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Baytown Special Well Construction Area Update

Date: March 30, 2005

To: Baytown Township Board, West Lakeland Town Board, City of Bayport, City of Lake Elmo, Residents, Washington County Department of Public Health and Environment, Well Contractors, Realtors, Developers, and Building Contractors

From: Patricia A. Bloomgren, Director
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Subject: Expansion of Boundary and Update of the Special Well Construction Area for Portions of Baytown Township, West Lakeland Township, the City of Bayport, and the City of Lake Elmo, Washington County, Minnesota

On May 6, 1988, the Minnesota Department of Health (MDH) issued a "Well Advisory" now known as a "Special Well Construction Area," (SWCA) for parts of Baytown Township, West Lakeland Township, and the city of Bayport in response to the discovery of volatile organic chemical (VOC) contaminants in several private wells in the area. The contaminants initially detected included trichloroethylene, carbon tetrachloride, tetrachloroethylene, and cis-1,2, dichloroethylene. The advisory placed special restrictions on the construction of new wells within the well advisory boundary, and required that well owners conduct additional water testing prior to completing and placing a well into service. The additional construction and water testing requirements were established to assure that persons are not exposed to levels of contamination that exceed health exposure guidelines. The SWCA has been revised as investigation has proceeded and conditions have changed. This update of the SWCA provides current details on the recently-discovered source in northeast Lake Elmo, contamination extent, well construction requirements, the water testing and carbon filter ordinances of Baytown and West Lakeland Townships, and recently passed legislation concerning disclosure at property transfer.

The primary contaminant now present in the groundwater within the SWCA is trichloroethylene (TCE). TCE was most commonly used as a degreasing agent for washing metal parts and also as a dry-cleaning solvent. Exposure to high levels of TCE in drinking water can damage the liver, kidneys, immune system, and nervous system. Exposure to low levels of TCE over a long period of time, may be linked to an increased risk of several types of cancer. TCE may also harm a developing fetus if consumed in high concentrations by an expectant mother. The recommended interim exposure limit for TCE in drinking water is 5 micrograms per liter (μ g/L).

Low levels of carbon tetrachloride have been infrequently detected in some water samples collected in the northern portion of the SWCA. Recent detections have been below the health risk limit of 3 µg/L. Tetrachloroethylene and cis-1,2, dichloroethylene have been detected at low concentrations in some wells in the past, but have not been detected for several years.

The Minnesota Pollution Control Agency (MPCA) conducted additional investigation during 2004 northwest of Lake Elmo Airport and discovered high concentrations of TCE in the shallow groundwater on property currently occupied by Hagberg's Country Market in northeast Lake Elmo. TCE is suspected to have been used by a metal-working business, known as Neilsen Products Company, that previously occupied this property during the 1950-60's. MPCA is currently considering the feasibility of various remedial options at this site.

The plume of TCE contamination is approximately 5 miles long, and 2 miles wide, extending from northeast Lake Elmo to the St. Croix River. Groundwater movement is generally to the east, toward the St. Croix River, but is complicated due to the fracture flow in the Prairie du Chien aquifer, and other hydrogeologic conditions, some of which are not fully characterized. TCE has been detected in glacial sediments in northeast Lake Elmo, at the Lake Elmo Airport, and in the city of Bayport. The highest concentrations of TCE detected to date are present in the glacial deposits in northeast Lake Elmo, exceeding 50,000 µg/L. The largest aerial extent of TCE contamination is in the underlying Prairie du Chien limestone and the Jordan sandstone. Highest concentrations in the bedrock exceed 50 µg/L in the Prairie du Chien limestone underneath the Lake Elmo Airport and in the Jordan sandstone northeast of the airport. Recently, TCE has been detected in the Franconia sandstone in the eastern portion of the SWCA near Stagecoach Trail, and in Bayport Municipal Well Number 2. Only one deeper aquifer, the Mt. Simon-Hinckley sandstone, exists below the Franconia-Ironton-Galesville aquifer. There are no known wells within the SWCA completed in the Mt. Simon-Hinckley aquifer and therefore the water quality is not known.

A public water supply is only available in portions of the cities of Bayport and Lake Elmo. The remainder of the SWCA is served by private wells. A groundwater remediation system has not been installed.

