

Salmon Open House: Disinfection Byproducts



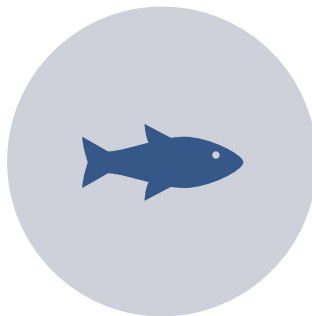
STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Cassandra Lemmons
Drinking Water Compliance and
Enforcement Supervisor

Agenda



DISINFECTION
BYPRODUCTS



SALMON'S
RESULTS



NEXT STEPS

Disinfection Byproducts

- What are they?
- Regulations in Drinking Water
- Exposure
- Potential health impacts
- Reduce exposure
- Benefits outweigh risks



Comprehensive Disinfectants and Disinfection Byproducts Rules (Stage 1 and Stage 2): Quick Reference Guide

Overview of the Rules

Titles*	► Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 DBPR) 63 FR 69390, December 16, 1998, Vol. 63, No. 241 ► Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) 71 FR 388, January 4, 2006, Vol. 71, No. 2
Purpose	Improve public health protection by reducing exposure to disinfection byproducts. Some disinfectants and disinfection byproducts (DBPs) have been shown to cause cancer and reproductive effects in lab animals and suggested bladder cancer and reproductive effects in humans.
General Description	The DBPRs require public water systems (PWSs) to: ► Comply with established maximum contaminant levels (MCLs) and operational evaluation levels (OELs) for DBPs, and maximum residual disinfection levels (MRDLs) for disinfectant residuals. ► Conduct an initial evaluation of their distribution system. In addition, PWSs using conventional filtration are required to remove specific percentages of organic material that may react to form DBPs through the implementation of a treatment technique.
Utilities Covered	The DBPRs apply to all sizes of community water systems (CWSs) and nontransient noncommunity water systems (NTNCWSs) that add a disinfectant other than ultraviolet (UV) light or deliver disinfected water, and transient noncommunity water systems (TNCWSs) that add chlorine dioxide.
*This document provides a summary of federal drinking water requirements; to ensure full compliance, please consult the federal regulations at 40 CFR 141 and any approved state requirements.	

Overview of Requirements

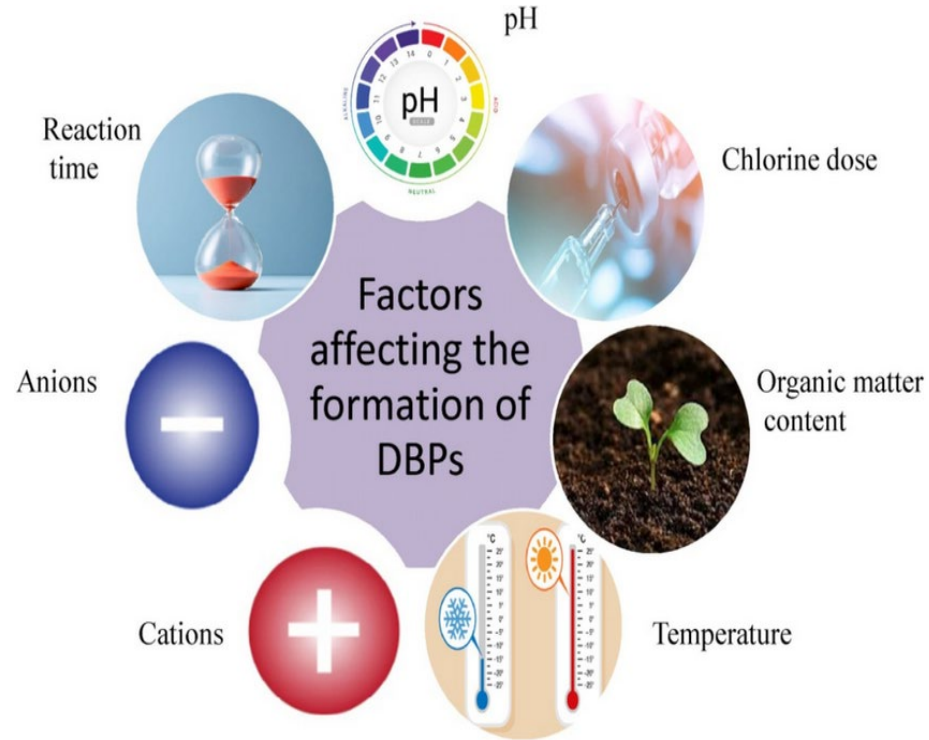
This table shows how the requirements for the Stage 2 DBPR build on the existing requirements established in the Stage 1 DBPR. For more information on changes in monitoring requirements, see Table 1.

