Water Contamination

Safe Drinking water is a critical component of human life, but pollution threatens many of our water supplies. Agriculture is one of the key causes of water pollution and contamination. Pesticides, herbicides and other agricultural substances can also contaminate drinking water. Knowing the signs of water contamination will help you take actions that will keep you and your family safe.

When we turn on the tap, we trust that the water coming out of it is safe, but that's not always the case.

Everything from agricultural runoff to lead pipes is liable to contaminate water supplies. Contamination of drinking water is a serious issue. Drinking water that is supposed to protect our drinking water doesn't even stack up to our federal standards and guidelines. Unfortunately, the EPA has the constitutional authority to leave it up to the states to enforce.

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That's why it's important to know how these types of contamination happen and what you can do to protect your health and the environment.

Safe Drinking Water Act

The federal government regulates and protects our public drinking water via the Safe Drinking Water Act. The act, which was first enacted in 1974, covers water that comes from public sources, such as rivers, lakes, springs and groundwater wells. It does not include private wells that provide water to fewer than 25 people.

The Environmental Protection Agency sets national standards for drinking water that include maximum limits for more than 90 contaminants. The agency also requires state authorities to perform certain tests for contaminants to ensure the standards are achieved. Hard or tableau how contaminants should be removed.

> **DID YOU KNOW?**
>
> The Safe Drinking Water Act guards the United States drinking water supply. The act sets standards and guidelines for drinking water and is can be legal limits on more than 90 contaminants.
>
> Source: American Environmental Protection Agency

States can set their own drinking water standards as long as their standards are at least as strict as the EPA's requirements. The EPA also supports state enforcement actions against water systems that violate safety standards.

Types of Contaminants

Numerous types of contaminants can threaten drinking water. They include everything from chemicals to pesticides and herbicides to industrial waste materials. In the ground. Naturally occurring substances, such as arsenic, radon and fluoride, can also contaminate drinking water.

> **DID YOU KNOW?**
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> Every day, 2 million tons of sewage and other liquid waste pour into the world's water supply. Contaminated water kills more people every year than all forms of violence, including war.
>
> Source: United Nations

Waterborne pathogens, including bacteria, viruses and parasites, can also contaminate water. Between 2011 and 2014, there were three dozen waterborne outbreaks were reported to the Centers for Disease Control and Prevention. These outbreaks resulted in more than 1,000 illnesses, 124 hospitalizations and 13 deaths.

According to the CDC, the leading causes of waterborne disease outbreaks are:

- Giardia
- Legionella
- Norovirus
- Shigella
- Campylobacter
- Copper
- Salmonella
- Hepatitis A
- Cryptosporidium
- E. coli and excessive fluoride (fluo)

These contaminants can lead to severe illness, including gastrointestinal upset, respiratory illnesses and neurological disorders. Children are particularly vulnerable to the ill-purring and they will need to those with compromised immune systems.

In recent years, there have been dozen reports of pharmaceutical drugs in the water supply. Fortunately, the concentrations of these drugs are extremely low and similar to other undetectable health effects, according to a 2012 study by the World Health Organization.

Water-related outbreaks between 2013 and 2014 resulted in:

1,000	124	13
Illnesses	Hospitalizations	Deaths

CDC Centers for Disease Control and Prevention

Causes of Contamination

Agricultural runoff is one of the biggest sources of water pollution and industrial and agricultural operations are some of the worst offenders. Crop production and livestock both generate significant amounts of waste and runoff that can seep into water supplies.

Runoff from agricultural operations can contaminate water with:

- Animal fecal waste containing bacteria, viruses and other pathogens
- Antibiotics, hormones, salts and heavy metals excreted by livestock
- Fertilizers, herbicides and pesticides

Water supplies can also be contaminated through the drinking water distribution process. Water additives, such as chlorine and chloramines, are used to control the growth of microbes. But other levels are too high, they can cause eye and nose irritation, stomach upset and other problems.

> **DID YOU KNOW?**
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> Claiming consumes about 70 percent of the earth's surface water and is the leading cause of water degradation.
>
> Source: Food and Agriculture Organization of the United Nations

Water distribution can also cause the formation of dangerous byproducts, such as bromates, haloacetic acids and trihalomethanes — all of which can increase your risk of cancer. Other byproducts, such as chlorite, can cause anemia and nervous system problems in babies and children.

