

2006 Drinking Water Quality Report

University of Kansas - Lawrence Campus (KU) - July 2007
Prepared by the Department of Environment, Health & Safety (EHS)

This report is designed to inform you about the water quality and services that the KU Public Water Supply System provides to you. Every water system's goal is to provide customers with a safe and dependable supply of drinking water. Times and locations of meetings regarding the water system at KU will be posted on the KU EHS Water Quality website (http://www.ehs.ku.edu/documents/ehs_reports/index.aspx). In the continuing efforts to maintain a safe and dependable water supply it may be necessary to make improvements in the water system. Therefore, interruptions in supply may occur from time to time. If you have any questions or comments about this report or the quality of your water, please contact Jon Rossillon, Hazardous Materials/Environmental Protection Manager, by phone (864-0224), or by email (jrossillon@ku.edu).

KU purchases its water from the City of Lawrence which means that the source of water is either from the Kansas River and/or from the Clinton Reservoir. The state has completed an assessment of those source waters. To view results of the source water assessment, visit the Kansas Department of Health and Environment's (KDHE's) assessment web page (www.kdhe.state.ks.us/nps/swap/SWreports.html).

This report shows the campus water quality test results for 2006 and explains what the test results mean. The bottom line is that the water that is provided to you is safe. The City of Lawrence and the University of Kansas routinely monitor for various contaminants of concern in the drinking water according to federal and state regulations. The tables at the end of the report show the results of this monitoring. It is important to remember that the presence of these contaminants does not necessarily pose a health risk. More information about contaminants and their potential health effects can be obtained by calling the Environmental Protection Agency's (EPA's) Safe Drinking Water Hotline at 1-800-426-4791 or by visiting their website (<http://www.epa.gov/safewater>).

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. Quality standards for public water systems are set at very stringent levels. To understand the possible health effects described for most constituents, we have provided the following example. A person would have to drink two liters of water every day at the maximum drinking water standard for a lifetime to have a one-in-a-million chance of having the described health effect.

Some individuals may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised individuals such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, persons with HIV/AIDS or other immune system disorders, and some elderly persons and infants can be particularly at risk from infections. These individuals should seek advice from their health care providers about drinking water contaminants. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium, other microbiological contaminants, and information about potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline at 1-800-426-4791.

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 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 storm water 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 storm water runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, can also come from gas stations, urban storm water 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 prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

To help you better understand some of the terms used in this report, we have provided the following definitions:

Action Level (AL) - The contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

ND – Not detected by the laboratory. The number in parentheses is the lowest concentration the laboratory can detect (method detection limit).

Parts per million (ppm) - one part per million corresponds to one minute in two years, or one penny in \$10,000.

Parts per billion (ppb) - one part per billion corresponds to one minute in 2,000 years, or one penny in \$10,000,000.

PicoCuries per liter (pCi/L) - a measure of the radioactivity in water.

Million fibers per liter (MFL) - A measure of the presence of asbestos fibers more than ten micrometers in length.

NTU – Nephelometric Turbidity Units. A measure of the clarity of water. Turbidity in excess of five NTU is just noticeable to the average person.

Treatment technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level (MCL) - 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.

Maximum Contaminant Level Goal (MCLG) - 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.

RAA – Running annual average. This average is calculated every 3 months, using data from the previous 12 months.

Maximum Residual Disinfectant Level (MRDL) – The highest level of residual disinfectant that is allowed in drinking water.

Maximum Residual Disinfectant Level Goal (MRDLG) – The level of residual disinfectant in drinking water below which there is no known or expected risk to health. MRDLG's allow for a margin of safety.

SMCL – Secondary Maximum Contaminant Level (or optimal range) set by KDHE.

Table I. 2006 Water Quality Data as reported by the University of Kansas – Lawrence Campus.

Parameter	Ideal Goals (EPA MCLG)	Highest Level Allowed (EPA MCL)	KU Results
Coliform, Total (TCR)	0	5% of monthly samples are positive (2 samples out of 40)	2.5 % (October, 1 sample)
Coliform, Fecal	0	Routine sample and repeat sample are Total Coliform Positive, and One is also Fecal Positive/E. Coli Positive	0 samples
Parameter	Ideal Goals (EPA MCLG)	Highest Level Allowed (EPA MCL)	90 th Percentile
Copper (tested in 2005)	1.3 ppm AL	1.3 ppm AL	0.18 ppm AL
Lead (tested in 2005)	0 ppb AL	15 ppb AL	2.6 ppb AL

During the 2006 calendar year, we had no violations. Coliform bacteria are naturally present in the environment; a possible source of the metal contaminants is the normal corrosion of plumbing systems. 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, some of the elderly, and people with severely compromised immune systems.

