



Warrington Township

2016 WARRINGTON TOWNSHIP WATER QUALITY REPORT

PWSID# 1090070

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo ó hable con alguien que lo entienda bien. (This report contains important information about your drinking water. Translate it, or speak with someone who understands it.)

Introduction

This report presents a summary of the quality of the public drinking water provided by Warrington Township during 2016. We have included details about the sources of your water, what it contains, and how the water quality compares to the standards set by the Pennsylvania Department of Environmental Protection (PADEP) and the Environmental Protection Agency (EPA) Safe Drinking Water Act (SDWA). The Warrington Township Board of Supervisors is committed to providing safe and reliable drinking water to our more than 21,000 customers. We feel that this information is important and that an informed customer is a public utility's best ally.

Where Does Your Water Come From

The western portion of the Township, from Folly Road to Upper State Road, and the Bradford Greene development along County Line Road, has historically been served with water that the Township purchases directly from the North Wales Water Authority (NWWA). This portion of the Township is underlain by the Locketong geological formation, which does not support the development of large production groundwater wells. The water purchased from NWWA is a surface water supply that comes from the Forest Park Water Treatment Plant located in Chalfont. The Forest Park Water Treatment Plant is a state of the art facility that treats and pumps water delivered from the Point Pleasant pump station located on the Delaware River. The treatment process at Forest Park consists of flocculation, sedimentation, filtration, and pre and post ozone disinfection.

The eastern portion of the Township, from Valley Road to Elbow Lane, was previously served primarily with water from nine production wells drilled 300 to 760 feet deep into the Stockton geological formation that are owned and operated by the Township. The wells are generally located along the Route 611 corridor that bisects the eastern part of the Township.

As a result of changes in water quality testing protocols that were implemented by the EPA, in late 2014, the Township became aware of Perflourooctanesulfonic Acid (PFOS) and Perflourooctanic Acid (PFOA) that were present in varying concentrations within the Township's production wells . The aforementioned contaminants are not regulated under the Safe Drinking Water Act, but the EPA had

initially established a provisional Health Advisory Limit (HAL) of 400 parts per trillion for PFOA and 200 parts per trillion PFOS. Initial testing conducted by the Township of production wells 1,2 & 6 exhibited results in excess of the original EPA HAL for PFOS and PFOA and therefore, the aforementioned wells were immediately removed from service. The remaining Township production wells were tested and were documented to be operating below the provisional PFOS and PFOA HAL, and therefore remained in service.

In May 2016, the EPA issued a revised HAL of 70 parts per trillion of PFOA and PFOS combined. As result of this announcement, the Township immediately removed production wells 3 and 9 from service. Since that time the Township has increased the frequency of testing for PFOA and PFOS in the three wells remaining in service (Wells 5, 8 and 11) and has documented consistent results for PFOS and PFOA concentrations that have been below the revised HAL.

The Township's eastern and western water systems are interconnected. The interconnection is controlled by a valve that allows water into the Township's eastern end water distribution system. Since the discovery of the PFOA/PFOS contamination, the Township has increased the quantity of water purchased from the NWWA up to as much as two million gallons per day. Two additional interconnections have been designed and are to be constructed in 2017 to increase the volume of water available to the Eastern section of the Township. These additional interconnections will increase the reliability of the distribution system by providing redundancy. A treatment system for Wells 1, 2, and 6 is currently under construction, which will remove PFOA and PFOS to non-detect concentrations, allowing the wells to be used as a supplemental source of supply during times of drought or other emergencies. Treatment systems for Wells 3 and 9 will follow to further increase the availability of emergency supplies. The design and installation of the interconnections and treatment systems to remove these perflourinated compounds from the public water is being funded by the federal government.

Why We Monitor Your Drinking Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water before it is treated include:

- *Microbial contaminants*, such a viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- *Inorganic contaminants*, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- *Pesticides and herbicides*, which may come from a variety of sources such as agricultural, urban stormwater runoff, and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can, also, come from gas stations, urban stormwater runoff, and septic systems
- *Radioactive contaminants*, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA and PADEP prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. We treat and monitor our water according to their regulations. FDA and PADEP regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791.

Our 2016 Water Monitoring Results

During 2016, Warrington Township conducted over 600 tests for 90 possible drinking water contaminants. Similar testing was also completed by NWWA and the Forest Park Treatment Plant. This arrangement results in some duplication of testing, but also provides more quality control.

