Drinking Water Quality and Compliance
SaskWater Melville Water Supply System
2016 Notification to Consumers

The Water Security Agency (WSA) 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 Permit to Operate a waterworks. The following is a summary of the Melville Water Supply System water quality and sample submission compliance record for the July 1, 2016 to December 31, 2016 time period. This report was completed on March 20, 2017. Readers should refer to the WSA's Municipal Drinking Water Quality Monitoring Guidelines, October 2012, 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 Agency's monitoring guidelines. If consumers need to know more about drinking water in Saskatchewan, more detailed information is available from: **http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/index-eng.php**.

BACTERIOLOGICAL QUALITY

Parameter	Limit	Regular Samples Required	Required Samples Submitted	# of Positive Regular Submitted
Total Coliform	0 Organisms/100 mL	26	29	0
E. Coli	0 Organisms/100 mL	26	29	0
Background Bacteria	Less than 200/100 mL	26	29	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. Additional sampling was done for informational purposes only.

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	# Adequate Chlorine
Free Chlorine	0.1 mg/L	1.29 – 2.84	26	29	29
Total Chlorine	0.5 mg/L	1.66 – 3.26	26	29	

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 Distribution System

Parameter	Limit (mg/L)	Range (mg/L)	# Tests Required	# Tests Performed	% Adequate Chlorine
Free Chlorine	At least 1.28	1.38 – 3.41	Continuous	Continuous	100

Residuals are monitored continuously and multiple tests are performed on a daily basis by waterworks operators and are recorded in operation records.

TURBIDITY

Turbidity for Water Leaving the Filter

Parameter	Limit (NTU)	Range (NTU)	95th Percentile (NTU)	# Tests Required	# Tests Performed
Turbidity	< 0.30 – 95% of time and; not to be > 0.3 for > 12 consecutive hours; never >1.0	0.07 – 0.29	0.27	Continuous	Continuous

Turbidity is monitored continuously and multiple tests are done daily by waterworks operators and are recorded in daily records.

Turbidity for Water entering the Distribution System – From Test Results Submitted with Bacteriological Samples

Parameter	Limit (NTU)	Range (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.10 – 0.67	26	29	0

Turbidity for Water Entering the Distribution System

Parameter	Limit (NTU)	Range (NTU)	95th Percentile (NTU)	# Tests Required	# Tests Performed
Turbidity	< 1.0 95% of measurements	0.02 – 0.59	0.39	Continuous	Continuous

Turbidity is a measure of water treatment efficiency. Turbidity measures the “clarity” of the drinking water and is reported in Nephelometric Turbidity Units (NTU). The turbidity is monitored continuously and multiple tests are done daily by waterworks operators and are recorded in daily records.

HALOACETIC ACIDS (HAAs)

Haloacetic acids are formed when chlorine reacts with organic matter in water. The five regulated haloacetic acids are: monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid. The sum of the concentrations of these five components is referred to as HAA5. The limit for HAAs is a long term objective based on an annual average of quarterly samples.

Parameter	Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted
Haloacetic Acids	0.080	0.024	2	1

TRIHALOMETHANES (THM)

Trihalomethanes are formed when chlorine reacts with organic matter in water. The four THM compounds are: chloroform, dibromochloromethane, bromodichloromethane (BDCM) 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. Additional sampling was done for informational purposes only.

Parameter	Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted
Trihalomethane	0.100	0.047	2	3

CHEMICAL – GENERAL

The SaskWater Melville Water Supply System is required to submit water samples for the WSA's General Chemical category once per three months every year. The last sample for General Chemical analysis was submitted on September 21, 2016. Sample 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	257	2	1
Bicarbonate (mg/L)	No Objective		314	2	1
Calcium (mg/L)	No Objective		57	2	1
Carbonate (mg/L)	No Objective		<1	2	1
Chloride (mg/L)		250	29	2	1
Fluoride (mg/L)	1.5		0.08	2	1
Total Hardness (mg/L)		800	294	2	1
Hydroxide (mg/L)	No Objective		<1	2	1
Magnesium (mg/L)		200	37	2	1
Nitrate (mg/L)	45		0.53	2	1
pH (pH units)		6.5 - 9.0	7.84	2	1
Potassium (mg/L)	No Objective		5.4	2	1
Sodium (mg/L)		300	146	2	1
Specific Conductivity (µs/cm)	No Objective		1190	2	1
Sulphate (mg/L)		500	320	2	1
Sum of Ions	No Objective		909	2	1
Total Dissolved Solids (mg/L)		1500	796	2	1

MAC – Maximum Acceptable Concentration AO – Aesthetic Objective

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

CHEMICAL – HEALTH

The SaskWater Melville Water Supply System is required to submit water samples for the WSA's Chemical Health category once every year. The last sample for Chemical Health analysis was submitted on September 21, 2016. Sample results indicated that the provincial drinking water quality standards were not exceeded.

