

City of Lloydminster
Drinking Water Quality and Compliance
Annual Notice to Consumers

January 15, 2008

Saskatchewan Ministry of Environment requests that all waterworks owners provide an annual notification to consumers regarding the quality of water produced and information on the performance of the waterworks. The following is a summary of the City of Lloydminsters water quality and sample submission compliance records for January 1 – December 31, 2007, as required by the **Permit to Operate a Waterworks**. Readers should refer to Saskatchewan Ministry of Environment’s “Municipal Drinking Water Quality Monitoring Guidelines, November, 2002, EPB 202” for more information on minimum sample submission requirements. Permit requirements for a specific waterworks may require more sampling than outlined in the department’s monitoring guidelines. If consumers require more information on the nature and significance of specific water tests, more detailed information is available from: http://www.hc-sc.gc.ca/ewh-semt/water-eau/index_e.html

Water Quality Standards

Bacteriological Quality

Parameter/Location	Limit	Regular Samples Required/yr	Regular Samples Submitted	# of Positive Regular Submitted (Percentage)
Total Coliform	0 organisms/100 mL	312	321	0%
Background Bacteria	Less than 200-organisms/100 mL			

The City of Lloydminster is responsible to ensure that one hundred percent of all bacteriological samples are submitted as required. Based on current population the City is required to take a minimum of 6 samples per week or 312 samples per year.

Water Disinfection – Chlorine residuals for Test results submitted with Bacteriological Samples in Distribution system

Parameter	Minimum Limit (mg/L)	Free Chlorine Residual Range	Total Chlorine Residual Range	# of Tests Required/yr	# of Tests Submitted	# of Adequate Chlorine (%)
Chlorine Residual in Distribution System	0.1 mg/L free OR 0.5 mg/L total	0.24 – 1.44	0.37 – 1.69	260	265	(100%)

*A minimum of 0.1 milligrams per liter (mg/L) free chlorine residual **OR** 0.5 mg/L total chlorine residual is required at all times throughout the distribution system. The City is required to test chlorine residuals on every bacteriological sample submitted. Routine locations include; Husky Gas station (East), Common Wealth Center, Leisure Center, West End Reservoir and Sobeys.*

Water Disinfection – Free Chlorine Residuals of treated water entering distribution system

Parameter	Limit (mg/L)	Test Level Range	# of Tests Performed	# of Tests Not Meeting Requirements
Free Chlorine Residual	at least 0.1	0.81 – 2.18 mg/l	Minimum 1 test/day	0

Ministry of Environment requires a minimum of 0.1 mg/L free chlorine residual for water entering the distribution system. The City performs chlorine tests daily in the lab and has continuous on-line Cl₂ monitoring to ensure treated water entering the distribution system has at least 0.7 mg/L of free Cl₂ residual or more.

Turbidity

Parameter	Limit (NTU)	Test Level Range	Maximum Allowable Turbidity (NTU)	# of Tests Not Meeting Requirements	# of Tests Required	# of Tests Completed
Turbidity	0.3	0.02 – 0.26	1.0	0	363/yr *	363

Turbidity is a measure of water treatment efficiency. Turbidity measures the “clarity” of the drinking water and is generally reported in Nephelometric Turbidity Units (NTU). Tests are performed daily and the WTP has 5 on- line Turbidimeters to ensure no treated water has Turbidity levels exceeding 0.3 NTU's. for 12 hours.

* WTP was shut down for maintenance on June 27, 2007 and Nov26, 2007.

Chemical – Health & Toxicity Category

Parameter	Limit MAC (mg/l)	Limit IMAC (mg/l)	Aesthetic Objective (mg/l)	Sample Results (mg/l)	Samples Exceeding MAC/IMAC	# of Samples Required/yr	# of Samples Submitted	Sampling Date: May 30, 2007
Aluminum			-----	0.059	0	1	1	
Arsenic	0.025				0	1	1	
Barium	1.0			0.065	0	1	1	
Boron		5.0		0.023	0	1	1	
Cadmium	0.005			< 0.001	0	1	1	
Chromium	0.05			< 0.001	0	1	1	
Copper			1.0	0.004	0	1	1	
Lead	0.01			<0.002	0	1	1	
Manganese			0.05	0.001	0	1	1	
Selenium	0.01				0	1	1	
Uranium	0.02				0	1	1	
Zinc			5.0	<0.005	0	1	1	

Substances within the chemical health category may be naturally occurring in drinking water sources or may be the result of human activities. These substances may represent a long-term health risk if the Maximum Acceptable Concentration (MAC) or Interim Maximum Acceptable Concentration (IMAC) is exceeded.

