

City of Manhattan Kansas 2015 Water Quality Report



Lead contaminated water has been making headlines recently, leading many people to question the safety of their drinking water. The City of Manhattan would like to assure you that the City's drinking water meets all federal and state drinking water standards. City staff, their spouses, children, friends and neighbors drink Manhattan water every day, and it's critical that we can all do so without concern. Our goal is to provide water of the highest quality, and we take steps to ensure we meet that goal every minute of every day.

Lead isn't found in Manhattan's source water, and it is not introduced during our treatment process. Most often, lead contamination originates in the plumbing of private residences when corrosive water (water with a low pH) sits in lead pipes, galvanized pipes, pipes with lead-based solder, or old plumbing fixtures made of brass that may be found in some older homes.

How does lead contamination occur?

Lime is added during the treatment process to reduce hardness and raise pH. As a result, Manhattan's finished water is basic and not corrosive. The City also adds hexametaphosphate to our water, which inhibits corrosion by creating a coating on the inside of pipes, acting as a barrier between the water and the pipe material, whatever that material may be.

How does the City prevent contamination?

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Our commitment to our customers

Year after year, we deliver on a promise to provide safe and reliable drinking water. This promise demands foresight, investment and long-range planning. Monitoring and treatment are key methods by which we protect the public water supply.

The source of the City's drinking water is 20 public water supply wells located near the confluence of the Big Blue and Kansas rivers. Protecting the wellfield is a vital public service that remains a top priority.

In 1999, we initiated a voluntary wellfield water quality monitoring program, testing the untreated water directly from the wells.

Find more information at CityofMHK.com/Water.

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How often is your water tested?

The City of Manhattan tests water throughout the treatment process, when it reaches the water towers and at various locations throughout the distribution system.

In addition to manual testing, we use automated analyzers that continuously test the water before, during and after the treatment process for pH, conductivity, turbidity, free chlorine, total chlorine and other water quality parameters.

Water from six storage reservoirs is tested weekly by environmental staff for pH, chlorine, ammonia and other parameters. Finished water, or water that has been through the water treatment process, is regularly tested.

The following tests are conducted by certified Water Treatment Plant operators:

- Every 4 hours: Hardness, pH, total chlorine, and turbidity
- Every 8 hours: Total dissolved solids
- Every 24 hours: Fluoride and free ammonia

We also collect the following samples and submit them to the KDHE laboratory in Topeka:

- Monthly: Coliform bacteria (60 samples from the distribution system)
- Quarterly: Trihalomethanes/haloacetic acids, fluoride
- Annually: Nitrate, synthetic organic compounds and volatile organic compounds
- Tri-Annually: Lead, copper, regulated and unregulated inorganic contaminants

If you do have concerns about lead in your water, 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. 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 (800-426-4791) or at EPA.gov/SafeWater/Lead.

More questions or concerns?



Thanks to a 1986 amendment to the Safe Drinking Water Act, the use of lead in public water supply systems and private plumbing was banned nationwide. We are not aware of any lead pipe being used to supply drinking water in Manhattan.

Is there lead in the system?

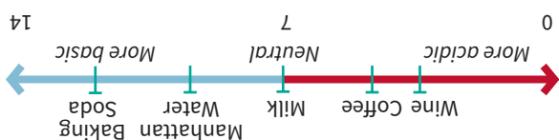
Every three years, 30 of our customers living in older homes throughout Manhattan collect samples for lead and copper analysis. Collection of these samples simulates a worst case scenario with collection occurring only after water has sat undisturbed in the customer's water lines for at least 6 hours. The samples are tested at Kansas Department of Health and Environment labs. The results of these tests continue to be far below Environmental Protection Agency health advisory levels.

We monitor all aspects of water quality closely, including online analyzers that test pH levels constantly throughout the treatment process and manual pH testing performed every four hours by Water Treatment Plant operators.

