



# 2018 WATER QUALITY REPORT

DELIVERING HIGH QUALITY WATER TO YOUR TAP

## LETTER FROM THE DIRECTOR

Perhaps one of the most important natural resources Kansas Citians enjoy – sometimes without even thinking about it – is the Missouri River. It's the source of our drinking water – the most precious resource of life.



Terry Leeds

It is our privilege at KC Water to be stewards of this resource on your behalf. Please take a moment to review our 2018 Water Quality Report, which provides a detailed overview of how we are doing in the very important municipal function of making sure you and all residents can enjoy safe and reliable drinking water.

While a privilege, delivering clean water in Kansas City also has challenges. Our pipeline system is over 2,800 miles long and delivers water to almost a half million residents and 32 wholesale customers in the region. Like elsewhere in the country, the infrastructure in Kansas City is aging and some of it has reached the end of its usable life.

That is why we have a strategic plan to update the plants, pumps, and pipes that bring drinking water to you. We focus first on the parts of the system that are most susceptible and most critical for the entire community.

In the fiscal year that started May 1, 2018, we plan to spend \$137.7 million on 50 water and wastewater projects to improve water quality, protect public health, meet regulatory requirements, reduce long-term operational costs, improve overall system efficiency, enhance service reliability, build and maintain utility infrastructure, promote economic development and serve future generations.

Treating water for you and your family is a responsibility we take very seriously. On behalf of the nearly 900 associates of KC Water, thank you for your investment in Kansas City's future.



## QUALITY – FROM TREATMENT TO TAP

Clean, fresh water that tastes good – that's what you expect when you take a drink of water, and that's what KC Water delivers right to your tap. Our goal, from start to finish, is to deliver the best drinking water in the nation!

The sources of drinking water across the country (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and groundwater 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.

Some individuals may be more vulnerable to contaminants in the drinking water than is 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 people and infants can be particularly at risk from infections.

These individuals should seek advice about drinking water from their health care providers. The EPA and Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants can be found on the EPA's website at [www.epa.gov/safewater](http://www.epa.gov/safewater) or on the CDC's website at [www.cdc.gov/healthywater](http://www.cdc.gov/healthywater).

## WHERE DOES MY WATER COME FROM? SOURCE WATER ASSESSMENT

KC Water's source water is the Missouri River. In 2017, we treated an average of 93 million gallons of water per day. Federal laws were put into place in 1996 in all states requiring Source Water Assessment. The Missouri Department of Natural Resources has identified potential sources of contamination in the areas around and upstream of Kansas City's wells and river intake. For a full inventory of possible contamination sources, please visit: <http://drinkingwater.missouri.edu/swip/swipmaps/pwssid.htm> and enter: PSSID MO – 1010415.

## PRIMARY DRINKING WATER STANDARDS

Substance	KCMO Average	KCMO Range	Units	Violation	MCL	MCLG	Year Sampled
Fluoride	0.73	0.42 – 1.36	ppm	NO	4	4	2017
Nitrate	1.97	ND – 5.54	ppm	NO	10	10	2017
Atrazine	0.23	ND – 1.59	ppb	NO	3	3	2017
Barium	0.012	0.005 – 0.019	ppm	NO	2	2	2017
Chromium	4	3 – 5	ppb	NO	100	100	2017
Selenium	3	1.5 – 3.4	ppb	NO	50	50	2017
Combined Radium (226/228)	ND	ND – ND	pCi/L	NO	5	0	2012
Turbidity	0.08	0.02 – 0.16 (highest month: April)	NTU	NO			2017
Turbidity (Monthly percentage below 0.3 NTU)	100	100 – 100	NTU	NO	%	<95%	2017
Total Coliform Bacteria: (Monthly percentage of positive samples)	0.36	0 – 4.38 (highest month: April)	%	NO	5	0	2017
Disinfection By-Products	Highest Measurement		Units	Violation	MCL	MCLG	Year Sampled
TTHM	10.7		ppb	NO	80	NA	2017
Disinfection Byproducts - HAA5	23.3		ppb	NO	60	NA	2017
Chloramine as Cl <sub>2</sub>	2.3		ppm	NO	4	4	2017
Lead and Copper	90th Percentile		Units	Violation	Action Level	MCLG	Year Sampled
Lead (household testing)	0.003		ppm	NO	0.015	0	2016
Copper (household testing)	0.009		ppm	NO	1.3	1.3	2016