	Stage 1 DBPR	Stage 2 DBPR	For More Info:
Coverage	All CWSs and NTNCWSs that add disinfectant other than UV light and TNCWSs that treat with chlorine dioxide.	✓	✓
	Consecutive systems that deliver water treated with a disinfectant other than UV light.		✓
TTHM & HAA5 MCL Compliance	MCL compliance is calculated using the running annual average (RAA) of all samples from all monitoring locations across the system.	✓	See Table 3 and Table 4.
	MCL compliance is calculated using the locational RAA (LRAA) for each monitoring location in the distribution system.		
Regulated Contaminants & Disinfectants	Contaminants		
	Total Trihalomethanes (TTHM)	✓	✓
	5 Haloacetic Acids (HAA5)	✓	✓
	Bromate	✓	Regulated under Stage 1 DBPR
	Chlorite	✓	Regulated under Stage 1 DBPR
	Disinfectants		
See Table 2.			

Disinfection Byproducts

What are they?

- DBPs are the results of the chemical reaction between organic matter and disinfecting products



Disinfection Byproducts

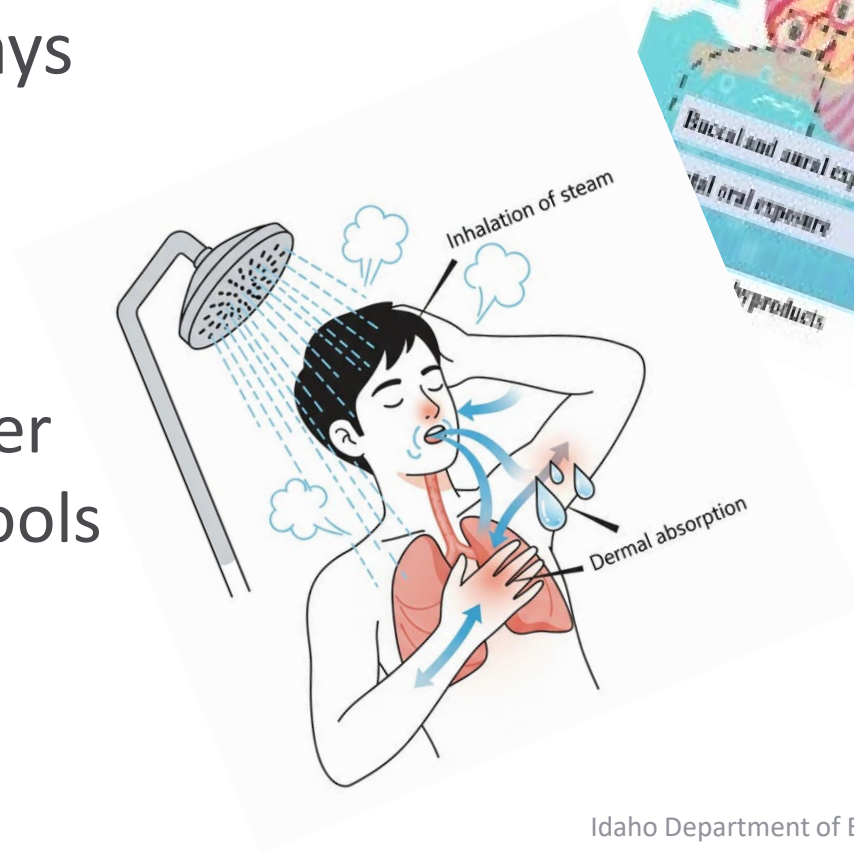
Regulations in Drinking Water

- Balances the need to kill pathogens with potential health risks
- Chronic contaminant
- Establishes maximum acceptable levels
- Quarterly sampling at highest risk site

