

# WATER QUALITY

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## Water Quality

The United States has one of the safest water supplies in the world. However, national statistics don't tell you specifically about the quality and safety of the water coming out of your tap. That's because drinking water quality varies from place to place, depending on the condition of the source water from which it is drawn and the treatment it receives.

Now you have a new way to find information about your drinking water, if it comes from a public water supplier. (EPA doesn't regulate private wells, but does have [recommendations for their owners](#).) Every community water supplier must provide an annual report (sometimes called a consumer confidence report) to its customers. The report provides information on your local drinking water quality, including the water's source, the contaminants found in the water, and how consumers can get involved in protecting drinking water. If you have been looking for specific information about your drinking water, this annual report will provide you with the information you need to begin your investigation.

These annual reports will by necessity be short documents. You may want more information, or have more questions. One place you can go is to your water supplier, who is best equipped to answer questions about your specific water supply. This page will help you find other sources of information.

**[Tap Into Prevention: Drinking Water Information for Health Care Providers](#):** This continuing education video explains potential health risks from exposure to microbial and chemical contaminants in drinking water and demonstrates actions health care providers can take in their practices. It's available in DVD and VHS formats.

For an overview of drinking water issues, read [Water on Tap: What You Need To Know](#). You may wish to consult EPA's [drinking water glossary](#) if you find unfamiliar terms in the following pages. For other assistance, please contact the [Safe Drinking Water Hotline](#) at 1 800 426 4791.

Most Americans get their drinking water from large scale municipal water systems that rely on surface water sources such as rivers, lakes and reservoirs. However, millions of Americans depend on private water sources such as wells and aquifers. In either case, the United States enjoys one of the cleanest drinking water supplies in the world. The EPA regulates the quality of the nation's drinking water by issuing and enforcing safe drinking water standards. EPA also protects the nation's drinking water by safeguarding our watersheds and regulating the release of pollutants into the environment. In partnership with local authorities and community groups, the Agency encourages water conservation. EPA also works with these partners to develop contingency plans for source contamination and other water emergencies.

Each year by July 1 you should receive in the mail a short report (consumer confidence report) from your water supplier that tells where your water comes from and what's in it [see if your report is posted on line](#) or [read a fact sheet](#) about these new reports.

## What Law Keeps My Drinking Water Safe?

Congress passed the Safe Drinking Water Act (SDWA) in 1974 to protect public health by regulating the nation's public drinking water supply and protecting sources of drinking water. SDWA is administered by the U.S. Environmental Protection Agency (EPA) and its state partners.

### Highlights of the Safe Drinking Water Act

- Authorizes EPA to set enforceable health standards for contaminants in drinking water
- Requires public notification of water systems violations and annual reports (Consumer Confidence Reports) to customers on contaminants found in their drinking water  
[www.epa.gov/safewater/ccr](http://www.epa.gov/safewater/ccr)
- Establishes a federal state partnership for regulation enforcement
- Includes provisions specifically designed to protect underground sources of drinking water  
[www.epa.gov/safewater/uic](http://www.epa.gov/safewater/uic)
- Requires disinfection of surface water supplies, except those with pristine, protected sources
- Establishes a multi billion dollar state revolving loan fund for water system upgrades  
[www.epa.gov/safewater/dwsrf](http://www.epa.gov/safewater/dwsrf)
- Requires an assessment of the vulnerability of all drinking water sources to contamination  
[www.epa.gov/safewater/protect](http://www.epa.gov/safewater/protect) Drinking Water: Past, Present, and Future EPA 816 F 00 002

### What Is a Public Water System?

The Safe Drinking Water Act (SDWA) defines a public water system (PWS) as one that serves piped water to at least 25 persons or 15 service connections for at least 60 days each year. There are approximately 161,000 public water systems in the United States.<sup>1</sup> Such systems may be publicly or privately owned. Community water systems (CWSs) are public water systems that serve people year round in their homes. Most people in the U.S. (268 million) get their water from a community water system. EPA also regulates other kinds of public water systems, such as those at schools, campgrounds, factories, and restaurants. Private water supplies, such as household wells that serve one or a few homes, are not regulated by EPA.

### Public Water Systems

*Community Water System (54,000 systems)* A public water system that serves the same people year round. Most residences are served by Community Water Systems. *Non Community Water System (approximately 108,000 systems)* A public water system that does not serve the same people year round. There are two types of non community systems:

- *Non Transient Non Community Water System (almost 19,000 systems)* A non community water system that serves the same people more than six months of the year, but not year round. For example, a school with its own water supply is considered a non transient system.
- *Transient Non Community Water System (more than 89,000 systems)* A noncommunity water system that serves the public but not the same individuals for more than six months. For example, a rest area or a campground may be considered a transient system.

