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40 CFR Ch. I (7–1–12 Edition)

monitoring shall be conducted pursuant to a schedule specified by the State and concurred in by the Administrator of the U.S. Environmental Protection Agency.

APPENDIX A TO SUBPART C OF PART 141—ALTERNATIVE TESTING METHODS APPROVED FOR ANALYSES UNDER THE SAFE DRINKING WATER ACT

Only the editions stated in the following table are approved.

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.21(f)(3)

Organism	Methodology	SM 21st edition ¹	Other
Total Coliforms	Total Coliform Fermentation Technique.	9221 A, B	Modified Colitag™ ¹³
	Total Coliform Membrane Filter Technique.	9222 A, B, C	
	Presence-Absence (P–A) Coliform Test.	9221 D	
	ONPG–MUG Test	9223	
	Colitag™		

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.21(f)(6)

Organism	Methodology	SM 20th edition ⁶	SM 21st edition ¹	SM on-line ³	Other
<i>E. coli</i>	ONPG–MUG Test	9223 B	9223 B	9223 B–97	Modified Colitag™ ¹³

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.23(k)(1)

Contaminant	Methodology	EPA method	SM 21st edition ¹	SM online ³	ASTM ⁴	Other
Alkalinity	Titrimetric .....	.....	2320 B		D 1067–06 B	
Antimony	Hydride–Atomic Absorption .....	.....			D 3697–07	
	Atomic Absorption; Furnace .....	.....	3113 B	3113 B–04		
Arsenic	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES).	200.5, Revision 4.2. ²				
	Atomic Absorption; Furnace .....	.....	3113 B	3113 B–04	D 2972–08 C	
	Hydride Atomic Absorption .....	.....	3114 B	3114 B–09	D 2972–08 B	
	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES).	200.5, Revision 4.2. ²				
Barium	Inductively Coupled Plasma .....	.....	3120 B			
	Atomic Absorption; Direct .....	.....	3111 D			
	Atomic Absorption; Furnace .....	.....	3113 B	3113 B–04		
	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES).	200.5, Revision 4.2. ²				
Beryllium	Inductively Coupled Plasma .....	.....	3120 B			
	Atomic Absorption; Furnace .....	.....	3113 B	3113 B–04	D 3645–08 B	
	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES).	200.5, Revision 4.2. ²				
Cadmium	Atomic Absorption; Furnace .....	.....	3113 B	3113 B–04		
	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES).	200.5, Revision 4.2. ²				
Calcium	EDTA titrimetric .....	.....	3500–Ca B		D 511–09 A	
	Atomic Absorption; Direct Aspiration.	.....	3111 B		D 511–09 B	
	Inductively Coupled Plasma .....	.....	3120 B			
	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES).	200.5, Revision 4.2. ²				
Chromium	Ion Chromatography .....	.....			D 6919–09	
	Inductively Coupled Plasma	3120 B			
	Atomic Absorption; Furnace	3113 B	3113 B–04		

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ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.23(k)(1)—Continued

Contaminant	Methodology	EPA method	SM 21st edition ¹	SM online ³	ASTM ⁴	Other
Copper	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES).	200.5, Revision 4.2. ²				
	Atomic Absorption; Furnace .....	.....	3113 B	3113 B-04	D 1688-07 C D 1688-07 A	
	Atomic Absorption; Direct Aspiration.	.....	3111 B			
Inductively Coupled Plasma .....	.....	3120 B				
Conductivity ...	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES).	200.5, Revision 4.2. ²				
	Conductance .....	.....	2510 B			
Cyanide	Manual Distillation followed by .. Spectrophotometric, Amenable.	.....	4500-CN ⁻ G		D2036-06 A D2036-06 B	
	Spectrophotometric Manual ... Selective Electrode .....	.....	4500-CN ⁻ E		D2036-06 A	
	Gas Chromatography/Mass Spectrometry Headspace.	.....	4500-CN ⁻ F			ME355.01 ⁷
	Ion Chromatography .....	.....	4110 B			
Fluoride	Manual Distillation; Colorimetric SPADNS.	.....	4500-F ⁻ B, D			
	Manual Electrode .....	.....	4500-F ⁻ C		D 1179-04, 10 B	
	Automated Alizarin Arsenite-Free Colorimetric SPADNS.	.....	4500-F ⁻ E			Hach SPADNS 2 Method 10225 ²²
Lead	Atomic Absorption; Furnace .....	.....	3113 B	3113 B-04	D 3559-08 D	
	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES).	200.5, Revision 4.2. ²				
Magnesium ...	Atomic Absorption; Direct .....	.....	3111 B		D 511-09 B	
	Inductively Coupled Plasma .....	.....	3120 B			
	Complexation Titrimetric Methods.	.....	3500-Mg B		D 511-09 A	
Mercury	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES).	200.5, Revision 4.2. ²				
	Ion Chromatography .....	.....	4110 B		D 6919-09	
Manual, Cold Vapor	Manual, Cold Vapor .....	.....	3112 B	3112 B-09		
	Inductively Coupled Plasma .....	.....	3120 B			
Nickel	Atomic Absorption; Direct .....	.....	3111 B	3113 B-04		
	Atomic Absorption; Furnace .....	.....	3113 B			
Nitrate	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES).	200.5, Revision 4.2. ²				
	Ion Chromatography .....	.....	4110 B			
	Automated Cadmium Reduction	.....	4500-NO ₃ -F			
	Manual Cadmium Reduction ....	.....	4500-NO ₃ -E			
	Ion Selective Electrode .....	.....	4500-NO ₃ -D			
Reduction/Colorimetric .....	.....	.....				Systea Easy (1-Reagent). ⁸
	Colorimetric; Direct .....	.....				Hach TNTplus™ 835/836 Method 10206. ²³
Nitrite	Ion Chromatography .....	.....	4110 B			
	Automated Cadmium Reduction	.....	4500-NO ₃ -F			
	Manual Cadmium Reduction ....	.....	4500-NO ₃ -E			
	Spectrophotometric .....	.....	4500-NO ₂ -B			
Reduction/Colorimetric .....	.....					Systea Easy (1-Reagent) ⁸
Orthophosphate.	Ion Chromatography .....	.....	4110 B			

