

PRIVATE WELL HEALTH PROTECTIONS

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WHY IT MATTERS

Roughly 1/5th of Virginians source their drinking water from private wells, with the frequency of residents relying on private systems approaching 80% in more rural Virginia counties.¹ Although federal and state laws require testing and treatment of water contaminants in public water systems, no such legal protection exists for private wells. In Virginia, the burden of testing and treating private well water is placed upon the property owner.²

Placing the burden on Virginia households creates several barriers to effectively protecting and promoting the health of rural Virginians, including the financial and technical considerations of conducting testing - and, if necessary, remediating contaminated water - to even become aware of the possibility of contamination. In the United States, there is an expectation that drinking water is safe for consumption, so Virginians who source their drinking water from private wells are often unaware of the possibility of contamination.³

Consumption of contaminated water can lead to a multitude of health impacts to residents, particularly vulnerable populations, including pregnant women, children, and the elderly. In agricultural areas of the state, where reliance on private systems is concentrated, this has historically included contamination from nitrates and pesticides, which leach into groundwater and then into wells after application in agricultural uses.⁴ However, in addition to historic sources of contamination, an emergent threat to the health of Virginians is the practice of applying sewage sludge (marketed as “biosolids” fertilizer) to Virginia farm fields. These biosolids are contaminated with PFAS, so-called “forever chemicals,” which are linked to significant harms including numerous cancers, developmental and reproductive disorders, and neurodegenerative disease. The disposal practice of applying biosolids as fertilizer spreads PFAS contamination into agricultural areas and watersheds in the Commonwealth, and represents a significant vector for human exposure.⁵

CURRENT LANDSCAPE

The U.S. Environmental Protection Agency (EPA) has set a maximum contaminant level (MCL) for a variety of contaminants in drinking water. However, while the EPA recommends drinking water sources be maintained below the MCL, the MCL is only legally enforced for public systems.⁶

In Virginia, there are limited protections for residents who source their drinking water from private wells.

Currently, Virginia requires that the owner conduct a one-time test for coliform bacteria for a new well.⁷ However, there is no requirement to test for other contaminants or for ongoing testing or treatment, and the state requires no disclosure statement about the safety of the water or the state of the private well upon sale or rental of the property.

Although the Virginia Department of Environmental Quality (DEQ) does require certain permitting and monitoring to be conducted at some agricultural facilities, public disclosure of these data and of violations is not well shared, resulting in a lack of public awareness of potential contamination. Additionally, while DEQ has begun planning for PFAS contamination response in public systems and in some surface waters,⁸ there is currently no groundwater testing or support for private well owners in assessing the degree of contamination from these highly toxic substances, despite DEQ approvals of permits for land disposal of contaminated biosolids that risk contamination of groundwater sources. Further, DEQ does not require disclosure or monitoring by Virginia Pollutant Discharge Elimination System (VPDES) permit-holders, which have significant potential to impact local groundwater sources.

Virginia encourages residents to contact their local health district for information related to private wells, but the quality of data collected and maintained by a given health district related to private wells varies in quality. Data related to groundwater quality are not collected and maintained by the agencies as a central reference for the region, even when private testing is conducted in the region.

OPPORTUNITIES

The Commonwealth needs to improve public data collection on well contamination and guidance to affected residents to improve awareness of potential contamination to their well systems. Absent awareness of risk, there will be significant gaps in residents taking action and resultant exposure to contamination. Virginia agencies should share existing data, collect private test information, disaggregate it, and make it publicly available through local health districts to improve contamination awareness.

The Commonwealth, through DEQ, should expand PFAS monitoring to include groundwater sources, especially in and around areas where biosolids land applications are conducted to create a baseline dataset for evaluating the spread of these contaminants. The DEQ should require permit-holders to test and disclose levels of PFAS contamination in biosolids applied to farmland.

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Finally, the Commonwealth should join other states like Maryland that have placed basic safeguards for renters and purchasers of properties that rely on private well systems by requiring a test for contamination at the time of rental or property sale. Further protections should include a requirement for corrective remediation in the instance of rentals.

TOP TAKEAWAYS

The data collection already undertaken by agencies in the Commonwealth needs to be publicly accessible and shared across agencies to increase awareness of risk and harm to residents.

Companies permitted to apply biosolids on farms should be required to test and disclose the levels of PFAS in the biosolids applied to Virginia's farmlands, the soils the biosolids are applied to, and the private drinking water wells that may be contaminated.

Testing of private wells should be conducted for contaminants upon either the lease or sale of the property to protect new residents with incomplete knowledge of potential toxic contamination in their drinking water source.

ENDNOTES

1. *Well Informed Virginia*. (n.d.). Virginia Department of Health. <https://www.wellwater.bse.vt.edu/well-informed-virginia.php>
2. *Private Well Program*. (n.d.). Virginia Department of Health. <https://www.vdh.virginia.gov/environmental-health/private-well-program>
3. Dunning, B., and Holm, F. (2025). *Private Wells in Virginia: Data Gaps and Public Health Concerns around Nitrate Contamination of Groundwater*. Center for Progressive Reform. <https://cpr-assets.s3.amazonaws.com/wp/uploads/2025/01/va-private-well-water-contamination-rpt-0125.pdf>
4. Oun A, et al. (2014). Effects of Biosolids and Manure Application on Microbial Water Quality in Rural Areas in the US. *Water* 2014, 6 (12), 3701-3723; <https://doi.org/10.3390/w6123701>
5. Flores, D. (2024). *New Report: Virginia Approves Land Application of PFAS*. Potomac Riverkeeper Network. <https://www.potomacriverkeepernetwork.org/new-report-virginia-approves-land-application-of-pfas>
6. *National Primary Drinking Water Regulations*. (n.d.). US EPA. <https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>
7. *Private Well Program*. (n.d.). Virginia Department of Health. <https://www.vdh.virginia.gov/environmental-health/private-well-program>
8. *Per- and Polyfluoroalkyl Substances (PFAS)*. (n.d.). Virginia Department of Environmental Quality. <https://www.deq.virginia.gov/topics-of-interest/per-and-polyfluoroalkyl-substances-pfas>