## Where Can I Find Information About My Local Water System?

Since 1999, water suppliers have been required to provide annual Consumer Confidence Reports to their customers. These reports are due by July 1 each year, and contain information on contaminants found in the drinking water, possible health effects, and the water's source. Some Consumer Confidence Reports are available at [www.epa.gov/safewater/dwinfo.htm](http://www.epa.gov/safewater/dwinfo.htm). Water suppliers must promptly inform you if your water has become contaminated by something that can cause immediate illness. Water suppliers have 24 hours to inform their customers of violations of EPA standards "that have the potential to have serious adverse effects on human health as a result of short term exposure." If such a violation occurs, the water system will announce it through the media, and must provide information about the potential adverse effects on human health, steps the system is taking to correct the violation, and the need to use alternative water supplies (such as boiled or bottled water) until the problem is corrected.

Systems will inform customers about violations of less immediate concern in the first water bill sent after the violation, in a Consumer Confidence Report, or by mail within a year. In 1998, states began compiling information on individual systems, so you can evaluate the overall quality of drinking water in your state. Additionally, EPA must compile and summarize the state reports into an annual report on the condition of the nation's drinking water. To view the most recent annual report, see [www.epa.gov/safewater/annual](http://www.epa.gov/safewater/annual).

## How Often Is My Water Supply Tested?

EPA has established pollutant specific minimum testing schedules for public water systems. To find out how frequently your drinking water is tested, contact your water system or the agency in your state in charge of drinking water. If a problem is detected, immediate retesting requirements go into effect along with strict instructions about how the system informs the public. Until the system can reliably demonstrate that it is free of problems, the retesting is continued. In 2001, one out of every four community water systems did not conduct testing or report the results for all of the monitoring required to verify the safety of their drinking water. Although failure to monitor does not necessarily suggest safety problems, conducting the required reporting is crucial to ensure that problems will be detected. Consumers can help make sure certain monitoring and reporting requirements are met by first contacting their state drinking water agency to determine if their water supplier is in compliance. If the water system is not meeting the requirements, consumers can work with local and state officials and the water supplier to make sure the required monitoring and

reporting occurs.

A network of government agencies monitor tap water suppliers and enforce drinking water standards to ensure the safety of public water supplies. These agencies include EPA, state departments of health and environment, and local public health departments.

## Common Sources of Pollution

**Naturally Occurring:** microorganisms (wildlife and soils), radionuclides (underlying rock), nitrates and nitrites (nitrogen compounds in the soil), heavy metals (underground rocks containing arsenic, cadmium, chromium, lead, and selenium), fluoride.

**Human Activities:** bacteria and nitrates (human and animal wastes septic tanks and large farms), heavy metals (mining construction, older fruit orchards), fertilizers and pesticides (used by you and others (anywhere crops or lawns are maintained)), industrial products and wastes (local factories, industrial plants, gas stations, dry cleaners, leaking underground storage tanks, landfills, and waste dumps), household wastes (cleaning solvents, used motor oil, paint, paint thinner), lead and copper (household plumbing materials), water treatment chemicals (wastewater treatment plants).

## What Problems Can Occur?

Actual events of drinking water contamination are rare, and typically do not occur at levels likely to pose health concerns. However, as development in our modern society increases, there are growing numbers of activities that can contaminate our drinking water. Improperly disposed of chemicals, animal and human wastes, wastes injected underground, and naturally occurring substances have the potential to contaminate drinking water. Likewise, drinking water that is not properly treated or disinfected, or that travels through an improperly maintained distribution system, may also pose a health risk. Greater vigilance by you, your water supplier, and your government can help prevent such events in your water supply.

Contaminants can enter water supplies either as a result of human and animal activities, or because they occur naturally in the environment. Threats to your drinking water may exist in your neighborhood, or may occur many miles away. For more information on drinking water threats, see

[http://www.epa.gov/safewater/publicoutreach/pdfs/poster\\_landscape\\_11x17version.pdf](http://www.epa.gov/safewater/publicoutreach/pdfs/poster_landscape_11x17version.pdf).

Some typical examples are microbial contamination, chemical contamination from fertilizers, and lead contamination.

## Consumer Confidence Report General Information

- [Consumer Confidence Report – General Information](#)
- [Cryptosporidium / Immunocompromised](#)
- [Lead](#)
- [Monitoring Waiver](#)

- [Safe Drinking Water Hotline](#)

## Consumer Confidence Report – General Information

### **Q: What is a CCR?**

A: The Consumer Confidence Report, or CCR, is an annual water quality report that a community water system is required to provide to its customers. The CCR contains information about substances detected in your drinking water, possible sources of the substances, potential health effects of the substances and other valuable information.

