

# Appendix A

## 2016 MONITORING MATRIX

### IBWA Code of Practice Monitoring Requirements

MONITORING PARAMETER GROUP		MONITORING FREQUENCY	SOQs, MCLs, SMCLs, and Guidelines (Apply to finished products)		
Individual Group Analytes					
<b>Inorganic Chemicals (IOCs)</b>		ANNUALLY	<b>IBWA SOQ</b>	<b>FDA SOQ</b>	<b>EPA MCL</b>
		(Product and Source)			
	Antimony (1)	For items with footnote (2), see <i>FDA D/DBP Rule Monitoring Requirements on page 21.</i>	0.006	0.006	0.006
	Arsenic		0.01	0.01	0.01
	Barium		1	2	2
	Beryllium (1)		0.004	0.004	0.004
	Bromate (2)		0.010	0.010	0.010
	Cadmium		0.005	0.005	0.005
	Chlorine (2)		0.1	4.0	4.0
	Chloramine (2)		4.0	4.0	4.0
	Chlorine dioxide (2)		0.8	0.8	0.8
	Chlorite (2)		1.0	1.0	1.0
	Chromium, Total		0.05	0.1	0.1
	Chromium, Hexavalent (6)		0.01	NA	NA
	Cyanide (1)		0.1	0.1	0.2
	Fluoride		(3)	(3)	4
	Lead		0.005	0.005	0.015 AL
	Mercury		0.001	0.002	0.002
	Nickel (1)		0.1	0.1	
	Nitrate-N		10	10	10
	Nitrite-N		1	1	1
	Total Nitrate + Nitrite	10	10	10	
	Selenium	0.01	0.05	0.05	
	Thallium (1)	0.002	0.002	0.002	
<b>Secondary Inorganic Parameters</b>		ANNUALLY	<b>IBWA SOQ</b>	<b>FDA SOQ</b>	<b>SMCL (4)</b>
		(Product and Source)			
	Aluminum		0.2	0.2	0.2
	Chloride (5)		250	250	250
	Copper		1	1	1 AL
	Iron (5)		0.3	0.3	0.3
	Manganese (5)		0.05	0.05	0.05
	Silver		0.025	0.1	0.1
	Sulfate (5)		250	250	250
	Total Dissolved Solids (TDS) (5)		500	500	500
	Zinc (5)		5	5	5
<b>Volatile Organic Chemicals (VOCs)</b>		ANNUALLY	<b>IBWA SOQ</b>	<b>FDA SOQ</b>	<b>EPA MCL</b>
		(Product and Source)			
	1,1,1-Trichloroethane	For items with footnote (2), see <i>FDA D/DBP Rule Monitoring Requirements on page 21.</i>	0.03	0.2	0.2
	1,1,2-Trichloroethane		0.003	0.005	0.005
	1,1-Dichloroethylene		0.002	0.007	0.007
	1,2,4-Trichlorobenzene		0.009	0.07	0.07
	1,2-Dichloroethane		0.002	0.005	0.005
	1,2-Dichloropropane		0.005	0.005	0.005
	Benzene		0.001	0.005	0.005
	Carbon tetrachloride		0.005	0.005	0.005
	cis-1,2-Dichloroethylene		0.07	0.07	0.07
	trans-1,2-Dichloroethylene		0.1	0.1	0.1
	Ethylbenzene		0.7	0.7	0.7
	Methylene chloride (Dichloromethane)		0.003	0.005	0.005
	Monochlorobenzene		0.05	0.1	0.1
	o-Dichlorobenzene		0.6	0.6	0.6
	p-Dichlorobenzene		0.075	0.075	0.075
	Haloacetic Acids (HAA5) (2)		0.06	0.06	0.06
	Styrene		0.1	0.1	0.1

(1) Included in FDA's 9 contaminant regulations.

(2) Included in FDA's D/DBP rule. See D/DBP monitoring requirements section on page 21 in Appendix A for details.

(3) SOQ dependent upon temperature and other factors. See fluoride section on page 22 of Appendix A for details.

(4) SMCL = Secondary maximum contaminant level. SMCLs are guidelines established by the USEPA for use in evaluating aesthetic, non-health-related properties in water. SMCLs are not enforceable for public water systems.

(5) Mineral water is exempt from allowable level. The exemptions are aesthetically based allowable levels and do not relate to a health concern.

(6) If total chromium results are <0.005 mg/l (5 ug/l), then monitoring for hexavalent chromium is waived.

