

Saskatchewan Ministry of Environment (MOE) 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. The following is a summary of the SaskWater Codette Lake Regional Water Supply System water quality and sample submission compliance record for the January 1, 2009 to December 31, 2009 time period. This report was completed on February 22, 2010. Readers should refer to MOE's "Municipal Drinking Water Quality Monitoring Guidelines, November 2002, EPB 202" for more information on minimum sample submission requirements and types of samples. Permit requirements for a specific waterworks may require more sampling than outlined in the department's monitoring guidelines. If consumers need to know more about drinking water in Saskatchewan, more detailed information is available from: <http://www.saskh2o.ca/>.

BACTERIOLOGICAL QUALITY

Parameter	Limit	Regular Samples Required	Regular Samples Submitted	# Positive of Regular Submitted
Total Coliform	0 Organisms/100 mL	104	104	0
E. Coli	0 Organisms/100 mL	104	104	0
Background Bacteria	Less than 200/100 mL	104	104	0

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 in Distribution System – From Test Results Submitted with Bacteriological Samples

Parameter	Minimum Limit (either/or)	Range (mg/L)	# Tests Required	# Tests Submitted	# Inadequate Chlorine
Free Chlorine	0.1 mg/L	0.79 – 2.20	104	104	0
Total Chlorine	0.5 mg/L	1.04 – 2.68	104	104	0

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. An adequate chlorine is a result that indicates that the chlorine level is above the regulated minimums. A waterworks is required to submit chlorine residual test results on every bacteriological sample they submit.

Free Chlorine Residual for Water Entering the Distribution System – From Water Treatment Plant Records

Parameter	Limit (mg/L)	Range (mg/L)	# Tests Required	# Tests Performed	# Inadequate Chlorine (%)
Free Chlorine	At least 0.1	1.10 – 2.72	365	2954	0

Minimum 0.1 milligrams per litre (mg/L) free chlorine residual is required for water in a distribution system. Residuals are monitored continuously and tests normally performed on a daily basis by waterworks operators and are to be recorded in operation records.

TURBIDITY

Turbidity in the Distribution System – From Test Results Submitted with Bacteriological Samples

Turbidity is a measure of water treatment efficiency. Turbidity measures the "clarity" of the drinking water and is reported in Nephelometric Turbidity Units (NTU).

Parameter	Limit (NTU)	Range (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.00 – 0.26	0	104	0

Turbidity for Water Leaving the Filter

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	< 0.30 – 95% of time and; never >1.0	0.018–0.288	0.059	9352	9352	0

CHEMICAL – HEALTH

All waterworks serving less than 5000 persons are required to submit water samples for MOE's Chemical Health category once every 2 years. The last sample for Chemical Health analysis was submitted on July 20, 2009. Results indicated that provincial drinking water quality standards were not exceeded.

Parameter	MAC (mg/L)	IMAC (mg/L)	AO* (mg/L)	O-C (mg/L)	Sample Results (mg/L)	# Of Samples Required	# Of Samples Submitted
Aluminum				0.1	0.025	1	1
Arsenic		0.025			0.0003	1	1
Barium	1.0				0.060	1	1
Boron		5.0			0.03	1	1
Cadmium	0.005				<0.0001	1	1
Chromium	0.05				<0.0005	1	1
Copper			1.0		0.0035	1	1
Iron			0.3		0.0018	1	1
Lead	0.01				<0.0001	1	1
Manganese			0.05		0.0006	1	1
Selenium	0.01				0.0004	1	1
Uranium	0.02				0.0002	1	1
Zinc			5		0.0030	1	1

MAC – Maximum Acceptable Concentrations

AO – Aesthetic Objective

IMAC – Interim Maximum Acceptable Concentrations

O-C – Operational-Conventional

*Objectives apply to certain characteristics of or substances found in water for human consumptive or hygienic use. The presence of these substances will affect the acceptance of water by consumers and/or interfere with the practice of supplying good quality water. Compliance with drinking water aesthetic objectives is not mandatory as these objectives are in the range where they do not constitute a health hazards. The aesthetic objectives for several parameters (including hardness as CaCO₃, magnesium, sodium and total dissolved solids) consider regional differences in drinking water sources and quality.

CHEMICAL – GENERAL

The sample for General Chemical analysis was submitted on November 23, 2009. Results indicated that the provincial drinking water quality standards were not exceeded.

Parameter	MAC	AO	Sample Results	# Of Samples Required	# Of Samples Submitted
Total Alkalinity (mg/L)		500	137	4	4
Bicarbonate (mg/L)	No Objective		161	4	4
Calcium (mg/L)	No Objective		54	4	4
Carbonate (mg/L)	No Objective		<1	4	4
Chloride (mg/L)		250	10	4	4
Fluoride (mg/L)	1.5		0.66	4	4
Total Hardness (mg/L)		800	206	4	4
Hydroxide (mg/L)	No Objective		<1	0	4
Magnesium (mg/L)		200	17	4	4
Nitrate (mg/L)	5		1.05	4	4
pH (pH units)		6.5 - 9.0	7.71	4	4
Potassium (mg/L)	No Objective		2.8	0	4
Sodium (mg/L)		300	20	4	4
Specific Conductivity (µs/cm)	No Objective		493	4	4
Sulphate (mg/L)		500	108	4	4
Sum of Ions	No Objective		373	0	4
Total Dissolved Solids (mg/L)		1500	300	4	4

FLUORIDE

Fluoride – From Treated Water at the Water Treatment Plant

Parameter	Limit (mg/L)	Average (mg/L)	Maximum (mg/L)	# Samples Required	# Samples Submitted	# Exceeding Limit
Fluoride	1.5	0.83	1.45	365	730	0

CHEMICAL – TRIHALOMETHANES (THM)

Trihalomethanes are formed when chlorine reacts with organic matter in water. The four THM compounds are: chloroform, dibromochloromethane, bromodichloromethane (BCDM) and bromoform. The sum of the concentrations of these four components is referred to as Total Trihalomethanes. The limit for THM is a long term objective based on an annual average of seasonal samples.

Parameter	Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted	# Exceeding Limit
Total Trihalomethanes	0.1	0.023	8	8	0

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

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