Table 2. 2006 Detected Primary Drinking Water Contaminants as reported by the City of Lawrence.

Parameter	Highest Level Allowed (EPA's MCL)	Highest Level Detected Clinton Reservoir Water Treatment Plant	Highest Level Detected Kaw River Water Treatment Plant	Ideal Goals (EPA's MCLG)
Alpha emitters	15 pCi/L	3.3 pCi/L	1.8 pCi/L	0 pCi/L
Atrazine	3 ppb	0.3 ppb	0.3 ppb	3 ppb
Barium	2 ppm	0.043 ppm	0.034 ppm	2 ppm
Beta emitters	50 pCi/L	4.5 pCi/L	6.9 pCi/L	0 pCi/L
Chromium	100 ppb	1.0 ppb	4.0 ppb	100 ppb
Combined Radium 226/228	5 pCi/L	0.8 pCi/L	0.5 pCi/L	0 pCi/L
Fluoride	4 ppm	0.73 ppm	0.98 ppm	4 ppm
Nitrate	10.0 ppm	0.23 ppm	0.60 ppm	10.0 ppm
Selenium	50 ppb	ND (<1.0 ppb)	1.9 ppb	50 ppb
Total Organic Carbon	TT	2.7 ppm	2.8 ppm	N/A
Turbidity	TT	0.29 NTU	0.29 NTU	N/A
(Percentage of samples < 0.3 NTU)		100%	100%	
Uranium	30 ppb	1.0 ppb	ND (0.7 ppb)	0 ppb
Asbestos (08/19/2004)	7 MFL	ND (<0.174 MFL)		7 MFL
Total Trihalomethanes	80 ppb	55.5 ppb (RAA)		None
HAA5s (Haloacetic acids)	60 ppb	29.5 ppb (RAA)		None
Total Chlorine	MRDL = 4.0 ppm	3.6 ppm (Annual average)		MRDLG = 4.0 ppm

Listed above are contaminants detected in Lawrence's drinking water as reported in the City of Lawrence's *2007 Consumer Confidence Report*. Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection by-products. Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Possible sources of the above contaminants include the erosion of natural deposits, runoff from herbicide used on row crops, decay of natural and man-made deposits, former chlorine supplier, water additive which promotes strong teeth, runoff from fertilizer use, chlorination by-products, and soil runoff. Not listed are the hundreds of other contaminants that were tested, but not detected.

Table 3. 2006 Detected Secondary Drinking Water Contaminants as reported by the City of Lawrence.

Parameter	Highest Level Allowed (KDHE's SMCL)	Highest Level Detected Clinton Reservoir Water Treatment Plant	Highest Level Detected Kaw River Water Treatment Plant
Calcium	75 – 200 ppm	31 ppm	41 ppm
Magnesium	50 – 150 ppm	9.1 ppm	15 ppm
Sodium	100 ppm	9.7 ppm	91 ppm
Potassium	100 ppm	3.6 ppm	10 ppm
Chloride	250 ppm	11 ppm	110 ppm
Sulfate	250 ppm	27 ppm	150 ppm
Total Hardness	400 ppm	110 ppm	150 ppm
Alkalinity as CaCO ₃	60 – 300 ppm	94.4 ppm	52 ppm
pH	6.5 – 8.5 pH Units	9.1	10.1
Specific Conductance	1500 µmhos/cm	300 µmhos/cm	780 µmhos/cm
Total Dissolved Solids	500 ppm	170 ppm	450 ppm
Total Phosphorus (P)	5 ppm	0.38 ppm	0.17 ppm
Silica	50 ppm	1.5 ppm	6.8 ppm

Secondary contaminants are not regulated, but provide guidelines for producing good tasting and aesthetically pleasing water. The typical source for secondary contaminants is the erosion of natural deposits.

Web Links for Additional Water Quality Information

- <http://www.ehs.ku.edu>
- <http://www.kdhe.state.ks.us/pws/>
- <http://www.epa.gov/safewater/>
- <http://www.kdhe.state.ks.us/nps/swap/SWreports.html>