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TO: Daniel Kelley, Environmental Protection Committee, Iowa House of Representatives

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SUBJECT: Protecting Iowans from arsenic-contaminated well water

Background

Nearly 800,000 Iowans who rely on private well water are in danger of consuming harmful levels of arsenic, which is naturally present in groundwater throughout the state. A 2008 study revealed that 8% of private wells surveyed in Iowa were contaminated with arsenic above the 10 µg/L drinking water limit set by the U.S. Environmental Protection Agency (EPA)¹. Exposure to arsenic can cause many health problems, including increased risk of cancer, heart disease, respiratory illness, and diabetes. However, simple cost-effective solutions can reduce this risk. In this memo, I describe two near-term and two long-term actions that the Committee could take to protect Iowa residents from arsenic-contaminated well water.

Options

1. Encourage private well owners to test for arsenic

The committee could draft legislation to authorize funding for the Iowa Department of Natural Resources (IDNR) and Iowa Department of Public Health (IDPH) to incentivize arsenic testing. Many private well owners are not aware of the need to test their water for arsenic, but the benefits of testing are immediate. A one-time \$20 test can identify harmful arsenic levels that can be treated with a commercially available filter. Two possible methods of incentivizing testing are described here.

a. Educate well owners about the need for arsenic testing.

The IDNR could implement a public outreach campaign to encourage arsenic testing as part of its Private Well Program. Potential partners in this campaign are IDPH and the Center for Health Effects of Environmental Contamination at the University of Iowa. These agencies could complete local pilot studies to determine the most effective methods to use statewide. They could also conduct surveys to track the impact of outreach on the percentage of wells tested and to identify barriers to well testing and treatment.

In 2011, these organizations sponsored a conference on arsenic for private well owners. The conference paid dividends in awareness when TV stations and newspapers picked up the story and spread the message throughout the state. A new campaign could build on the success of this initial publicity.

b. Include arsenic in the Grants to Counties Well Program.

The IDPH's Grants to Counties Well Program provides free nitrate and coliform bacteria testing. Adding arsenic to this program would encourage arsenic testing by eliminating the \$20 fee that the State Hygienic Laboratory currently charges for the test. Support for the Grants to Counties Program is a small percentage of the Groundwater Protection Fund budget, and adding arsenic to the program should not have a large budgetary impact. The IDPH has already begun to incorporate arsenic into some aspects of this program, and its full incorporation could lead to significant health benefits.

2. Initiate a research program to identify key factors affecting arsenic contamination.

The Committee could draft legislation to authorize funding for arsenic research.

Previous research has demonstrated that well siting and patterns of well use may affect arsenic concentrations². Additional investigations by IDNR and partner scientists would help wells to be constructed and used in ways that minimize arsenic contamination. Although it is possible that straightforward associations between arsenic concentrations and well siting/use do not exist, it is also possible that such research could provide key information leading to reduced arsenic concentrations in well water in the future.

3. Require arsenic testing when a well is drilled and when property is transferred.

The Committee could draft legislation requiring arsenic testing at the time of well drilling and property sale. Arsenic concentrations in private wells often do not change much over time, so testing for arsenic when a well is constructed, and perhaps occasionally throughout a well's lifetime, should provide adequate protection for most well owners. Some states require private wells to be tested for arsenic when they are drilled (e.g. Minnesota) or when property rights are transferred (e.g. Oregon). The state of Iowa could adopt a similar law requiring wells to be tested after construction and/or when the land containing them is transferred to a new owner. Potential drawbacks of this approach include increased workload for state regulators and possible resistance to the new law from domestic well owners. This approach also fails to incentivize testing of existing wells on property that is not transferred.

4. Subsidize treatment for well owners with arsenic contamination.

The Committee could authorize funding to subsidize arsenic treatment for at-need well owners. Well owners with high arsenic concentrations may purchase bottled water, treat their well water to remove arsenic, or connect to a public water system. The most cost-effective option is often water treatment, which can range in cost from a few hundred to a few thousand dollars. Through the IDNR's Private Wells Program, the state could provide financial assistance to well owners, or specifically to low-income well owners, whose wells are contaminated with dangerous levels of arsenic. This option could help to incentivize well owners to test and treat their water, but it could require significant financial resources from the state.

Recommendations

I recommend the immediate adoption of options 1 and 2 as a first step to address the problem of arsenic in private wells. Specifically, I recommend that the Committee pass a bill authorizing the use of state funds to (1) incentivize arsenic testing by private well owners and (2) investigate the causes of arsenic contamination in Iowa wells.

These options provide a good first step because they are relatively low-cost and non-intrusive measures. If arsenic testing and treatment remain low, the Committee may consider passing legislation to mandate arsenic testing upon well construction and property sale or to authorize funding for the treatment of arsenic-contaminated well water.

References

1. Iowa Statewide Rural Well Water Survey Phase 2 (SWRL2) Results and Analysis. Center for Health Effects of Environmental Contamination, The University of Iowa. 2009.
<http://www.cheec.uiowa.edu/research/SWRL2.html>
2. Erickson, M.L. Arsenic in Upper Midwest Ground Water: Occurrence and Geochemical Mobilization Mechanisms. 2005.
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