### **Q: When will I receive my Annual Water Quality Report (CCR)?**

A: Community water systems are required to provide the CCR to customers by July 1 of each year. The report contains water quality information from the previous calendar year.

### **Q: I received a water quality report from my water system. Does this report indicate there is something wrong with the water, or that it's unsafe?**

A: Every Community Water System (CWS) is required by law to provide its customers with a water quality report also known as a Consumer Confidence Report (CCR). The CCR is a general overview of the water quality. This report lists the regulated contaminants the CWS detected in treated water and the level at which they were found for the preceding calendar year.

For each detected contaminant, the report must contain the following pieces of information in a table; maximum contaminant level goal (MCLG), maximum contaminant level (MCL), level of contaminant detected, likely contaminant source, and notation of any violation. The Hotline can provide general information concerning the required content for the CCR. Contact your local water system for specific information about local water quality.

### **Q: What do MCL, MCLG and MRDL mean?**

A: Each CCR should contain a section of definitions, which explains what these terms mean. Below is a table of definitions.

### **Important Drinking Water Definitions**

- **MCLG: Maximum Contaminant Level Goal:** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- **MCL: Maximum Contaminant Level:** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
- **TT: Treatment Technique:** A required process intended to reduce the level of a contaminant in drinking water.

**AL: Action Level:** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

- **Variations and Exemptions:** State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
- **MRDLG: Maximum residual disinfection level goal.** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **MRDL: Maximum residual disinfectant level.** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **MNR: Monitored Not Regulated**
- **MPL: State Assigned Maximum Permissible Level**

## Cryptosporidium / Immunocompromised

### **Q: Why did my CCR contain information on cryptosporidium? What can I do if I am immunocompromised?**

A: A section concerning cryptosporidium and other microbial contaminants is required in all CCRs to provide information for immunocompromised persons such as individuals with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants. The section does not indicate the presence of cryptosporidium in drinking water. A guidance document developed jointly by EPA and CDC for people who may be immunocompromised is available online at [www.epa.gov/safewater/crypto.html](http://www.epa.gov/safewater/crypto.html). This guidance provides important information for immunocompromised individuals. You can order hard copies of this guidance through the SDW Hotline.

### **Q: Does my public water system treat the water for cryptosporidium?**

A: Contact your water system to inquire about its cryptosporidium removal practices.

### **Q: What the health effects are associated with cryptosporidium?**

A: Cryptosporidium can cause gastrointestinal illness (e.g., diarrhea, vomiting, cramps). Other health effects information concerning cryptosporidium is available online at [www.epa.gov/safewater/crypto.html](http://www.epa.gov/safewater/crypto.html).

## Lead in Drinking Water

### **Q: Is there a safe level of lead in drinking water for children?**

A: EPA has set the maximum contaminant level goal for lead at zero because lead is a toxic metal that can be harmful to human health even at low exposure levels, it is persistent, and it



can bioaccumulate in the body over time. The Center for Disease Control and Prevention recommends intervention when the level of lead in a child's blood is 10 micrograms per deciliter or greater. It is important to recognize all the ways a child can be exposed to lead. Children are exposed to lead in paint, dust, soil, air, and food, as well as drinking water. Therefore, the amount of lead a child can be exposed to in drinking water before exceeding the recommended blood level depends upon the amount of lead coming from these other sources. Young children, infants, and fetuses are particularly vulnerable to lead because the physical and behavioral effects of lead occur at lower exposure levels in children than in adults. A dose of lead that would have little effect on an adult can have a significant effect on a child. In children, low levels of exposure have been linked to damage to the central and peripheral nervous system, learning disabilities, shorter stature, impaired hearing, and impaired formation and function of blood cells.

## Monitoring Waiver

### **Q: Why does the current CCR contain results from previous calendar years?**

A: Federal regulations require that if a system is allowed to monitor for regulated contaminants less often than once a year, the table must include the date and results of the most recent sampling. Thus, the report may reflect the date and result of the last samples taken.

## Safe Drinking Water Hotline

### **Q: Why is the Safe Drinking Water Hotline's 800 number listed in the report if the Hotline cannot provide local water quality information?**

A: Systems are required to provide a name and telephone contact at the water system who can answer questions about the report. In addition, a toll free number for EPA's Safe Drinking Water Hotline is provided to offer another source of information at no cost to the customer. The Hotline provides general information about CCRs and other safe drinking water issues. Hotline staff can also direct callers to sources for additional information, and can assist people in understanding the purpose and language of the CCRs.

**Operator Certification:** States must implement programs to certify operators of drinking water systems. EPA has published guidance outlining minimum requirements. **Small Systems and Capacity Development:** The program addresses issues affecting drinking water systems serving populations less than 3,300. A major focus is on capacity development, which refers to the technical, financial and managerial capacity of a system to provide safe drinking water. The program also provides information about treatment technology options for small systems.

