Saskatchewan Ministry of Environment

Water Security Agency

Drinking Water Quality and Compliance

The Water Security Agency and Ministry of Environment requires that at least once each year waterworks owners provide notification to consumers of the quality of water produced and supplied as well as information on the performance of the waterworks in submitting samples as required by a Minister's Order or Permit to Operate a waterworks. The following is a summary of the City of North Battleford water quality and sample submission compliance record for the 2013 time period. This report was completed on January 24th, 2014. Readers should refer to Saskatchewan Water Security Agency'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 need more information on the nature and significance of specific water tests, for example, "what is the significance of selenium in a water supply", more detailed information is available from: http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/index_e.html .

Water Quality Standards

Bacteriological Quality

Parameter/Location	Limit	Regular Sample Required	Regular Samples Submitted	# of Positive Regular Submitted (Percentage)
Total Coliform and Background Bacteria	0 organisms/100 mL Less than 200 organisms/100 mL	156	342	0%

The owner/operator is responsible to ensure that one hundred percent of all bacteriological samples are submitted as required. Generally analysis is performed on a single sample for all parameters mentioned above. All waterworks are required to submit samples for bacteriological water quality, the frequency of monitoring depends on the population served by the waterworks.

Water Disinfection – Chlorine Residual for Test Results Submitted with Bacteriological Samples

Parameter	Minimum Limit (mg/L)	Free Chlorine Residual Range	Total Chlorine Residual Range	# Tests Required	# Tests Submitted	# Adequate Chlorine (%)
Chlorine Residual in Distribution System	0.1 mg/L free OR 0.5 mg/L total	0.07- 2.01	0.19 – 2.20	156	342	99.7%

*A minimum of 0.1 milligrams per litre (mg/L) free chlorine residual **OR** 0.5 mg/L total chlorine residual is required at all times throughout the distribution system unless otherwise approved. A proper chlorine submission is defined as a bacteriological sample submission form with both the free and total chlorine residual fields filled out. An adequate chlorine is a result that indicates that the chlorine level is above the regulated minimums. An adequate chlorine may be counted even if the chlorine results were submitted incorrectly. A waterworks is required to submit chlorine residual test results on every bacteriological sample they submit.*

Water Disinfection – Free Chlorine Residual for Water Entering Distribution System – From Water Treatment Plant Records (WTP#1)

Parameter	Limit (mg/L)	Daily Reading Range	# Reading/Tests Performed	# Readings/Tests Not Meeting Requirements
Free Chlorine Residual	at 0.2	0.32 – 2.31	Continuous Monitoring	

Water Disinfection – Free Chlorine Residual for Water Entering Distribution System – From Water Treatment Plant Records (WTP#2)

Parameter	Limit (mg/L)	Daily Reading Range	# Readings/Tests Required	# Readings/Tests Not Meeting Requirements
Free Chlorine Residual	at 0.2	0.30 – 2.86	Continuous Monitoring	

A minimum of 0.2 milligrams per litre (mg/L) free chlorine residual is required for water entering the distribution system. Tests are normally performed on a daily basis by the waterworks operators and are to be recorded in operation records. This data includes the number of free chlorine residual tests performed, the overall range of free chlorine residual (highest and lowest recorded values) and the number of tests and percentage of results not meeting the minimum requirement of 0.1 mg/L free chlorine residual. The City of North Battleford is required to continuously monitor the Free Residual Chlorine. In situations where the inline analyzer is not operating, the Free Residual Chlorine is to be tested hourly.

Turbidity WTP#1

Parameter	Limit (NTU)	Daily Reading Range	# Readings Not Meeting Requirements	Maximum Turbidity (NTU)	# Tests Required	# Tests Submitted
Turbidity	1.0	0.020 – 0.990*	0	0.990*	Continuous Monitoring	

Turbidity WTP#2

Parameter	Limit (NTU)	Daily Reading Range	# Readings Not Meeting Requirements	Maximum Turbidity (NTU)	# Tests Required	# Tests Submitted
Turbidity	0.3	0.02 – 0.204	0	0.204	Continuous Monitoring	

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). All waterworks are required to monitor turbidity at the water treatment plant. The frequency of measurement varies from daily for small systems to continuous for larger waterworks.

