



2016 CONSUMER CONFIDENCE REPORT

KEOKUK MUNICIPAL WATERWORKS

Water quality is our primary commitment at Keokuk Municipal Waterworks. We believe that the best way to assure you that your drinking water is safe is to provide you with accurate facts.

The information in this Consumer Confidence Report summarizes the results of our water monitoring program as required by the Environmental Protection Agency (EPA) during 2016. Many of the analyses are required by the Safe Drinking Water Act and other regulations. However, we monitor for contaminants above and beyond the basic requirements.

If you have any questions about the information in this report, please contact us at (319) 524-5285.

Keokuk Municipal Waterworks is dedicated to providing you, the customer, with the safest and most dependable supply of drinking water available.



**SOURCE WATER
ASSESSMENT**

QUALITY WATER

Additional Information

For more information on this *Consumer Confidence Report* or other water quality concerns, please contact:

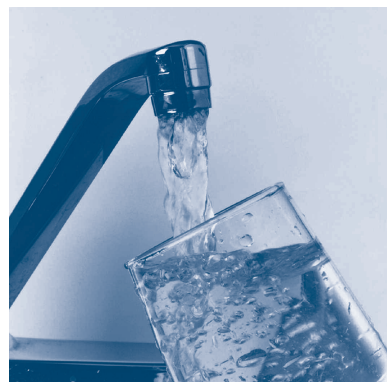
Keokuk Municipal Waterworks

Andrea Rogers, General Manager or Jim Maddox, Plant Superintendent
20 North 4th Street Keokuk, IA 52632 Phone: (319) 524-5285
Fax: (319) 524-2824

Public Meeting Information

We encourage our customers to attend and participate in the meetings of our water utility. Keokuk Municipal Waterworks Board of Trustees meet once each month. Board meetings are open to the public. Inquiries may be directed to:

**Keokuk Municipal
Waterworks** 20 N. 4th Street
Keokuk, IA 52632
Phone: (319) 524-5285
Fax: (319) 524-2824



The City of Keokuk obtains its water from the Mississippi River and its tributaries. Reservoirs and streams are highly susceptible to contamination because contaminants can move through them quickly. Keokuk's water supply will be susceptible to contaminants released from landfills and livestock confinements. A detailed evaluation of your source water was completed by the Iowa Department of Natural Resources, and available from Keokuk Municipal Waterworks by calling (319) 524-5285.

DRINKING WATER & HEALTH INFORMATION FROM THE EPA

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems.

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 for infections. These people should seek advice from their health care providers about drinking water. The EPA and Centers 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.

Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask for advice from your health care provider.

Many customers wish to know if bottled water is safer than regular tap water. The Food and Drug Administration (FDA) establishes limits for contaminants in bottled water that must provide the same protection for public health. Any bottled water labeled "drinking water" has to meet EPA's drinking water regulations. 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 contacting the EPA's Safe Drinking Water Hotline.

EPA Safe Drinking Water Hotline:

1-800-426-4791

<http://water.epa.gov/drink>

AWWA Safe Drinking Water Web Site:

www.drinktap.org

WATERSHED MAP



WATER QUALITY

2016 WATER QUALITY RESULTS

SUBSTANCE	YEAR/DATE TESTED	VIOLATION YES/NO	HIGHEST LEVEL ALLOWED	HIGHEST LEVEL DETECTED	UTILITY RANGE	EPA MCLG (EPA GOAL)	SOURCES OF CONTAMINANT
MICROBIOLOGICAL CONTAMINANTS							
Turbidity (NTU)	2016	No	0.30	.13	0.04-0.13	100%	Soil runoff
Total Coliform/ E. Coli Bacteria	2016	No	5%	0	0	0	Naturally present in the environment
INORGANIC CHEMICALS							
Fluoride (ppm)	1-4-2016	No	4	.87	.52-.87	4	Water additive to promote strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories Runoff from fertilizer use; leaching from septic tanks, sewage. Erosion of natural deposits.
Sodium (ppm)	2016	No	N/A	17	N/A	N/A	
Nitrate [as N] (mg/L)	2016	No	10	5.9	ND-5.9	10	
DISINFECTANTS							
Chlorine (mg/L)	2016	No	4	2.1 RAA	1.50-3.05	4 MRDLG	Water additive to control microbes
ORGANIC CONTAMINANTS							
Total Trihalomethane 2015 [TTHM] (ppb)	2016	No	80	36 LRAA	(17-59)	N/A	Byproduct of treatment process
Total Haloacetic Acids [HAA5] (ppb)	2016	No	60	17 LRAA	(12-26)	N/A	Byproduct of treatment process
SOURCE WATER							
			% REMOVAL RANGE		% REMOVAL REQUIRED		
TOTAL ORGANIC CARBON			36.59-63.89%		15-25%		
Mississippi River	2016				Naturally present in the environment.		
COPPER AND LEAD - Regulated at Customer Tap							
Copper (ppm)	2014	No	1.3	0.02 (90th)	ND-0.06	1.3	Corrosion of home plumbing; erosion of natural deposits Corrosion of home plumbing; erosion of natural deposits.
Lead (ppb)	2014	No	15	6 (90th)	ND-21	0	
			1 sample (s) exceeded AL				
UCMR3 - Unregulated Contaminants							
Chlorate	5-26-2015	No			239	N/A	Unregulated contaminants are those for which the EPA has not established drinking water standards.
Hexavalent chromium	8-4-2015	No			2.27	N/A	
Vanadium	11-17-2014	No			.50	N/A	
Molybdenum	11-17-2014	No			1.5	N/A	
Strontium	8-4-2015	No			106	N/A	
Chromium	5-26-2015	No			2.40	N/A	

