

Although over 90 percent of American households are serviced by the public water system, the United States Environmental Protection Agency (EPA) reports that about 23 million households rely on private wells for drinking water in the United States.^{1,2} In Pennsylvania (PA), more than a quarter of adults rely on private wells as their primary source of drinking water.³ Private water supplies may be obtained from ground water or aquifers or surface water sources, such as springs. Contamination from manmade or natural sources may pose a health risk to individuals bathing in, drinking, or cooking with private well water.



HOW MAY THE QUALITY OF MY WELL WATER BE AFFECTED?

Contaminants in wells may negatively affect water quality and pose a threat to health. Well water may be contaminated by disease-causing bacteria such as *Cryptosporidium*, *Giardia lamblia*, and *Legionella*, other naturally occurring contaminants such as radon, or by manmade contaminants including per- and polyfluoroalkyl and other substances from industrial site leaks. Some contaminants such as arsenic, do not have a taste or smell but are highly toxic. Depending on the contaminant, drinking contaminated well water may cause gastrointestinal illness such as diarrhea, vomiting, and cramps. In severe cases, it can cause death. Furthermore, it is possible for skin reactions (i.e., rashes or itching) to occur due to bathing in the water or other skin contact.

WHAT ARE THE ENVIRONMENTAL REGULATIONS FOR PRIVATE WELL WATER?

EPA does not regulate private wells, nor does it provide water quality standards for individual wells.⁴ Additionally, PA is one of two states that does not have any statewide regulations for private well construction, maintenance, or water quality testing. Residents who rely on private well water are solely responsible for maintaining their water supplies, including having water quality testing completed on a regular basis.

WHAT CAN I DO TO PROTECT MY WELL WATER AND ENSURE ITS QUALITY?

Although some groundwater contaminants are unavoidable, such as naturally occurring radon, it is possible to reduce contamination and protect your well water by taking some of the following actions:

- The [Centers for Disease Control and Prevention \(CDC\)](#) recommends testing your well annually for coliform bacteria, nitrates, total dissolved solids, pH levels, and other suspected contaminants.^{4,5}
- Properly use, store, and dispose of substances such as petroleum products, degreasers, herbicides, pesticides, fertilizers, paint, and other pollutants. Do not dispose of these in septic tanks, dry, or abandoned wells.
- Make sure the well is designed, installed, and maintained properly, especially the well cap.
- Slope the area around the well to drain surface runoff away from the well and ensure there is enough distance between the wellhead and other possible sources of contamination, such as roads or septic system drain fields.
- Keep accurate records of well maintenance, and hire a certified well driller for any new well construction, modification, abandonment and closure, and consider installing a well water treatment system if a water quality issue persists.
- Periodically inspect exposed parts of the well for problems such as a cracked, corroded, or damaged well casing, a broken or missing well cap, or settling and cracking of surface seals.
- Regularly check the integrity of any storage tanks that hold home heating oil, diesel, or gasoline on your property.
- Pump and inspect [septic systems](#) as needed.⁶ Also check with the Pennsylvania Department of Environmental Protection (DEP) or your local municipality to ensure activities and industry on or near your property are at a safe distance from your well.

WHAT DO I DO IF MY WELL IS AFFECTED BY A FLOOD OR POWER OUTAGE?

Stay away from the well pump while flooded to avoid electric shock. To avoid illness, do not drink or wash from the flooded well. Get a well or pump contractor to clean and disinfect your well before turning on the pump. After the pump is turned back on, pump the well until the water runs clear to rid the well of flood water. If the water does not run clear or water testing shows evidence of contamination, seek advice from DEP or Penn State Extension.

If there is an interruption in your electric power supply, this may prevent your well pump from functioning. It is advised to have an alternate water source to ensure continuous supply of water or an alternate power source such as a gas or diesel-powered electricity generator to keep your well pump operating in an emergency.⁷ It is also recommended that you store at least one

gallon per day of fresh water for each member of your household for at least three days. Replenish these supplies every six months to keep the water fresh.⁷

WHAT RESOURCES ARE AVAILABLE FOR MAINTENANCE OF MY WELL WATER?

Contact DEP, Penn State Extension, or a certified well driller for information on well maintenance and testing. You can also reach out to [a state certified laboratory](#) to conduct water testing.⁸ Additionally, there are organizations such as [The Private Well Class](#) that offer free webinars and resources to aid proper maintenance of your private drinking water well.⁹ The EPA's webpage, [Protect Your Home's Water](#) is another credible source for information.¹⁰

WELL WATER TESTING

Some private well owners in PA are eligible to receive free limited water testing through Penn State Extension's Drinking Water Program thanks to funding provided by the CDC's Environmental Health Capacity program, in addition to the support of other outside funding sources. The goal of Penn State Extension's Drinking Water Program is to promote well water testing and to educate homeowners on its importance. Penn State's Agricultural Analytical Services Laboratory ([Ag Analytical Lab](#)) is accredited by the PA DEP for drinking water analysis and publishes water quality summaries by county based on tests conducted.¹¹

For information on Penn State Extension's well water testing programs, how to collect and submit a water sample, and how to interpret water test results, please visit their [Drinking Water Program website](#).¹² You may also call 814-863-0841 or email aaslab@psu.edu with your contact information.

In addition to regular water testing, wells should be tested when first drilled, if there is a sudden change in the smell, color, or taste of the water, and after a flood or septic tank failure. New homebuyers or renters may also want to test wells before moving into their new property. Common contaminants to test for include bacteria, nitrates, lead, and arsenic. You can reach out to your local Penn State Extension County Office for further guidance on specific testing recommendations.

WELL OWNER EDUCATION

[The Private Well Class](#) offers online and in-person courses to help homeowners better understand the basic science of water wells and how to properly care for their well water to ensure that it remains safe to drink.⁹ Enroll for classes at <https://privatewellclass.org/enroll>.

The [WellCare HOTLINE](#) is also another great resource which provides education to private well owners including information on choosing a filtration system and how to maintain your well.¹³ Additional resources include:

<https://extension.psu.edu/resources-for-water-well-spring-and-cistern-owners> and <https://www.watersystemscouncil.org/water-well-help/wellcare-info-sheets/>.

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¹ <https://www.epa.gov/privatewells>

² <https://onlinelibrary.wiley.com/doi/full/10.1111/1752-1688.12937>

³ <https://www.phaim1.health.pa.gov/EDD/WebForms/BRFSSstate.aspx>

⁴ <https://www.epa.gov/privatewells>

⁵ <https://www.cdc.gov/healthywater/drinking/private/wells/testing.html>

⁶ https://www3.epa.gov/npdes/pubs/homeowner_guide_long.pdf

⁷ https://www.watersystemscouncil.org/download/wellcare_information_sheets/maintaining_your_well_information_sheets/Power-Fails_FINAL.pdf

⁸ <https://www.epa.gov/dwlabcert/contact-information-certification-programs-and-certified-laboratories-drinking-water>

⁹ <https://privatewellclass.org/>

¹⁰ <https://www.epa.gov/privatewells/protect-your-homes-water#preventwellanchor>

¹¹ <https://agsci.psu.edu/aasl/water-testing/drinking-water-testing/drinking-water-test-summaries>

¹² <https://agsci.psu.edu/aasl/water-testing/drinking-water-testing>

¹³ <https://wellcarehotline.org/>

¹⁴ <https://www.ngwa.org/events-and-education/ngwa-s-event-calendar>

If you have any questions, contact us

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