

2009 CITY OF LAWRENCE WATER QUALITY REPORT

The City of Lawrence is pleased to inform you that your drinking water consistently met all regulatory compliance standards in 2009. This report summarizes Lawrence's water quality information from 2009 compared to federal and state standards. To obtain additional information or more copies of this Water Quality Report, contact Aurora Shields, Water Quality Manager, at 832-7817 or email her at: ashields@ci.lawrence.ks.us.

Lawrence has two major surface water sources: *the Kansas River* and *Clinton Lake*. Occasionally, groundwater is drawn from the *Kansas River Alluvium*. This shallow groundwater is directly influenced by surface water from the Kansas River. When in use, groundwater is a very small percentage of the total water treated at the Kansas River Water Treatment Plant. These sources are located in the Kansas - Lower Republican Basin. A Kansas Department of Health and Environment Source Water Assessment has evaluated Lawrence's source water as moderately susceptible to contamination and is available upon request or download at www.kdheks.gov/hps/swap/SWreports.html.

Message from the EPA

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 healthcare providers. EPA/Centers 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 Water Drinking Hotline (800-426-4791)*.

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 Environmental Protection Agency's (EPA) *Safe Drinking Water Hotline*.

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. Your water system is responsible for providing high quality 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 <http://www.epa.gov/safewater/lead>.

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 storm water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming.

▶ **Pesticides and herbicides** may come from a variety of sources such as storm water runoff, agriculture, and residential uses.

▶ **Radioactive contaminants**, which can be naturally occurring or the result of mining activity.

▶ **Organic contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, can also come from gas stations, urban storm water runoff, and septic systems.

In order to ensure that tap water is safe to drink, EPA requires regulations that limit the amount of certain contaminants in water provided by public water systems. We treat our water according to EPA's regulations. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Radon is a radioactive gas that you can't see, taste, or smell. Radon can move up through the ground through cracks and holes in the foundation. Radon can also get into indoor air when released from tap water. Compared to radon entering the home through soil, radon entering the home through tap water will in most cases be a small source of radon in indoor air. Radon is a human carcinogen that can lead to lung cancer from breathing contaminated air and may also increase risk of stomach cancer if ingested. Currently EPA does not regulate radon in drinking water but the City of Lawrence monitors for radon in the water. If you are concerned about radon in your home, you should have the air tested. If the level of radon in your home is 4 picocuries per liter of air (pCi/L) or higher, you should pursue radon removal for your home. There are simple ways to fix radon problems that are not too costly. For additional information, call your state radon program or call EPA's Radon Hotline (800-767-7236).

The second cycle of the Unregulated Contaminant Monitoring Regulation (UCMR 2) began in 2009. Unregulated contaminants are those that don't yet have a drinking water standard set by USEPA. The purpose of monitoring for these contaminants is to help EPA decide whether the contaminants should have a standard. More information can be obtained at <http://www.epa.gov/safewater/ucmr/ucmr2/>.

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Primary Drinking Water Contaminants - Regulated at the Customer Tap (monitoring for lead and copper conducted every 3 years)

CONTAMINANT	MCL	MCLG	90 TH PERCENTILE	SOURCES OF CONTAMINANT
Copper (July – Sept. 2008)	1.3 ppm (AL)	1.3 ppm	0.097 ppm	Corrosion of household plumbing systems
Lead (July – Sept. 2008)	15 ppb (AL)	0.0 ppb	5.5 ppb	Corrosion of household plumbing systems

Primary Drinking Water Contaminants - Monitored in the Distribution System (January - December 2009)

CONTAMINANT	MCL	MCLG	HIGHEST LEVEL DETECTED	HIGHEST RAA	RANGE	ANNUAL AVERAGE	SOURCES OF CONTAMINANT
Asbestos (8/19/04)	7MF/L	7MF/L	ND	N/A	N/A	N/A	Decay of asbestos water mains
Total Coliform Bacteria	5% positives of all samples in calendar month	0%	3.96 %	N/A	N/A	N/A	Naturally present in the environment
Total Trihalomethanes	80 ppb	N/A	N/A	67 ppb	14 - 110 ppb	N/A	Disinfection by-product
Haloacetic Acids	60 ppb	N/A	N/A	46 ppb	13 - 75 ppb	N/A	Disinfection by-product
Chlorine	4.0 ppm (MRDL)	4.0 ppm (MRDLG)	3.7 ppm	N/A	3.2 - 3.7 ppm	3.4 ppm	Additive to control microbes

Primary Drinking Water Contaminants - Monitored at the Treatment Plants (January - December 2009)

