REDUCING WELL WATER NITRATE CONTAMINATION

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WHY IT MATTERS

Nitrate is a colorless, odorless, and tasteless compound that is a health threat when ingested in significant amounts and can cause acute health emergencies for pregnant women, infants, and young children. Nitrate-contaminated drinking water has also increasingly been linked with the development of cancer and thyroid disease.[1]

The primary means of nitrate ingestion is through consumption of nitrate-contaminated water. There are a variety of means by which water sources can become contaminated, including plant and animal decomposition and wastewater discharge from treatment plants. The most common and impactful means of contamination comes from agricultural processes, typically those related to intensive application of fertilizers which leach into aquifers when nitrates, not yet absorbed by plants, are exposed to water and travel into groundwater aquifers.[2]

Although federal and state laws require testing for and treatment of water contaminated with nitrates in municipal 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.[3] This represents a major concern in the state, as 22% of the population relies on water supplied by a private water well, with the share of private well use reaching upwards of 80% of the population of the state's most rural counties, which, as discussed above, are subject to the most common source of nitrate contamination from fertilizers and other agricultural processes.[4]

CURRENT LANDSCAPE

The EPA has set a maximum contaminant level (MCL) of 10 mg/L for nitrate in drinking water, and although not enforceable for private wells, recommends private well water be maintained below the MCL.[5]

Prior to the drilling of a new private well, Virginia requires that the owner file an application with the local health district containing specifics as to the construction of the well, and requires that a test for coliform bacteria must be conducted prior to use[6] 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.

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

Virginia does have programs to provide financial and technical assistance for testing. The Virginia Household Water Quality Program run through Virginia Tech performs tests and provides technical assistance. The Southeast Rural Community Assistance Project also provides grants and technical assistance, though availability is contingent on communities being aware of contamination and seeking out financial and technical assistance to address it.[7]

OPPORTUNITIES

Addressing the issue of nitrate contamination in the drinking water supplied by private wells is an achievable task through increased public protection and public information.

VDH should collect private well data related to contamination as well as create a centralized and publicly searchable database for nitrates and other criteria pollutant levels. This will improve state and public access to critical data, highlight areas where treatment is required, and track trends in contamination.

Landlords should also conduct testing and notify renters as to water quality issues. Disclosures related to water quality on sale or transfer of the property will improve public protection from existing sources of contamination and reduce the chance of harm to individuals least equipped to be aware of or mitigate against them.

Treatment, technical assistance, and mitigation efforts related to nitrates will need funding. Treatment of water with high nitrate contamination is an expensive process and one that is borne by the property owner. Increasing available funding for treatment and technical assistance in selecting a treatment method is important, especially for low-income residents of the state to meaningfully address contamination of water sources. Additionally, increasing funding for mitigation practices, particularly related to agricultural conservation efforts to reduce nitrate contamination from fertilizers, will reduce the likelihood of private well contamination, and provide for long-term public protections in communities that rely on private well water.

TOP TAKEAWAYS

Roughly one-fifth of Virginians source their water from private wells that lack regulatory protections from dangerous levels of nitrate contamination.

The state does not have accessible data related to contamination levels.

Centralized data collection and improved disclosure and public awareness, coupled with increasing funding for mitigation and treatment, will improve public health outcomes.