United States Environmental Protection Agency
Office of Water (4606)
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www.epa.gov/safewater

Stage 1 Disinfectants and Disinfection Byproducts Rule: A Quick Reference Guide

Overview of the Rule

Title	Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 DBPR) 63 FR 69390 - 69476, December 16, 1998, Vol. 63, No. 241 Revisions to the Interim Enhanced Surface Water Treatment Rule (IESWTR), the Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 DBPR), and Revisions to State Primacy Requirements to Implement the Safe Drinking Water Act (SDWA) Amendments 66 FR 3770, January 16, 2001, Vol 66, No. 29
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 Stage 1 DBPR is the first of a staged set of rules that will reduce the allowable levels of DBPs in drinking water. The new rule establishes seven new standards and a treatment technique of enhanced coagulation or enhanced softening to further reduce DBP exposure. The rule is designed to limit capital investments and avoid major shifts in disinfection technologies until additional information is available on the occurrence and health effects of DBPs.
Utilities Covered	The Stage 1 DBPR applies to all sizes of community water systems and nontransient noncommunity water systems that add a disinfectant to the drinking water during any part of the treatment process and transient noncommunity water systems that use chlorine dioxide.

Public Health Benefits

Implementation of the Stage 1 DBPR will result in . . .	▸ As many as 140 million people receiving increased protection from DBPs. ▸ 24 percent average reduction nationally in trihalomethane levels. ▸ Reduction in exposure to the major DBPs from use of ozone (DBP = bromate) and chlorine dioxide (DBP = chlorite).
Estimated impacts of the Stage 1 DBPR include . . .	▸ National capital costs: $2.3 billion ▸ National total annualized costs to utilities: $684 million ▸ 95 percent of households will incur an increase of less than $1 per month. ▸ 4 percent of households will incur an increase of $1-10 per month. ▸ <1 percent of households will incur an increase of $10-33 per month.

Critical Deadlines and Requirements

For Drinking Water Systems

January 1, 2002	Surface water systems and ground water systems under the direct influence of surface water serving ³ 10,000 people must comply with the Stage 1 DBPR requirements.
January 1, 2004	Surface water systems and ground water systems under the direct influence of surface water serving < 10,000, and all ground water systems must comply with the Stage 1 DBPR requirements.

For States

December 16, 2000	States submit Stage 1 DBPR primacy revision applications to EPA (triggers interim primacy).
December 16, 2002	Primacy extension deadline - all states with an extension must submit primacy revision applications to EPA.

For additional information on the Stage 1 DBPR

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA web site at www.epa.gov/safewater; or contact your State drinking water representative.

Additional material is available at www.epa.gov/safewater/mdbp/implement.html.

Regulated Contaminants/Disinfectants

Regulated Contaminants	MCL (mg/L)	MCLG (mg/L)	Regulated Disinfectants	MRDL* (mg/L)	MRDLG* (mg/L)
Total Trihalomethanes (TTHM)	**0.080**		**Chlorine**	**4.0 as Cl_2**	**4**
Chloroform		-			
Bromodichloromethane		zero			
Dibromochloromethane		0.06			
Bromoform		zero			
Five Haloacetic Acids (HAA5)	**0.060**		**Chloramines**	**4.0 as Cl_2**	**4**
Monochloroacetic acid		-	**Chlorine dioxide**	**0.8**	**0.8**
Dichloroacetic acid		zero			
Trichloroacetic acid		0.3			
Bromoacetic acid		-			
Dibromoacetic acid		-			
Bromate (plants that use ozone)	**0.010**	**zero**	***Stage 1 DBPR includes maximum residual disinfectant levels (MRDLs) and maximum residual disinfectant level goals (MRDLGs) which are similar to MCLs and MCLGs, but for disinfectants.**		
Chlorite (plants that use chlorine dioxide)	**1.0**	**0.8**			

Treatment Technique

Enhanced coagulation/enhanced softening to improve removal of DBP precursors (See Step 1 TOC Table) for systems using conventional filtration treatment.

Step 1 TOC Table - Required % Removal of TOC

Source Water TOC (mg/L)	Source Water Alkalinity, mg/L as $CaCO_3$		
	0-60	> 60-120	> 120
> 2.0 to 4.0	35.0%	25.0%	15.0%
> 4.0 to 8.0	45.0%	35.0%	25.0%
> 8.0	50.0%	40.0%	30.0%

[1] Systems meeting at least one of the alternative compliance criteria in the rule are not required to meet the removals in this table.

[2] Systems practicing softening must meet the TOC removal requirements in the last column to the right

Routine Monitoring Requirements

	Coverage	Monitoring Frequency	Compliance
TTHM/HAA5	**Surface and ground water under the direct influence of surface water serving ³ 10,000**	**4/plant/quarter**	**Running annual average**
	Surface and ground water under the direct influence of surface water serving 500 - 9,999	**1/plant/quarter**	**Running annual average**
	Surface and ground water under the direct influence of surface water serving < 500	**1/plant/year in month of warmest water temperature****	**Running annual average of increased monitoring**
	Ground water serving ³ 10,000	**1/plant/quarter**	**Running annual average**
	Ground water serving < 10,000	**1/plant/year in month of warmest water temperature****	**Running annual average of increased monitoring**
Bromate	**Ozone plants**	**Monthly**	**Running annual average**
Chlorite	**Chlorine dioxide plants**	**Daily at entrance to distribution system; monthly in distribution system**	**Daily/follow-up monitoring**
Chlorine dioxide	**Chlorine dioxide plants**	**Daily at entrance to distribution system**	**Daily/follow-up monitoring**
Chlorine/Chloramines	**All systems**	**Same location and frequency as TCR sampling**	**Running annual average**
DBP precursors	**Conventional filtration**	**Monthly for total organic carbon and alkalinity**	**Running annual average**

** System must increase monitoring to 1 sample per plant per quarter if an MCL is exceeded.