## OTHER CHARACTERISTICS

Parameter	KCMO Average	KCMO Range	Units	SMCL	Year Sampled
Alkalinity	32	28 – 32	ppm	NA	2017
Aluminum	0.007	0.003 – 0.015	ppm	0.2	2017
Ammonia (as N)	0.15	0.05 – 0.34	ppm	NA	2017
Calcium	37.4	33.0 – 43.3	ppm	NA	2017
Chloride	23	12 – 36	ppm	250	2017
Iron	0.007	0.004 – 0.013	ppm	0.3	2017
Magnesium	5.73	4.3 – 8.07	ppm	NA	2017
pH	9.9	9.7 – 10.0	S.U.	6.5 – 8.5	2017
Sodium	63.8	46.1 – 79.5	ppm	NA	2017
Sulfate	179	149 – 204	ppm	250	2017
Total Hardness (as CaCO <sub>3</sub> )	110	98 – 120	ppm	NA	2017
Total Dissolved Solids (TDS)	423	240 – 930	ppm	500	2017
Zinc	0.003	0.003 – 0.005	ppm	5	2017

## TABLE INFORMATION

The above tables represent analytical results for regulated compounds, none of which were detected at levels of regulatory concern. Each column shows the results of tests on our finished water. They represent the average, and range, of all values measured for each compound, and the maximum and minimum levels detected in all measurements. This report is based upon tests conducted by KC Water. Terms used in the Water Quality Data Table, and in other parts of this report, are defined here:

**Action Level or AL:** The concentration of a contaminant which, if exceeded, triggers treatment, or other requirements that a water system must follow.

**Maximum Contaminant Level Goal or MCLG:** 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 Contaminant Level or 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.

**Maximum Residual Disinfectant Level or MRDL:** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is

necessary for control of microbial contaminants.

**Maximum Residual Disinfectant Level Goal or MRDLG:**

The level of a 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.

**Treatment Technique or TT:** A required process intended to reduce the level of a contaminant in drinking water.

### Table Key

AL – action level

LRAA – Locational Running Annual Average

MCL – maximum contaminant level

MCLG – maximum contaminant level goal

NA – not applicable

ND – not detected

NTU – nephelometric turbidity units

oocyst – The presence of *Cryptosporidium* in water is measured by counting the number of oocysts present in the water

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

ppm – parts per million or milligrams per liter (mg/L)

ppb – parts per billion or micrograms per liter (ug/L)

S.U. – standard unit

# DATA TABLE

Source in Drinking Water	Health Effects
Chlorine: water additive used to control bacteria	Some people who drink water containing chlorine, well in excess of the MRDL, might experience irritating effects to their eyes and/or nose, or stomach discomfort.
Fluoride: erosion of natural deposits, discharge from fertilizer and aluminum factories, water additive which promotes strong teeth	Some people who drink water containing fluoride, in excess of the MCL over many years, could get bone disease, including pains and tenderness of the bones. Fluoride in drinking water, at half the MCL or more, may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining, and/or pitting of the teeth, and occurs only in the developing teeth before they emerge from the gums.
Nitrate: runoff from fertilizer use, leaching from septic tanks, sewage, erosion of natural deposits	Infants below the age of six months, who drink water containing nitrate, in excess of the MCL, could become seriously ill, and if untreated, could die. Symptoms include shortness of breath, and blue baby syndrome.
Atrazine: runoff from herbicide used on row crops	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.
Antimony: found in natural deposits, often used as a flame retardant	Some people who drink water containing antimony, well in excess of the MCL over many years, may develop cancer.
Barium: discharge of drilling waste, erosion of natural deposits, discharge from metal refineries	Some people who drink water containing barium, in excess of the MCL over many years, could experience an increase in blood pressure.
Chromium: discharge from steel and pulp mills; erosion of natural deposits	Some people who use water containing chromium, in excess of the MCL over many years, could experience allergic dermatitis.
Selenium: discharge from petroleum refineries, metal refineries and mines; erosion of natural deposits	Selenium is an essential nutrient, but some people who drink water containing selenium, in excess of the MCL over many years, could experience hair or fingernail loss, numbness in fingers or toes, or problems with circulation.
Radium 226 + 228: erosion of natural deposits	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.



## SEASONAL TAP WATER CHANGES

Due to seasonal fluctuations in temperature and upriver precipitation, the characteristics of the Missouri River can change, possibly affecting the taste, odor, and color of your tap water. These seasonal changes are routine occurrences which take place when rain and snowmelt increase the amount of silt and natural organic matter that is carried downstream by the Missouri River. Thankfully, the compounds which cause these subtle changes come from nature and do not cause health issues.



## IS FLUORIDE ADDED TO MY DRINKING WATER?

Yes, fluoride is added as part of our treatment process. Voters approved fluoridation in 1980. The average level of fluoride in treated water is 0.73 ppm, well below the federal limit of 4 ppm. It has been shown that fluoridation, when administered at low levels of concentration, is proven to help prevent tooth decay.

