. Any time a water system provides water with levels of a contaminant that exceed EPA standards or that hasn't been treated properly, but that doesn't pose an immediate risk to human health, the water system must notify its customers as soon as possible, but within 30 days of the violation. When a water system violates a standard that does not have a direct impact on human health (for example, failing to take a required sample on time) the water supplier has up to a year to provide notice of this situation to its customers.

In Nebraska, and in most states, drinking water from a private water supply is not regulated. If water test results indicate private tap water is in compliance with EPA regulations for public drinking water supplies, the water should be suitable for drinking and cooking. If private drinking water is contaminated, bottled water is one alternative to consider. Water treatment is another alternative and may be less expensive over a long period of time.

Sensitive populations

Individuals with a compromised immune system, or those who react adversely to disinfectants or specific minerals in water should consult their health care provider on their drinking water source.

Summary

The decision to use bottled water or tap water is often one of choice. Allowable maximum levels for potentially harmful contaminants are enforced for public water supplies, imported bottled water, and domestic bottled water sold through interstate commerce. Individual states may or may not enforce allowable maximum levels for bottled water that is sold only in the state in which it is bottled. Private water supplies are not subject to any regulation.

If bottled water is commercially sold in Nebraska but is bottled in a country other than the United States or in a state other than Nebraska, it is regulated by FDA and must meet FDA bottled water standards. If water is commercially

sold in Nebraska and is bottled and sold in this state, it is regulated by the Nebraska Department of Agriculture and must meet FDA bottled water standards. All publicly supplied tap water in Nebraska is regulated by EPA and must meet Safe Drinking Water standards. Either bottled water sold in Nebraska or publicly supplied water in Nebraska will be suitable for drinking and cooking if in full compliance with respective FDA or EPA regulations. While the quality of privately supplied water is not regulated, a private water supply that has been tested and meets EPA Safe Drinking Water standards will be suitable for drinking and cooking. Bottled water may be a good alternative if the taste, color, or odor of tap water is objectionable to the user. In addition, it may be a good alternative if tap water does not meet EPA Safe Drinking Water standards.

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