



# Do you know what's in your drinking water?

It is rare that a day goes by without some mention in the local or national media regarding drinking water concerns!

The following information was copied from the World Wide Web. Links to all the news information and source have been provided. Validity of information is deemed reliable but not verified.



Today we are going to look at why the local and national media sources have been dedicating so much air time and press to the topic of drinking water! The medias attention is not only focused on private wells sources, but municipal and city water sources as well.

## A Google Web Search for:

- **“Pharmaceuticals in city water”**  
**Listed 110,000,000 entries (Feb 2019)**
- **“Water well contamination”**  
**Listed 73,900,000 entries (Feb 2019)**

## City Water----Chlorine VS Chloramines

Many municipal water treatment plants have switched from using Chlorine as a disinfectant to Chloramines.

- While chlorine has long been used as the best disinfectant for public water supplies, recent discovery of a group of unsavory and often carcinogenic chemicals called Trihalomethanes or THM's are formed when chlorine combines with organic matter in water.
- Estimates indicate that THM's in drinking water are responsible for up to 17% of bladder cancers diagnosed each year.
- Many utilities are now using chloramines, a mix of chlorine and ammonia to reduce THM's levels in municipal water.
- The use of Chloramines are not by any means problem free. They can be deadly to patients on dialysis machines, fish in aquariums and ponds. Chloramines also account for aesthetic issues of bad taste, odor and skin irritation. There are byproducts generated from the use of chloramines that are strongly suspected as being human carcinogens.
- [https://www.wqa.org/Portals/o/Technical/Technical%20Fact%20Sheets/2014\\_Chloramine.pdf](https://www.wqa.org/Portals/o/Technical/Technical%20Fact%20Sheets/2014_Chloramine.pdf)

# Potential Well Water Contaminants and Their Impact

<https://www.epa.gov/privatewells/potential-well-water-contaminants-and-their-impacts>

- Over 13,000,000 private wells in the United States
- Contamination can occur by naturally occurring sources and by human activities.
- The following slides will detail commonly found contaminants, their sources, and their possible human health impacts.

Source: EPA.GOV February 2019

# Potential Sources

- **Microorganisms** include bacteria, viruses, and parasites. They can be found all over the surface of our planet and are found in human sewage and animal waste. People that consume drinking water containing microorganisms can experience gastrointestinal illnesses and infections. Water run off from rainfall or snow-melt can contaminate private wells by washing microorganisms into the well system or seeping underground. Leakage of waste from underground storage tanks and effluent from septic leach fields can reach a water source and result in microorganisms being present in water wells
- **Nitrate and nitrite** are present in chemical fertilizers, human sewage, and animal waste and fertilizers. They can contaminate a private well through groundwater movement and surface water seepage and water run-off. High levels of nitrate/nitrite in drinking water can cause methemoglobinemia or "blue baby syndrome". These substances reduce the blood's ability to carry oxygen. Infants below six months who drink water with high levels of nitrate can become seriously ill and die.
- **Heavy metals** can leach into drinking water from household plumbing and service lines, mining operations, petroleum refineries, electronics manufacturers, municipal waste disposal, cement plants, and natural mineral deposits. Heavy metals include: arsenic, antimony, cadmium, chromium, copper, lead, selenium and many more. Heavy metals can contaminate private wells through groundwater movement and surface water seepage and run-off. People that consume high levels of heavy metals risk acute and chronic toxicity, liver, kidney, and intestinal damage, anemia, and cancer.

# Potential Sources (con't)

- **Organic chemicals** are found in many house-hold products and are used widely in agriculture and industry. They can be found in inks, dyes, pesticides, paints, pharmaceuticals, solvents, petroleum products, sealants, and disinfectants. Organic chemicals can enter ground water and contaminate private wells through waste disposal, spills, and surface water run-off. People that consume high levels of organic chemicals may suffer from damage to their kidneys, liver, circulatory system, nervous system, and reproductive system.
- **Radionuclides** are **radioactive** forms of **elements** such as uranium and radium. They are harmful to humans and can be released into the environment from uranium mining and milling, coal mining, and **nuclear power production**. Radionuclides may also be naturally present in ground water in some areas. Radionuclides can contaminate private wells through groundwater flow, waste water seepage and flooding. Drinking water with radionuclides can cause toxic kidney effects and increase the risk of cancer.
- **Fluoride** can be present in many aquifers and can be found in private wells. Fluoride can be helpful in preventing tooth decay. However, excessive consumption of fluoride can cause skeletal fluorosis, a condition characterized by pain and tenderness of bones and joints. Excess consumption of fluoride during formative period of tooth enamel may cause dental fluorosis, tooth discoloration and/or pitting of teeth

Other Potential Source Contaminants.....

