

Drinking Water Quality and Compliance Annual Notice to Consumers

Saskatchewan 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 **PRINCE ALBERT**'s water quality and sample submission compliance record for the year of 2005. Readers should refer to Saskatchewan Environment's "Municipal Drinking Water Quality Monitoring Guidelines, November 2002, EPB 202" for more information on minimum sample submission guidelines. If consumers need more information on the nature and significance of specific water tests, for example, "what is the significance of Arsenic in a water supply", more detailed information is available from:

http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/index_e.html

Water Quality Standards

Bacteriological Quality

Parameter/Location	Limit	Regular Samples Required	Regular Samples Submitted	# of Positive Regular Submitted (Percentage %)
Total Coliform and Background Bacteria	0 organisms/100 mL Less than 200 organisms/100 mL	480	570	0.2 0.9

The owner/operator is responsible to ensure that one hundred percent of all bacteriological samples are submitted as required. All waterworks are required to submit samples for bacteriological water quality; the frequency of monitoring depends on the population served by the waterworks. A total of 1 regular sample out of the 570 samples submitted tested positive for either Total or Fecal coliforms. A total of 5 regular samples had background bacteria less than 200 organisms per 100 ml of water. The repeat sample for each positive sample tested negative.

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

Parameter	Minimum Limit (mg/L)	Free Chlorine Residual Range (mg/L)	Total Chlorine Residual Range (mg/L)	# Tests Required	# Tests Submitted	# Adequate Chlorine (%)
Chlorine Residual in Distribution System	0.1 mg/L free OR 0.5 mg/L total	0.04 – 2.05	0.06 – 2.70	480	570	99.5

*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. Please note that for this annual report, an adequate chlorine submission is defined as a bacteriological sample submission with both free and total chlorine residuals filled out and those chlorine residual levels being above the minimum regulated levels described above. 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

Parameter	Limit (mg/L)	Test Level Range (mg/L)	# Tests Performed	# Test Not Meeting Requirements
Free Chlorine Residual	at least 0.1	1.26 –2.65	4,380	0

A minimum of 0.1 milligrams per litre (mg/L) free chlorine residual is required for water entering the distribution system. In Prince Albert, grab sample tests are normally performed every 2 hours by the water plant operators and are recorded in operation records. This is in addition to the continuous monitoring of the free chlorine residual for water entering the distribution system. 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.

Turbidity

Parameter	Limit (NTU)	Test Level Range (NTU)	# Tests Not Meeting Requirements	Maximum Turbidity (NTU)	# Tests Required	# Tests Submitted
Turbidity	1.0	0.04 – 0.25	0	0.25	365	365

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 turbidity data above summarizes the daily average turbidity entering the distribution system. The frequency of measurement varies from daily for small systems to continuous for larger waterworks. Prince Albert monitors the turbidity entering the distribution system on a continuous basis. On December 5, 2006 the turbidity parameter will be changed to “turbidity must never exceed 1.0 NTU and not exceed 0.3 NTU for more than 12 consecutive hours”.

General Chemical

Samples Required	Samples Submitted	Date of Last Sample(s)
4	4	December 20, 2005

All waterworks serving 5000 persons or more are required to submit water samples for Saskatchewan Environment’s “General Chemical” based on population size. The “General Chemical” category includes analysis for alkalinity, bicarbonate, calcium, carbonate, chloride, conductivity, hardness, magnesium, nitrate, pH, sodium, sulphate, total dissolved solids, and nitrilotriacetic acid. Samples for “General Chemical” analysis were submitted on May 3, August 26, October 5, and December 20, 2005. Sample results indicated that the provincial drinking water standards were not exceeded.

Health and Toxicity

Samples Required	Samples Submitted	Date of Last Sample(s)
2	4	December 20, 2005

The “Health and Toxicity” category includes analysis for aluminum, arsenic, barium, boron, cadmium, chromium, copper, iron, lead, manganese, selenium, uranium, and zinc. Samples for “Health and Toxicity” analysis were submitted on May 3, August 26, October 5, and December 20, 2005. Sample results indicated that the provincial drinking water standards were not exceeded.

Trihalomethanes

Parameter	Limit IMAC (mg/L)	Sample Result (average)	# Samples Required	# Samples Submitted
Trihalomethanes	0.100	0.035	8	8

Trihalomethanes are generated during the water disinfection process as 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 with two samples collected from representative locations in the distribution system. The Interim Maximum Acceptable Concentration (IMAC) result 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 for Trihalomethanes.

Cyanide and Mercury

Parameter	Limit MAC (mg/L)	Sample Results	# Samples Exceeding MAC	# Samples Required	# Samples Submitted
Cyanide	0.2	<0.001 – 0.002	0	2	4
Mercury	0.001	<0.00005	0	2	4

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. Prince Albert is required to submit a sample once every six months, from the treated water at the water treatment plant. The date of the last sample was December 20, 2005.

Pesticides and Organics

All waterworks serving 5,000 persons or more are required to submit water samples for Saskatchewan Environment's "Pesticides and Organics" category. Prince Albert is required to submit a water sample once each two years, from the treated water at the water treatment plant.

Contamination of drinking water by pesticides and organics only results from pollution events. Prince Albert is required to submit a water sample once every two years, from the treated water at the water treatment plant. The "pesticides and organics" category includes analysis for Carbontetrachloride, dichloromethane, 1,2-dichlorobenzene, 1,2 dichloroethane, 1,4- dichlorobenzene, 2,4-D, 1,2-dichloroethan, 2,4-dichlorophenol, 1-1 dichlorethylene, monochlorobenzene, 2,3,4,6-tetrachlorophenol, trichloroethylene, 2,4,6-trichlorophenol, benzene, atrazine, toluene, ethylbenzene, xylenes, diclofop-methyl (HoeGrass), lindane, bromoxynil (Buctril), dicamba (Banvil), MCPA, pentachlorophenol (PCP), Picloram (Tordon), Propanil (stampede), chloroform, dichlorobromomethane, dibromochloromethane, bromoform, triallate (Avadex BW), trifluralin (treflan), (and benzo(a)pyrene.

Samples for pesticide and organics analysis were submitted on May 13, 2004. Sample results indicated that the provincial drinking water quality standards were not exceeded.

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

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