The attached Tables summarize the results of monitoring in the Western and Eastern systems, respectively, for the year 2016. Dozens of other contaminants that were tested for, but not detected, are not listed. Unless otherwise noted, the data presented in the tables is from testing done from January 1, 2016 to December 31, 2016. The PADEP requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of our data, though representative, are more than 1 year old.

Related Information

In 2001, the Township participated in the Unregulated Contaminants Monitoring Rule (UCMR) Program in which suppliers began a 3-year monitoring period for unregulated contaminants, including the gasoline additive MTBE. Although the EPA does not regulate MTBE, the Township recognized the potential threat of MTBE and began voluntarily sampling for it prior to 2001 in each production well and at various locations in both the eastern and western distribution systems. MTBE has **never** been detected in the Township's water supply. In 2010, the Township participated in the UCMR-2 Program, and in 2014 and 2015, the Township participated in the UCMR-3 program, for each of which suppliers began a new 3-year monitoring period for additional unregulated contaminants. The UCMR-3 and its predecessors were designed to establish data for contaminants listed on EPA's Contaminate Candidate List for which EPA may establish future MCL's.

Related to our monitoring efforts, the Township completed an assessment of the nine groundwater wells that supply the eastern distribution system. The study is part of Pennsylvania's Source Water Assessment and Protection (SWAP) Program. The assessment identified existing and potential sources of contamination located within a one-mile radius of each well and includes a detailed map showing the location of these sites within a half-mile radius of each well. This study was performed prior to the detection of perfluorinated compounds in the area. Overall, our sources have a high risk of significant contamination. The report is available for review at the Warrington Township Water and Sewer Department Office at 852 Easton Road.

Educational Information

While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low

levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Warrington Township is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA and the Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791 or visit the EPA website at www.epa.gov/safewater/dwhealth.

For More Information

Warrington Township Water and Sewer Department is staffed with State-certified water operators who work to provide top quality water to every tap. Information about the Township's water system and a full 2016 Water Quality Report prepared by NWWA for their system is available for review at the Warrington Township Water and Sewer Department Office. For more information about your water quality, please contact Christian Jones, Director of the Warrington Township Water and Sewer Department at (215) 343-1800 or log on to the Township's web site at www.warringtontownship.org.

The Warrington Township Board of Supervisors meets the second and fourth Tuesday of each month at 7:00 p.m. in the Warrington Township Municipal Building at 852 Easton Road. These meetings allow the public to voice any concerns or comments they may have pertaining to the public water or sewer systems. Please feel free to participate in these meetings.

Health Effects

About our 2014 gross alpha violation you should know that certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer. The presence of gross alpha was attributed to Well 4, as a result the Township voluntarily elected to close the affected well as a precautionary measure in June 2015. Subsequent testing in 2015 indicated the gross alpha levels decreased to below the MCL. If you want more information about gross alpha emitters or the violation, please call us at (215) 343-1800, or the State Drinking Water office at (484) 250-5900.

Other Violations

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards.

During July, August, September, October, November, December of 2016 and January, February, and March of 2017, the Township's contract laboratory inadvertently omitted the collection and testing of a number of samples from the distribution system for chlorine residual and total coliform bacteria screening, and therefore information concerning the quality of drinking water supplied by the Township is unavailable during that time period. This report shall serve as public notice of the sampling and testing omissions, which are considered as violations. The Township has implemented changes to its procedures to address this omission and ensure future similar instances will not occur.

The PADEP had previously granted the Township a waiver for the monitoring of synthetic organic chemicals (SOC) including herbicides and pesticides, which expired in December 2016. During the first quarter of 2017, the Township's contract laboratory did not collect and analyze samples for synthetic organic chemicals at Production Wells 5, 8, and 11. Subsequent SOC sampling and testing have been conducted, with the analytical results being within safe drinking water standards. This report shall serve as public notice of the sampling and testing omission, which is considered as a violation.