# Fluorinated Chemical Compounds

Class of man-made fluorinated chemical compounds

AKA—Perfluoro octanoic Acid (PFOA) (C8)

Perfluoro octane Sulfonic Acid (PFOS)

Are resistant to heat, water and oils. They are used in a wide variety of commercial products such as non-stick cookware, carpets, stain resistant clothing, food packaging, firefighting foams, adhesives, cosmetics, leather and the film inside microwave popcorn bags.

The EPA currently marks the unsafe level of PFOA & PFOS to be above 70 Parts per trillion! Even 1 part per trillion may pose health risk

# Dateline: 8/9/2016 Harvard Gazette

## Unsafe levels of toxic chemicals found in drinking water of 33 states

Levels of a widely used class of industrial chemicals linked with cancer and other health problems — polyfluoroalkyl and perfluoroalkyl substances (PFASs) — exceed federally recommended safety levels in public drinking-water supplies for 6 million people in the United States, according to a new study led by researchers from the Harvard T.H. Chan School of Public Health.

The study found that PFASs were detectable at the minimum reporting levels required by the EPA in 194 out of 4,864 water supplies in 33 states across the United States. Drinking water from 13 states accounted for 75 percent of the detections: California, New Jersey, North Carolina, Alabama, Florida, Pennsylvania, Ohio, New York, Georgia, Minnesota, Arizona, Massachusetts, and Illinois, in order of frequency of detection.

*[news.harvard.edu/.../unsafe-levels-of-toxic-chemicals-found-in-drinking-water-of-33-](https://news.harvard.edu/.../unsafe-levels-of-toxic-chemicals-found-in-drinking-water-of-33-)*

# Water Quality Association Supports EPA Plan for PFAS

EPA suggest consumers have water tested and use certified in home filtration to remove or reduce levels of these toxic chemicals.

## **Dateline.....February 14, 2019 LISLE, Ill.**

The Water Quality Association supports the U.S. Environmental Protection Agency (EPA) taking steps toward setting a safety threshold for highly toxic drinking water contaminants known as PFAS. Acting EPA Administrator Andrew Wheeler on Thursday outlined a plan that addresses drinking water and cleanup concerns as well as monitoring of PFAS, expanding research and improving enforcement.

“We are encouraged that the EPA is continuing to move forward with establishing a consistent standard across the country for these dangerous chemicals,” said WQA Global Government Affairs Director David Loveday. “We strongly support the [action plan’s](#) recommendations that consumers have their drinking water checked by a certified laboratory and then use certified in-home filtration to remove or reduce any chemicals found.”

In September, [a letter from WQA](#) supporting further study of human health risks of PFAS contamination and using in-home treatment technologies to combat them was introduced into testimony before a U.S. House Energy and Commerce subcommittee. Research shows POU/POE treatment “can be used to successfully treat for these contaminants at the home or in a building,” said the letter from WQA Executive Director Pauli Undesser. “They cost only a fraction of the price our society would need to bear to upgrade our drinking water treatment plants for PFAS removal.”

[https://www.epa.gov/sites/production/files/2019-02/documents/pfas\\_action\\_plan\\_021319\\_508compliant\\_1.pdf](https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf)

# Another source of water contamination in Municipal and City Water is ..... Prescription Drugs



# How Do They Get There?

*Mary Buzby, Director of Environmental Technology for Merck*

“There’s no doubt about it, pharmaceuticals are being detected in the environment and there is genuine concern that these compounds, in the small concentrations that they’re at, could be causing impacts to human health or to aquatic organisms.”

## *Drugs in Municipal or City water*

- One of the ways drugs get into our water supply is that people are flushing their unused prescriptions down the toilet. While water from sewage is filtered and chlorinated, the drugs remain in the water. The particulate is too fine to be caught in any city sewer filtration system. But, if you test the water, there they are. Anything from epilepsy drugs, to [antibiotics](#), to diabetes drugs, to antidepressants are found in our water supply.
- A less obvious way is Pharmaceuticals enter the water is that patients who take drugs cannot metabolize the whole pill. About 25% of that drug is flushed down the toilet along with your vitamins, which enter our sewer system and ultimately our water supply's.