How does the City monitor the water?

pH is a measurement of how acidic/basic water is. The scale is 0-14, with 0 being the most acidic and 14 being the most basic. Manhattan's water has a pH of approximately 9.40 pH units making it about as corrosive as hand soap.

What does pH mean?



How do we prevent lead contamination in Manhattan?

WATER QUALITY DATA

This report is based upon tests conducted by the Kansas Department of Health and Environment (KDHE) on the finished water produced by the City of Manhattan's Water Treatment Plant. Unless otherwise noted, the data represent tests conducted between January 1 and December 31, 2015. Of the 87 contaminants regulated by the Environmental Protection Agency (EPA), only eleven (11) were detected in the compliance monitoring samples. However, two (2) of the detected contaminants (chloramines and fluoride) are added as part of the treatment process to improve water quality. All detected contaminants were below the Maximum Contaminant Level (MCL).

The following tables list the name of each substance, unit, MCLs, the amount detected and Maximum Contaminant Level Goal (MCLG). All regulated and some unregulated contaminants that were detected in the water collected, even in the most minute traces, are included. The footnotes explain the findings, and there is also a key to the units of measurement. MCL is defined as "the highest level of a contaminant that is allowed in drinking water." MCLG is "the level of a contaminant in drinking water below which there is no known or expected risk to health." MCLs are set as close to the MCLGs as feasible. MCLGs allow for a margin of safety.

DETECTED REGULATED CONTAMINANTS

PARAMETER	AVERAGE LEVEL DETECTED	RANGE	MCL	MCLG	VIOLATION	SAMPLE DATE	LIKELY SOURCE
Arsenic (ppb)	2.5	2.5	10	0	No	May 7, 2014	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production waste
Barium (ppm)	0.053	0.053	2	2	No	May 7, 2014	Erosion of natural deposits; discharge from metal refineries; discharge of drilling wastes
Chloramines ¹ (ppm)	2.46	1.28 - 3.31	4	4	No	January - December 2015	Water additive used to control microbes
Chromium (ppb)	1.8	1.8	100	100	No	May 7, 2014	Erosion of natural deposits; discharge from steel and pulp mills
Fluoride ² (ppm)	0.73	0.63 - 0.86	4	4	No	January - December 2015	Water additive that promotes strong teeth
Nitrate (ppm)	0.27	0.27	10	10	No	May 1, 2015	Runoff from fertilizer use

MICROBIOLOGICAL

BY-PRODUCT	RESULT	MCL	MCLG	TYPICAL SOURCE
Coliform (TCR)	In August, 1.6% of samples tested positive	No more than 5% of samples can test positive	0	Naturally present in the environment

In compliance with the Total Coliform Rule (TCR), the City of Manhattan is required to collect a minimum of 60 samples per month (720 per year) for bacteriological water monitoring. Coliform bacteria are usually harmless but their presence in water can be an indication of disease-causing bacteria. When Coliform bacteria are found, special follow-up tests are done to determine if harmful bacteria are present in the water supply. Any violation of drinking water microbiological standards requires issuing a public notice. In August 2015, Coliform bacteria were found in one sample. However, no bacteria were found in any follow-up tests. There was no violation and no public notice required.

DISINFECTION BY-PRODUCTS

BY-PRODUCT	HIGHEST RAA ³	RANGE	MCL	MCLG	VIOLATION	SAMPLE DATE	LIKELY SOURCE
Haloacetic Acids (HAA5s) (ppb)	15.5	9.5 - 21.0	60	N/A	No	January - December 2015	By-product of drinking water disinfection
Total Trihalomethanes (TTHMs) (ppb)	29.0	19.0 - 36.0	80	N/A	No	January - December 2015	By-product of drinking water disinfection

METALS IN DRINKING WATER FROM HOME TAPS

The City of Manhattan is required to monitor corrosion of household plumbing systems by sampling in homes for lead and copper. KDHE requires these tests be performed every three years. With the cooperation of local homeowners, City staff will be collecting samples again in the summer of 2017. For more information on metals in drinking water, call the Safe Drinking Water Hotline at (800) 426-4791 or visit www.epa.gov/safewater/lead.

