UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
DRINKING WATER

Disinfection Byproducts (DBPs)

Disinfection Byproducts can form during the drinking water treatment process when disinfectants interact with naturally occurring organics in the water. They have been shown to cause birth defects and can be carcinogenic (cancer causing). The Disinfection Byproduct Rule limits human exposure to potentially harmful chemicals by ensuring water systems comply with maximum contaminant levels (MCLs) and maximum residual disinfection levels (MRDLs).

Applies to:		
	• Community Water Systems (CWS) • Non transient-Non community (NTNC)	All sizes that add any disinfectant other than UV
	• Transient Non community (TNC)	All sizes that add chlorine dioxide

Disinfectant	Disinfection By Product	Maximum Contaminant Level (MCL)
Chlorine	Trihalomethanes (TTHMs)	80 ppb (0.080 mg/l)
Chlorine	Haloacetic Acids (HAA5s)	60 ppb (0.060 mg/L)
Ozone	Bromate	10 ppb (0.010 mg/L)
Chlorine Dioxide	Chlorite	1000 ppb (1.000 mg/L)

Disinfectant Residual	Maximum Residual Disinfectant Levels (MRDLS)
Chlorine (as Cl_2)	4.0 (mg/L)
Chloramines (as Cl_2)	4.0 (mg/L)
Chlorine Dioxide (as ClO_2)	0.8 (mg/L)

Sampling Frequency – Disinfection By Products

Sampling schedules are based on population, source water type, and treatment process type. See chart on reverse side

Quarterly Systems: Sample every 90 days.

Annual Systems: Sample during July -September

- All systems **must** monitor during months of highest DBP concentrations. R309-210-10 (2)(a)(ii)(N)

Sampling Frequency -- Chlorine Residuals

Point of Entry to Distribution System		Operational Readings	Distribution System Cl_2 Residual
Surface Water	Daily sampling	3x per week	With every total coliform sample and/or a **minimum** of 3x per week
Ground Water	3 samples Per week		

Monthly residual average and total # of residuals taken may be submitted online at: http://MRDL.utah.gov

Locational Running Annual Average (LRAA):

Compliance with Maximum Contaminant Levels is based on LRAA.
If the LRAA at any location exceeds the MCL the system will incur a quality violation

Quarterly Systems: LRAA is the average calculated for each sampling site using the most recent 4 quarters of Disinfection By Product sampling results collected at that location.

Annual Systems: LRAA is based on the single most recent DBP sample result. If any sample exceeds the MCL the monitoring frequency will increase to quarterly for a minimum of 4 consecutive quarters. See FAQ for details.

Failure to monitor will result in a violation of the monitoring requirements for each quarter that a monitoring result would be used to calculate the LRAA.

Stage 2 Monitoring Plan: Required for all systems sampling for DBPs (R309-210-10(3))

Must include
(A) Monitoring locations;
(B) Monitoring dates;
(C) Compliance calculation procedures; and
(D) Monitoring plans for any other systems in the combined distribution system if the Director has reduced monitoring requirements under the Director authority in R309-105-5(2).

Routine and Reduced Monitoring Schedules

		Population	Location	Frequency	If qualified for Reduced Monitoring
TTHMs & HAA5s	Surface water	< 500	2 Per Year		**No Reduced monitoring**
		500 - 3,300	2	Per Quarter	1 dual sample set / Yr
		3,301 - 9,999	2		2 dual sample sets / Yr
		10,000 - 49,000	4		2 dual sample sets / Qtr
		50,000 - 249,999	8		4 dual sample sets / Qtr
		250,000 - 999,999	12		6 dual sample sets / Qtr
	Ground water	<500	2 Per Year		1 TTHM & 1 HAA5 / 3Yr
		500 - 9,999			1 TTHM & 1 HAA5 / Yr
		10,000 - 99,999	4	Per Quarter	2 dual sample sets / Yr
		100,000 - 499,999	6		2 dual sample sets / Qtr
Total Organic Carbon (TOC)	Systems using conventional filtration		1 Per Month - Per water source		1 sample set every 90 days
Bromate	Systems using ozone		1 Per Month @ Entry Point		1 Per Quarter
Chlorite	Systems using chlorine dioxide for disinfection		1 Per Day @ Entry Point 3 Per Month in Distribution System		**No Reduced monitoring**

-Membrane plants do not need to sample for TOC unless monitoring on a reduced schedule.

-Consecutive systems (system purchasing disinfected water) sample on the same schedule as the parent system

FAQ:

Q: Can I check on my monitoring schedule to see if my system is in compliance?

A: Yes! go to www.waterlink.utah.gov, enter in your system name or number, and click on "Water Monitoring" in the top right corner. This will show your monitoring schedule, your sampling locations on file, the date of your last sample submittal, and the date your next sample is due.

Q: Why has my monitoring schedule increased?

A: Monitoring schedules can increase for several reasons:

-If your system is on reduced quarterly monitoring schedule and the Locational Running Annual Average has exceeded the 40/30 threshold at any location, if your system is on reduced annual (or less frequent) monitoring schedule and the annual (or less frequent) sample at any location exceeds either 0.060 mg/L for TTHM or 0.045 mg/L for HAA5, or if the source water annual average TOC level is >4.0 mg/L at any treatment plant, you will immediately return to the baseline monitoring schedule. (R309-210-10(4)(c))

-If your system is monitoring annually, or once every three years, and DBP sample results are above the MCL threshold at any location(0.080 mg/L for TTHM or 0.060 mg/L for HAA5), your monitoring schedule will automatically increase to quarterly. All systems are required to monitoring to dual sample sets every ninety days, for at least four consecutive quarters, in order to calculate a Locational Running Annual Average. Your system may return to a routine monitoring schedule if the LRAA is ≤ 0.060 mg/L for TTHMs and ≤ 0.045 mg/L for HAA5s at all monitoring locations. (R309-210-10(6))

Q: How do I qualify for reduced monitoring?

A: The LRAA for **all** monitoring locations must be **half** of the MCL (≤ 0.040 mg/L for TTHM and ≤ 0.030 mg/L for HAA5). Additionally, the source water annual average TOC level, before any treatment, must be ≤ 4.0 mg/L at each treatment plant treating surface water or groundwater under the direct influence of surface water

— **If your system qualifies for reduced monitoring please contact the Rule Manager to update your schedule.**

For more information or to answer questions please contact the Rule Manager: **Randi Ryan (801) 536-4170**
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