## HOW HARD IS MY WATER?

Hardness is a measure of the mineral content of your water. Elevated amounts of calcium, and magnesium in water, can both contribute to the water's hardness. Kansas City's water hardness is 110 ppm (mg equivalent  $\text{CaCO}_3/\text{L}$ , as  $\text{CaCO}_3$ ). KC Water softens the water considerably at the treatment plant, to the point where it is considered only moderately hard, on the hardness scale.

Water Hardness Scale	
Soft	0 to 75 parts per million (ppm)
Moderately Hard	75 to 150 ppm
Hard	150 to 300 ppm
Very Hard	More than 300 ppm

## CRYPTOSPORIDIUM FILTRATION AND REMOVAL

Cryptosporidium is a microbial parasite which is found in surface water throughout the U.S. Although Cryptosporidium can be removed by filtration, the most commonly used filtration methods cannot guarantee one hundred percent (100%) removal. Monitoring of our source water in 2017 indicates the presence of these organisms. The highest arithmetic mean of all sample concentrations in any twelve months of the 2016-2017 monitoring period for our plant was 0.156 oocysts/Liter. While this shows that the water treatment plant source water is vulnerable to Cryptosporidium contamination, it is also known that our water treatment technique meets state and federal standards for Cryptosporidium removal. Current test methods do not enable us to determine if these organisms are dead or if they are capable of causing disease. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immune-compromised people have more difficulty and are at greater risk of developing severe, life threatening illness. Immuno-compromised individuals are encouraged to contact their doctor regarding appropriate precautions to prevent infection. Cryptosporidium must be ingested for it to cause disease and may be passed through other means than drinking water.

## LEAD IN DRINKING WATER

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. KC Water 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 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 EPA's Safe Drinking Water Hotline (1-800-426-4791) or at [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

## REGULATED

As regulations require, KC Water routinely tests drinking water for numerous contaminants and has found no contaminants at levels that raise concern. The following were detected in small quantities in our water supplies.

### Atrazine

Atrazine is an herbicide used by farmers to control weed growth. Atrazine enters our water sources through runoff from rainfall. We guard against Atrazine in water by using powdered activated carbon at the point-of-withdrawal at our treatment facility. Our running annual average has never exceeded the EPA limit of 3 ppb. In 2017 our running annual average was 0.23 ppb.

### Chromium

Chromium occurs naturally in the environment. Rarely is it found naturally in water, but it is common in soils and plants. The greatest use of chromium is in metal alloys such as stainless steel. The MCLG for chromium has been set at 100 ppb. KC Water has detected chromium levels at 4 ppb.

### Nitrate

Nitrate is a form of nitrogen, an element whose compounds are vital components of foods and fertilizers. It is an essential nutrient for plant growth. The federal drinking water standard for nitrate is 10 ppm. KC Water's average in 2017 was 1.97 ppm.

## UNREGULATED

Information on the following characteristics are provided, not because they are contaminants, but rather for people concerned about their dietary intake of sodium, households with water softening equipment, fish aquarium enthusiasts, and home brewers, etc.

### Alkalinity

The alkalinity of water is a measure of how much acid it can neutralize. Total alkalinity is affected by environmental factors, rain, acidic sanitizers, and other products. Water may also be unsuitable for use in irrigation if the alkalinity level in the water is higher than the natural level of alkalinity in the soil.

### Sodium

Sodium is a salt found in the earth's crust. It can dissolve into water that is in contact with natural deposits. There is currently no maximum contaminant level for sodium. At the levels found in KC Water's drinking water, sodium is unlikely to contribute to adverse health effects.

### Sulfate

Sulfate is one of the major dissolved components of rain. Also, some soils and rocks contain sulfate minerals. As groundwater moves through these, some of the sulfate is dissolved into the water. Three types of treatment systems will remove sulfate from drinking water: reverse osmosis, distillation, or ion exchange. Water softeners, carbon filters, and sediment filters do not remove sulfate.

## WHY ARE THERE CONTAMINANTS IN MY WATER?


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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. Environmental Protection Agency's (EPA) Safe Drinking Water Hotline at 1-800-426-4791 or by visiting the EPA's website at [www.epa.gov/safewater](http://www.epa.gov/safewater).


Contaminants that may be present in source water include:


- A. Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- B. Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, and residential uses.
- C. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- D. 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.
- E. 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, the Department of Natural Resources prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Department of Health regulations establish limits for contaminants in bottled water which must provide the same protection for public health.


## WATER QUESTIONS?


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