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.23(k)(1)—Continued

Contaminant	Methodology	EPA method	SM 21st edition ¹	SM online ³	ASTM ⁴	Other
pH	Colorimetric, ascorbic acid, single reagent.		4500–P E	4500–P E–99		
	Colorimetric, Automated, Ascorbic Acid.		4500–P F	4500–P F–99		
	Electrometric		4500–H ⁺ B			
Selenium	Hydride—Atomic Absorption		3114 B	3114 B–09	D 3859–08 A	
	Atomic Absorption; Furnace		3113 B	3113 B–04	D 3859–08 B	
Silica	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES).	200.5, Revision 4.2. ²				
	Colorimetric				D859–05, 10	
	Molybdosilicate		4500–SiO ₂ C			
	Heteropoly blue		4500–SiO ₂ D			
Sodium	Automated for Molybdate-reactive Silica.		4500–SiO ₂ E			
	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES).	200.5, Revision 4.2. ²				
	Inductively Coupled Plasma		3120 B			
Temperature ..	Atomic Absorption; Direct Aspiration.		3111 B			
	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES).	200.5, Revision 4.2. ²				
	Ion Chromatography				D 6919–09	
	Thermometric		2550			

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.24(e)(1)

Contaminant	Methodology	EPA method	SM 21st edition ¹	SM online ³
Benzene	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3 ⁹		
Carbon tetrachloride	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
Chlorobenzene	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
1,2-Dichlorobenzene	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
1,4-Dichlorobenzene	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
1,2-Dichloroethane ..	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
cis-Dichloroethylene	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
Trans-Dichloroethylene.	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
Dichloromethane	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
1,2-Dichloropropane	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
Ethylbenzene	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
Styrene	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
Tetrachloroethylene	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
1,1,1-Trichloroethane.	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
Trichloroethylene	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
Toluene	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
1,2,4-Trichlorobenzene.	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
1,1-Dichloroethylene	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		
1,1,2-Trichloroethane	Purge & Trap/Gas Chromatography/ Mass Spectrometry.	524.3		

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ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.24(e)(1)—Continued

