

Solutions for U.S. EPA drinking water contaminant analysis

The Thermo Scientific™ portfolio offers the most complete solutions for the analysis of anions, cations, metals, and organic contaminants. These contaminants affect water quality in many ways, including taste, toxicity, and odor. Knowledge of these contaminants helps you to monitor your water process so that you can understand source contamination and treat water in the most economical way possible. Dedicated sales personnel will help guide you through our entire product portfolio to find the right solution for process and regulatory compliance monitoring. All applications and products are backed by comprehensive worldwide support. Our extended portfolio of sample preparation, analysis, and integrated data handling solutions make us the perfect partner for any environmental laboratory.



Metal Contaminants	MCL* (mg/L)	Techniques	EPA Methods	Application Notes
Aluminum**	0.05 to 0.2	AA, ICP-OES, ICP-MS	200.7, 8, 9	AN43154, AN43157, AN43323, AN40689
Antimony	0.006	AA, ICP-MS	200.8, 9	AN43323, AN40689
Arsenic	0.01	AA, ICP-MS	200.8, 9	AN43323, AN40689, AN40851
Barium	2	ICP-OES, ICP-MS	200.7, 8	AN43154, AN43157, AN43323
Beryllium	0.004	AA, ICP-OES, ICP-MS	200.7, 8, 9	AN43154, AN43157, AN43323, AN40689
Cadmium	0.005	AA, ICP-OES, ICP-MS	200.7, 8, 9	AN43154, AN43157, AN43323, AN40689
Chromium	0.1	AA, ICP-OES, ICP-MS	200.7, 8, 9	AN43154, AN43157, AN43323, AN40689
Copper	1.3***	AA, ICP-OES, ICP-MS	200.7, 8, 9	AN43154, AN43157, AN43323, AN40689
Copper**	1.0			
Iron**	0.3	AA, ICP-OES	200.7, 9	AN43154, AN43157, AN40689
Lead	0.015***	AA, ICP-MS	200.8, 9	AN43323, AN40689, AN40849
Manganese**	0.05	AA, ICP-OES, ICP-MS	200.7, 8, 9	AN43154, AN43157, AN43323, AN40689
Mercury	0.002	ICP-MS, CVAA	200.8, 245.1, 245.2	AN43323
Selenium	0.05	AA, ICP-MS	200.8, 9	AN43323, AN40689
Silver**	0.1	AA, ICP-OES, ICP-MS	200.7, 8, 9	AN43154, AN43157, AN43323, AN40689
Thallium	0.002	AA, ICP-MS	200.8, 9	AN43323, AN40689
Uranium****	0.03	ICP-MS	200.8	AN43323
Zinc**	5	ICP-OES, ICP-MS	200.7, 200.8	AN43154, AN43157, AN43323

Metals identification

We offer a full range of trace elemental analysis solutions, including atomic absorption (AA), inductively coupled plasma—optical emission spectrometry (ICP-OES), and inductively coupled plasma—mass spectrometry (ICP-MS) for accurate, effortless identification of trace level elements. Environmental applications require instruments that can handle high sample throughput and demanding detection limits. Our range of atomic spectroscopy analyzers are designed specifically to enable laboratories to analyze more samples with greater accuracy, simplicity, and cost-effectiveness.