**Laboratories and Monitoring:** Water systems must monitor their drinking water to ensure that it is safe for their customers. Monitoring schedules differ according to the type of contaminant and the population that the public water system serves. EPA approves the analytical methods that laboratories use to analyze drinking water samples and also certifies the laboratories.

**Water Conservation:** See our [water efficiency page](#) for information on guidelines for states on

water conservation programs and guidance for water systems on how to prepare water conservation plans, as well as fact sheets for the public.

**Research:** The Office of Research & Development's [Water Supply and Water Resources Division](#) conducts research to help prepare drinking water regulations and to develop technologies and strategies for controlling waterborne contaminants.

## Public Water System Supervision (PWSS) Program Issues

- [PWSS Water Supply Guidance](#)
- [Definition of a Public Water System \(PWS\)](#)
- [Primacy Requirements](#): states must meet specific requirements in order to have enforcement responsibility for PWSs
- [PWSS Grants to States](#)
- [Tribal Programs](#)
- [Drinking Water Customer Satisfaction Survey](#) ( 240 K PDF FILE)  
EPA commissioned the Gallup Organization to conduct a nationwide telephone survey of 1,000 households to assess (1) general knowledge about drinking water, (2) water use behavior, such as use of bottled water and home water treatment systems, (3) public confidence with information sources, and (4) value consumers place on EPA's "right to know" efforts, such as consumer confidence reports and source water assessments.

**Enforcement:** EPA's Office of Enforcement and Compliance Assurance (OECA) works on [enforcement activities related to drinking water](#).

**Variations and Exemptions:** States or EPA may grant variations to allow public water systems to use less costly technology. Exemptions can allow public water systems more time to comply with a new regulation. Read the [rule](#), published in August 1998. **Information from other federal agencies:**

- Department of Agriculture [Rural Utilities Service](#)
- Department of Interior [Bureau of Reclamation](#)
- [US Geological Survey](#)

## Water Quality FAQ

### **Q. How can I find out if my tap water is safe to drink?**

A: Because of water's different sources and the different ways in which water is treated, the taste and quality of drinking water varies from place to place. Over 90 percent of water systems

meet EPA's standards for tap water quality. The best source of specific information about your drinking water is your water supplier. Water suppliers that serve the same people year round are required to send their customers an [annual water quality report](#) (sometimes called a consumer confidence report). Contact your water supplier to get a copy or [see if your report is posted on line](#). For additional information, visit EPA's web site's on [local drinking water](#) (provides links to state and local sources of water quality information) and [drinking water and health](#) (provides information on drinking water contaminants and their health effects).

**Q. How will I know if my water isn't safe to drink?**

A: Your water supplier must notify you by newspaper, mail, radio, TV, or hand delivery if your water doesn't meet EPA or state standards or if there is a waterborne disease emergency. The notice will describe any precautions you need to take, such as boiling your water. Follow the advice of your water supplier if you ever receive such a notice. The most common drinking water emergency is contamination by disease causing germs. Boiling your water for one minute will kill these germs. You can also use common household bleach or iodine to disinfect your drinking water at home in an emergency, such as a flood (see EPA's [emergency disinfection fact sheet](#) for specific directions on how to disinfect your drinking water in an emergency).

**Q. What's this new drinking water report that I've heard about?**

A. Water suppliers must deliver to their customers annual drinking water quality reports (or [consumer confidence reports](#)). These reports will tell consumers what contaminants have been detected in their drinking water, how these detection levels compare to drinking water standards, and where their water comes from. The reports must be provided annually before July 1, and, in most cases, are mailed directly to customers' homes. Contact your water supplier to get a copy of your report, or [see if your report is posted on line](#).

**Q. How can I get my water tested?**

A.: If your home is served by a water system, get a copy of your [annual water quality report](#) before you test your water. This report will tell you what contaminants have been found in your drinking water and at what level. After you've read this report, you may wish to test for specific contaminants (such as lead) that can vary from house to house, or any other contaminant you're concerned about. EPA does not test individual homes, and cannot recommend specific laboratories to test your drinking water. States certify water testing laboratories. You may call your [state certification officer](#) to get a list of certified laboratories in your state. Depending on how many contaminants you test for, a water test can cost from \$15 to hundreds of dollars.

**Q. What is a drinking water standard?**

A. Under the authority of the [Safe Drinking Water Act](#) (SDWA), EPA sets standards for approximately 90 contaminants in drinking water. For each of these contaminants, EPA sets a legal limit, called a [maximum contaminant level](#), or requires a certain treatment. Water suppliers may not provide water that doesn't meet these standards. Water that meets these standards is safe to drink, although [people with severely compromised immune systems](#) and [children](#) may have special needs. For a more detailed description, read about [how standards are set](#) or about EPA's [Office of Ground Water and Drinking Water](#).