Baytown Township enacted Ordinance No. 36 on September 8, 2003, pertaining to water testing, and installation, testing, and maintenance of whole-house granular activated carbon (GAC) filters. West Lakeland Township enacted a similar ordinance, No. 15, on March 1, 2004. The ordinances require residents to install an approved GAC filter when TCE or carbon tetrachloride is detected in a well at concentrations exceeding exposure limits. All filter installation, testing, and maintenance costs are the responsibility of the well owner. The ordinances also require periodic testing and reporting of results. Some requirements of the ordinances do not apply if the MPCA is monitoring and maintaining a whole house GAC filter for the well owner.

Currently, the MPCA will install, maintain, and test a whole house, GAC filter for an existing well within the SWCA that exceeds the interim exposure limit of 5 µg/L TCE, only if the well is located on property approved for development on or before April 9, 2002.

A new law, Minnesota Statutes, section 103I.236, passed during the 2003 legislative session, requires a seller of real property in Washington County not served by a municipal water system or that has an unsealed well, to state in writing to the buyer, whether, to the seller's knowledge, the property is located within a SWCA.

The construction requirements for new wells in the SWCA will be dependent on the well location, known extent of the contamination plume, hydrogeology, well use, and regulatory status. Where feasible, the MDH requires that water be obtained from a safe source, rather than using a contaminated source and relying on individual treatment systems to remove contaminants. However, the presence of TCE in the Prairie du Chien, Jordan, and Franconia aquifers in the eastern portion of the SWCA, the lack of a groundwater remediation system, the lack of a public water-supply system, and the technical and cost challenges of drilling wells deeper to the Mt. Simon aquifer, may mean that in some locations within the eastern portion of the SWCA, construction of an uncontaminated private well may not be reasonably possible. In these cases, a GAC treatment system that is installed, maintained, and monitored, may be an option.

A property owner and a licensed well contractor must submit a written request to construct or permanently seal a well in the SWCA. The request must include a plan describing how the well will be constructed or sealed. The MDH will review the plan and reply in writing. Before permission to construct a well is granted, the well owner must agree to pay for a VOC analysis on the water, and abide by conditions of the approval. The MDH will review the water-test results and determine if the well can be completed, if the well must be drilled deeper, or if the well must be permanently sealed. Copies of analytical results will be forwarded to the well owner, MPCA, Washington County Department of Public Health and Environment, and the local city or township.

With the MPCA investigation finding groundwater contamination in northeastern Lake Elmo, the MDH is now expanding the SWCA to now include all of Section 13 of Township 29 North, Range 21 West (see figure). The construction requirements for new wells in the SWCA will be dependent on the well location, known extent of the contamination plume, hydrogeology, well use, and regulatory status. However, the following general requirements commonly apply:

1. Except for some locations at the northern, southern, and eastern boundaries of the SWCA, a well in unconsolidated deposits will not be allowed. The glacial deposits will not provide an adequate supply of water, or the water will exceed the TCE interim exposure limit, in most areas of the SWCA. Full length cement grouting will be required for all wells completed in glacial deposits within the SWCA. Requests for wells completed in glacial deposits will be evaluated on a case by case basis.
2. The Prairie du Chien aquifer will not be allowed for potable water use in the SWCA. The Prairie du Chien aquifer shows the greatest plume extent and the highest concentrations of TCE. The aquifer is susceptible to contamination due to generally thin geologic materials overlying the formation and the unfiltered fracture flow in the aquifer. Nitrate levels are elevated.

3. Jordan aquifer wells will be allowed outside the contaminant plume, and may be allowed inside the plume where the Franconia is affected and an approved monitoring and treatment regulatory program is in effect. In the Jordan aquifer, TCE levels exceed 5 µg/L in a plume that is approximately 4 miles long and up to 1½ miles wide, extending from the Lake Elmo Airport to Bayport.
4. Franconia or Ironton-Galesville aquifer wells will be permitted throughout the SWCA. Where the Franconia aquifer exceeds the TCE maximum concentration, a whole house GAC filter must be installed, maintained, and monitored under an approved program.
5. The MDH supports and will consider requests for public water-supply wells (wells that serve 15 or more homes or service connections) on any property within the SWCA, regardless of the property development approval date. Public water-supply wells are regulated under the federal and state Safe Drinking Water Act and must comply with drinking water standards and management, testing, inspection, and oversight requirements.

Additional information is available on the internet: http://www.health.state.mn.us/divs/eh/well/special_well.html or <http://www.pca.state.mn.us/>, or you may contact:

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