Contaminant	Methodology	EPA method	SM 21st edition ¹	SM online ³
Vinyl chloride	Purge & Trap/Gas Chromatography/Mass Spectrometry.	524.3		
Xylenes (total)	Purge & Trap/Gas Chromatography/Mass Spectrometry.	524.3		
2,4-D	Gas Chromatography/Electron Capture Detection (GC/ECD).		6640 B	6640 B-01
2,4,5-TP (Silvex)	Gas Chromatography/Electron Capture Detection (GC/ECD).		6640 B	6640 B-01
Alachlor	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Atrazine	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴ , 523 ²⁶		
	Liquid Chromatography Electrospray Ionization Tandem Mass Spectrometry (LC/ESI-MS/MS).	536 ²⁵		
Benzo(a)pyrene	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Carbofuran	High-performance liquid chromatography (HPLC) with post-column derivatization and fluorescence detection.		6610 B	6610 B-04
Chlordane	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Dalapon	Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry (IC-ESI-MS/MS).	557 ¹⁴		
	Gas Chromatography/Electron Capture Detection (GC/ECD).		6640 B	6640 B-01
Di(2-ethylhexyl)adipate.	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Di(2-ethylhexyl)phthalate.	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Dibromochloropropane (DBCP).	Purge & Trap/Gas Chromatography/Mass Spectrometry.	524.3		
Dinoseb	Gas Chromatography/Electron Capture Detection (GC/ECD).		6640 B	6640 B-01
Endrin	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Ethyl dibromide (EDB).	Purge & Trap/Gas Chromatography/Mass Spectrometry.	524.3		
Glyphosate	High-Performance Liquid Chromatography (HPLC) with Post-Column Derivatization and Fluorescence Detection.		6651 B	6651 B-00
Heptachlor	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Heptachlor Epoxide	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Hexachlorobenzene	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Hexachlorocyclopentadiene.	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Lindane	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Methoxychlor	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.24(e)(1)—Continued

Contaminant	Methodology	EPA method	SM 21st edition ¹	SM online ³
Oxamyl	High-performance liquid chromatography (HPLC) with post-column derivatization and fluorescence detection.		6610 B	6610 B-04
PCBs (as Aroclors)	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Pentachlorophenol ..	Gas Chromatography/Electron Capture Detection (GC/ECD).		6640 B	6640 B-01
	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Picloram	Gas Chromatography/Electron Capture Detection (GC/ECD).		6640 B	6640 B-01
Simazine	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴ , 523 ²⁶		
	Liquid Chromatography Electrospray Ionization Tandem Mass Spectrometry (LC/ESI-MS/MS).	536 ²⁵		
Toxaphene	Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS).	525.3 ²⁴		
Total Trihalomethanes.	Purge & Trap/Gas Chromatography/Mass Spectrometry.	524.3		

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.25(a)

Contaminant	Methodology	SM 21st edition ¹	ASTM ⁴
Naturally Occurring:			
Gross alpha and beta	Evaporation	7110 B	
Gross alpha	Coprecipitation	7110 C	
Radium 226	Radon emanation	7500-Ra C	D3454-05
	Radiochemical	7500-Ra B	D2460-07
Radium 228	Radiochemical	7500-Ra D	
Uranium	Radiochemical	7500-U B	
	ICP-MS	3125	D5673-05, 10
	Alpha spectrometry	7500-U C	D3972-09
	Laser Phosphorimetry		D5174-07
	Alpha Liquid Scintillation Spectrometry ..		D6239-09
Man-Made:			
Radioactive Cesium	Radiochemical	7500-Cs B	
	Gamma Ray Spectrometry	7120	D3649-06
Radioactive Iodine	Radiochemical	7500-I B	D3649-06
	.....	7500-I C	
	.....	7500-I D	
	Gamma Ray Spectrometry	7120	D4785-08
Radioactive Strontium 89, 90 ...	Radiochemical	7500-Sr B	
Tritium	Liquid Scintillation	7500- ³ H B	D4107-08
Gamma Emitters	Gamma Ray Spectrometry	7120	D3649-06
	.....	7500-Cs B	D4785-08
	.....	7500-I B	

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.74(a)(1)

Organism	Methodology	SM 21st edition ¹	Other
Total Coliform	Total Coliform Fermentation Technique	9221 A, B, C	
	Total Coliform Membrane Filter Technique	9222 A, B, C	
	ONPG-MUG Test	9223	
Fecal Coliforms	Fecal Coliform Procedure	9221 E	
	Fecal Coliform Filter Procedure	9222 D	
Heterotrophic bacteria.	Pour Plate Method	9215 B	
Turbidity	Nephelometric Method	2130 B	
	Laser Nephelometry (on-line)		Mitchell M5271 ¹⁰

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ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.74(a)(1)—Continued

Organism	Methodology	SM 21st edition ¹	Other
	LED Nephelometry (on-line)		Mitchell M5331 ¹¹
	LED Nephelometry (on-line)		AMI Turbiwell ¹⁵
	LED Nephelometry (portable)		Orion AQ4500 ¹²

ALTERNATIVE TESTING METHODS FOR DISINFECTANT RESIDUALS LISTED AT 40 CFR 141.74(a)(2)

