

# 2007 Drinking Water Quality Report

University of Kansas - Lawrence Campus - July 2008  
Prepared by the Department of Environment, Health & Safety

The purpose of this report is to inform people who work for, attend, or visit the University of Kansas (KU) about the quality of the drinking water provided to the campus by the KU Public Water Supply System. KU is committed to providing its users with a safe and dependable supply of drinking water. All public meetings regarding the KU water system (times and locations) are posted on the KU Department of Environment, Health & Safety (EHS) Water Quality [website](#). In our continuing effort to maintain a safe and dependable water supply it may be necessary to make improvements in the water distribution system. Therefore, interruptions in supply may occur from time to time. If you have any questions or comments about this report or about the quality of KU's drinking water, please contact Jon Rossillon, Hazardous Materials/Environmental Protection Manager, by phone (864-4089) or by [email](#). We welcome your input.

KU purchases its drinking water from the City of Lawrence. The sources of water for the city include the Kansas River, Clinton Reservoir and six Kansas River alluvial wells. An assessment of these sources of water was completed by the state of Kansas in 2003. The results of that source water assessment can be viewed on the Kansas Department of Health and Environment's (KDHE's) [web page](#).

This report presents the test results of KU campus drinking water quality conducted during the 2007 calendar year (unless otherwise noted in the tables) and explains what those test results mean (Tables 1, 2 and 3). The overall conclusion based on these results is that the drinking water provided to you is safe and meet all federal and state requirements. The City of Lawrence and KU routinely monitor the drinking water for various contaminants of concern. 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](#).

All drinking water can 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. In order to ensure that drinking water is safe, EPA established regulations which set concentration limits for contaminants in all drinking water that is provided by public water systems. To better understand the probability of suffering a health effect due to exposure to any specific contaminant, a person would have to drink two liters of water every day at the maximum EPA allowable drinking water standard for a lifetime (over 70 years) to have a one-in-a-million chance of having the described health effect.

Some individuals may be more vulnerable to specific contaminants in drinking water than the general population. Individuals who would be more vulnerable include persons who are immuno-compromised such as persons with cancer undergoing chemotherapy,

have undergone a recent organ transplant, have HIV/AIDS or other immune system disorders, some elderly persons and infants. These individuals should seek advice from their health care providers about their risk due to exposure to any possible drinking water contaminant.

*Cryptosporidium*, a very small, single celled parasite, is present in surface waters throughout the US. Ingestion of *Cryptosporidium* may cause cryptosporidiosis, an abdominal infection. The symptoms this infection may include diarrhea, dehydration and stomach cramps. If you have a weakened immune system (especially individuals living with HIV having a T-cell count lower than 200) the symptoms may be worse and last longer. The City of Lawrence, which provides KU with its drinking water, currently monitors its source waters for this parasite. EPA/CDC guidelines on ways to lessen your risk of exposure to *Cryptosporidium* and other microbiological organisms can be obtained by calling the EPA Safe Drinking Water Hotline at 1-800-426-4791.

The sources of all drinking 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 can also pick up substances associated with the presence of animals and human activities.

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 chemical 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.
- **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.
- **Pesticides**, which may come from a variety of sources such as agriculture (e.g., herbicides), urban storm water runoff and residential uses.
- **Radioactive contaminants**, which can be naturally-occurring or be the result of oil and gas production and mining activities.

To assist you in better understanding this report, we have provided the following definitions:

- **Action Level (AL)** - The concentration of a 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 amount of radioactivity in water.
- **Million fibers per liter (MFL)** - A measure of the amount of asbestos fibers which are longer 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 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.
- **Maximum Contaminant Level (MCL)** - The highest level of a contaminant that is allowed in drinking water. MCL for a specific contaminant is set as close to the MCLG as is feasible using the best available treatment technology.
- **RAA** – Running annual average. This average is calculated every 3 months, using data from the previous 12 months.
- **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.
- **Maximum Residual Disinfectant Level (MRDL)** – The highest level of residual disinfectant that is allowed in drinking water.
- **SMCL** – Secondary Maximum Contaminant Level (or optimal range). These contaminants do not pose a health risk rather they affect the aesthetic qualities of drinking water. SMCL levels are set by KDHE.
- **Lead and Copper 90<sup>th</sup> Percentile** – Out of every 10 locations sampled, 9 were at or below this level.