ANALYTE	90TH PERCENTILE ⁴	RANGE	MCL	MCLG	VIOLATION	SAMPLE DATE	LIKELY SOURCE
Copper (ppm)	0.010	0.001 - 0.019	AL = 1.3	AL = 1.3	No	July - September 2014	Corrosion of household plumbing systems; corrosion of natural deposits; leaching of wood preservatives
Lead (ppb)	0.0	0.0 - 2.1	AL = 15	AL = 15	No	July - September 2014	Corrosion of household plumbing systems; erosion of natural deposits

DETECTED UNREGULATED CONTAMINANTS

Unregulated contaminants are tested every three years. These samples were collected on May 7, 2014.

PARAMETER	LEVEL DETECTED	SMCL
Alkalinity as CaCO ₃ (ppm)	59.0	300
Calcium (ppm)	23	200
Chloride (ppm)	53	250
Conductivity, Specific (µmhos/cm)	470	1500
Corrosivity (LI)	0.89	0
⁵ Hardness, Total (ppm)	110	400
Magnesium (ppm)	14	150
Manganese (ppm)	0.0033	0.05
pH (pH units)	9.4	8.5
Potassium (ppm)	7.2	100
Silica (ppm)	22	50
Sodium (ppm)	45	100
Solids, Total Dissolved (ppm)	280	500
Sulfate (ppm)	74	250

KEY TO TABLES

AL=Action Level: Any samples that contain over this amount of a contaminant require corrosion control action by the utilities

LI=Langelier's Index: Used to reflect corrosion or deposition of scale deposits

N/A=Not Available

ppb=parts per billion or micrograms per liter (µg/L): One part per billion equals one penny per \$10,000,000

ppm=parts per million or milligrams per

liter (mg/L): One part per million equals one penny per \$10,000

SMCL=Secondary Maximum Contaminant Level

µmhos/cm=micromhos per centimeter

FOOTNOTES

¹ Compliance is based on a Running Annual Average (RAA) of the most recent 12 months of testing. The RAA was 2.46 ppm for 2015. Since chloramines are added disinfectants, MCLs do not apply. The highest level allowed in drinking water is the Maximum Residual Disinfectant Level (MRDL). For chloramines, the highest level allowed is 4 ppm.

² Fluoride occurs naturally in very low concentrations. It is added at the Water Treatment Plant to promote dental health.

³ KDHE regulations require the City to report the highest Running Annual Average (RAA) from 2015. The highest TTHMs RAA occurred in the third quarter, and the highest HAA5s RAA in the first quarter of 2015.

⁴ In a ranking of 10 samples, the ninth highest sample is the value that represents the 90th percentile.

⁵ Hardness can also be expressed in grains per gallon. To convert ppm to grains per gallon, divide by 17.1, (110 ppm=6.43 grains per gallon).

SOURCE WATER ASSESSMENT REPORT

The City of Manhattan obtains its water from 20 groundwater wells. Raw water is treated to remove several contaminants, and disinfectants are added to protect against microbial contaminants. The Safe Drinking Water Act (SDWA) requires states to develop a Source Water Assessment (SWA) for each public water supply that

treats and distributes raw source water in order to identify potential contamination sources. The state of Kansas has completed an assessment of our source water. For results of the source water assessment, please contact us or view the results online at www.kdhe.state.ks.us/nps/swap/SWreports.html.

MESSAGE FROM 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 (800-426-4791). The sources of drinking water (both tap 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 treatment include microbial contaminants, such as viruses and bacteria, which may come from sewage treatment

plants, septic systems, agricultural livestock operations and wildlife; and inorganic contaminants, such as salts and metals. Inorganic contaminants may 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, can be found in source water. It is also possible to find radioactive contaminants in source water, which can be naturally occurring or be the result of oil and gas production and mining activities. 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, may be present in source water.

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, persons 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 health care providers. EPA/Center for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

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