Definitions and Abbreviations

These are the definitions of the terms and abbreviations used in Tables 1 and 2 on the inside of this folder:

- **MCL** (*Maximum Contaminant Level*): The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.
- **MCLG** (*Maximum Contaminant Level Goal*): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.
- **MRDL** (*Maximum Residual Disinfectant Level*): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **MRDLG** (*Maximum Residual Disinfectant Level Goal*): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **ppm** (*parts per million*): one part per million corresponds to one minute in two years, a single penny in \$10,000, one ounce to 31 tons, or 1 inch in 16 miles.
- **ppb** (*parts per billion*): one part per billion corresponds to one second in 32 years, a single penny in \$10 million, a pinch of salt to 10 tons of potato chips, or 1 inch in 16,000 miles.
- **ppt** (*parts per trillion*): one part per trillion corresponds to one second in 32,000 years, a single penny in \$10 billion, a pinch of salt to 10,000 tons of potato chips, or 1 inch in 16,000,000 miles.
- **pCi/l** (*picocuries per liter*): picocuries per liter is a measure of the radioactivity of water.
- **NTU** (*Nephelometric Turbidity Unit*): nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
- **AL** (*Action Level*): the concentration of a contaminant, which, if exceeded, triggers treatment or other requirements, which a water system must follow.
- **TT** (*Treatment Technique*): a treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

2016 Western and Eastern Section

Water from North Wales Water Authority – Forest Park Water Treatment Plant

DETECTED SAMPLE RESULTS:

Inorganic Chemical Contaminants								
Contaminant	MCL in CCR Units	MCLG	Level Detected	Range of Detections	Units	Sample Date	Violation Y/N	Sources of Contamination
Nitrate (as Nitrogen)	10	10	0.497	0.259 -0.760	ppm	2016	No	Runoff from fertilizer, leaching from septic tanks, erosion of natural deposits
Barium	2	2	0.020	0.0 – 0.020	ppm	2016	No	Erosion of natural deposits

Disinfectants and Disinfection Byproducts								
Contaminant	MCL	MCLG	Level Detected	Range of Detections	Units	Sample Date	Violation Y/N	Sources of Contamination
Chlorine Residual	4	4	1.49	1.00– 1.76	ppm	2016	No	Water additive used to control microbes.
Total Trihalomethanes (TTHM)	80	0	10.72	7.4 – 13.8	ppb	2016	No	Byproduct of drinking water disinfection
Haloacetic Acids (HAA5)	60	0	4.48	4.46 – 5.07	ppb	2016	No	Byproduct of drinking water disinfection
Bromate	10	0	2.9	1.8 – 3.8	ppb	2016	No	Byproduct of drinking water disinfection

Lead and Copper							
Contaminant	Action Level (AL)	MCLG	90 th Percentile Value	Units	# of Sites Above AL of Total Sites	Violation Y/N	Sources of Contamination
Lead	15	0	5.0	ppb	0	No	Corrosion of household plumbing
Copper	1.3	1.3	0.42	ppm	0	No	Corrosion of household plumbing

2016 Western and Eastern Section (Continued)

Water from North Wales Water Authority – Forest Park Water Treatment Plant

Microbial Contaminants							
Contaminant	MCL	MCLG	Level Detected	Sample Date	Range	Violation Y/N	Sources of Contamination
Total Coliform Bacteria	Presence of coliform bacteria in 5% or less of monthly samples	0	0	2016	N/A	No	Naturally present in the environment.
Fecal Coliform and <i>E. Coli</i> Bacteria	A routine sample and repeat sample are total coliform positive, and sample is also fecal coliform or <i>E. coli</i> positive.	0	0	2016	N/A	No	Human and animal fecal waste
Turbidity (in NTU)	Treatment Technique Filtration System to maintain less than 0.1 NTU	N/A	0.02	2016	0.01 – 0.04	No	Soil runoff

Unregulated Chemical Contaminants – Perflourinated Compounds						
Contaminant	Health Advisory Limit (PFOS and PFOA Combined)	Level Detected	Range of Detection	Units	Sample Date	Sources of Contamination
Perflouroctanesulfonic Acid (PFOS)	70	0	N/A	ppt	2016	Firefighting foam and other man-made sources
Perflouroctanoic Acid (PFOA)	70	0.55	0 – 2.2	ppt	2016	Firefighting foam and other man-made sources

In addition during 2016, North Wales Water Authority conducted testing for volatile organic chemicals; synthetic organic chemicals, and radioactive contaminants with none detected.