**Table I** lists the results of water quality tests conducted by KU on its drinking water. Total coliform and fecal coliform bacteria in the University's drinking water supply are tested on a monthly schedule. Copper and lead are tested every three years. These schedules are set by the EPA under the Safe Drinking Water Act.

**Table I. 2007 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)	8.70 % (March, 4 samples) 2.27 % (May, 1 sample) 2.33 % (June, 1 sample) 4.08 % (August, 2 samples) 2.33 % (November, 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 <sup>th</sup> 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

Coliform bacteria are commonly found in the environment (e.g., soil or vegetation) and are generally harmless. Coliform bacteria will not likely cause illness. Fecal coliform and *Escherichia coli* (commonly called *E. coli*) are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. If fecal coliform bacteria are present in drinking water, these microbes can cause short-term effects such as diarrhea, cramps, nausea, or headaches. They may pose a special health risk for people with severely compromised immune systems, infants, young children, and some of the elderly.

KU had one violation in 2007 in regards to the presence of coliform bacteria (not fecal coliform) in drinking water (March 2007 – Green Hall). When the problem was detected, the University immediately posted notices throughout Green Hall to inform those people working in or visiting the building of the problem (a copy of the notice is appended

to this report). A faulty backflow prevention valve was discovered to be the cause of the problem. The valve was replaced after which the building's entire water lines were flushed. These actions corrected the problem.

If the heavy metal lead is present in drinking water, it can cause serious health problems for pregnant women and young children. Ingestion of lead can cause damage to the brain and kidneys and can interfere with the production of red blood cells that carry oxygen to all parts of your body. Lead in drinking water is primarily from materials and components associated with service lines. When water has been sitting for several hours, flushing the tap for 30 seconds to 2 minutes before using water for drinking or cooking you can minimize the potential for lead exposure. Information on lead in drinking water is available from the EPA's Safe Drinking Water Hotline (1-800-426-4791) or at their [web page](#)

Although copper is an essential nutrient (Recommended Daily Allowance is 0.9 milligrams for adults; USDA March 17, 2008), people drinking water containing excess copper over a short period of time can experience temporary gastrointestinal distress such as nausea, vomiting, diarrhea and stomach cramps. People drinking water containing excessive copper over many years may suffer liver or kidney damage. Individuals with Wilson's Disease, a rare inherited (genetic) disorder (1 in 30,000 people), should consult their personal physician if copper is detected in their drinking water. The principal source of copper in drinking water results from the leaching of copper from pipes and bathroom fixtures due to corrosive (acidic) water. In water systems that have been sitting unused for several hours, running the water for 30 to 60 seconds before using it for drinking or cooking will often significantly reduce the concentration of copper.

**Table 2** is a list of 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 also has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Possible sources of contaminants include the erosion of natural deposits (e.g., soil), runoff of pesticides (e.g., those used on row crops or residential properties), decay of natural and man-made deposits, former chlorine suppliers, water additives which promote strong teeth, runoff of fertilizers and chlorination by-products. Not listed in Table 2 are the hundreds of other contaminants that were tested for but were not detected.

**Table 2. 2007 Detected Primary Drinking Water Contaminants as reported by the City of Lawrence.**

Parameter	Ideal Goals (EPA's MCLG)	Highest Level Allowed (EPA's MCL)	Highest Level Detected Clinton Reservoir Water Treatment Plant	Highest Level Detected Kaw River Water Treatment Plant
Alpha emitters	0 pCi/L	15 pCi/L	1.9 pCi/L	0.7 pCi/L
Atrazine	3 ppb	3 ppb	0.1 ppb	0.2 ppb
Barium	2 ppm	2 ppm	0.047 ppm	0.110 ppm
Beta emitters	0 pCi/L	50 pCi/L	6.9 pCi/L	8.4 pCi/L
Chromium	100 ppb	100 ppb	9.6 ppb	7.9 ppb
Combined Radium 226/228	0 pCi/L	5 pCi/L	0.9 pCi/L	1.7 pCi/L
Fluoride	4 ppm	4 ppm	0.75 ppm	0.76 ppm
Nitrate	10.0 ppm	10.0 ppm	0.49 ppm	1.3 ppm
Selenium	50 ppb	50 ppb	1.3 ppb	1.7 ppb
Total Organic Carbon	N/A	TT	2.9 ppm	3.9 ppm
Turbidity	N/A	TT	0.29 NTU	0.29 NTU
(Percentage of samples < 0.3 NTU)			100%	100%
Uranium	0 ppb	30 ppb	1.4 ppb	ND (0.7 ppb)
Asbestos (08/19/2004)	7 MFL	7 MFL	ND (<0.174 MFL)	
Total Trihalomethanes	None	80 ppb	58.8 ppb (RAA)	
HAA5s (Haloacetic acids)	None	60 ppb	34.3 ppb (RAA)	
Total Chlorine	MRDLG = 4.0 ppm	MRDL = 4.0 ppm	3.6 ppm (Annual average)	