Disinfection Byproducts

Exposure pathways

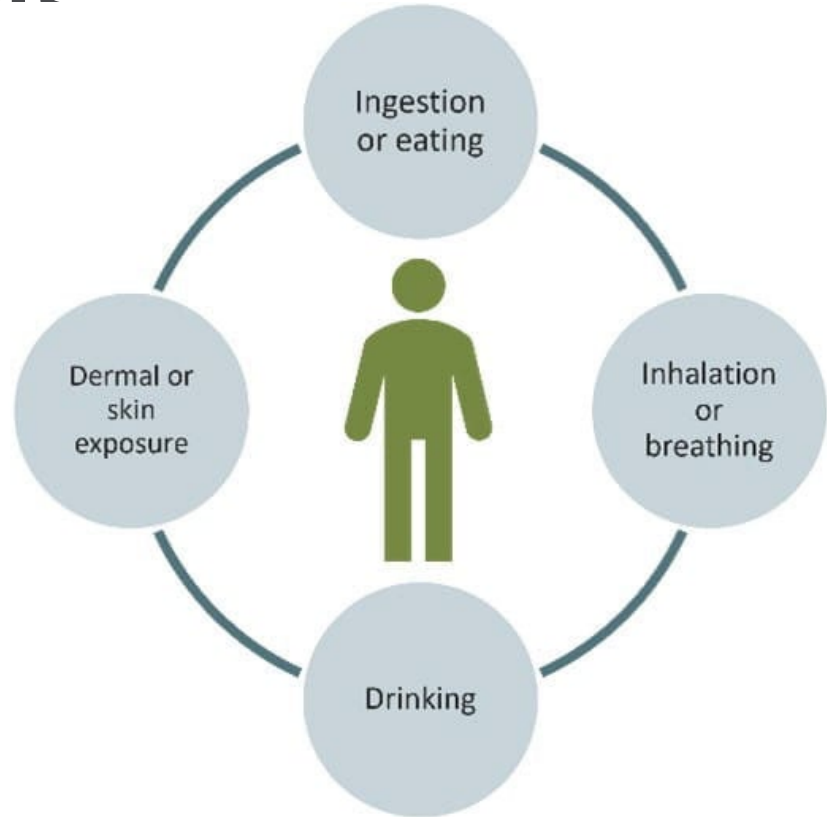
- Ingestion
- Transdermal
- Inhalation
 - Drinking water
 - Swimming pools
 - Hot tubs



Disinfection Byproducts

Potential health impacts

- Lifetime consumption (decades of exposure)
- Complex
- Person dependent
- If concerned discuss with your primary care provider



Disinfection Byproducts

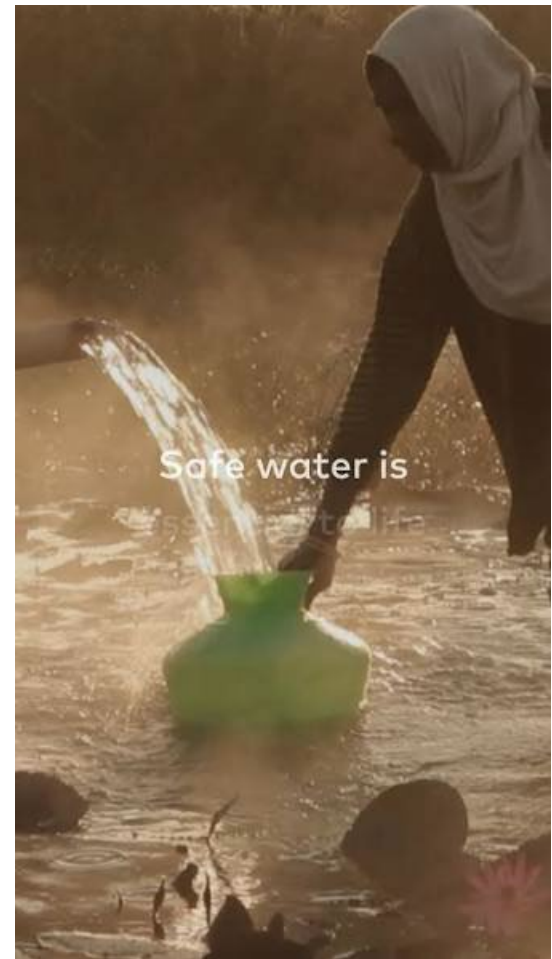
Reduce exposure

- Ventilate bathroom
- Take cooler, shorter baths/showers
- Install
- Use a pour-over filtration water pitcher, fill it and let it sit
- Install point of use filter under sink

Disinfection

Benefits outweigh risks

- Disinfection kills deadly pathogens naturally found in surface water
- Lowers death rates from water borne disease
- Prevents water borne disease outbreaks



Salmon's DBP History

- Sporadic exceedances
 - HAA5
 - 2016 and 2022 exceeded all 4 quarters
 - 2012, 2021 and 2026 exceeded 2 quarters
 - TTHM
 - No full year exceedances
 - 2010, 2016 and 2025 exceeded 1 quarter
 - 2009, 2011 and 2012 exceeded 2 quarters

Salmon's DBP History

- City works to troubleshoot after every exceedance
- Regional DEQ staff work with the system
- Sample results come in after the exceedance happened
- Makes troubleshooting challenging

Next Steps

- Contract with an engineering firm
 - Done
- Enter into a compliance agreement schedule with DEQ
 - Pending
- Engineering evaluation of the system and conditions
 - Underway
- Engineering recommendation for the best corrective action
 - Might need additional funds for construction
 - Might be process change

DBP key points

- DBPs form when disinfecting chemicals come into contact with organic matter naturally found in water
- Human exposure can be from ingestion, inhalation or transdermal or drinking water, pools and hot tubs
- It takes many years of constant exposure to put your health at risk
- The benefits of disinfecting drinking water are greater than the risks
- Salmon is working with DEQ and their engineers to resolve

Questions?

Cassandra.lemmons@deq.idaho.gov



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