

DRINKING WATER ANALYSIS



WATER TYPE: Municipal
ORDERED BY:

LAB NUMBER: W161228-2213-1
DATE ORDERED: 12/28/2016
DATE COLLECTED: 02/09/2017
DATE COMPLETED: 02/23/2017

5615 Fahrwangen, Hallwilerweg 9c, Neubau

PRIMARY EPA DRINKING WATER METALS

PRIMARY METALS	RESULT parts per billion (ppb)	ACCEPTABLE	CAUTION	UNACCEPTABLE
Arsenic (As)	< 1	X		
Copper (Cu)	67	X		
Lead (Pb)	1.4		X	
Thallium (Tl)	< 0.1	X		
Uranium (U238)	1.4		X	
Antimony (Sb)	< 0.5	X	The EPA has not established levels for this category	
Barium	21	X		
Beryllium	< 0.4	X		
Cadmium (Cd)	< 1	X		
Chromium (Cr)	< 10	X		
Mercury (Hg)	< 0.5	X		
Nickel (Ni)	< 5	X		
Selenium (Se)	< 10	X		

SECONDARY EPA DRINKING WATER METALS

SECONDARY METALS	RESULT parts per billion (ppb)	ACCEPTABLE	CAUTION	
Aluminum (Al)	< 10	X		The EPA has not established levels for this category
Iron (Fe)	51	X		
Manganese (Mn)	< 5	X		
Zinc (Zn)	55	X		

PH LEVEL

	RESULT pH unit	ACIDIC < 6.5	ACCEPTABLE 6.5 - 8.5	ALKALINE >8.5
pH	7.5		X	

pH is a measurement of corrosivity. A pH of 7 is neutral, being neither acidic nor alkaline. pH values of less than 7 are considered acidic (the lower the pH, the more acidic) and pH values above 7 are considered alkaline (the higher the pH, the more alkaline).

INFORMATION

This test is a screen for primary and secondary metals regulated by the U.S. Environmental Protection Agency (EPA) in drinking water using analysis by ICP-MS. ICP-MS is one of the most sensitive and accurate techniques for measuring trace elements in drinking water. Please see the back of this report for definitions of terms and abbreviations and information about action levels and reference ranges.

Interpretation:

ACCEPTABLE: Levels marked in the green area are within the desirable range recommended by the EPA. These levels are considered safe to drink by the EPA.

CAUTION: Levels marked in the yellow area are higher than the desirable range recommended by the EPA, but lower than the EPA Maximum Contaminant Limit. If your drinking water contains metals with levels in the caution area you may wish to consider alternate sources or filtration.

UNACCEPTABLE: Metals marked in the red area are higher than the EPA Maximum Contaminant Limit and actionable. Consumption of water with metals at this level may affect health. Contact your municipality and/or consider alternate sources or filtration.

COMMENTS: NON FILTERED

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Drinking Water Information from the EPA

Primary Drinking Water Standards have been established by the EPA for those metals that have known or suspected health effects. Water that contains primary metals in concentrations above the EPA's maximum contaminant limit poses a potentially serious health threat. **Secondary Drinking Water Standards** are unenforceable federal guidelines regarding taste, odor, color and certain other non-aesthetic effects of drinking water. Individual states may adopt their own drinking water regulations for these metals.

The EPA has published extensive guidelines on how its **maximum contaminant levels (MCL)** are obtained and how its various **health advisory (HA)** levels are obtained. ACCEPTABLE and UNACCEPTABLE levels used in this report are based on various levels set by the EPA and given in the table below. Elements that exceed the EPA's MCLs are considered UNACCEPTABLE. Elements less than the various HA levels are considered ACCEPTABLE. Elements between these levels should be considered with CAUTION. The HA levels include the EPA's lifetime HAs, the 10^{-4} cancer risk, or the EPA's **maximum contaminant limit goal (MCLG)**. The MCL is the maximum permissible level of a contaminant in water that is delivered to any user of a public water system. The MCLG is a non-enforceable concentration of a drinking water contaminant that is protective of adverse human health effects and allows an adequate margin of safety.

Reference limits (ppb or µg/L) and information on contaminants in drinking water (www.epa.gov/safewater/contaminants/index.html)

Element	Acceptable < HA	Unacceptable > MCL	Source	Potential Health Effects for Primary Metals
Arsenic	< 1*	≥ 10	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer
Copper	< 1300	≥ 1300	Corrosion of household plumbing; Erosion of natural deposits; Leaching from wood preservatives	Short-term exposure: Gastrointestinal distress Long-term exposure: Liver or kidney damage
Lead	< 0.5 *	≥ 15	Corrosion of household plumbing; Erosion of natural deposits	Infants and children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities Adults: Kidney problems; high blood pressure
Thallium	< 0.5	≥ 2	Leaching from ore-processing sites; Discharge from electronics, glass and drug factories	Hair loss; changes in blood; kidney, intestine, or liver problems
Uranium	< 1 *	≥ 30	Erosion of natural deposits	Increased risk of cancer, kidney toxicity
Antimony	< 6	≥ 6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	Increase in blood cholesterol; decrease in blood sugar
Barium	< 2000	≥ 2000	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits	Increase in blood pressure
Beryllium	< 0.4	≥ 4	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries	Intestinal lesions
Cadmium	< 5	≥ 5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints	Kidney damage
Chromium	< 100	≥ 100	Discharge from steel and pulp mills; Erosion from natural deposits	Allergic dermatitis
Mercury	< 2	≥ 2	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland	Kidney damage
Nickel**	< 100	≥ 100	Erosion of naturally occurring deposits	Decreased body weight; heart and liver damage; dermatitis
Selenium	< 50	≥ 50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines	Hair or fingernail loss; numbness in fingers or toes; circulatory problems
Aluminum	< 50		Erosion of naturally occurring deposits	Secondary Drinking Water Elements
Iron	< 300		Erosion of naturally occurring deposits	
Manganese	< 50		Erosion of naturally occurring deposits	
Zinc	< 5000		Naturally occurring; Discharge from metal factories	
Fluoride	< 4 ppm	≥ 4 ppm	Added to municipal water supplies; Erosion of natural deposits	Bone disease (pain and tenderness of the bones); Children may get mottled teeth

* The MCLG for arsenic, lead, and uranium is zero. ** The MCL and MCLG for Nickel were remanded in 1995.

What to do for elevated metals

Call your local water supplier, the state EPA, or the EPA drinking water hot line (800-426-4791). Sometimes, the EPA will allow public water systems time to correct their problems as long as they have a plan to do so. If they are unaware of the problem, it may mean the source of the contamination is after it leaves the water treatment facility or that they are not testing for the element. Toxic metals can be removed with 90% or greater efficiency by reverse osmosis or particulate filtration. Please refer to the specifications of your water purification system.

Lead

Lead is perhaps one of the most important elements in drinking water in the United States. Infants and young children are typically more vulnerable to lead than the general population and levels taken at the source or reported from a municipality may not reflect the levels at any given tap within a home. The EPA has set zero as a MCLG for lead.

When to test your water

Clinical tests show unknown exposure to toxic elements
New well
Reports of water problems in your area
New water filtration system

Symptoms of metal toxicity (see your doctor)
New house
Old house
New water source