CONTAMINANT	MCL	MCLG	HIGHEST LEVEL DETECTED	RANGE	SOURCES OF CONTAMINANT
Gross Alpha (2008)	15 pCi/L	0 pCi/L	1.0 pCi/L	ND - 1.0 pCi/L	Erosion of natural deposits
Arsenic	10 ppb	0 ppb	1.2 ppb	ND - 1.2 ppb	Erosion of natural deposits
Atrazine	3 ppb	3 ppb	0.7 ppb	ND - 0.7 ppb	Runoff from herbicide used on crops
Barium	2 ppm	2 ppm	0.099 ppm	0.0015 - 0.099 ppm	Discharge from metal refineries
Chromium	100 ppb	100 ppb	2.3 ppb	ND - 2.3 ppb	Discharge from steel and pulp mills
Combined Radium 226/228 (2008)	5 pCi/L	0 pCi/L	1.0 pCi/L	ND - 1.0 pCi/L	Erosion of natural deposits
Ethylbenzene	700 ppb	700 ppb	0.8 ppb	ND - 0.8 ppb	Discharge from petroleum refinery
Fluoride	4 ppm	4 ppm	0.91 ppm	0.48 - 0.91 ppm	Erosion of natural deposits. Water additive that promotes strong teeth.
Mercury	2 ppb	2 ppb	0.1 ppb	ND - 0.1 ppb	Erosion of natural deposits. Discharge from refineries. Runoffs from landfills and cropland.
Nitrate	10 ppm	10 ppm	0.9 ppm	ND - 0.9 ppm	Runoff from fertilizer use
Selenium	50 ppb	50 ppb	4.2 ppb	ND - 4.2 ppb	Erosion of natural deposits
Total Organic Carbon*	TT	N/A	4.2 ppm	2.2 - 4.2 ppm	Naturally present in the environment
Turbidity** (Percentage of samples <0.3 NTU)	TT	N/A	0.3 NTU (100%)	0.06 - 0.3 NTU	Soil runoff
Vinyl Chloride	2 ppb	0	0.2 ppb	ND - 0.2 ppb	Leaching from PVC piping and discharge from plastic factories
Total Xylenes	10 ppm	10 ppm	0.0022 ppm	ND - 0.0022 ppm	Discharge from petroleum and chemical factories

*Total organic carbon (TOC) has no health effects. However, it provides a medium for the formation of disinfection byproducts. These by-products include trihalomethanes (THMs) and haloacetic acids (HAAs).

**Turbidity has no health effects. However, it can interfere with disinfection and provide a medium for microbial growth.

Detected Secondary Drinking Water Contaminants (January - December 2009)

CONTAMINANT	HIGHEST LEVEL	DETECTION RANGE	UNITS	SMCL	TYPICAL SOURCE
Alkalinity as CaCO ₃	96.5	44.8 - 96.5	ppm	60 - 300	Erosion of natural deposits
Aluminum	0.037	0.020 - 0.037	ppm	0.05 - 0.2	Erosion of natural deposits
Calcium	52	22 - 52	ppm	75 - 200	Erosion of natural deposits
Corrosivity	0.72	0.41 - 0.72	Langelier Index	Non-corrosive	Erosion of natural deposits
Chloride	120	11 - 120	ppm	250	Erosion of natural deposits
Iron	0.13	ND - 0.13	ppm	0.3	Erosion of natural deposits
Magnesium	13	0.5 - 13	ppm	50 - 150	Erosion of natural deposits
Nickel	0.0017	ND - 0.0017	ppm	0.1	Erosion of natural deposits
Orthophosphate as P	0.09	ND - 0.09	ppm	N/A	Additive to control pipe corrosion
pH	9.9	7.6 - 9.9	S.U.	6.5 - 8.5	Erosion of natural deposits
Potassium	10	3 - 10	ppm	100	Erosion of natural deposits
Silica	12	0.83 - 12	ppm	50	Erosion of natural deposits
Sodium	95	14 - 95	ppm	100	Erosion of natural deposits
Specific Conductance	860	280 - 860	µmhos/cm	1500	Erosion of natural deposits
Sulfate	150	18 - 150	ppm	250	Erosion of natural deposits
Total Dissolved Solids	490	140 - 490	ppm	500	Erosion of natural deposits
Total Hardness	190	72 - 190	ppm	400	Erosion of natural deposits
Total Phosphorus (P)	0.47	0.09 - 0.47	ppm	5	Erosion of natural deposits

Secondary contaminants are not regulated, but indicate good tasting and aesthetically pleasing water.

Additional Monitoring Conducted by the City of Lawrence (January - December 2009)

CONTAMINANT	HIGHEST LEVEL	DETECTION RANGE	UNITS	SMCL	TYPICAL SOURCE
Radon	10.0	ND - 10.0	pCi/L	N/A	Erosion of natural deposits

CONTAMINANT	AVERAGE LEVEL	DETECTION RANGE	UNITS	SMCL	TYPICAL SOURCE
N-nitrosodimethylamine (NDMA) ***	0.0042	0.0033 - 0.0068	ppb	N/A	Byproduct of manufacturing of leather, rubber, and plastics. Reaction of precursor amines with nitrosating agents.

*** Unregulated contaminants are those that don't yet have a drinking water standard set by USEPA. The purpose of monitoring for these contaminants is to help EPA decide whether the contaminants should have a standard.

DEFINITIONS & ABBREVIATIONS

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

Maximum Contaminant Level (MCL) – 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.

MF/L – million fibers per liter.

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.

Micromhos per Centimeter (µmhos/cm) – A measure of the ability to carry electric current.

Not Applicable (N/A) – The data does not apply for this contaminant and category.

ND – Not detected by the laboratory.

NTU – Nephelometric Turbidity Units.

pCi/L – picocuries per liter (a measurement of radioactivity).

ppb – micrograms per liter (µg/L) One part per billion

ppm – milligrams per liter (mg/L) One part per million

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

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

Standard Units (S.U.) – A measuring unit for pH, based on hydrogen ion concentration.

Treatment Technique (TT) – A required process intended to reduce the level of a contaminant.