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TO: Stephen Solowczuk, Chair
Board Working Session

THROUGH: Robert E. Guenzel
County Administrator

FROM: Anthony VanDerworp, Director
Department of Planning and Environment

DATE: November 3, 2005

RE: New procedures to implement new arsenic standard in on-site drinking water wells

Recent changes in the State of Michigan Safe Drinking Water Act have made it necessary to develop new procedures for ensuring that new and existing homes have safe levels of arsenic in their drinking water.

Currently Washtenaw County requires arsenic testing for all new and replacement well water supplies and drinking water wells at time of property transfer. The standard used for this testing had been 50 parts per billion (ppb). At this level less than a half of a percent of supplies in Washtenaw County were affected.

Changes in the State and Federal Safe Drinking Water Acts have lowered the standard for arsenic in drinking water to 10 ppb or less. The most recent change in the State of Michigan Safe Drinking Water Act has created the need to implement procedures for implementing the new standard, as the Washtenaw County regulation for drinking water wells references the drinking water quality standards as set forth by the State of Michigan.

It is estimated that implementing the new standard will affect approximately 7-10% of new and existing homes in Washtenaw County that have on-site drinking water wells. Many of these homes will need to have water treatment devices installed in order to meet the new standard. Because of this significant impact, community involvement on new procedures was sought through the establishment of a community stakeholders group. A major issue that arose from the stakeholders group was how homeowners are notified that treatment is required in order to meet this standard. This was addressed with a three part approach:

1. When arsenic treatment is installed as a requirement of the time of sale inspection program, the name and address of purchaser will be required and notification will occur prior to authorizing sale.
2. When arsenic treatment is installed as a condition of receiving final approval of a new or replacement well, the current property owner will be required to sign an arsenic affidavit.
3. The County will send annual reminder notices to all homes that have arsenic treatment reminding them of the need to maintain their arsenic treatment device and advising them to have their water tested for arsenic.

These procedures have been endorsed by the Washtenaw County Public Health Advisory/Environmental Appeals Board. It is proposed that these procedures be implanted on January 1, 2006.

ATTACHMENTS

Report on the testing and regulation of arsenic in on-site drinking water wells in Washtenaw County

Preparer: H. Leon Moore R.S. Environmental Health Supervisor
Development Services Team
Department of Planning and Environment

Washtenaw County

Report on the testing and regulation of arsenic in on-site drinking water wells

October 26, 2005

Prepared by:
H. Leon Moore R.S.
Washtenaw County
Environmental Health Supervisor
Development Services Team
Department of Planning and Environment

Executive Summary

Currently Washtenaw County requires arsenic testing for all new and replacement well water supplies and drinking water wells at time of property transfer. The standard used for this testing had been 50 parts per billion (ppb). At this level less than a half of a percent of supplies in Washtenaw County were affected.

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Michigan Safe Drinking Water Act has created the need to implement procedures for implementing the new standard, as the Washtenaw County regulation for drinking water wells references the drinking water quality standards as set forth by the State of Michigan.

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4. When arsenic treatment is installed as a requirement of the time of sale inspection program, the name and address of purchaser will be required and notification will occur prior to authorizing sale.
5. When arsenic treatment is installed as a condition of receiving final approval of a new or replacement well, the current property owner will be required to sign an arsenic affidavit. This document will confirm the owner's knowledge of the requirement for arsenic treatment.
6. The County will send annual reminder notices to all homes that have arsenic treatment reminding them of the need to maintain their arsenic treatment device and advising them to have their water tested for arsenic.

Included in this document is background information on how Washtenaw County has regulated arsenic in drinking water to date and the proposed procedures necessary to implement the new standard. These procedures have been endorsed by the Washtenaw County Public Health Advisory/Environmental Appeals Board. It is proposed that these procedures be implanted on January 1, 2006.

Background

In 1988, Washtenaw County Environmental Health first learned of the natural occurrence of elevated levels of arsenic in groundwater as the result of sampling conducted around the Chelsea landfill. Homes located up-gradient (upstream) of the landfill were found to have arsenic levels that exceeded the State and Federal safe levels of 50 parts per billion (ppb). Based on this discovery, over two hundred homes in the Chelsea area were sent letters advising them to perform arsenic testing. Approximately 100 homes tested their water and it was determined that the arsenic problem was wide spread across western portions of the county. Based on this information, staff identified a large area north and west of Chelsea where all newly constructed homes were required to have a safe arsenic test prior to being approved for occupancy.