2016 Eastern Section

Water from Warrington Township groundwater wells remaining in service

DETECTED SAMPLE RESULTS:

<i>Inorganic Chemical Contaminants</i>								
Contaminant	MCL in CCR Units	MCLG	Level Detected	Range of Detections	Units	Sample Date	Violation Y/N	Sources of Contamination
Arsenic	10	0	7.1	7.1 1 sample	ppb	2016	No	Erosion of natural deposits
Barium	2	2	0.0961	0.961 1 sample	ppm	2015	No	Erosion of natural deposits
Chromium	100	100	5.4	5.4 1 sample	ppb	2015	No	Erosion of natural deposits
Mercury	2	2	0.028	0 – 0.028	ppb	2012	No	Erosion of natural deposits
Nitrate (as Nitrogen)	10	10	1.87	0.98 – 2.9	ppm	2016	No	Runoff from fertilizer, leaching from septic tanks, erosion of natural deposits
Selenium	50	50	2.65	1.9 – 3.3	ppb	2012	No	Erosion of natural deposits

<i>Synthetic Organic Chemical Contaminants</i>								
Contaminant	MCL in CCR Units	MCLG	Level Detected	Range of Detections	Units	Sample Date	Violation Y/N	Sources of Contamination
Di (2-ethylhexyl) phthalate	6	0	1.06	0.089 – 1.17	ppb	2015	No	Discharge from rubber and chemical factories

<i>Lead and Copper</i>							
Contaminant	Action Level (AL)	MCLG	90th Percentile Value	Units	# of Sites Above AL of Total Sites	Violation Y/N	Sources of Contamination
Lead	15	0	2.45	ppb	0 of 55	No	Corrosion of household plumbing
Copper	1.3	1.3	0.443	ppm	0 of 55	No	Corrosion of household plumbing

<i>Radioactive Contaminants</i>								
Contaminant	MCL in CCR Units	MCLG	Level Detected	Range of Detections	Units	Sample Date	Violation Y/N	Sources of Contamination
Gross Alpha	15	0	17.89	1.98 – 26.1	pCi/L	2014	Yes	Erosion of natural deposits
Combined Radium	5	0	1.17	0.51 – 1.17	pCi/L	2014	No	Erosion of natural deposits
Combined Uranium	30	0	10	9.9 – 10.2	ppb	2015	No	Erosion of natural deposits

2016 Eastern Section (Continued)

Water from Warrington Township groundwater wells remaining in service

Disinfectants and Disinfection Byproducts								
Contaminant	MCL	MCLG	Level Detected	Range of Detections	Units	Sample Date	Violation Y/N	Sources of Contamination
Chlorine Residual	4	4	0.7	0 – 1.6	ppm	2016	Yes*	Water additive used to control microbes.
Total Trihalomethanes (TTHM)	80	0	22.7	5.4 – 58.5	ppb	2016	No	Byproduct of drinking water disinfection
Haloacetic Acids (HAA5)	60	0	6.94	0 – 14.9	ppb	2016	No	Byproduct of drinking water disinfection

*Samples at one location showed zero chlorine residual in August and September 2016, retests did not show any bacterial contamination. Additionally, several times during the year fewer than the required number of samples were collected and tested by the Township's contract laboratory. This notice is as required by the PADEP.

Microbial Contaminants							
Contaminant	MCL	MCLG	Level Detected	Sample Date	Range	Violation Y/N	Sources of Contamination
Total Coliform Bacteria	Presence of coliform bacteria in 5% or less of monthly samples	0	0	2016	N/A	Yes*	Naturally present in the environment.
Fecal Coliform and <i>E. Coli</i> Bacteria	A routine sample and repeat sample are total coliform positive, and sample is also fecal coliform or <i>E. coli</i> positive.	0	0	2016	N/A	No	Human and animal fecal waste

* Several times during the year fewer than the required number of samples were collected and tested by the Township's contract laboratory. This notice is as required by the PADEP.

Unregulated Chemical Contaminants – Perflourinated Compounds						
Contaminant	Health Advisory Limit (PFOS and PFOA Combined)	Level Detected	Range of Detection	Units	Sample Date	Sources of Contamination
Perflouroctanesulfonic Acid (PFOS)	70	7.7	0 - 14	ppt	2016	Firefighting foam and other man-made sources
Perflouroctanoic Acid (PFOA)	70	9.8	3 – 14	ppt	2016	Firefighting foam and other man-made sources

The results above for PFOA and PFOS are test results for wells 5, 8, and 11, which are the only wells remaining in use. Five of the Township wells have been removed from service based on exceedance of the EPA's PFOS & PFOA HAL.