Even weather can adversely affect water quality. High temperatures and warmer waters can cause harmful algae blooms. Toxic blue-green algae prefer warm, slow-moving waters. They are triggered by excessive levels of nutrients, such as nitrogen and phosphorus.

Other potential sources of water contamination include:

- Industrial activities, such as mining and foundries
- Runoff from oil, oil production and automobile emissions
- Manufacturing wastewater treatment systems, such as septic tanks
- Leaking underground storage systems and pipes
- Landfill leakage
- Sewer overflows
- Radiation leaks from nuclear power plants

Water that's not properly treated or that travels through poorly maintained pipes can cause a health hazard. If your water source is a well, contact of cooper and lead pipes can occur and contaminate your water.

That's where treatment is vital. Although in 2014 when city officials decided to start using the Flint River as an alternative water source until a new water pipeline from Lake Huron was ready, the Flint River was cheaper than the Lake Huron water pipeline, according to Flint Director. And it wasn't treated with an important anti-corrosive agent to prevent lead contamination.

Sure, the city's water turned brown and consumers began complaining that it was contaminated. Unfortunately, the city's water was not treated properly and lead in the water increased over water. It was learning lead out of the city's aging pipes and spreading it through thousands of taps. Studies later revealed that local children's blood lead levels had doubled or even tripled in some cases.

What Are PFAS Chemicals?

Perfluoralkyl and polyfluoralkyl substances, known as PFAS, are also generating a lot of attention. These substances are used in a variety of consumer goods, including carpets, dirty pots and pans to stain protectant on carpets, clothes, clothing and upholstery. They are also used in firefighting foams.

The chemicals' compounds are sometimes referred to as "forever chemicals" because they don't break down in nature or in the body. They've been linked to a wide variety of health problems, including second cancer, thyroid disorders, endocrine and immune system problems, and elevated cholesterol.

While two common PFAS — perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) — have been phased out by United States industry, they are still used internationally and imported into the country.

A recent study by the Environmental Working Group and Northeastern University's Social Science and Environmental Health Research Institute analyzed PFAS contamination at locations 4-13 states, including drinking water sites serving approximately 16 million people.

Military sites were among those most affected by the problem. The chemicals likely contaminated the environment and groundwater on military bases where firefighting foam was used during training and emergency response exercises.

Communities near manufacturing sites have also discovered high levels of PFAS contamination of their water supplies.

> **DID YOU KNOW?**
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> In 2016, the EPA issued a non-enforceable lifetime guidance level of 70 parts per trillion for two PFAS (PFOA and PFOS) in drinking water. In Hoosick Falls, New York, some samples detected PFOA levels at 150,000 parts per trillion.
>
> Source: NBC and Times Union

In 2016, the village of Hoosick Falls, New York discovered high levels of the cancer-causing contaminants in its public drinking water supply and sounds alarming bells. According to the EPA, a person's exposure level to PFAS, including PFOA and PFOS, is considered safe if it's below 70 parts per trillion. But in Hoosick Falls, some samples detected PFOA levels at 150,000 parts per trillion.

The claim of New York has accused two local companies, Saint-Gobain Performance Plastics and Honeywell International, of causing the pollution. Saint-Gobain Performance Plastics was also implicated in a PFOA drinking water contamination near the company's factory in Merrimack, New Hampshire.

Health Complications of Water Contamination

Contaminated water can cause considerable health problems, ranging from gastrointestinal illnesses to neurological problems to cancer.

In the case of pathogens that cause waterborne illnesses, the effects are usually noticed rapidly. A person who drinks water contaminating bacteria or a virus will often develop diarrhea, nausea, vomiting and other acute gastrointestinal symptoms. In severe cases, these symptoms can lead to dehydration and death.

Likewise, ingesting large amounts of copper contaminated water may cause nausea, vomiting and diarrhea. Extremely high amounts can cause liver and kidney damage and even death.

Copper contamination risk

But other types of contamination are more insidious.