Concern over naturally occurring arsenic increased throughout southeast Michigan during the 1990's as other Counties also began finding elevated levels. There was considerable

effort on the part of environmental health agencies to develop predictive models that could determine where elevated levels of arsenic could be expected based on geological features. At that time there was believed to be an association between elevated levels of arsenic and proximity to the Marshal Sandstone bedrock formation.

In the late 1990's arsenic levels in drinking water became a national issue as the US EPA targeted arsenic because of concern over the potential increased cancer rates from consuming arsenic in drinking water. With a pending new national standard ten (10) southeastern counties joined forces and funded a cost shared project with the USGS to study arsenic in southeast Michigan. Also at this time Washtenaw County published an "Arsenic vulnerability map" that established high, medium, and low probability of having elevated arsenic. The map was based on geological features and arsenic test data. All new homes built in the area with highest probability were required to be tested for arsenic prior to occupancy. Also, the State of Michigan began offering free arsenic testing through the state laboratory.

Late in 1999 as one of his last acts, President Clinton authorized the lowering of the US Safe Drinking Water Act standard from 50 ppb to 10 ppb. It was determined that the new standard did not affect residential wells in Washtenaw County as the Washtenaw County well regulation adopted the State of Michigan Safe Drinking Water Act (Act 399) standards and not the federal standards. The State of Michigan did not modify Act 399 as the newly elected President Bush put a moratorium on the implementation of the new national standard until it could be studied further.

Washtenaw County implemented the Time of Sale Inspection program on January 1, 2000. At that time, arsenic sampling was only required for those homes sold in those areas earlier mapped as having the highest probability of having elevated levels of arsenic. Shortly thereafter, the USGS report was published which indicated that while there is an association with certain bedrock formations, there was no real way to use this information to predict where arsenic would occur. It was further determined that the arsenic in the groundwater in southeast Michigan is primarily Trivalent arsenic (arsenic -3) as opposed to pentavalent arsenic (arsenic -5). This finding posed two concerns as arsenic -3 is much more toxic to humans than arsenic -5 and arsenic -3 is much harder to remove or treat.

Later in 2000 President Bush authorized the new federal standard of 10 ppb. Based on the new federal standard and the USGS report, Washtenaw County began requiring arsenic testing for all time of sale inspections throughout the County. This action was endorsed by the Washtenaw County Health Code Appeals/Public Health Advisory Board.

Current Situation

From 2002 until now, the County has been following the following procedure:

1. As required by the MDEQ (guidance letter dated April 15, 2002), the Public Health Engineer evaluates arsenic test well data for all proposed subdivisions and site condominiums, and places information on the master deed that notifies prospective buyers of potential health risks if arsenic is found in test wells.

2. As approved by the MDEQ, any subdivision that was approved prior to any specific arsenic information being placed on the master deed is managed in the same manner as a metes and bounds parcel.
3. For all metes and bounds lots, the Washtenaw County “maximum contaminant level (MCL)” for arsenic is 50 ppb. . ***Two repeat samples are required for any well permit sample or TOS sample that tests 25 ppb or higher.*** No newly drilled well, or Time of Sale Inspection receives final approval if the average of **three** samples is over 50 ppb. If an MCL violation exists, the first option is always to locate or replace the well in a different aquifer that may not have arsenic. Sanitarians pull well records and arsenic sample results from surrounding properties and determine if another aquifer may be available. Shallow (i.e. at least 25’ feet of casing) wells can be used, however the isolation distance to sources of contamination is to be increased to a minimum of 150’ feet when wells are less than 50’ feet deep and have no clay protection.
4. If it is determined that another aquifer is not available, water treatment can be considered as an option. Prior to issuing final approval at least three samples of treated water are to be collected. The average of the three samples must be 10 ppb or below and a deed restriction is recorded that requires treatment, and recognizes that the supply does not meet potable drinking water limits without treatment. To date our experience with the success of treatment has been varied. In most cases treatment has shown to be an effective tool to reduce arsenic levels, however, treatment has not been successful for some homes. We have also seen varied approaches to treatment. Some homeowners have chosen to treat water as it enters the home, “point of entry”; while other homeowners have installed treatment devices at the kitchen faucet “point of use”. Washtenaw County currently approves both approaches. Treating water to remove arsenic is a rapidly evolving technology as many water treatment companies are still learning about residential applications. Current devices designed to take out arsenic have primarily been designed for larger commercial applications. With the new standard, water treatment companies are just now beginning to develop equipment for the residential market.
5. Advisory letters are issued for all wells that have an arsenic level from above 10 ppb to less than 50 ppb, except in the case of a subdivision or site condominium well where there is specific language on arsenic levels in the master deed. Advisory letters are issued as part of the Time of sale authorization process and well permit final approval process.