**Q. I don't like the taste/smell/appearance of my tap water. What's wrong with it?**

A. Even when water meets EPA's standards, you may still object to its taste, smell, or appearance. EPA sets [secondary standards](#) based on these aesthetic characteristics (not health effects) which water systems and states can choose to adopt. Common complaints about water aesthetics include temporary cloudiness (typically caused by air bubbles) or chlorine taste (which can be improved by letting the water stand exposed to the air).

**Q. I'm worried about a specific drinking water contaminant [lead, Cryptosporidium, nitrate, radon, etc.]. What should I know?**

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. As long as they occur below EPA's standards, they don't pose a significant threat to health, although people with severely compromised immune systems and children may have special needs. For more information about a specific contaminant, see EPA's [fact sheets on drinking water contaminants](#), which have more detailed information on every contaminant EPA currently sets standards for and those EPA is considering setting standards for.

**Q. What if I have a severely compromised immune system?**

A. Some people may be more vulnerable to contaminants in drinking water than the general population. People with severely compromised immune systems, such as people with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. [EPA/Centers for Disease Control guidelines](#) on appropriate means to lessen the risk of infection from Cryptosporidium and other microbial contaminants offer more detailed advice.

**Q. What should I do if I have my own drinking water well?**

A.: If you have your own well, you are responsible for making sure that your water is safe to drink. Private wells should be tested annually for nitrate and coliform bacteria to detect contamination problems early. Test more frequently and for other contaminants, such as radon or pesticides, if you suspect a problem. Check with your local health department and local public water systems that use ground water to learn more about well water quality in your area and what contaminants you are more likely to find. More information is available on [EPA's page for private well owners](#). You can help protect your water supply by carefully managing activities near the water source. The organization [Farm\\*A\\*Syst/Home\\*A\\*Syst](#) provides information to help farmers and rural residents assess pollution risks and develop management plans to meet their unique needs.

**Q. What about bottled water?**

A.: Bottled water is not necessarily safer than your tap water. EPA sets standards for tap water provided by public water systems; the Food and Drug Administration sets bottled water standards based on EPA's tap water standards. Bottled water and tap water are both safe to drink if they meet these standards, although [people with severely compromised immune](#)

[systems](#) and [children](#) may have special needs. Some bottled water is treated more than tap water, while some is treated less or not treated at all. Bottled water costs much more than tap water on a per gallon basis. Bottled water is valuable in emergency situations (such as floods and earthquakes), and high quality bottled water may be a desirable option for people with weakened immune systems. Consumers who choose to purchase bottled water should carefully read its label to understand what they are buying, whether it is a better taste, or a certain method of treatment.

More information on bottled water is available from the [International Bottled Water Association](#), which represents most US bottlers.

#### **Q. What about home water treatment units?**

A.: Most people do not need to treat their drinking water at home to make it safe. A home water treatment unit can improve water's taste, or provide an extra margin of safety for people more vulnerable to the effects of waterborne illness ([people with severely compromised immune systems](#) and [children](#) may have special needs). Consumers who choose to purchase a home water treatment unit should carefully read its product information to understand what they are buying, whether it is a better taste or a certain method of treatment. Be certain to follow the manufacturer's instructions for operation and maintenance, especially changing the filter on a regular basis. EPA neither endorses nor recommends specific home water treatment units. EPA does register units that make germ killing claims (contact the National Antimicrobial Information Network at 800/447 6349 for more information). No single unit takes out every kind of drinking water contaminant; you must decide which type best meets your needs.

For help in picking a unit, contact one of the following independent non profit organizations: [NSF International](#) (877/8 NSF HELP), the [Underwriters Laboratories Inc.](#) (888 547 8851), and the [Water Quality Association](#) (630 505 0160). Both NSF International and Underwriters Laboratories Inc. test and certify home water treatment units. The Water Quality Association classifies units according to the contaminants they remove as well as listing units that have earned their "Gold Seal" approval. Water treatment units certified by these organizations will indicate certification on their packaging or labels.

#### **Q. Where does my drinking water come from?**

A. Drinking water can come from either ground water sources (via wells) or surface water sources (such as rivers, lakes, and streams). Nationally, most water systems use a ground water source (80%), but most people (66%) are served by a water system that uses surface water. This is because large metropolitan areas tend to rely on surface water, whereas small and rural areas tend to rely on ground water. In addition, 10 20% of people have their own private well for drinking water. To find the source of your drinking water, check your annual water quality report or call your water supplier. You can get more information about specific watersheds by visiting EPA's [Watershed Information Network](#). You can also learn more about EPA, state, and other efforts to [protect sources of drinking water](#).