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Individual Group Analytes			IBWA SOQ	FDA SOQ	EPA MCL	
<b>Volatile Organic Chemicals (VOCs) (Continued)</b>		ANNUALLY				
	Tetrachloroethylene	(Product and Source)	0.001	0.005	0.005	
	Toluene		1	1	1	
	Trichloroethylene	For items with footnote (2), see FDA D/DBP Rule Monitoring Requirements on page 21.	0.001	0.005	0.005	
	Vinyl chloride		0.002	0.002	0.002	
	Xylenes (total)		1	10	10	
	Bromodichloromethane		(6)	(6)	(6)	
	Chlorodibromomethane		(6)	(6)	(6)	
	Chloroform		(6)	(6)	(6)	
	Bromoform		(6)	(6)	(6)	
	Total Trihalomethanes (2)		0.01	0.08	0.08	
<b>Semivolatile Organic Chemicals (SVOCs)</b>			ANNUALLY			
	Benzo(a)pyrene		(Product and Source)	0.0002	0.0002	0.0002
	Di(2-ethylhexyl)adipate		0.4	0.4	0.4	
	Di(2-ethylhexyl)phthalate		0.006	0.006	0.006	
	Hexachlorobenzene		0.001	0.001	0.001	
	Hexachlorocyclopentadiene		0.05	0.05	0.05	
<b>Synthetic Organic Chemicals (SOCs)</b>		ANNUALLY				
	2,4,5-TP (Silvex)	(Product and Source)	0.01	0.05	0.05	
	2,4-D (Dichlorophenoxy acetic acid)	(unless otherwise noted)	0.07	0.07	0.07	
	Alachlor		0.002	0.002	0.002	
	Aldicarb		0.003	NA	0.003	
	Aldicarb sulfone		0.003	NA	0.003	
	Aldicarb sulfoxide		0.004	NA	0.004	
	Atrazine		0.003	0.003	0.003	
	Carbofuran		0.04	0.04	0.04	
	Chlordane		0.002	0.002	0.002	
	Dalapon		0.2	0.2	0.2	
	Dibromochloropropane (DBCP)		0.0002	0.0002	0.0002	
	Dinoseb		0.007	0.007	0.007	
	Dioxin (2,3,7,8-Tetrachlorodibenzo-p-dioxin) (1)(7)	Product: Every 3 years Source: Annually	3x10 <sup>-8</sup>	3x10 <sup>-8</sup>	3x10 <sup>-8</sup>	
	Diquat (1)(7)		0.02	0.02	0.02	
	Endothall (1)(7)		0.1	0.1	0.1	
	Endrin	ANNUALLY	0.002	0.002	0.002	
	Ethylene dibromide	(Product and Source)	0.00005	0.00005	0.00005	
	Glyphosate (1)(7)	Product: Every 3 years Source: Annually	0.7	0.7	0.7	
	Heptachlor	ANNUALLY	0.0004	0.0004	0.0004	
	Heptachlor epoxide	(Product and Source)	0.0002	0.0002	0.0002	
	Lindane		0.0002	0.0002	0.0002	
	Methoxychlor		0.04	0.04	0.04	
	Oxamyl (vydate)		0.2	0.2	0.2	
	Pentachlorophenol		0.001	0.001	0.001	
	Picloram		0.5	0.5	0.5	
	Polychlorinated biphenyls (PCBs)		0.0005	0.0005	0.0005	
	Simazine		0.004	0.004	0.004	
	Toxaphene		0.003	0.003	0.003	

(1) Included in FDA's 9 contaminant regulations.

(2) Included in FDA's D/DBP Rule. See D/DBP monitoring requirements section in Appendix A for details.

(7) No SOQs or MCLs established for individual trihalomethane contaminants. The sum of the 4 THMs is regulated as total trihalomethanes (TTHMs).

(8) FDA requires that the four synthetic organic chemicals (SOC) listed must be tested quarterly for four consecutive quarters for each type of finished bottled water (e.g., spring, purified, etc.). If none of the SOCs are detected, then once every three years for each type of finished product. If SOCs are detected, maintain monitoring for four consecutive quarters in each three-year period. New products and new companies must do an initial round of quarterly monitoring in the first year of operation.

**All SOQs, MCLs, SMCLs, and guidelines in mg/L (ppm) except as noted. Refer to your state bottled water regulations to determine if additional testing is required.**