Residual	Methodology	SM 21st Edition ¹	ASTM ⁴	Other
Free Chlorine	Amperometric Titration	4500–Cl D	D 1253–08.	EPA 334.0. ¹⁶ ChloroSense. ¹⁷
	DPD Ferrous Titrimetric	4500–Cl F		
	DPD Colorimetric	4500–Cl G		
	Syringaldazine (FACTS)	4500–Cl H		
	On-line Chlorine Analyzer .....	.....	
Total Chlorine	Amperometric Sensor	D 1253–08.	EPA 334.0. ¹⁶ ChloroSense. ¹⁷
	Amperometric Titration	4500–Cl D		
	Amperometric Titration (Low level measurement)	4500–Cl E		
	DPD Ferrous Titrimetric	4500–Cl F		
	DPD Colorimetric	4500–Cl G		
Chlorine Dioxide	Iodometric Electrode	4500–Cl I	EPA 334.0. ¹⁶ ChloroSense. ¹⁷
	On-line Chlorine Analyzer .....	.....	
	Amperometric Sensor .....	.....	
Ozone	Amperometric Titration	4500–ClO ₂ C
	Amperometric Titration	4500–ClO ₂ E		
	Indigo Method	4500–O ₃ B		

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.131(b)(1)

Contaminant	Methodology	EPA Method	ASTM ⁴	SM 21st Edition ¹
TTHM	P&T/GC/MS	⁹ 524.3		
HAA5	LLE (diazomethane)/GC/ECD			6251 B.
	Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry (IC–ESI–MS/MS)	¹⁴ 557		
Bromate	Two-Dimensional Ion Chromatography (IC)	¹⁸ 302.0		
	Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry (IC–ESI–MS/MS)	¹⁴ 557		
	Chemically Suppressed Ion Chromatography		D 6581–08 A.	
Chlorite	Electrolytically Suppressed Ion Chromatography		D 6581–08 B.	
	Chemically Suppressed Ion Chromatography		D 6581–08 A.	
Chlorite—daily monitoring as prescribed in 40 CFR 141.132(b)(2)(i)(A)..	Electrolytically Suppressed Ion Chromatography		D 6581–08 B.	
	Amperometric Titration			4500–ClO ₂ E.

ALTERNATIVE TESTING METHODS FOR DISINFECTANT RESIDUALS LISTED AT 40 CFR 141.131(c)(1)

Residual	Methodology	SM 21st Edition ¹	ASTM ⁴	Other
Free Chlorine	Amperometric Titration	4500–Cl D	D 1253–08	ChloroSense. ¹⁷ EPA 334.0. ¹⁶
	DPD Ferrous Titrimetric	4500–Cl F		
	DPD Colorimetric	4500–Cl G		
	Syringaldazine (FACTS)	4500–Cl H		
	Amperometric Sensor .....	.....	
Combined Chlorine	On-line Chlorine Analyzer	D 1253–08.
	Amperometric Titration	4500–Cl D		
Total Chlorine	DPD Ferrous Titrimetric	4500–Cl F	D 1253–08.
	DPD Colorimetric	4500–Cl G		
	Amperometric Titration	4500–Cl D		
Low level Amperometric Titration	4500–Cl E
	DPD Ferrous Titrimetric	4500–Cl F		

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**ALTERNATIVE TESTING METHODS FOR DISINFECTANT RESIDUALS LISTED AT 40 CFR 141.131(c)(1)—
Continued**

Residual	Methodology	SM 21st Edition ¹	ASTM ⁴	Other
Chlorine Dioxide	DPD Colorimetric	4500-CI G.		ChloroSense. ¹⁷ EPA 334.0. ¹⁶
	Iodometric Electrode	4500-CI I.		
	Amperometric Sensor			
	On-line Chlorine Analyzer			
	Amperometric Method II	4500-CIO ₂ E.		

**ALTERNATIVE TESTING METHODS FOR DISINFECTANT RESIDUALS LISTED AT 40 CFR 141.131(c)(2), IF
APPROVED BY THE STATE**

Residual	Methodology	Method
Free Chlorine	Test Strips	Method D99-003 ⁵

ALTERNATIVE TESTING METHODS FOR PARAMETERS LISTED AT 40 CFR 141.131(d)

Parameter	Methodology	SM 21st edition ¹	EPA
Total Organic Carbon (TOC)	High Temperature Combustion	5310 B	415.3, Rev 1.2 ¹⁹
	Persulfate-Ultraviolet or Heated Persulfate Oxidation.	5310 C	415.3, Rev 1.2
Specific Ultraviolet Absorbance (SUVA).	Wet Oxidation	5310 D	415.3, Rev 1.2
	Calculation using DOC and UV ₂₅₄ data.		415.3, Rev 1.2
Dissolved Organic Carbon (DOC).	High Temperature Combustion	5310 B	415.3, Rev 1.2
	Persulfate-Ultraviolet or Heated Persulfate Oxidation.	5310 C	415.3, Rev 1.2
Ultraviolet absorption at 254 nm (UV ₂₅₄).	Wet Oxidation	5310 D	415.3, Rev 1.2
	Spectrophotometry	5910 B	415.3, Rev 1.2