Signs and symptoms of lead exposure, for instance, typically aren't apparent until months or years after the initial exposure. Lead is a toxic metal that can cause lasting complications, infants and children exposed to lead may have developmental delays, learning difficulties and behavioral problems.

And the health impacts of PFAS and other contaminants can take years to show up.

Studies suggest that PFAS exposure can lead to:

- Fertility problems and hormone suppression
- Pregnancy-induced hypertension and preeclampsia
- Increased cholesterol levels
- Immune system problems
- A disruption of endocrine levels
- An increased risk of various cancers, including testicular and kidney cancer
- Birth defects
- Liver damage
- An elevated risk of thyroid disease
- And increased risk of asthma

Protecting Yourself

If you suspect something is wrong with your tap water, contact your public water utility immediately. Ask for a copy of their most recent consumer confidence report. The EPA provides a list of certified laboratories.

Red Flags That Your Water May Be Contaminated

It Looks Funny

Your tap water should always be clear. If it looks cloudy or milky, and it doesn't do so for a few seconds after you turn on the tap, it may be a sign that there is a problem with your water supply. If it stays cloudy or foamy, your water could contain excessive levels of heavy minerals or something worse. In that case, it's time to get your water tested.

It Smells Strange

If your water has an unusual smell, it could be contaminated, but oftentimes contaminants have no smell. A strong rotten egg smell can indicate that your water contains hydrogen sulfide. It's a toxic gas that can corrode your pipes and plumbing. Likewise, if you water tastes like a swimming pool, it may contain high levels of chlorine. A water filter may help eliminate excess chlorine and sulfur.

It Tastes Funny

Oftentimes, contaminants have no tastes, but in some cases they might. In Flint, Michigan, residents said the water tasted strange, smelled bad and had a brownish color.

Contaminated tap water

Your water may be contaminated if it looks, smells, or tastes funny.

According to a 2017 article in the journal Applied Water Science, most contaminants can't be easily detected and testing is needed to identify them.

If you have reason to believe your water supply is contaminated, switch to using bottled water for cooking, drinking, brushing your teeth and making coffee.

In some situations, boiling your water will make it safe to consume. If your water smells, tastes or look odd, stop using it. Boiling your water kills most bacteria and viruses. This will ensure that bacteria and other microbes are killed and will make the water safe for drinking, cooking and so making.

Unfortunately, boiling water won't get rid of other types of contaminants and may even make the water worse. Boiling water that contains PFAS, for instance, will actually concentrate the chemicals and increase your health risks.

On a household basis, there are also a number of things you can do to reduce the pollution of our water.

Take care of your family can help keep our water supply safe by abiding by the following dos and don'ts.

- **Dill Cards Benefit**: Use ground, paper sciences and other porous materials to stop the flow of stormwater around your home before it pours into storm drains.
- **Dill Pick Up Other Pup**: Pick up waste to taken with bacteria and can easily wash into storm drains and water supplies. Pick up poop in a bag and dog and put it in your garbage.
- **Dill Moderate Your Use**: When your car leaks oil, control and other fluids, consumer does it right into the groundwater. Keep your car in good condition and stay aware it is a commercial car wash. It's better than discharging pollutant water into your drainage.
- **Dill Stop with Pollution in Mind**: Reducing your use of harmful chemicals can help keep our water supply safe. Consumer lists cleaners and pesticides and can be phosphates that damaged.
- **Dill Don't Use the Toilet as a Trash Can**: Don't flush tampons, baby wipes and other non-biodegradable products. Also, avoid flushing old prescription medications and take them to a prescription drug drop off point instead.
- **Dill Don't Use the Drain as a Trash Can**: Never dump paint, oil or other household chemicals down the drain. This also goes for fat, oil and cooking grease. Instead, wipe it out under the sink and dispose of the grit in the garbage when it gets full.

Finally, if you see someone pouring oil down a storm drain or dumping waste in a creek, report them to the authorities. You may find want to try contacting your local government, but if that doesn't work, you can contact your www.epa.gov/reporter. The EPA also has an online form where you can report violations.

Please seek the advice of a qualified professional before making decisions about your health or finances.

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