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<i>Individual Group Analytes</i>					
<b>Additional Regulated Contaminants</b>		ANNUALLY (Product and Source)	<b>IBWA SOQ</b>	<b>FDA SOQ</b>	<b>EPA MCL</b>
	Methyl tertiary butyl ether (MTBE)		0.07	NA	NA
	Naphthalene		0.3	NA	NA
	Perchlorate		0.002	NA	NA
	Phenols (Total Recoverable Phenolics)		0.001	0.001	NA
	1,1,2,2-Tetrachloroethane		0.001	NA	NA
<b>Microbiological Contaminants</b>			<b>IBWA SOQ</b>	<b>FDA SOQ</b>	<b>EPA MCL</b>
	Total coliform / <i>E. coli</i>	SOURCE: at least once each week (21 CFR §129.35(a)(3)) PRODUCT: at least once each week (21 CFR §129.35(g)(1))	No <i>Escherichia coli</i> detectable in a 100 ml portion/sample. No validated total coliform detectable in a 100 ml portion/sample as substantiated by resampling.  NOTE: Confirmation AND validation of all positive total coliform results in finished product required. See Appendix C of the Code of Practice.	<b>MPN:</b> <2.2 organisms per 100 ml. <b>MF:</b> <4 CFU per 100 ml.	No more than 5% of monthly samples valid for total coliform.
<b>Radiological Contaminants</b>		SEE BELOW	<b>IBWA SOQ</b>	<b>FDA SOQ</b>	<b>EPA MCL</b>
	Gross Alpha Particle Radioactivity	SOURCE: Every 4 years	15 pCi/L	15 pCi/L	15 pCi/L
	Gross Beta Particle and Photon Radioactivity (8)	PRODUCT: Annually	50 pCi/L	50 pCi/L	50 pCi/L
	Radium 226/228 (combined)	SOURCE: Every 4 years PRODUCT: Annually	5 pCi/L	5 pCi/L	5 pCi/L
	Uranium	SOURCE: Every 4 years PRODUCT: Annually	0.030	0.030	0.030
<b>Water Properties</b>		ANNUALLY (Product and Source)	<b>IBWA SOQ</b>	<b>FDA SOQ</b>	<b>GUIDELINE</b>
	Color		5 Units	15 Units	5 Units
	Turbidity		0.5 NTU	5.0 NTU	0.5 NTU
	pH (9)		5-7/6.5-8.5	NA	6.5-8.5
	Odor		3 T.O.N.	3 T.O.N.	3 T.O.N.

- (8) If the gross beta particle activity exceeds 50 pCi/1, an analysis of the sample must be performed to identify the major radioactive constituents present. Compliance (with § 141.16) may be assumed without further analysis if the average annual concentration of gross beta particle activity is less than 50 pCi/1 and if the average annual concentrations of tritium and strontium-90 are less than those listed in table A, *Provided*, That if both radionuclides are present the sum of their annual dose equivalents to bone marrow shall not exceed 4 millirem/year. Consult with your testing laboratory for more information.
- (9) The Code of Practice guideline for pH in purified water is 5.0-7.0 (see Appendix B for definition and requirements for purified water). The guideline for source water and other product waters is 6.5-8.5. NOTE: This guideline is not enforceable.

**All SOQs, MCLs, SMCLs, and guidelines in mg/L(ppm) except as noted. Refer to your state bottled water regulations to determine if additional testing is required.**

**Appendix A**  
**2016 MONITORING MATRIX**  
**IBWA Code of Practice Monitoring Requirements**  
*FDA D/DBP Rule Monitoring Requirements*

***Public Water System (PWS) Source Water***

If current PWS D/DBP data is available, no source water analysis is required.

If current PWS D/DBP data is NOT available, ANNUAL testing for the following is required:

- Disinfectants: Chlorine, Chloramine, Chlorine dioxide
- Disinfection Byproducts: Bromate, Chlorite, Haloacetic acids (HAA5), and Total Trihalomethanes (TTHMs)

***Natural Water Sources***

If no disinfection is applied at the source, including use in bulk water hauling, no source water analysis is required.

If disinfection is applied at the source, including use in bulk water hauling, ANNUAL testing for the following is required:

- The residual disinfectant used (chlorine, chloramine, or chlorine dioxide)
- Ozone: Bromate, Haloacetic acids (HAA5), Total Trihalomethanes (TTHMs)
- Chlorine-based disinfectants (chlorine, chloramine, or chlorine dioxide): Haloacetic acids (HAA5) and Total Trihalomethanes (TTHMs)

***ALL FINISHED PRODUCTS***

ANNUAL testing is required for ALL of the following in each finished product type:

- Chlorine
- Chloramine
- Chlorine dioxide
- Bromate
- Chlorite
- Haloacetic acids (HAA5)
- Total Trihalomethanes (TTHMs)

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#### *FDA Requirements for Fluoride in Bottled Water*

Bottled water packaged in the United States to which no fluoride is added shall not contain fluoride in excess of the levels in Table 1 and these levels shall be based on the annual average of maximum daily air temperatures at the location where the bottled water is sold at retail.

**TABLE 1**

*Annual average of maximum daily air temperatures ( °F)	Fluoride concentration in milligrams per liter
53.7 and below .....	2.4
53.8–58.3 .....	2.2
58.4–63.8 .....	2.0
63.9–70.6 .....	1.8
70.7–79.2 .....	1.6
79.3–90.5 .....	1.4

Imported bottled water to which no fluoride is added shall not contain fluoride in excess of 1.4 milligrams per liter.

Bottled water packaged in the United States to which fluoride is added shall not contain fluoride in excess of levels in Table 2 and these levels shall be based on the annual average of maximum daily air temperatures at the location where the bottled water is sold at retail.

**TABLE 2**

*Annual average of maximum daily air temperatures ( °F)	Fluoride concentration in milligrams per liter
53.7 and below . .....	1.7
53.8–58.3 .....	1.5
58.4–63.8 .....	1.3
63.9–70.6 .....	1.2
70.7–79.2 .....	1.0
79.3–90.5 .....	0.8

Imported bottled water to which fluoride is added shall not contain fluoride in excess of 0.8 milligram per liter.