**ALTERNATIVE TESTING METHODS WITH MRL > 0.0010 MG/L FOR MONITORING LISTED AT 40 CFR
141.132(b)(3)(ii)(B)**

Contaminant	Methodology	EPA method
Bromate	Two-Dimensional Ion Chromatography (IC) Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry (IC-ESI-MS/MS).	302.0 ¹⁸ 557 ¹⁴

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.402(c)(2)

Organism	Methodology	SM 20th edition ⁶	SM 21st edition ¹	SM online ³	Other
E. coli	Colilert		9223 B	9223 B-97.	ReadyCult [®] , ²⁰ Modified Colitag [™] , ¹³ Chromocult [®] , ²¹
	Colisure		9223 B	9223 B-97.	
	Colilert-18	9223 B	9223 B	9223 B-97.	
	ReadyCult [®]				
	Colitag				
Enterococci	Chromocult [®]				
	Multiple-Tube Technique.			9230 B-04.	

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.704(a)

Organism	Methodology	EPA Method
Cryptosporidium	Filtration/Immunomagnetic Separation/Immunofluorescence Assay Microscopy.	1623.1 ²⁷

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ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.704(b)

Organism	Methodology	SM 20th edition ⁶
<i>E. coli</i>	Membrane Filtration, Two Step	9222 D/9222 G

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 143.4(b)

Contaminant	Methodology	EPA method	ASTM ⁴	SM 21st edition ¹	SM online ³
Aluminum	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES).	200.5, Revision 4.2. ²	D 512-04 B	3111 D 3113 B 3120 B	3113 B-04
	Atomic Absorption; Direct				
	Atomic Absorption; Furnace Inductively Coupled Plasma				
Chloride ..	Silver Nitrate Titration	200.5, Revision 4.2. ²	D 512-04 B	4500-Cl ⁻ B 4110 B 4500-Cl ⁻ D	3113 B-04
	Ion Chromatography				
	Potentiometric Titration				
Color	Visual Comparison	200.5, Revision 4.2. ²	D 512-04 B	2120 B 5540 C	3113 B-04
Foaming Agents.	Methylene Blue Active Substances (MBAS).				
Iron	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES).				
Man-ganese.	Atomic Absorption; Direct	200.5, Revision 4.2. ²	D 512-04 B	3111 B 3113 B 3120 B	3113 B-04
	Atomic Absorption; Furnace Inductively Coupled Plasma				
	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES).				
Odor	Atomic Absorption; Direct	200.5, Revision 4.2. ²	D 512-04 B	3111 B 3113 B 3120 B	3113 B-04
	Atomic Absorption; Furnace Inductively Coupled Plasma				
	Threshold Odor Test				
Silver	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES).	200.5, Revision 4.2. ²	D 512-04 B	3111 B 3113 B 3120 B	3113 B-04
	Atomic Absorption; Direct				
	Atomic Absorption; Furnace Inductively Coupled Plasma				
Sulfate	Ion Chromatography	200.5, Revision 4.2. ²	D 516-07	4110 B 4500-SO ₄ ⁻² C 4500-SO ₄ ⁻² D 4500-SO ₄ ⁻² E 4500-SO ₄ ⁻² F	4500-SO ₄ ⁻² C-97 4500-SO ₄ ⁻² D-97 4500-SO ₄ ⁻² E-97 4500-SO ₄ ⁻² F-97
	Gravimetric with ignition of residue.				
	Gravimetric with drying of residue.				
	Turbidimetric method				
	Automated methylthymol blue method.				
Total Dissolved Solids.	Total Dissolved Solids Dried at 180 deg C.	200.5, Revision 4.2.	D 516-07	2540 C	3113 B-04
Zinc	Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES).				
	Atomic Absorption; Direct Aspiration. Inductively Coupled Plasma				

[74 FR 38353, Aug. 3, 2009, as amended at 74 FR 57914, Nov. 10, 2009; 74 FR 63069, Dec. 2, 2009; 75 FR 32299, June 8, 2010; 76 FR 37018, June 24, 2011; 77 FR 38527, June 28, 2012]

¹Standard Methods for the Examination of Water and Wastewater, 21st edition (2005). Available from American Public Health Association, 800 I Street, NW., Washington, DC 20001-3710.

²EPA Method 200.5, Revision 4.2. “Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry.” 2003. EPA/600/R-06/115. (Available at <http://www.epa.gov/nerlcwww/ordmeth.htm>.)

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