#### **Q. How can I help protect my drinking water?**

A.: Drinking water protection is a community wide effort, beginning with protecting the source of your water, and including education, funding, and conservation. Many communities already have established source water protection programs. Call your local water supplier to find out if your community participates. You can also support efforts to improve operation, maintenance, and construction of water treatment processes. States are now engaged in source water assessments, to work with communities to identify local sources of contamination. You can contact your [state source water protection program](#) to find out how to get involved in this process, or join a local group in [Adopting a Watershed](#).

**Q. How many public water systems are there in the United States?**

A. There are almost 170,000 public water systems in the United States. Visit EPA's page of [water system facts and figures](#) for more information.

**Q: Where can I get more information?**

A.: For more information on your drinking water, contact your water supplier.

You can also contact:

- your [state drinking water program](#);
- call EPA's [Safe Drinking Water Hotline](#) at 1 800 426 4791;
- explore the rest of the Office of Ground Water and Drinking Water's web site, or
- order [publications](#) from EPA on various topics from source water protection to home well use.

EPA has also prepared a citizen's guide to drinking water called [Water on Tap: What You Need To Know](#).

**What contaminants may be found in drinking water?**

There is no such thing as naturally pure water. In nature, all water contains some impurities. As water flows in streams, sits in lakes, and filters through layers of soil and rock in the ground, it dissolves or absorbs the substances that it touches. Some of these substances are harmless. In fact, some people prefer mineral water precisely because minerals give it an appealing taste. However, at certain levels minerals, just like manmade chemicals, are considered contaminants that can make water unpalatable or even unsafe.

Some contaminants come from erosion of natural rock formations. Other contaminants are substances discharged from factories, applied to farmlands, or used by consumers in their homes and yards. Sources of contaminants might be in your neighborhood or might be many miles away. Your local water quality report tells which contaminants are in your drinking water, the levels at which they were found, and the actual or likely source of each contaminant.

Some ground water systems have established wellhead protection programs to prevent substances from contaminating their wells. Similarly, some surface water systems protect the

watershed around their reservoir to prevent contamination. Right now, states and water suppliers are working systematically to assess every source of drinking water and to identify potential sources of contaminants. This process will help communities to protect their drinking water supplies from contamination, and a summary of the results will be in future water quality reports.

For more information

- Read [a list of the drinking water contaminants that EPA regulates](#), including their sources in drinking water and their potential health effects.
- How does arsenic get in drinking water? How do people use vinyl chloride? a set of fact sheets provides [information on each contaminant that EPA regulates](#), including its tradename(s), areas in which it is commonly found, its possible health effects, etc.
- Non point source pollution, such as runoff from farmlands and urban storm water, is one of the greatest threats to water quality today. To learn more about this threat, see EPA's [Non point source pollution](#) site.
- To learn about the source water assessment process in your state, visit EPA's [local drinking water information web site](#), which will help you find the state's web site and source water protection coordinator.
- To find information about locations where there are substances present that may contaminate sources of drinking water (for example, Superfund sites), visit EPA's [Envirofacts](#) web site, where you can search by your location, zip code, etc. You can also use the [Enviromapper](#) function to plot the information that you find on a map.

### **Where does drinking water come from?**

A clean, constant supply of drinking water is essential to every community. People in large cities frequently drink water that comes from surface water sources, such as lakes, rivers, and reservoirs. Sometimes these sources are close to the community. Other times, drinking water suppliers get their water from sources many miles away. In either case, when you think about where your drinking water comes from, it's important to consider not just the part of the river or lake that you can see, but the entire watershed. The watershed is the land area over which water flows into the river, lake, or reservoir. In rural areas, people are more likely to drink ground water that was pumped from a well. These wells tap into aquifers the natural reservoirs under the earth's surface that may be only a few miles wide, or may span the borders of many states. As with surface water, it is important to remember that activities many miles away from you may affect the quality of ground water.

Your annual drinking water quality report will tell you where your water supplier gets your water.

For more information:

- Check out Surf Your Watershed's [Locate Your Watershed](#) feature. It will connect you to maps and dozens of sources of information about your watershed.

- To see [a map of the major North American aquifers](#) and [for other information about ground water](#), visit the web site of the U.S. Geological Survey. USGS also provides access to a wealth of [data about surface water quality](#).

### How is drinking water treated?

When a water supplier takes untreated water from a river or reservoir, the water often contains dirt and tiny pieces of leaves and other organic matter, as well as trace amounts of certain contaminants. When it gets to the treatment plant, water suppliers often add chemicals called coagulants to the water. These act on the water as it flows very slowly through tanks so that the dirt and other contaminants form clumps that settle to the bottom. Usually, this water then flows through a filter for removal of the smallest contaminants like viruses and Giardia.

