PFAS: The Truth About Private Water Wells

Position Summary

It is the position of the National Ground Water Association (NGWA) that:

• Decades of water testing have shown that PFAS chemicals are widespread in the nation's groundwater resources due to their long and extensive uses in industrial and commercial applications.

• For private well owners concerned about PFAS, water wells can still provide safe water because effective residential-scale PFAS treatment technologies are commercially available.

• With an accredited PFAS treatment system and testing program in place, a private water well remains an efficient way for people to obtain domestic and even irrigation water that meets state drinking water standards.

• Water wells are assets and should not be abandoned if affected by PFAS because they can still be used for water supply, or for groundwater monitoring and remediation.

• Private wells are a cost-effective, efficient, and sustainable way for individual users to meet their water needs without the need for more expensive and extensive infrastructure.

• Entities that contributed to the PFAS contamination should bear the cost of PFAS treatment and remediation, including costs for private well treatment systems, testing, and replacement if necessary and feasible.

• There are a lot of unknowns and PFAS science is continuously evolving. Getting advice from qualified professionals and authorities is critical to ensure safe use of water.

• Outreach and education of well owners and water users is critical for the safe use of impacted water.

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Background

Privately owned domestic water supply wells are an important source of water for many people worldwide. In the United States, domestic wells provide drinking water supply for approximately 40 million people. Owning a private water well allows homeowners to control their own water supply. Ownership also comes with the responsibility of keeping the water well in good working order. A properly constructed and maintained household-supply well will provide many years of quality service.

The National Ground Water Association recommends routine annual maintenance checks by a licensed or certified water well systems professional to ensure the proper operation of the well and prolong its years of service, as well as to monitor the water quality.

New and expanded programs can make the difference in assuring that private well owners maintain a safe local and economical source of water supply in areas affected by PFAS contamination.

Annual testing of well water is recommended for coliform bacteria and nitrate as indicators of well integrity. Additionally, testing may be undertaken for contaminants of local concern (such as arsenic), as well as water quality constituents (such as iron and manganese) that cause problems with plumbing, staining, water appearance, and odor.

Per- and polyfluoroalkyl substances (PFAS) are a large class of synthetic chemicals that pose a threat to domestic wells that goes beyond traditional concerns. Because they are water-repellent and stain- and heat-resistant, PFAS have been used in a wide variety of industrial and commercial products.

Their occurrence in the environment is commonly associated with manufacturing facilities, fire-training sites, wastewater treatment plants, and landfills. Many PFAS dissolve easily in water, do not break down in the environment, and can travel miles to wells and streams via groundwater flow; surface runoff; and aerial dispersion, deposition, and infiltration.

PFAS have been the recent focus of scientists, health organizations, and environmental protection agencies worldwide. Many of these groups (including the U.S. Environmental Protection Agency and many individual states) have issued health-protective drinking water concentration criteria for PFAS. NGWA recommends following state testing policies for PFAS in residential drinking water wells.

Importance of Financial and Technical Support

Private water well owners represent a large, under-represented population in efforts to address water supplies contaminated with PFAS.

Municipal, county, state, and federal agencies and programs should provide technical and financial assistance to private well owners for PFAS testing and treatment as well as information on known PFAS contamination, especially where government facilities may contribute to the problem (e.g., fire department, publicly owned treatment works, municipal landfills, and military installations).

New and expanded programs can make the difference in assuring that private well owners maintain a safe local and economical source of water supply in areas affected by PFAS contamination. Local health or environmental health departments can provide some assistance. In many cases, state and federal funding support and assistance is also needed.

Testing of Private Wells

Financial assistance is needed to enhance testing of private water wells in areas affected by PFAS contamination. Technical support is also critical to help private well owners navigate the complex and evolving issues associated with PFAS testing options.

Support is needed on sample collection techniques, the frequency of PFAS testing, who should collect the samples, protocols for sample collection, reporting requirements, interpretation of results, and recommended remedial actions. Testing should be done using standard procedures at an accredited laboratory.

Treatment of Private Wells

Financial assistance and technical support are critical to help private well owners navigate the complex and evolving issues associated with PFAS treatment options. Support is needed on system selection, system maintenance, and who should be conducting the maintenance. System selection, monitoring, and maintenance must be done only by properly trained and accredited personnel.

There are proven technologies for effectively removing PFAS from household water supply, and treatment will often be a financially prudent decision to address PFAS contamination.

PFAS Water Treatment Technologies

There are proven technologies for effectively removing PFAS from household water supply, and treatment will often be a financially prudent decision to address PFAS contamination.

Two basic types of systems exist: point-of-entry treatment (POET) systems filter and treat all water as it enters a home, and point-of-use treatment (POUT) systems attach to faucets and fixtures where water is dispensed, treating only the water coming out of that fixture. For example, a POUT unit at a kitchen sink treats drinking/cooking water at that single location but does not treat water in bathrooms.

PFAS water treatment technologies include activated carbon, anion exchange resins, and reverse osmosis systems. There are many variables that go into system selection and operation. Prolonged operation of the wrong system or improper operation of that system may be less effective at protecting against long-term health impacts.

An important part of any decision to select a system among a range of products is looking for third-party product certification. Certification provides a level of confidence that the purchase will provide the desired water-quality protection. In addition, certified water treatment professionals should be used for selection, installation, and maintenance of treatment systems.

Financial and technical support is needed to assist private well owners in selecting and maintaining treatment systems and identifying certified systems and professionals for installation and maintenance. Filter performance also varies depending on the specific characteristics of the PFAS treated and may be affected by background water chemistry, PFAS concentrations, or other factors.

Maintenance and verification that treatment media are being changed out at proper periods are essential. Maintenance requirements could include parts replacement and PFAS testing. Assistance on an exchange program (e.g., cylinder exchange) may be necessary, perhaps including a rebate program. Support also may be needed in dealing with any waste stream generated by residential water treatment and recycling programs for spent treatment media.

In some cases, problematic PFAS-impacted wells may be taken out of service. These wells should be assessed by the lead regulatory authority or qualified hydrogeologist/consultant to determine whether a well can be used as part of monitoring or remediation or need to be managed in a different way to avoid risk to water resources and water users.

Summary

Financial and technical support is needed for private well owners with respect to PFAS. Existing government assistance and programs (local, state, and federal) should be made widely available to affected private well owners. New programs should be created to help private well owners pay for PFAS testing and treatment.

While consolidation may be economical for merging small utilities, the expensive hook-up of widely distributed residences with private water wells to public water systems is often not the most cost-effective response to PFAS contamination, and many well owners would prefer to maintain their private water supply.

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Dates

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The National Ground Water Association is a not-for-profit professional society and trade association for the global groundwater industry. Our members around the world include leading public and private sector groundwater scientists, engineers, water well system professionals, manufacturers, and suppliers of groundwater-related products and services. The Association's vision is to be the leading groundwater association advocating for responsible development, management, and use of water.

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