City of Nichols Hills

2010
Annual Drinking Water Quality Report

We're very pleased to provide you with this year's Annual Water Quality Report. We want to keep you informed about the excellent water and services we have delivered to you over the past year. Our goal is and always has been, to provide to you a safe and dependable supply of drinking water at a responsible and reasonable rate. Our water source is ground water drawn from 23 water wells located within and east of the City of Nichols Hills. The water wells are 500 to 800 feet deep and pump from the Garber-Wellington Aquifer. We have a source water protection plan that shows the vulnerability as a low risk for contamination. Additionally more information such as potential sources of contamination is listed later in this report.

The City of Nichols Hills routinely monitors for constituents in your drinking water according to Federal and State laws. This table shows the results of our monitoring for the period of January 1st to December 31st, 2009. (Some of our data may be more than one year old because the state allows us to monitor for some contaminants less often than once per year.) All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It's important to remember that the presence of these constituents does not necessarily pose a health risk.

As you will see in the following report, we had **two** violations. The violations were discovered by DEQ during routine monitoring. The first violation was for **Radionuclides**. Radioactive contaminates are common in water and enter through the erosion of natural formations, and gas, oil and mining explorations. The second violation was for **Arsenic.** Arsenic enters our water supplies by the erosion of natural formations, the runoff from orchards, and runoff from glass and electronics waste. Both violations have been corrected and will be addressed in detail later in this report.

This report shows our water quality and what it means. Despite local rumors, we have a high quality water at very competitive water rates and feel we offer a very high quality service. If you have any questions about this report or concerning your water utility, please contact **Randy Smith** at 843-5222. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled meetings. They are held at City Hall on the 2nd Tuesday of every month at 5:30 PM.

WATER QUALITY DATA TABLE

The table below lists all of the drinking water contaminants we detected for the calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report.

In this table you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Non-Detects (ND) - laboratory analysis indicates that the constituent is not present.
Parts per million (ppm) or Milligrams per liter (mg/l)
Parts per billion (ppb) or Micrograms per liter (ug/l)
Parts per trillion (ppt) or Nanograms per liter (nanograms/l)
Parts per quadrillion (ppq) or Picograms per liter (picograms/l)
Picocuries per liter (pCi/L) - picocuries per liter is a measure of the radioactivity in water.
Millirems per year (mrem/yr) - measure of radiation absorbed by the body.
Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
Action Level (AL) - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Treatment Technique (TT) - (mandatory language) A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.
Maximum Contaminant Level (MCL) - (mandatory language) The MCL is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal - (mandatory language) The MCLG is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

TEST RESULTS						
Contaminant	Violation Y/N	Highest Level Detected	Range Detected	MCL	MCLG	Likely Source of Contamination
Microbiological Contaminants						
1. Total Coliform Bacteria (System takes <40 monthly samples)	N	1		5% positive 1 positive	0	Naturally present in the environment
2. Fecal coliform and E.coli	**N**	2 samples		a routine sample and repeat sample are total coliform positive, and one is also fecal coliform or E. coli positive	0	Human and animal fecal waste
Radiochemical Contaminants						
3. Gross Beta (pCi/L)	-	-	-	50	0	Decay of natural and man-made deposits
4. Gross Alpha (pCi/L)	Y	51	51	15	0	Erosion of natural deposits
5. Combined radium 226/228 (pCi/L)	N	9.2	1-9.2	5	0	Erosion of natural deposits
6. Uranium (pCi/L or ug/l)	Y	89	36-89	30 ug / L	0	Erosion of natural deposits
Inorganic Contaminants						
7. Antimony (ppb)	N	<2		6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
8. Arsenic (ppb)	Y		11	10	0	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
9. Barium (ppb)	N	65.8		2000	2000	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits

10. Beryllium (ppb)	N	<2		4	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
11. Bromate (ppb)				10	0	By-product of drinking water ozonation
12. Cadmium (ppb)	N	<2		5	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
13. Chloramines (ppm)				MRDL = 4	MRDLG = 4	Water additive used to control microbes
14. Chlorine (ppm)	N	1		MRDL = 4	MRDLG = 4	Water additive used to control microbes
15. Chlorite (ppm)				1	0.8	Water additive used to control microbes
16. Chlorine Dioxide (ppb)				MRDL = 800	MRDLG = 800	Water additive used to control microbes
17. Chromium (ppb)	N	30.9		100	100	Discharge from steel and pulp mills; erosion of natural deposits
18. Copper (ppm)	N	.055		AL=1.3	1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
19. Cyanide (ppb)	N	<10		200	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
20. Fluoride (ppm)	N	<.4		4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
21. Lead (ppb)	N	1.7		AL=15 *Action Level – 90% of samples must be below this level.**	0	Corrosion of household plumbing systems, erosion of natural deposits

22. Mercury (ppb) (inorganic)	N	<.1		2	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
23. Nitrate - NO_3 (ppm) (as Nitrogen)	N	.39		10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
24. Nitrite - NO_2 (ppm) (as Nitrogen)	N	.34		1	1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
25. Selenium (ppb)	N	21.8		50	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
26. Thallium (ppb)	N	.002		2	0.5	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories
Volatile Organic Contaminants						
27. Benzene (ppb)	N	<.5		5	0	Discharge from factories; leaching from gas storage tanks and landfills
28. Carbon tetrachloride (ppb)	N	<.5		5	0	Discharge from chemical plants and other industrial activities
29. Chlorobenzene (ppb)	N	<.5		100	100	Discharge from chemical and agricultural chemical factories
30. o-Dichlorobenzene (ppb)	N	<.5		600	600	Discharge from industrial chemical factories
31. p-Dichlorobenzene (ppb)	N	<.5		75	75	Discharge from industrial chemical factories
32. 1,2-Dichloroethane (ppb)	N	<.5		5	0	Discharge from industrial chemical factories
33. 1,1-Dichloroethylene (ppb)				7	7	Discharge from industrial chemical factories
34. cis-1,2-Dichloroethylene (ppb)				70	70	Discharge from industrial chemical

						factories
35. trans - 1,2 -Dichloroethylene (ppb)				100	100	Discharge from industrial chemical factories
36. Dichloromethane (ppb)				5	0	Discharge from pharmaceutical and chemical factories
37. 1,2- Dichloropropane (ppb)	N	<.5		5	0	Discharge from industrial chemical factories
38. Ethylbenzene (ppb)				700	700	Discharge from petroleum refineries
39. Haloacetic Acids (HAA5) (ppb)	N	10		60	N/a	By-product of drinking water chlorination
40. Styrene (ppb)	N	<.5		100	100	Discharge from rubber and plastic factories; leaching from landfills
41. Tetrachloroethylene (ppb)	N	<.5		5	0	Leaching from PVC pipes; discharge from factories and dry cleaners
42. 1,2,4- Trichlorobenzene (ppb)	N	<.5		70	70	Discharge from textile-finishing factories
43. 1,1,1 - Trichloroethane (ppb)	N	<.5		200	200	Discharge from metal degreasing sites and other factories
44. 1,1,2 - Trichloroethane (ppb)	N	<.5		5	3	Discharge from industrial chemical factories
45. Trichloroethylene (ppb)				5	0	Discharge from metal degreasing sites and other factories
46. TTHM [Total trihalomethanes] (ppb)	N	8		80	N/a	By-product of drinking water chlorination
47. Toluene (ppm)	N	<.5		1	1	Discharge from petroleum factories
48. Vinyl Chloride (ppb)	N	<.5		2	0	Leaching from PVC piping; discharge from plastics factories
49. Xylenes (ppb)	N	<.5		10	10	Discharge from petroleum factories; discharge from chemical factories

Microbiological Contaminants:
(1) Total Coliform. Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially- harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
(2) Fecal coliform/E.Coli. Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.

Radiochemical Contaminants:
(3) Gross Beta. Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
(4) Gross Alpha. 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.
(5) Combined Radium 226/228. Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
(6) Uranium. Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity

Inorganic Contaminants:
(7) Antimony. Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
(8) Arsenic. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
(9) Barium. Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
(10) Beryllium. Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
(11)Bromate. Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
(12) Cadmium. Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
(13) Chloramines. Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
(14) Chlorine. Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
(15) Chlorite. Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
(16) Chlorine Dioxide. Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.
(17) Chromium. Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
(18) Copper. Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
(19) Cyanide. Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve

damage or problems with their thyroid.
(20) Fluoride. Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.
(21) Lead. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
(22) Mercury (inorganic). Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
(23) Nitrate. Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
(24) Nitrite. Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
(25) Selenium. Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
(26) Thallium. Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.