Ionic Contaminants	MCL (mg/L)	Techniques	EPA Methods	Application Notes
Bromate	0.01	IC, 2D IC, IC-ICP-MS, IC-MS/MS	300.1, 301, 317, 326, 302, 321.8, 557	AN149, AN168, AN171, AN184, AN187, AN208, AN630, AN43227
Chloride**	250	IC	300.0, 300.1	AN140, AN150, AN154, AU196
Chlorite	1	IC	300.0, 300.1, 317, 326	AN149, AN184, AN208
Cr(VI)—CA	0.01	IC	218.7	AU179, AN43098
Cyanide	0.2	Distillation spectrophotometric, ISE	335	AN55, AN107, AN149, AN161, AN173
Fluoride	4	IC	300.0, 300.1	AN140, AN150, AN154, AU196
Fluoride**	2			
Haloacetic acids (HAA5)	0.06	GC-MS/MS, IC-MS/MS	552.1, 552.2, 552.3, 557	AN454, AN590, AN630, WP70422
Nitrate-N	10	IC	300.0, 300.1	AN140, AN150, AN154, AU196
Nitrite-N	1	IC	300.0, 300.1	AN140, AN150, AN154, AU196
Perchlorate-CA	0.006	IC, 2D IC, IC-MS	314.0, 314.1, 314.2, 332	AU148, AN176, AN178, AN151
Sulfate**	250	IC	300.0, 300.1	AN140, AN150, AN154, AU196

* MCL=Maximum Contaminant Level in U.S. EPA National Primary Drinking Water Regulations (NPDWR)

** The contaminants are on the list of U.S. EPA National Secondary Drinking Water Regulations (NSDWR). The MCL for these contaminants are secondary MCLs

*** These contaminants have no MCLs, but Action Level (AL)

**** The contaminant is radioactive

Ion analysis

Ion chromatography (IC) is now a well-established and accepted technique for the monitoring of anions in environmental waters, such as surface, ground, and drinking water. Whether you have just a few samples or a heavy workload, whether your analytical task is simple or challenging, we have a solution to match your needs and budget. And with your IC purchase, you get more than just an instrument—you get a complete solution based on the modern technology and world-class support of the leader in IC for over 30 years.



U.S. EPA-Regulated contaminants in drinking water

Organic analysis

Our gas chromatography (GC) product portfolio delivers outstanding performance for routine analyses, while incorporating advanced capabilities and the flexibility to expand your lab's capabilities or increase sample throughput. From our latest innovations in GC-MS and GC-MS/MS to stand-alone GC, our portfolio of GC solutions delivers sensitivity and productivity for today's laboratory. These application notes provide the detailed information needed to implement the method in your laboratory. The Thermo Scientific™ Dionex™ AutoTrace™ 280 Solid-Phase Extraction (SPE) instrument automates liquid-liquid extractions for large-volume samples for organic analysis, to speed up a process that previously took hours.



Organic Contaminants	MCL (mg/L)	Techniques	EPA Methods	Application Notes
1,1,1-Trichloroethane	0.2	GC/ECD or MS	502, 524	AN10441
1,1,2-Trichloroethane	0.005	GC/ECD or MS	502, 524	AN10441
1,1-Dichloroethylene	0.007	GC/ECD or MS	502, 524	AN10441
1,2,4-Trichlorobenzene	0.07	GC/ECD or MS	502, 524	AN10441
1,2-Dibromo-3-Chloropropane (DBCP)	0.0002	GC/ECD or MS	504, 524, 551	AN10441
1,2-Dichloroethane	0.005	GC/ECD or MS	502, 524	AN10441
1,2-Dichloropropane	0.005	GC/ECD or MS	502, 524	AN10441
2,4,5-TP (Silvex)	0.05	GC/ECD or MS	515	AN10522, TN10431, AN819
2,4-D	0.07	GC/ECD or MS	515, 525, 555	AN10522, TN10431, AN819
Acrylamide	0.05 % dosed at 1 mg/L	GC-ECD, HPLC	505, 525, 551	AN10522, TN10431, AN819
Alachlor	0.002	GC/ECD or MS	505, 525, 551	AN1004, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
Atrazine	0.003	GC/ECD or MS	505, 525, 551	AN10522, TN10431, AN819
Benzene	0.005	GC/ECD or MS	502, 524	AN10441
Benzo(a)pyrene (PAHs)	0.0002	GCMS or LC-FL	525, 550	AN1025, AN10522, TN10431, AN819, AN52389
Carbofuran	0.04	LC/MS/MS or HPLC	531	AN378, AN391, LPN2436
Carbon Tetrachloride	0.005	GC/ECD or MS	505, 524, 551	AN10522, TN10431, AN819
Chlordane	0.002	GC/ECD or MS	508, 525	AN1004, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
Chlorobenzene	0.1	GC/ECD or MS	502, 524	AN10441
cis-1,2-Dichloroethylene	0.07	GC/ECD or MS	502, 524	AN10441
Dalapon	0.2	GC/ECD or MS	515, 552, 557	AN1004, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
Di(2-ethylhexyl) Adipate	0.4	GC/ECD or MS	525	AN10522, TN10431, AN819
Di(2-ethylhexyl) Phthalate	0.006	GC/ECD or MS	525	AN10522, TN10431, AN819
Dichloromethane	0.005	GC/ECD or MS	502, 524	AN10441
Dinoseb	0.007	GC/ECD or MS	515, 555	AN10522, TN10431, AN819
Dioxin (2,3,7,8-TCDD)	0.00000003	GC-MS/MS to screen GC/HRMS to confirm	1613	AN10336, AN30174
Diquat	0.02	LC/UV	549.2	AB114, AN274, AN1051, AN70051
Endothall	0.1	GC-FID or MS	548.1	AN263, AN70051
Endrin	0.002	GC/ECD or MS	505, 508, 525, 551	AN1004, AN10401, AN20708, AN10522, TN10431, AN819, AN52389