**Table 3** is a list of secondary contaminants that are not regulated as they do not pose a health risk. KDHE sets guidelines for these contaminants to insure public water systems provide good tasting and aesthetically pleasing water. The typical source for secondary contaminants is the erosion of natural deposits.

**Table 3. 2007 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	34 ppm	45 ppm
Magnesium	50 – 150 ppm	10 ppm	12 ppm
Sodium	100 ppm	13 ppm	82 ppm
Potassium	100 ppm	4.3 ppm	9.8 ppm
Chloride	250 ppm	13 ppm	100 ppm
Sulfate	250 ppm	29 ppm	97 ppm
Total Hardness	400 ppm	130 ppm	140 ppm
Alkalinity as CaCO <sub>3</sub>	60 – 300 ppm	101 ppm	75.8 ppm
pH	6.5 – 8.5 pH Units	9.1	10
Specific Conductance	1500 µmhos/cm	330 µmhos/cm	740 µmhos/cm
Total Dissolved Solids	500 ppm	180 ppm	410 ppm
Total Phosphorus (P)	5 ppm	0.36 ppm	0.20 ppm
Silica	50 ppm	4.8 ppm	11 ppm

### Web Links for Additional Water Quality Information

- [KU Department of Environment, Health & Safety](#)
- [KDHE Public Water Supply Section](#)
- [EPA Ground Water and Drinking Water](#)
- [KDHE Source Water Assessment Reports](#)

# Appendix – Public Notice



5/10/2007

## PUBLIC NOTICE OF COLIFORM BACTERIA IN DRINKING WATER

The University of Kansas Public Water Supply system (EPA ID# KS2004513, State Lab #N1060) incurred a maximum contaminant level violation for total coliform bacteria for the month of March 2007. Although this was not an emergency, you as customers have a right to know what happened and what was done to correct the situation.

Each month, personnel from the KU Department of Environment, Health & Safety (EHS) routinely monitor for the presence of total coliform bacteria in the campus drinking water supply by taking a sample from forty different buildings from across campus. In late March of this year, the routine sample from Green Hall tested positive for coliform bacteria. All other buildings sampled tested negative. The building lines were flushed and repeat check samples were taken. Three of the six repeat samples showed the presence of total coliform bacteria. The standard is that no more than five percent of samples may contain coliform – for the KU Public Water Supply system this means more than two samples – in a given month or the system incurs a maximum contaminant level violation for that month.

KU Facilities Operations (FO) Plumbing Shop personnel, a representative from the Kansas Department of Health & Environment (KDHE) Northeast District Office and EHS personnel discovered a faulty backflow preventer valve during the investigation of the building's pipes. The faulty valve was repaired, the building lines were flushed, and faucets were manually disinfected. Subsequent samples (special study samples plus the April routine sample) have all tested negative for the presence of coliform bacteria.

You do not need to boil your water or take other corrective actions. However, if you have specific health concerns, consult your doctor. People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at 1 (800) 426-4791.

This was not an emergency. Total coliform bacteria are generally not harmful themselves. Coliforms are bacteria which 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. Usually coliforms are a sign that there could be a problem with the treatment or distribution system (pipes). Whenever we detect coliform bacteria in

any sample, we do follow-up testing to see if other bacteria of greater concern, such as fecal coliform or *E. Coli*, are present. No fecal coliform bacteria or *E. Coli* bacteria have been found in the routine and repeat samples tested.

Bacterial contamination can occur when increased run-off enters the drinking water source (for example, following heavy rains). It can also happen due to a break in the distribution system (pipes) or a failure in the water treatment process.

If you have any questions or comments about this notice, please contact Jon Rossillon, Hazardous Materials/Environmental Protection Manager, by phone (864-0224) or by email ([jrossillon@ku.edu](mailto:jrossillon@ku.edu)).