# What Else? (Potential Sources cont.)

- Concentrated Animal Feeding Operations (CAFOs) aka factory farms are another source of drug runoff. Factory farmed animals are given antibiotics, powerful steroidal growth hormones, and other drugs in concentrated amounts because of their physical size. Just as we contribute to the drugs in our sewage via our bodily secretions, so do large farm animals. That waste water runoff gets into our soil and water table eventually. Because CAFOs are big business, that's a whole lot of animals, a whole lot of waste, and a whole lot of drugs running into our water supply. Yes, it's treated sewage but again, they can't filter out pharmaceuticals.
- This isn't just a problem in reservoirs and water treatment plants. Watersheds are also showing pharmaceuticals in the water table. This means that even if you have spring or well water, you could be exposed to water tainted with drugs. And, they don't just affect humans. A study done in a Colorado river found that estrogen-containing drugs in the water are turning male fish into female fish.
- The Associated Press' National Investigative Team ran their own tests and found pharmaceuticals in the drinking water of 41 million Americans. Philadelphia alone tested positive for 56 different drugs in their water supply.

# Lead in Drinking Water (Potential Source cont.)

## Is there a safe level of lead in drinking water?

The Safe Drinking Water Act requires EPA to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur with an adequate margin of safety. These non-enforceable health goals, based solely on possible health risks, are called maximum contaminant level goals (MCLGs). EPA has set the maximum contaminant level goal for lead in drinking water at zero because lead is a toxic metal that can be harmful to human health even at low exposure levels. Lead is persistent, and it can bioaccumulate in the body over time.

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.

Homes built before 1986 are more likely to have lead pipes, fixtures and solder. The Safe Drinking Water Act (SDWA) has reduced the maximum allowable lead content -- that is, content that is considered "lead-free" -- to be a weighted average of 0.25 percent calculated across the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures and 0.2 percent for solder and flux. <https://www.cdc.gov/mmwr/preview/mmwrhtml/su6104a1.htm>

## Dateline: 2/5/16 Greentown, Indiana Eastern High School

GREENTOWN, Ind.

Don't drink the water and don't wash your hands in it - that's what students and staff at Eastern High School and Middle School have been told for the last two days after tests found elevated levels of lead in the tap water. Eric Shupperd said, "It does concern me because my kids go to school here."

There was some good news Friday. A letter from to the district from the Howard County Health Department said while tap water was still off limits, "since lead is not absorbed in the skin, it is acceptable to use tap water for hand washing, showering and swimming."

So, the plastic was removed from the bathroom sinks, but the stacks of bottled water (the district bought 2,500) are still in the main office.

Superintendent Dr. Tracy Caddell said, "It's been a huge concern. Anytime you hear the word lead it absolutely scares you," especially given what's happened in Flint, Michigan

He was quick to point out, though, "This is not Flint, but to those moms and dads (who have kids) in those classrooms I'm sure it feels like it." Caddell is most upset with the town's water utility, which sent letters to residential customers last fall say it had found elevated levels in some older homes. Caddell said the utility never contacted its biggest customer, the school district. "I'm angry," he said. "I wish the town would have come to us in October and said, 'Hey, can we test your water?' That didn't happen. We determined we needed to do it on our own." And when they shared the test results with the health department, he said it was advised the district take precautions.

Caddell said they've also hired a company to check the pipes in hopes of determining the source of the lead.

[www.wthr.com/.../concerns-raised-by-lead-found-in-drinking-water-at-indiana-school](http://www.wthr.com/.../concerns-raised-by-lead-found-in-drinking-water-at-indiana-school)

We all contribute to pollution.

Stop to think about what chemical based household products you use as well as the items you “flush” that will find their way into our sewer systems and ultimately into our nations waterways!



**Now multiply  
that times  
127 million  
households  
in America**

OK....so who is responsible for My health and well being?  
Who is going to make sure My water is safe to drink?  
That is..... the multi-billion dollar question.

- Our Government?
- The U. S. EPA?
- The Safe Drinking Water Act?
- State Regulators?
- City Government?



The US EPA—Is responsible for Regulations and Policy regarding the United States Water Ways. The following is from their website with the heading....

## “Drinking Water Regulatory Information”

EPA sets legal limits on over 90 contaminants in drinking water. The legal limit for a contaminant reflects the level that protects human health and that water systems can achieve using the best available technology. EPA rules also set water-testing schedules and methods that water systems must follow.

The Safe Drinking Water Act (SDWA) gives individual states the opportunity to set and enforce their own drinking water standards if the standards are at a minimum as stringent as EPA's national standards.

