

THE OZAUKEE COUNTY PUBLIC HEALTH DEPARTMENT

2008 Arsenic in well water

PROJECT REPORT

In 2008 the Ozaukee County Public Health Department was awarded a grant by the Wisconsin Division of Health Services (DHS) Bureau of Environmental and Occupational Health to monitor well water in Ozaukee County for arsenic. The grant reimbursed well owners only for lab fees through the Wisconsin State Lab of Hygiene (WSLH). Staff from the WSLH and the Wisconsin Department of Natural Resources (WDNR) Bureau of Drinking and Groundwater provided advice on the design and implementation of the grant.

Groundwater is water located beneath the ground surface in soil pore spaces and in the fractures in rock formations. Arsenic is bound up with iron based minerals and as groundwater levels fluctuate, arsenic dissolves into the aquifer. An aquifer is a unit of rock or an unconsolidated deposit that can yield a usable quantity of water. Potable supply wells sampled as part of this study were constructed into the Silurian Dolomite aquifer, known locally as the limestone aquifer. However, the study also included water samples from two sand and gravel aquifer wells and water samples from three wells of unknown construction.

In the Mequon area significant levels of arsenic have been found in well water. This project was designed to investigate the occurrence of arsenic in groundwater in other areas of the county. As the table below indicates, arsenic in well water was detected in all other areas of the county. The periodic monitoring of well water supplies for arsenic is a prudent measure which protects public health and informs citizens of important facts about their water. Arsenic in groundwater is an emerging public health issue in the southeast region since the risk of cancers increase significantly at the level of the federal health standard. The US Environmental Protection Agency (EPA) and World Health Organization (WHO) health standard for arsenic in drinking water is 10 ppb (parts per billion).

Since the presence of arsenic in the Mequon area groundwater was previously documented the decision was made to concentrate the sampling efforts of this grant in the rest of the county. Each of the six remaining towns was allocated a specific number of samples and prospective well owners were contacted based on well construction reports. Well owners voluntarily participated in the project and took their own well water samples and mailed them to the WSLH. Health Department staff monitored all results and provided additional sampling kits to those who had initial arsenic detects. Some well owners decided not to re-test using check samples after initial detects were indicated.

Despite sampling differences the health department provided health advice and informational resources to all well owners that had any arsenic detects in their well water. Well owners that had arsenic detects below the health standard were advised to re-test on an annual basis. Well owners that had arsenic detects at or above the health standard were advised to cease consumption of the well water and utilize bottled water until a water treatment system could be installed. In general, the health department recommends all well owners in the county test their water for arsenic at least once every five years.

Well water testing started in October of 2008 and by February of 2009 sampling activities were completed. Health Department staff provided well owners with copies of their lab results as they came available.

Table: Summary of Arsenic in well water Results by Town

Town	# Wells Tested	Results ≤ 5 ppb ND	Results > 5 < 10 ppb	Results ≥ 10 ppb	% of Wells > 5 ppb
Fredonia	17	15	1	1	11.8
Belgium	16	11	3	2	31
Cedarburg	16	12	2	2	25
Saukville	17	12	4	1	29
Grafton	16	14	2	0	12.5
Port Washington	16	13	2	1	18.8

LOD the level of detection is 5 ppb of arsenic

ND results at or below the level of detection are reported as no arsenic detected

ppb equals parts per billion

Although the data above is limited some points should be highlighted. Arsenic detects were located in water from wells in all six towns. Wells in the Town of Belgium had the highest percentage of arsenic detects (31.3%) versus wells in the Town of Fredonia which had the lowest percentage of arsenic detects (11.8%). 29.4 % of the wells in the Town of Saukville had arsenic detects. The highest arsenic detect was from a well in the Town of Cedarburg (average of 28.5 ppb). Overall 21 of 98 wells sampled in these six townships had measurable arsenic detects (21.4% of total). Seven of the 98 wells tested had arsenic levels above the EPA/WHO health standard of 10 ppb (7.1% of total).



PUBLIC HEALTH DEPARTMENT

Glenda S. Madlom, RN, BS, BSN
Director/Health Officer
www.co.ozaukee.wi.us

FOR IMMEDIATE RELEASE
April 6, 2009

Contact:
Dan Ziegler R. S.
Ozaukee County Public Health Department
Environmental Health Specialist
dziegler@co.ozaukee.wi.us
262 238 8170 metro 262 284 8170 local

Ozaukee County

**Private Well Owners Urged to Test Water for Arsenic
As Part of National Public Health Week, April 6th – April 12th**

When people are healthy, they say they feel well. There's another type of 'well health' that private water well owners need to be concerned with which is the health of their well water. Join us in celebrating National Public Health Week 2009 and supporting public health efforts aimed at "*Building the Foundation for a Healthy America*" by testing your wells.

This spring, the Ozaukee County Public Health Department is advising private well owners to check the health of their wells by having their water tested for arsenic. A recent well testing project was conducted by the Health Department with the cooperation of local well owners. This study has highlighted that arsenic is present in well water in all areas of Ozaukee County.

Safe, contaminant free water is one of the most vital resources Wisconsin citizens have for drinking and cooking. Municipalities regularly test the drinking water supplies to ensure they are safe. But with private wells, it's the owner's responsibility. Wisconsin has approximately one million private wells, most of which are not tested for arsenic on a periodic basis. Arsenic consumption at levels above the federal standard can cause cancers, hair loss, tremors, numbness, and skin abnormalities.

"Testing well water is one of the easiest things private well owners can do to take care of the health and well-being of themselves and their loved ones," said Dan Ziegler, Environmental Health Specialist with the Ozaukee County Public Health Department. "We are urging residents to test their well water for arsenic at least once every five years."

Arsenic is an element that is found in soil and rock. Under certain conditions arsenic can be released into groundwater and enter local wells. Potable supply wells sampled as part of this study were constructed into the limestone aquifer.

Currently the US Environmental Protection Agency health standard for arsenic in well water is 10 parts per billion. Results of this study showed that 7% of the wells tested had arsenic in well water above the federal standard and another 14% of the wells tested had detectable levels of arsenic less than the standard. The risk factors for cancers of the gastro-intestinal tract, kidney and bladder increase as the parts per billion of arsenic in well water increase. The good news is that once arsenic is identified, the water can be treated to be safe for consumption.

For more information on this health department project, an arsenic health fact sheet and information on where to have your private well water tested for arsenic, please contact Dan Ziegler at 262-284-8170 local, 262-238-8170 metro, or click on our website at: www.co.ozaukee.wi.us/PublicHealth/

#####