On May 31, 2005 Washtenaw County Environmental Health was informed that on April 6, 2005 the State of Michigan amended Act 399 to incorporate the new MCL of 10 ppb. This action mandates that Washtenaw County begin using 10 ppb as the regulatory limit as the Washtenaw County Rules and Regulation for the Protection of Groundwater adopts the safe drinking water limits set forth in Act 399, as amended. Thus, new procedures are necessary to implement this new standard.

In review of the data collected as the result of the requirement for arsenic testing the following was determined:

Arsenic sample data by Township

Township	Total # of Samples	Total # of Samples > 10 ppb and < 25 ppb	Total # of Samples ≥ 25 ppb	Total # of Samples > 10 ppb	Percentage of Samples > 10 ppb within Township	Percentage of Samples > 10 ppb within WC
Salem	113	10	3	13	11.5%	0.5%
Northfield	155	15	3	18	11.6%	0.7%
Webster	263	31	2	33	12.5%	1.3%
Dexter	418	42	20	62	14.8%	2.5%
Lyndon	111	26	5	31	27.9%	1.2%
Sylvan	106	11	5	16	15.1%	0.6%
Lima	125	13	4	17	13.6%	0.7%
Scio	146	4	2	6	4.1%	0.2%
Ann Arbor	62	1	0	1	1.6%	0.0%
Superior	125	7	3	10	8.0%	0.4%
Ypsilanti	27	0	0	0	0.0%	0.0%
Pittsfield	70	1	1	2	2.9%	0.1%
Lodi	142	1	3	4	2.8%	0.2%
Freedom	47	3	2	5	10.6%	0.2%
Sharon	81	8	0	8	9.9%	0.3%
Manchester	171	8	1	9	5.3%	0.4%
Manchester village	1	0	0	0	0.0%	0.0%
Bridgewater	39	0	0	0	0.0%	0.0%
Saline	32	1	0	1	3.1%	0.0%
York	214	9	4	13	6.1%	0.5%
Augusta	54	3	2	5	9.3%	0.2%
Total:	2502	194	60	254		

10.2% = Percentage of samples testing positive for Arsenic > 10 ppb

2.4% = Percentage of samples testing positive for Arsenic ≥ 25 ppb

In August of 2005, the Washtenaw County Department of Planning and Environment created a community stakeholder advisory group to advise staff on how new procedures could be drafted in Washtenaw County to implement the new arsenic standard.

The major item of discussion focused around the issue of notification. The group thoroughly discussed options to ensure that home purchasers and new home owners were knowledgeable about arsenic levels and the need for treatment in their new homes.

The attached Arsenic Affidavit was reviewed by Jim Reach, Counsel for Washtenaw County under the direction of Curt Hedger.

Membership of the Community stakeholders group included:

Jeff Fischer	Home Builders Association
Nancy Merdzinsky	Ann Arbor Area Board of Realtors
Mike Morehouse	Washtenaw County Certified Time of sale Inspector
Matt Bolang	Livingston County Environmental Health Groundwater Specialist
Ric Faladeau	Michigan Department of Environmental Quality
Dan Yordanich	Washtenaw Co. Health Code Appeals/Public Health Advisory Committee
Michael Williams	Michigan Township Association
Gene Paez	Shiawassee County Health Department

The following procedure was drafted to implement the new arsenic standard:

WASHTENAW COUNTY PLANNING AND ENVIRONMENT PROCEDURE

Residential and Type III Water Supplies Arsenic Testing and remediation

Effective date: January 1, 2006

Approved by: _____ **Date:** _____
Washtenaw County Public Health officer

Washtenaw County Environmental Health Director

1. This procedure shall apply to all Residential and Type III water supplies within Washtenaw County. All Type I Community and Type II Non-Community Public Water supplies are regulated by the Federal and State Safe Drinking Water Acts.
2. To be considered potable and be approvable as a new or replacement drinking water well, including at the time of property transfer, all residential and Type III water supplies must be in compliance with the Maximum Contaminant levels (MCL) established by Act 399 – the Michigan Safe Drinking Water Act. The MCL for arsenic is currently any level greater than 10 ppb.
3. One arsenic test will be used to evaluate all new or replacement drinking water wells and wells at the time of property transfer. However, if the initial test shows an arsenic level of 6 ppb to 10 ppb two additional arsenic samples will be collected and the average of the three samples will be used to evaluate the supply. In cases where multiple arsenic samples have been collected, the average of the last three samples collected will be used to determine compliance with the arsenic standard.
4. Washtenaw County will produce and maintain a map that identifies those areas where wells have been drilled that contain 25 ppb or greater of arsenic. It will be required that wells drilled for new homes in these areas be drilled “first” (prior to new home construction) and that a water sample meeting the MCL for arsenic be obtained prior to issuing a permit for the construction of an on-site sewage disposal system. Building officials with jurisdiction in these areas will be asked to refrain from issuing building permits in those areas until a water supply that has a safe level of arsenic has been obtained.

The requirement for a well or group of wells to be drilled first may be waived in cases where sufficient water quality data showing safe arsenic levels is available. Well first waivers will not be issued until a completed well permit application has been received. In cases where a waiver is issued, the well permit application will remain valid until a well permit is issued.

5. In cases where wells have been drilled that have elevated arsenic, the department will, upon request, perform an aquifer analysis of the area by examining well drilling records and water sample results. Homeowners will be advised on the possibility of drilling a well that has a lower level of arsenic.
6. Any well that has been tested and found to have an arsenic level greater than 10 ppb and less than 50 ppb must either:

- a. Connect to municipal water;
-or-
- b. Obtain a permit and drill a replacement well that has an arsenic level below 10 ppb;
-or-
- c. Install a water treatment device that reduces the level of arsenic to 10 ppb or below as confirmed by sampling. If treatment is used as part of a property transfer approval, it will be required that the purchasers name and address be provided prior to final authorization being granted. The purchaser will be notified in writing of the utilization of a treatment device to remove arsenic. In cases where a new home is being built it will be required to sign an affidavit that indicates the home is served by a water well that has an elevated level of arsenic and that treatment has been installed and must be maintained in service to remove arsenic to 10 ppb or below.

Any well found to have an arsenic level of 50 ppb or higher has no viable treatment option and must either:

- a. Connect to municipal water;
-or-
 - b. Obtain a permit and drill a replacement well that has an arsenic level 10 ppb or below;
-or-
 - c. Obtain a permit and drill a new well that has an arsenic level between 11- and 49 ppb and install a water treatment device and follow the requirements for notification found in item six (6) above.
-or-
 - d. Provide bottled water for cooking and drinking purposes; and sign and record a deed Affidavit of Notification that indicates that drinking water for the home is to be obtained from an approved bottled water source.
7. In new subdivision/site condominium/condominium/parcels less than one acre in size the following shall apply:
- a) If test well or existing well data shows arsenic levels that exceed 10 ppb, but are not likely to exceed 50 ppb a meeting is to occur with the MDEQ, developer, and the Washtenaw County Public Health Engineer to advise of concerns, discuss available options, and discuss required master deed language to establish an acceptable plan.
 - b) If test well or existing well data shows arsenic levels that exceed 50 ppb and there are no other options for drilling into aquifers with lower concentrations of arsenic, the project is to be denied as there are no viable treatment options for wells with levels of arsenic above 50 ppb.

- c) If test well data show any arsenic results of 25 ppb to 49 ppb, it will be required that all wells in the development be drilled as “well first” and tested for arsenic. Any lot in which a well with an arsenic level of less than 50 ppb can not be found is not to be sold as this lot will not be considered an approved lot until a safe water source is determined.
 - d) Language will be incorporated in the master deed for any proposed subdivision/site condominium development where test wells are found to have levels of arsenic that exceeds 10 ppb. The language at a minimum will include:
 - Requirement for arsenic testing
 - Requirement for treatment
 - Potential health affects of drinking water with arsenic
8. All homes that utilize a water treatment device to remove arsenic in order to obtain an approval of the well at time of drilling or at time of property transfer will receive an annual reminder notice advising the following:
- Reminding the homeowner of the importance of maintaining their arsenic treatment system.
 - Advising the homeowner to collect an arsenic sample to assure that their arsenic treatment device is functioning properly.
9. When treatment is utilized the following standards apply:
1. The treatment can be at point of use or at point of entry.
 2. The manufacture’s claim of system capacity and recommendations for maintenance is required to be forwarded to the County when treatment for arsenic is utilized. This requirement will be placed on all well permits.
 3. The treatment unit must be listed by NSF International or have equivalent capacity to remove arsenic.

