

Terms & Definitions

Action Level (AL) is the concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Contaminant is any physical, chemical, biological, or radiological substance or matter in water, which may or may not be harmful depending on the concentration.

Maximum Contaminant Level (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 (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.

Maximum Residual Disinfectant Level (MRDL) is the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for the control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) is 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.

Nephelometric Turbidity Unit (NTU) is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Non-Detects (ND) means that laboratory analysis indicates the contaminant is not present above the method's detection capability.

Picocuries per liter (pCi/l) is a measure of the radioactivity in water.

Secondary Standards are guidelines pertaining to certain contaminants that may cause cosmetic or aesthetic effects, such as skin or tooth discoloration, or taste, odor, or discoloration in drinking water.

Treatment Technique (TT) is a required process intended to reduce the level of a contaminant in drinking water.

Note: The following common scientific measures of substances in water may be difficult to envision. To make them easier to understand, we have related them to examples.

Parts per million (ppm) or milligrams per liter (mg/l) One part per million is equivalent to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) or micrograms per liter One part per billion corresponds to one minute in 2,000 years or a single penny in \$10,000,000.

Consumer Confidence Report

An amendment to the Safe Drinking Water Act in 1996 required that water suppliers publish and furnish customers with a Consumer Confidence Report (CCR) every year beginning in 1999. The Knoxville Utilities Board (KUB) began publishing an annual Water Quality Report more than ten years before this requirement.

KUB performs many more tests than federal and state laws and the Environmental Protection Agency (EPA) require to provide our customers with safe, high-quality drinking water. KUB has always met or exceeded federal and state water quality standards, and we look forward to continuing that tradition in the future.

As you will see from the data in the tables included in this brochure, our system had no water quality monitoring violations. Although monitoring did detect the presence of some contaminants in small quantities, none exceeded the acceptable levels established by the EPA. 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.

Information for Consumers At Risk

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised people, such as people with cancer undergoing chemotherapy, people 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. Those people should seek advice about drinking water from their health care providers.

EPA/Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the EPA's Safe Drinking Water Hotline, 1-800-426-4791.

Cross Connections

KUB routinely conducts inspections for cross connections between a customer's service and the public water system to protect water quality. For residential customers, cross connections can occur where lawn irrigation systems, fire protection systems, pools, saunas, hot tubs, fountains, auxiliary intakes (e.g., wells, ponds, streams), and home water treatment systems exist. The use of chemicals in these installations, or the presence of stagnant water, can contaminate the public water source if a backflow occurs. If you have a potential cross connection or have any questions regarding cross connections, please contact KUB.

Drinking Water Sources

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Our water source is surface water from the Tennessee River, which supplies the Mark B. Whitaker Water Plant. 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:

- 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, 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.

To ensure that tap water is safe to drink, EPA and TDEC prescribe regulations, which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Contact Information

For more information about

- Contaminants and potential health effects, call the EPA's Safe Drinking Water Hotline at 1-800-426-4791.
- KUB's water or this report, contact KUB's Customer Information Center at 524-2911 or visit our Web site at www.kub.org.

KUB is a municipal utility serving approximately 77,000 water customers in Knoxville, Knox County, and adjacent areas. KUB's Board meets in open public session on a monthly basis. Please feel free to participate in these meetings. Information about regularly scheduled meetings can be obtained by calling KUB.

Información en Español

Esta información es muy importante. Por favor tradúscalo o hable con alguien que lo entienda bien. Para más información en español, llame a KUB al número de teléfono 524-2911 y oprima el número 8.



Water Quality Report 2009



The quality is clear.



(865) 524-2911 • www.kub.org

Mark B. Whitaker Water Plant

	Violation Y/N	Maximum Level Detected	Unit	MCLG	MCL	Likely Source of Contamination
Microbiological Contaminants						
Fecal Coliform and E. Coli	N	0	% pos	0	0	Human and animal fecal waste
Total Coliform ¹	N	1.5	% pos	0	5	Naturally present in the environment
Turbidity ²	N	0.16	NTU	N/A	TT	Soil runoff
Radioactive Contaminants						
Alpha Emitters	N	<2.0	pCi/l	0	15	Erosion of natural deposits
Beta/Photon Emitters ³	N	2.7	pCi/l	0	50	Decay of natural and man-made deposits
Combined Radium	N	<1.25	pCi/l	0	5	Erosion of natural deposits
Inorganic Contaminants						
Barium	N	22	ppb	0	2000	Discharge of drilling wastes and metal refineries; erosion of natural deposits
Nitrate (as Nitrogen)	N	0.5	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Fluoride	N	1.2	ppm	4	4	Erosion of natural deposits; water additive, which promotes strong teeth; discharge from fertilizer and aluminum factories
Volatile Organic Contaminants						
Trihalomethanes (THM)	N	Max Quarter RAA: 49 ppb (4th quarter) – Individual site range: 33–76 ppb ⁴	ppb	N/A	80	By-product of drinking water chlorination
Haloacetic Acids (HAA)	N	Max Quarter RAA: 30 ppb (4th quarter) – Individual site range: 16–43 ppb ⁴	ppb	N/A	60	By-product of drinking water chlorination
Other Contaminants⁵						
Aluminum	N	20	ppb	N/A	N/A	Erosion of natural deposits; residue from some surface water treatment processes
Chloride	N	10	ppm	N/A	N/A	Runoff, leaching from natural deposits
Sodium	N	13	ppm	N/A	N/A	Used in treatment process
Sulfate	N	20	ppm	N/A	N/A	Substances that form ions when in water
Total Dissolved Solids	N	110	ppm	N/A	N/A	Runoff, leaching from natural deposits
Zinc	N	86	ppb	N/A	N/A	Naturally present in the environment