Organic Contaminants	MCL (mg/L)	Techniques	EPA Methods	Application Notes
Ethylbenzene	0.7	GC/ECD or MS	502, 524	AN10441
Ethylene Dibromide	0.00005	GC/ECD or MS	504, 551	AN10441
Glyphosate	0.7	GC/ECD or MS	547	AN109, AN491, AN70051
Heptachlor	0.0004	GC/ECD or MS	508, 525, 551	AN1004, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
Heptachlor Epoxide	0.0002	GC/ECD or MS	508, 525, 551	AN1004, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
Hexachlorobenzene	0.001	GC/ECD or MS	508, 525, 551	AN1004, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
Hexachlorocyclopentadiene	0.05	GC/ECD or MS	508, 515, 525	AN10522, TN10431, AN819
Lindane	0.0002	GC/ECD or MS	508, 515, 525	AN1004, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
Methoxychlor	0.04	GC/ECD or MS	508, 515, 525	AN1004, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
o-Dichlorobenzene	0.6	GC/ECD or MS	502, 524	AN10441
Oxamyl (Vydate)	0.2	GC/ECD or MS	508, 525, 531	AN10522, TN10431, AN819
p-Dichlorobenzene	0.075	GC/ECD or MS	502, 524	AN10441
Pentachlorophenol	0.001	GC/ECD or MS	515, 525, 555	AN20737, AN10522, TN10431, AN819
Picloram	0.5	GC/ECD or MS	515, 525, 555	AN10522, TN10431, AN819
Polychlorinated Biphenyls (PCBs)	0.0005	GC/ECD or MS	508, 525	AN1025, AN10522, TN10431, AN819, AN52389
Simazine	0.004	GC/ECD or MS LC/MS/MS	515, 525	AN10522, TN10431, AN819, AN437
Styrene	0.1	GC/ECD or MS	502, 524	AN10173, AN51900
Tetrachloroethylene	0.005	GC/ECD or MS	515, 525	AN10522, TN10431, AN819
Toluene	1	GC/ECD or MS	502, 524	AN10441
Trihalomethanes (THMs)	0.08	GC-ECD or MS	502, 524, 551	AN10441
Toxaphene	0.003	GC/ECD or MS	505, 508, 525	AN1004, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
trans-1,2-Dichloroethylene	0.1	GC/ECD or MS	502, 524	AN10441
Trichloroethylene	0.005	GC/ECD or MS	502, 524	AN10441
Vinyl Chloride	0.002	GC/ECD or MS	502, 524	AN10441
Xylenes (Total)	10	GC/ECD or MS	502, 524	AN10441

For product specifications, application notes, and more, please visit thermofisher.com or email us at analyze@thermofisher.com

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