**This reading may be due to a reporting or instrument error as the readings before and after are much lower.*

Chemical – Health Category							
Parameter	**Limit MAC(mg/L)**	**Limit IMAC (mg/L)**	**WTP#1 Sample Results**	**WTP#2 Sample Results**	**Samples Exceeding MAC/IMAC**	**# Samples Required**	**# Samples Submitted**
Arsenic	0.025		0.0002	<0.0001	0	2	2
Barium	1.0		0.053	0.059	0	2	2
Cadmium	0.005		<0.00001	<0.00001	0	2	2
Chromium	0.05		<0.0005	<0.0005	0	2	2
Fluoride (avg.*)	1.5		0.14	0.10	0	2	2
Lead	0.01		0.0002	<0.0001	0	2	2
Nitrate (avg.*)	45.0		<0.4	1.175	0	2	2
Selenium	0.01		<0.0001	0.0002	0	2	2
Uranium	0.02		0.0003	0.0004	0	2	2

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. All drinking water supplies are required to monitor for substances in the "Chemical-Health" category, the frequency of monitoring depends on the population served by the waterworks. Some waterworks add fluoride to drinking water as a means to aid in the prevention of dental decay.

* Results expressed as average values for communities or waterworks which fluoridate drinking water supplies or those with elevated concentrations of fluoride or nitrates. The City of North Battleford does not fluoridate the drinking water. The fluoride present is naturally occurring.

Chemical – Pesticides							
Parameter	**Limit MAC(µg/L)**	**Limit IMAC (µg/L)**	**WTP#1 Sample Results**	**WTP#2 Sample Results**	**Samples Exceeding MAC/IMAC**	**# Samples Required**	**# Samples Submitted**
Atrazine		5	<0.1	<0.1	0	2	2
Bromoxynil		5	<0.5	<0.5	0	2	2
Carbofuran	90		<2	<2	0	2	2
Chlorpyrifos	90		<2	<2	0	2	2
Dicamba	120		<0.5	<0.5	0	2	2
2,4-D*		100	<0.5	<0.5	0	2	2
Diclofop-methyl	9		<3	<3	0	2	2
Dimethoate		20	<0.01	<0.01	0	2	2
Malathion	190		<2	<2	0	2	2
Pentachlorophenol	60		<2	<2	0	2	2
Picloram		190	<1	<1	0	2	2
Trifluralin		45	<0.5	<0.5	0	2	2

Pesticides in drinking water may occur as a result of the use of these substances 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. Mandatory sampling requirements depends on the population served by the waterworks.

Chemical – Trihalomethanes

Parameter	Trihalomethanes Limit (µg/L)	Sample Result (average)	# Samples Required	# Samples Submitted
Trihalomethanes	100	34	8 (two every 3 months)	16

Trihalomethanes are generated during the water disinfection process by a by-product of reactions between chlorine and organic material. Trihalomethanes are generally found only in drinking water obtained from surface water supplies. Trihalomethanes are to be monitored on a quarterly basis and the Interim Maximum Acceptable Concentration is expressed as an average of 4 quarterly samples. Only water supplies derived from surface water or groundwater under the influence of surface water are required to monitor trihalomethanes.

Chemical – Cyanide and Mercury Date of last sample: March 13, 3013

Parameter	Limit MAC (µg/L)	WTP#1 Sample Results	WTP#2 Sample Results	# Samples Exceeding MAC	# Samples Required	# Samples Submitted
Cyanide	200	<1	<1	0	2	2
Mercury	1	<0.1	<0.1	0	2	2

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. Mandatory sampling requirements depend on the population served by the waterworks.

Chemical – Synthetic Organic Chemicals

Parameter	Limit MAC (µg/L)	Limit IMAC (µg/L)	Sample Results	Sample Result(s)	# Samples Exceeding Limit	# Samples Required	# Samples Submitted
Benzene	5		<0.2	<0.2	0	2	2
Benzo(a)pyrene	0.01		<0.01	<0.01	0	2	2
Carbon tetrachloride	5		<2	<2	0	2	2
Dichlorobenzene, 1,2	200		<0.5	<0.5	0	2	2
Dichlorobenzene, 1,4	5		<0.5	<0.5	0	2	2
Dichloroethane, 1,2		5	<0.5	<0.5	0	2	2
Dichloroethylene, 1,1	14		<0.5	<0.5	0	2	2
Dichloromethane	50		<0.5	<0.5	0	2	2
Dichlorophenol, 2,4	900		<1	<1	0	2	2
Monochlorobenzene	80		<0.5	<0.5	0	2	2
Tetrachlorophenol, 2,3,4,6	100		<0.5	<0.5	0	2	2
Tichloroethylene	50		<0.5	<0.5	0	2	2
Trichlorophenol, 2,4,6	5		<1	<1	0	2	2
Vinyl Chloride	2		<0.5	<0.5	0	2	2

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 (IMAC) may represent a health risk. Mandatory sampling requirements depends on the population served by the waterworks.

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

City of North Battleford,
Public Works & Utilities Dept.
121-101st St (Box 460)
North Battleford, SK
S9A 2Y6
(Tel) 306 445 1730
(Fax) 306 445 1739

(Note: This form may be used for communities or waterworks serving a population of 5000 persons or more).

JAN 13
EPB 236A