Lead and Copper Study • 2007 Test Results

Contaminants	Violation		Unit	MCLG	MCL	Likely Source of Contamination
	Y/N	90th Percentile Level				
Copper	N	0.171	ppm	1.3	AL=1.3	Customer plumbing and service connection
Lead ⁶	N	3.1	ppb	0	AL=15	Customer plumbing and service connection

¹Highest monthly percentage (September 2009, three of 201 samples taken). ²No turbidity violations were incurred in 2009. Turbidity is a measure of the cloudiness of the water. KUB monitors turbidity because it is a good indicator of the effectiveness of our filtration system. ³EPA considers 50pCi/l to be the level of concern for beta particles. ⁴Compliance is determined by calculating a Running Annual Average (RAA) of all the sample results obtained quarterly at required sampling sites. ⁵In conjunction with the above listed drinking water monitoring results, KUB analyzed in excess of 100 additional contaminants during 2009 with no results above detectable levels. ⁶During the 2007 tri-annual lead and copper testing, two out of 79 households sampled contained concentrations exceeding the action level. **Lead:** 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. Knoxville Utilities Board 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 two 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 EPA Safe Drinking Water Hotline, 1-800-426-4791 or at <http://www.epa.gov/safewater/lead>.

Cryptosporidium • 2006-2007 Test Results

Source Water Monitoring	Violation Y/N	Maximum Level Detected	Unit	MCLG	MCL
	N	0.016	oocyst/L	N/A	N/A

Monitoring of KUB's source water during a 24-month period indicated the presence of only two detections in 25 samples of raw water. KUB's highest average of 12 consecutive months during this monitoring period was 0.016 oocyst/L, which is below the regulatory criteria of 0.075oocyst/L for no additional filtration or treatment. Cryptosporidium is a microbial parasite that is found in surface water throughout the U.S. Although Cryptosporidium can be removed by filtration, the most commonly used filtration methods cannot guarantee 100 percent removal. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immuno-compromised people have more difficulty and are at greater risk of developing severe, life-threatening illness. Immuno-compromised individuals are encouraged to consult their doctor regarding appropriate precautions to take to prevent infection. For more information on Cryptosporidium, contact EPA's Safe Drinking Water Hotline (800-426-4791).

Disinfection By-Products

Contaminants	Violation Y/N	Range and/or Maximum Level Detected at Entry Point	Maximum Level Detected in Distribution System	Unit	MRDLG or	MRDL or	Likely Source of Contamination
					MCLG	MCL	
Chlorine Dioxide	N	0–504	N/A	ppb	MRDLG=800	MRDL=800	Water additive used to control microbes
Chlorite	N	0–0.25	0.09	ppm	0.8	1	By-product of drinking water disinfection
Total Organic Carbon (Source) ⁷	N	1.5–4.3 (avg 2.2)	N/A	ppm	N/A	TT	Naturally present in the environment
Total Organic Carbon (Tap) ⁷	N	1.1–2.6 (avg 1.5)	N/A	ppm	N/A	TT	Naturally present in the environment
Chlorine	N	1.6–3.4 (avg 2.2)	0.3–2.8	ppm	MRDLG=4	MRDL=4	Water additive used to control microbes

⁷ KUB met the Treatment Technique requirement for Total Organic Carbon.

Source Water: What is the source of my water? Your water, which is surface water, comes from the Tennessee River. Our goal is to protect our water from contaminants, and we continue to work with the State to assess the vulnerability of our water source to potential contamination. The Tennessee Department of Environment and Conservation (TDEC) has prepared a Source Water Assessment Program (SWAP) Report for the untreated water sources serving the KUB system. The SWAP Report assesses the susceptibility of untreated water sources to potential contamination. Water sources have been rated as reasonably susceptible (high), moderately susceptible (moderate), or slightly susceptible (low) based on geologic factors and human activities in the vicinity of the water source. The KUB Water System source is rated as reasonably susceptible to potential contamination. To ensure safe drinking water, all public water systems treat and routinely test their water. An explanation of Tennessee's Source Water Assessment Program, the Source Water Assessment summaries, susceptibility scorings, and the overall TDEC report to EPA can be viewed online at www.tn.gov/environment/dws/dwassess.shtml or you may contact KUB to obtain copies of specific assessments.