NOTE: The EPA requires monitoring of over 80 drinking water contaminants. Those listed above are the only contaminants detected in your drinking water. For a complete list, contact Keokuk Municipal Waterworks.
"Our system monitors for several unregulated contaminants as part of an EPA Study"

Definitions

Action Level (AL) The concentration of a contaminant that, if exceeded, triggers a treatment or other requirement that a water system must follow.

Inorganic Contaminants Such as salts and metals, which can occur naturally or come from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

Maximum Contaminant Level (MCL) The highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs 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. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level (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 (MRDLG) The level of a drinking water 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.

Microbiological Contaminants Very small organisms, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

N/A Not applicable.

ND Not detected at testing limit.

NTU Nephelometric Turbidity Units.

Organic Contaminants Including synthetic and volatile organic chemicals, which are industrial and petroleum process byproducts and can also come from gas stations, urban storm water runoff and septic systems.

pCi/l Picocuries per liter.

ppb Parts of contaminant per billion parts of water. One part per billion (ppb) is equivalent to a single penny in ten million dollars. ppb may also be referred to as ug/l or micrograms per liter.

ppm Parts of contaminant per million parts of water. One part per million (ppm) is equivalent to a single penny in ten thousand dollars. ppm may also be referred to as mg/l or milligrams per liter.

Pesticides and Herbicides May come from agriculture, urban storm water runoff and residential use.

RAA Running Annual Average.

LRAA Locational Running Annual Average.

Radioactive Contaminants occur naturally or result from oil and gas production and mining activities.

TOC Total organic carbon in untreated water.

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

SGL Single Sample Result.

TCR Total Coliform Rule.

Chlorine Disinfectant

The most common drinking water treatment is disinfection. Disinfection is considered to be the primary mechanism to kill bacteria and other germs to prevent the spread of waterborne diseases. Chlorine is the most widely used disinfectant. Disinfectants combine with organic and inorganic matter present in water, to form chemicals called disinfection byproducts. EPA sets standards for controlling the levels of disinfectants and disinfectant byproducts in drinking water. The chart above reflects these standards and the utility's ability to meet those standards. **Fluoride-** Some fluoride is naturally present in the source water. The amount is carefully monitored every day so optimum concentration is maintained. If you have concerns about fluoride, you should discuss this topic with your dentist and doctor.

Nitrate-

Nitrate in drinking water at levels above 10 ppm is a health risk for infants less than 6 months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agriculture activity. If you are caring for an infant, you should ask for advice from your healthcare provider.

Sodium-

Erosion of natural deposits; Added to water during treatment process.

Turbidity-

Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microparasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

Total Trihalomethanes

(TTHMs) Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system and may have an increased risk of getting cancer.

Lead

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. Keokuk Municipal Waterworks 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 Safe Drinking Water Hotline or at: <http://www.epa.gov/safewater/lead>.

Unregulated Contaminants

Contaminants with dates indicate results from the most recent testing done in accordance with regulations. Keokuk Municipal Waterworks is participating in a study with the Environmental Protection Agency (EPA) related to the "Unregulated Contaminant Monitoring Rule" (UCMR3). Unregulated contaminants are those for which the EPA has not established drinking water standards. The purpose of the unregulated contaminants monitoring is to assist the EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. None of the contaminants currently have a maximum contaminant level (MCL). Note: The most recent list of unregulated contaminants can be obtained on the EPA website at: www.epa.gov/safewater/ucmr/index.html.