# Can Those Standards be Enforced?

[Quote from...EAP Connect Official Blog 4/26/2016 Joel Beauvais](#)

Meanwhile, EPA data show that at least [\\$384 billion in improvements](#) will be needed through 2030 to maintain, upgrade and replace thousands of miles of pipe and thousands of treatment plants, storage tanks and water distribution systems that make up our country's water infrastructure. And if local and state governments do not lean into these investments and instead defer and delay, rebuilding our water infrastructure will only become more expensive.

[www.epa.gov](http://www.epa.gov)

# Does the EPA have the ability to enforce the Safe Drinking Water Act?

**The Safe Drinking Water Act (SDWA)** was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources—rivers, lakes, reservoirs, springs, and ground water wells. (SDWA does not regulate private wells which serve fewer than 25 individuals.) SDWA authorizes the United States Environmental Protection Agency (US EPA) to set national health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants that may be found in drinking water. US EPA, states, and water systems then work together to make sure that these standards are met.

Millions of Americans receive high quality drinking water every day from their public water systems, (which may be publicly or privately owned). **Nonetheless, drinking water safety cannot be taken for granted. There are a number of threats to drinking water: improperly disposed of chemicals; animal wastes; pesticides; human threats; wastes injected underground; and naturally-occurring substances can all contaminate drinking water.** Likewise, drinking water that is not properly treated or disinfected, or which travels through an improperly maintained distribution system, may also pose a health risk.

# Understand this.....

This presentation is in no way intended to criticize or imply that your local water utility is providing an end product that does or does not meet Federal and State drinking water standards. In fact..... the intent is to present information that our current “Safe Drinking Water Act” Standards...do not require the local utilities to monitor or test for all contaminants that might be found, and have been found in certain municipal water sources.

Even if new standards were adopted, it is not feasible that municipal water providers could afford the cost of providing such a high quality of water to their customers! This leads to the conclusion that.....

POU drinking water filtration systems are the least expensive and best method of assuring that our quality of water is safe to consume!

# No one cares more about your health and well being....than You!

Unfortunately.....we can not assume that someone else is going to take a more proactive approach regarding the purity and safety of our drinking water than we are willing to take ourselves.

It is your responsibility as a water treatment professional to make sure that each home owner you serve, is aware of the risk and consequences of drinking tap water.

# Fortunately .....we have solutions!

The Water Quality Association published a timely fact sheet in February of 2019 regarding pharmaceuticals in Water.

The WQA reports:

Home filtering systems provide the best protection for drinking water.

Filtering systems in the home provide the highest technology available for treatment of drinking water. Less than 2% of all water consumed is ingested by humans.....making these “point-of-use systems” the most cost effective and environmentally friendly. While utilities are required to meet safety standards set by the U.S. EPA.....home systems act as a final contaminant barrier and can further purify water for drinking.

How can we as a company that serves the consumer, impact the quality of drinking water around us? Just so happens..... Your Company has the ability to provide your customers the highest quality of drinking water systems available on the market today!

Call Aqua Systems today for information and equipment selections to provide quality water in your home!

# Freshpoint Filtration Systems

- City Water F2000-B2M
- Well Water F3000-B2M
- Effortless Click-in-lock dry cartridge replacement
- Reduces Taste-Odor plus VOC's & MBTE
- Color Coded Cartridges
- NSF and ANSI Standards 42 & 53



# Freshpoint GRO-475B- R/O



- 75 GPD High Efficiency Membrane
- 4 Stage effortless Click-in-lock dry cartridge replacement
- 3/8" push fit connectors
- 3.2 Gallon Storage Tank
- Air Gap Faucet
- Color Coded Cartridges
- NSF/ANSI Standards 42-53-58 and CAS 483.1

# PuRO Max PC—4- R/O

- 50 gpd TFC Membrane
- 4 stage filtration
- 3 Gallon Storage Tank
- Non-Air Gap Faucet
- Standard 10" Pre & Post
- 1 Year Limited Warranty
- NSF components



# MAX Flow HR-3- R/O

- 50 gpd TFC Membrane
- Permeate Pump  
(non-electric booster pump)
- 3 Gallon storage tank
- Non-Air Gap Faucet
- Standard 10" Pre & Post Filters
- 1 Year Limited Warranty
- NSF components



# Microline TFC 335 R/O

- 50 Gpd TFC Membrane
- NSF Tested & Validated
- 2.5 Gal Tri-Hull Storage Tank
- Long Reach Air Gap Faucet
- 5 Year Limited Warranty
- Proprietary pre & post filters
- Manifold design



# And Finally.....REMEMBER!

- Be cautious and consider what Personal Care Products you use.... and how you dispose of them.....  
The impact they could have on our environment might be devastating!



We all have a responsibility to keep this planet....  
Livable for future generations!