Ground water is naturally filtered as it passes through layers of the earth into underground reservoirs known as aquifers. Water that suppliers pump from wells generally contains less organic material than surface water and may not need to go through any or all of the treatments described in the previous paragraph. The quality of the water will depend on local conditions.

The most common drinking water treatment, considered by many to be one of the most important scientific advances of the 20th century, is disinfection. Most water suppliers add chlorine or another disinfectant to kill bacteria and other germs.

Water suppliers use other treatments as needed, according to the quality of their source water. For example, systems whose water is contaminated with organic chemicals can treat their water with activated carbon, which adsorbs or attracts the chemicals dissolved in the water.

For more information:

- Click [here](#) to see a typical water treatment system for surface water.
- Read a fact sheet on [The History of Drinking Water Treatment](#)
- To learn more about the different treatments for drinking water, see the National Drinking Water Clearinghouse's [fact sheet series on drinking water treatments](#).
- Learn [how water towers work](#) and why they are important to you.

### What if I have special health needs?

People who have HIV/AIDS, are undergoing chemotherapy, take steroids, or for another reason have a weakened immune system may be more susceptible to microbial contaminants, including Cryptosporidium, in drinking water. If you or someone you know fall into one of these categories, talk to your health care provider to find out if you need to take special precautions, such as boiling your water.

Young children are particularly susceptible to the effects of high levels of certain contaminants, including nitrate and lead. To avoid exposure to lead, use water from the cold tap for making baby formula, drinking, and cooking, and let the water run for a minute or more if the water hasn't been turned on for six or more hours. If your water supplier alerts you that your water



does not meet EPA's standard for nitrates and you have children less than six months old, consult your health care provider. You may want to find an alternate source of water that contains lower levels of nitrates for your child.

- EPA and the Centers for Disease Control and Prevention (CDC) have prepared Guidance for People with Severely Weakened Immune Systems, in [English](#) and in CDC also has publications on [Cryptosporidium and HIV/AIDS](#) and [Cryptosporidiosis](#)
- Learn about the easy steps you can take at home to reduce your child's exposure to [Lead in Your Drinking Water. En Español](#)
- What are kid's sensitivities when it comes to drinking water? How are EPA and its many partners working to protect them? [Click here](#) to read "Children and Drinking Water Standards." [En Español](#)
- to learn more about the risks that high levels of nitrate may pose to very young children, read [Drinking Water: Nitrate and Methemoglobinemia](#) or [Nitrates in drinking water](#)
- visit the EPA [Children's Environmental Kids Club web site](#)

## What are the health effects of contaminants in drinking water?

EPA has set standards for more than 80 contaminants that may occur in drinking water and pose a risk to human health. EPA sets these standards to protect the health of everybody, including vulnerable groups like children. The contaminants fall into two groups according to the health effects that they cause. Your water supplier will alert you through the media, mail, or other means if there is a potential acute or chronic health effect from compounds in the drinking water. You may want to contact the supplier for additional information specific to your area.

Acute effects occur within hours or days of the time that a person consumes a contaminant. People can suffer acute health effects from almost any contaminant if they are exposed to extraordinarily high levels (as in the case of a spill). In drinking water, microbes, such as bacteria and viruses, are the contaminants with the greatest chance of reaching levels high enough to cause acute health effects. Most people's bodies can fight off these microbial contaminants the way they fight off germs, and these acute contaminants typically don't have permanent effects. Nonetheless, when high enough levels occur, they can make people ill, and can be dangerous or deadly for a person whose immune system is already weak due to HIV/AIDS, chemotherapy, steroid use, or another reason.

Chronic effects occur after people consume a contaminant at levels over EPA's safety standards for many years. The drinking water contaminants that can have chronic effects are chemicals (such as disinfection by products, solvents, and pesticides), radionuclides (such as radium), and minerals (such as arsenic). Examples of the chronic effects of drinking water contaminants are cancer, liver or kidney problems, or reproductive difficulties.