Parameter	MAC (mg/L)	IMAC (mg/L)	AO (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Aluminum	No Objective			0.0067	1	1
Antimony	0.006			<0.0002	1	1
Arsenic	0.010			0.0013	1	1
Barium	1.0			0.012	1	1
Boron		5.0		0.34	1	1
Cadmium	0.005			<0.00001	1	1
Chromium	0.05			<0.0005	1	1
Copper			1.0	0.0061	1	1
Iron			0.3	0.012	1	1
Lead	0.01			<0.0001	1	1
Manganese			0.05	0.011	1	1
Selenium	0.01			<0.0001	1	1
Silver	No Objective			<0.00005	1	1
Uranium	0.02			0.0011	1	1
Zinc			5	0.0020	1	1

MAC – Maximum Acceptable Concentrations AO – Aesthetic Objective
IMAC – Interim Maximum Acceptable Concentrations

CHEMICAL – PESTICIDES

The SaskWater Melville Water Supply System is required to submit water samples for the WSA's Pesticide category once every 2 years. 2016 is a required sampling year. The last sample for Pesticides analysis was submitted on September 21, 2016. Sample results indicated that the provincial drinking water quality standards were not exceeded.

Parameter	MAC (mg/L)	IMAC (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Atrazine		0.005	<0.0002	1	1
Bromoxynil		0.005	<0.0005	1	1
Carbofuran	0.09		<0.0002	1	1
Chlorpyrifos	0.09		<0.0002	1	1
Dicamba	0.12		<0.0005	1	1
2, 4-D		0.10	<0.0005	1	1
Diclofop-methyl	0.009		<0.003	1	1
Dimethoate		0.02	<0.002	1	1
Malathion	0.19		<0.0002	1	1
MCPA	0.10		<0.001	1	1
Pentachlorophenol	0.06		<0.002	1	1
Picloram		0.19	<0.001	1	1
Trifluralin		0.045	<0.0002	1	1

MAC – Maximum Acceptable Concentrations IMAC – Interim Maximum Acceptable Concentrations

CHEMICAL – SYNTHETIC ORGANICS

The SaskWater Melville Water Supply System is required to submit water samples for the WSA's Synthetic Organic category once every 2 years. 2016 is a required sampling year. The last sample for analysis was submitted on September 21, 2016. Sample results indicated that the provincial drinking water quality standards were not exceeded.

Parameter	MAC (mg/L)	IMAC (mg/L)	AO (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Benzene	0.005			<0.0002	1	1
Benzo(a)pyrene	0.00001			<0.00001	1	1
Carbon tetrachloride	0.005			<0.002	1	1
Dichlorobenzene 1,2	10.2			<0.0005	1	1
Dichlorobenzene 1,4	0.005			<0.0005	1	1
Dichloroethane 1,2		0.005		<0.0005	1	1
Dichloroethylene 1,1	0.014			<0.0005	1	1
Dichloromethane	0.05			<0.0005	1	1
Dichlorophenol 2,4	0.9			<0.002	1	1
Ethylbenzene			0.0024	<0.0002	1	1
Monochlorobenzene	0.080			<0.0005	1	1
Nitrilotriacetic acid (NTA)	0.4			<0.1	1	1
Tetrachlorophenol 2,3,4,6	0.10			<0.002	1	1
Toluene	0.05			<0.0002	1	1
Trichloroethylene			0.024	<0.0005	1	1
Trichlorophenol 2,4,6	0.005			<0.002	1	1
Vinyl Chloride	0.002			<0.0005	1	1
Total Xylenes			0.3	<0.0002	1	1

MAC – Maximum Acceptable Concentrations AO – Aesthetic Objective
IMAC – Interim Maximum Acceptable Concentrations

CYANIDE AND MERCURY

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. The last sample was submitted on September 21, 2016.

Parameter	Limit (mg/L)	Sample Results (mg/L)	# Samples Required	# Samples Submitted
Cyanide	0.2	0.002	1	1
Mercury	0.001	<0.000001	1	1

MICROCYSTIN LR and/or TOTAL MICROCYSTIN TOXINS

The SaskWater Melville Water Supply System is required to sample for microcystin once every month from the treated water at the water treatment plant during the algal bloom period. The last sample was submitted on September 21, 2016.

Parameter	Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted
Microcystin	No Standard	<0.0001	2	2

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

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