Volatile Organic Contaminants:
(27) Benzene. Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
(28) Carbon Tetrachloride. Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
(29) Chlorobenzene. Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
(30) o-Dichlorobenzene. Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
(31) p-Dichlorobenzene. Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
(32) 1,2-Dichloroethane. Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
(33) 1,1-Dichloroethylene. Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
(34) cis-1,2-Dichloroethylene. Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
(35) trans-1,2-Dicholoroethylene. Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
(36) Dichloromethane. Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
(37) 1,2-Dichloropropane. Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
(38) Ethylbenzene. Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
(39) Haloacetic Acids. Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
(40) Styrene. Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
(41) Tetrachloroethylene. Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
(42) 1,2,4-Trichlorobenzene. Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
(43) 1,1,1,-Trichloroethane. Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
(44) 1,1,2-Trichloroethane. Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
(45) Trichloroethylene. Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
(46) TTHMs [Total Trihalomethanes]. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
(47) Toluene. Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
(48) Vinyl Chloride. Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.

(49) Xylenes. Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.
(50) Atrazine. Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.

We routinely monitor for the presence of contaminates in your drinking water and as you can see we had violations on our Radionuclide sampling. Averaging our results for January 1, 2004 to December 31, 2004 shows that our system's Gross Alpha Particulate Activity was 51pCi/l which exceeds the set standard of 15 pCi/l. The violation occurred when testing the water from our well #8. To correct the problem we raised the pumping level of well 8 and sealed all zones below 564 feet. The well is back on line and used mainly during our high demand periods due to excessive hardness levels. We also exceeded the MCL for Uranium. The MCL is 30 ug/l (or 30 pounds in 120,000,000 gallons of water) for Uranium. Our average uranium testing from January 1,2004 to December 31,2004 was 36-89 ug/l, and our average from October 1,2004 to September 30,2005 was 40 pCi/l. The violations occurred on point of entry test on well #3s, #8, Chlorination Station #2. In addition to rehabilitation work on Well #8 and Chlorination Station #2 combined with other water sources to become Point of Entry #2 in 2005. This new Point of Entry is in compliance with Radionuclides violations. Well #3s was inactivated in December 2005 and this water source has not been used since that time. Nichols Hills is now in compliance with all Radionuclide Stardards.

Water that contains levels of Radionuclides in excess of the limits established by the United States Environmental Protection Agency (EPA) drinking water standards poses a health concern at certain levels of exposure. Some people who drink water containing Radionuclides in excess of the MCL over many years have an increased risk of getting cancer, and in the case of Uranium, kidney toxicity.

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The MCL on a running annual average for arsenic is 10 ug/l. During the period from July 1,2009 to July 1,2010 our average was shown to be 11ug/l. The source of the violation has been identified and isolated. After our treatment and blending facilities are completed we will be able to re-introduce the responsible well to the rotation.

Water that contains a level of arsenic in excess of the limits established by EPA's drinking water standards poses a health concern at certain levels of exposure. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their and circulatory systems and may have an increased risk of getting cancer.

What does this mean?

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 (800-426-4791).

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 we treat it include:
**Microbial contaminants*, such as 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 agriculture and residential uses.
**Radioactive contaminants*, which are naturally occurring.
**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.

MCLs are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

Total Coliform: The Total Coliform Rule requires water systems to meet a stricter limit for coliform bacteria. Coliform bacteria are usually harmless, but their presence in water can be an indication of disease-causing bacteria. When coliform bacteria are found, special follow-up tests are done to determine if harmful bacteria are present in the water supply. If this limit is exceeded, the water supplier must notify the public by newspaper, television or radio. To comply with the stricter regulation, we have increased the average amount of chlorine in the distribution system.

Nitrates: As a precaution we always notify physicians and health care providers in this area if there is ever a higher than normal level of nitrates in the water supply.

Lead: Lead in drinking water is rarely the sole cause of lead poisoning, but it can add to a person's total lead exposure. All potential sources of lead in the household should be identified and removed, replaced or reduced.

Thank you for allowing us to continue providing your family with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for understanding.

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/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

We at the City of Nichols Hills work around the clock to provide top quality water to every tap. Please call our office if you have questions at 843-5222.