For more information

- For information on the drinking water contaminants that EPA regulates, see the [Contaminant Fact Sheets](#):
  - [Inorganic contaminants \(metals and minerals\)](#)
  - [Volatile organic chemicals \(mostly industrial chemicals and solvents\)](#)
  - [Synthetic organic chemicals \(mostly pesticides\)](#)
  - [Lead in Your Drinking Water](#) web site
- EPA and the Centers for Disease Control and Prevention (CDC) have prepared [Guidance for People with Severely Weakened Immune Systems](#) (also available in Spanish)
- CDC also has a fact sheet on [Cryptosporidiosis](#) a disease caused by drinking water contaminated by the parasite *cryptosporidium* .
- to learn how EPA sets limits on drinking water contaminants, read [Setting Standards for Safe Drinking Water](#) .
- What are kid's sensitivities when it comes to drinking water? How are EPA and its many partners working to protect them? Read [Children and Drinking Water Standards](#) .
- EPA is studying a large group of contaminants and will decide in the next few years whether these contaminants present enough of a health risk that EPA needs to set health standards for them. EPA published the [contaminant candidate list](#) in March 1998. Some of the well known contaminants that EPA is studying are:
  - [Radon](#)
  - [Methyl Tert Butyl Ether \(MTBE\)](#)
  - [Perchlorate](#)
- EPA has Health Advisories for some contaminants for which it has not set drinking water health standards. These health advisory levels help public health officials and consumers to know when there is a potential health risk (for example, in the event of a chemical spill), but they do not have any legal significance. View a chart of all the [Drinking Water Regulations and Health Advisories](#) .
- There are several other highly technical resources on the potential health effects of toxic substances, including contaminants that are sometimes found in drinking water. Among these are EPA's [Integrated Risk Information System](#) , the Agency for Toxic Substances and Disease Registry's [ToxFAQs](#) and the National Library of Medicine's [TOXNET](#) .

## Who is responsible for drinking water quality?

The Safe Drinking Water Act gives the Environmental Protection Agency (EPA) the responsibility for setting national drinking water standards that protect the health of the 250 million people who get their water from public water systems. Other people get their water

from private wells which are not subject to Federal Regulations. Since 1974, EPA has set national safety standards for over 80 contaminants that may occur in drinking water.

While EPA and state governments set and enforce standards, local governments and private water suppliers have direct responsibility for the quality of the water that flows to your tap. Water systems test and treat their water, maintain the distribution systems that deliver water to consumers, and report on their water quality to the state. States and EPA provide technical assistance to water suppliers and can take legal action against systems that fail to provide water that meets state and EPA standards.

### **For more information**

- Read [Water on Tap: What You Need To Know](#)
- Find out what's going on in your state. Find its drinking water web site through [EPA's local drinking water information web site](#). This site will also help you find information about your drinking water supplier.
- EPA's rules don't apply to water from private wells, but EPA does have some [recommendations for people who get water from private wells](#).
- To learn how EPA sets limits on drinking water contaminants, read [Setting Standards for Safe Drinking Water](#).
- Read the complete [Safe Drinking Water Act](#) or a summary of the [1996 Amendments to the Act](#)<http://www.epa.gov/safewater>.
- Each state writes an annual report on its systems' compliance with drinking water rules. EPA compiles and analyzes these reports in its [Compliance Report](#).

## What is a violation of a drinking water standard?

The Safe Drinking Water Act gives the Environmental Protection Agency (EPA) the responsibility for setting national drinking water standards that protect the health of the 250 million people who get their water from public water systems. Other people get their water from private wells which are not subject to Federal Regulations. Since 1974, EPA has set national safety standards for over 80 contaminants that may occur in drinking water.

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### How can I help protect drinking water?

Using the new information that is now available about drinking water, citizens can both be aware of the challenges of keeping drinking water safe and take an active role in protecting drinking water. There are lots of ways that individuals can get involved. Some people will help clean up the watershed that is the source of their community's water. Other people might get involved in wellhead protection activities to prevent the contamination of the ground water source that provides water to their community. These people will be able to make use of the information that states and water systems are gathering as they assess their sources of water.

Other people will want to attend public meetings to ensure that the community's need for safe drinking water is considered in making decisions about land use. You may wish to participate as your state and water system make funding decisions. And all consumers can do their part to conserve water and to dispose properly of household chemicals.

### For more information:

- Read [It's YOUR Drinking Water: Get to Know it and Protect it!](#): How the right to know provisions of the Safe Drinking Water Act can help you learn about and protect your drinking water. (EPA 810 K 99 002) or download a [printable PDF](#)
- Learn about what [source water protection](#) can mean to your community
- The [Farm\\*A\\*Syst/Home\\*A\\*Syst](#) program can help you to keep your farm or home from being a source of drinkingwater contaminants, and help you prevent contamination of your own drinking water supply.
- Many communities have implemented successful programs to protect their ground water source. Learn how do wellhead protection in your community from [The Groundwater Foundation](#) and the [Ground Water Protection Council](#)
- Find out what your state is doing about source water protection. Visit your state's source water protection web site, which you can find through EPA's [local drinking water info site](#)

- To find out about source water protection and local watershed cleanup activities, check [\*\*Adopt Your Watershed\*\*](#)
- See what [\*\*proposed EPA rules about drinking water\*\*](#) are open for comment
- Be careful not to waste water. Read [\*\*Using Water Efficiently: Ideas for Residences\*\*](#) (955 K PDF FILE, 2 pgs) and [\*\*other efficiency publications.\*\*](#)

<https://www.law.cornell.edu/cfr/text/40/part-141>