Chemical – Trihalomethanes

Parameter	Trihalomethanes Limit (ug/L)	Sample Result (average)	# Samples Required/yr	# Samples Submitted
Trihalomethanes	100	40.9	8	6 **

Trihalomethanes are formed as a by-product of reactions between chlorine and organic material, generally found in drinking water obtained from surface water supplies. Trihalomethanes are monitored quarterly and the Interim Maximum Acceptable Concentration is expressed as an average of 4 quarterly samples.

*** August sample date was not completed*

Chemical – Pesticides

Parameter	Limit MAC (ug/L)	Limit IMAC (ug/L)	Sample Results	Samples Exceeding MAC/IMAC	# of Samples Required/2yrs	# of Samples Submitted	Sampling Date: May 30, 2007
Atrazine		5.0	< 2	0	1	1	
Bromoxynil		5.0	< 0.5	0	1	1	
Carbofuran			< 2	0	1	1	
Chlorpyrifos			< 2	0	1	1	
Dicamba (Banvel)	120		< 0.5	0	1	1	
2,4-D*		100	< 0.5	0	1	1	
Diclofop-methyl	9		< 1	0	1	1	
Dimethoate	----		< 5	0	1	1	
Malathion	----		< 2	0	1	1	
Pentachlorophenol	60		< 2	0	1	1	
Picloram		190	< 1	0	1	1	
Trifluralin		45	< 1	0	1	1	

Pesticides in drinking water may occur as a result of these substances used by humans. These substances may represent a long-term health risk if the Maximum Acceptable Concentration (MAC) or Interim Maximum Acceptable Concentration (IMAC) is exceeded.

Chemical - General Chemical

Parameter	Aesthetic * Objective (mg/l)	Sample Result (average)	# of Samples Required/yr	# of Samples Submitted
Conductivity	----	388.7	4	3 **
Nitrate	40	1.4	4	3
Sulphate	500	76.3	4	3
Ph	6.5-9.0	7.4	4	3
Total Alkalinity	500	119.2	4	3
Bicarbonate	----	145.7	4	3
Sodium	300	10.0	4	3
Magnesium	200	13.7	4	3
Calcium	----	49.7	4	3
Total Hardness	800	180.7	4	3
Chloride	250	6.7	4	3
Fluoride	1.5	0.12	4	3
Total Dissolved solids	1500	305.3	4	3

**Aesthetic objectives apply to certain characteristics of substances that affect the acceptance of water by consumers. Compliance with drinking water objectives is not mandatory, as these objectives do not constitute a health hazard. General chemical analysis results are the average of quarterly samples tested.*

*** August sample date was not completed.*

Chemical – Cyanide and Mercury

Sampling Date: May 30, 2007

Parameter	Limit MAC (ug/L)	Sample Results	# of Samples Exceeding MAC	# of Samples Required/yr	# of Samples Submitted
Cyanide	200	< 1	0	1	1
Mercury	1	< 0.05	0	1	1

Mercury enters water supplies naturally and as a result of human activities. Cyanide can enter source waters as a result of industrial effluent or spill events. These substances may represent a long-term health risk if the Maximum Acceptable Concentration (MAC) is exceeded.

Chemical – Synthetic Organic Chemicals

Sampling Date: May 30, 2007

Parameter	Limit MAC (ug/l)	Limit IMAC (ug/l)	Aesthetic Objective (ug/l)	Sample Result(s) (ug/l)	# Samples Exceeding Limit	# Samples Required/2yrs	# Samples Submitted
Benzene	5			< 0.2	0	1	1
Benzo (a) pyrene	0.01			< 0.01	0	1	1
Carbon tetrachloride	5			< 0.5	0	1	1
Dichlorobenzene, 1,2	20			< 0.5	0	1	1
Dichlorobenzene, 1,4	5			< 0.5	0	1	1
Dichloroethane, 1,2		5		< 0.5	0	1	1
Dichloroethylene 1,1				< 0.5	0	1	1
Dichloromethane	50			< 0.5	0	1	1
Dichlorophenol, 2,4	900			< 0.2	0	1	1
Ethylbenzene			2.4	< 0.2	0	1	1
Monochlorobenzene	80			< 0.5	0	1	1
Tetrachlorophenol, 2,3,4,6	100			< 0.5	0	1	1
Tichloroethylene	50			< 0.5	0	1	1
Toluene			24	<0.2	0	1	1
Trichlorophenol, 2,4,6	5			0.6	0	1	1
Vinyl Chloride				< 0.5	0	1	1
Xylene			300	< 0.2	0	1	1

Contamination of drinking water by synthetic organic chemicals only results from pollution events. Contamination of drinking water in excess of Maximum Acceptable Concentration (MAC) or Interim Maximum Acceptable Concentration (MHO) may represent a health risk.

More information on water quality and sample submission performance may be obtained from:

City of Lloydminster
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4420 50 Ave
Lloydminster, Alta T9V 0W2
306 825-2437 or email to kurban@lloydminster.ca