Solutions for World Health Organization (WHO) Drinking Water Contaminant Analysis

Thermo Scientific's portfolio offers the most complete solution for the analysis of anions, cations, metals, and organic contaminants proscribed by the World Health Organization (WHO) safe drinking water guidelines. These contaminants affect water quality in many ways, including taste, toxicity, and odor. Knowledge of these contaminants is essential for proper monitoring of water processes and understanding source contamination for the treatment of 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 analytical techniques. All applications and products are backed by comprehensive worldwide support. Our extended portfolio of sample preparation, analysis, and integrated data handling solutions make Thermo Scientific the perfect partner for any environmental laboratory.

Metals Contaminants	Guideline (mg/L)	Techniques	Application Notes
Antimony	0.02	AA, ICP-MS	AN43132, AN43323, AN40689
Arsenic	0.01	AA, ICP-MS	AN43323, AN40689, AN40851
Barium	0.7	AA, ICP-OES	AN43154, AN43157, AN43323
Boron	2.4	ICP-OES	AN43154, AN43157
Cadmium	0.003	AA, ICP-OES, ICP-MS	AN43154, AN43157, AN43323, AN40689
Chromium	0.05 (P)	AA, ICP-OES, ICP-MS	AN43154, AN43157, AN43323, AN40689
Copper	2	AA, ICP-OES, ICP-MS	AN43154, AN43157, AN43323, AN40689
Lead	0.01 (A,T)	AA, ICP-MS	AN43323, AN40689, AN40849
Mercury	0.006	ICP-MS, CVAA	AN43323
Nickel	0.07	AA, ICP-OES, ICP-MS	AN43154, AN43157, AN43323, AN40689
Selenium	0.04 (P)	AA, ICP-MS	AN43323, AN40689
Uranium	0.03 (P)	ICP-MS	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 and easy 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 process more samples with market-leading accuracy, simplicity, and cost-effectiveness.

Ion Contaminants	Guideline (mg/L)	Techniques	Application Notes
Bromate	0.01 (A, T)	IC, 2D IC, IC-ICP-MS, IC-MS/MS	AN149, AN168, AN171, AN184, AN187, AN208, AN630, AN43227
Chlorate	0.7 (D)	IC	AN149, AN184, AN208
Chlorite	0.7 (D)	IC	AN149, AN184, AN208
Fluoride	1.5	IC	AN140, AN150, AN154, AU196
Nitrate as NO3	50	IC	AN140, AN150, AN154, AU196
Nitrite as NO2	3	IC	AN140, AN150, AN154, AU196

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 Thermo Scientific has been known for as the leader in IC for over 30 years.

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WHO Guidelines for 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. The application notes listed here 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, significantly shortening your processing time from X hours to as little as X hours (or minutes).

Organic Contaminants	Guideline (mg/L)	Techniques	Application Note
1,2-Dibromo-3- chloropropane	0.001	GC/ECD or MS	AN10441
1,2-Dibromoethane	0.0004	GC/ECD or MS	AN10441
1,2-Dichlorobenzene	1 (C)	GC/ECD or MS	AN10441
1,4-Dichlorobenzene	0.3 (C)	GC/ECD or MS	AN10441
1,2-Dichloroethane	0.03	GC/ECD or MS	AN10441
1,2-Dichloropropane	0.04 (P)	GC/ECD or MS	AN10441
1,3-Dichloropropene	0.02	GC/ECD or MS	AN10441
1,4-Dioxane	0.05	GC or MS	AN52295
2,4-D	0.03	GC/ECD or MS	AN10522, TN10431, AN819
2,4-DB	0.09	GC/ECD or MS	AN10522, TN10431, AN819
2,4,5-T	0.009	GC/ECD or MS	AN10522, TN10431, AN819
2,4,6-Trichlorophenol	0.2 (C)	GC/ECD or MS	AN10331
Acrylamide	0.0005	GC/ECD, HPLC	AN10522, TN10431, AN819
Alachlor	0.02	GC/ECD or MS	AN1004, AN10401, AN20708, AN10522, TN10431, AN819,AN52389
Aldicarb	0.01	HPLC, LC-MS/MS	AN378, LPN2436, AN391
Aldrin and dieldrin	0.00003	GC/ECD or MS	AN10522, TN10431, AN819
Atrazine and its chloro-striazine metabolites	0.1	GC/ECD or MS	AN10522, TN10431, AN819
Benzene	0.01	GC/ECD or MS	AN10441
Benzo[a]pyrene	0.0007	GC-MS or LC-FL	AN1025, AN10522, TN10431, AN819, AN52389
Bromodichloromethane	0.06	GC/ECD or MS	AN10441
Bromoform	0.1	GC/ECD or MS	AN10441
Carbofuran	0.007	LC-MS/MS or HPLC	AN378, LPN2436, AN391
Carbon tetrachloride	0.004	GC/ECD or MS	AN10522, TN10431, AN819
Chlordane	0.0002	GC/ECD or MS	AN1004, AN10401, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
Chloroform	0.3	GC/ECD or MS	AN10441
Chlorotoluron	0.03	HPLC, GC-MS	AN10522, TN10431, AN819
Chlorpyrifos	0.03	GC/ECD or MS	AN10522, TN10431, AN819
DDT and metabolites	0.001	GC/ECD or MS	AN10522, TN10431, AN819
Cyanazine	0.2	GC/ECD or MS	AN10522, TN10431, AN819
Dibromoacetonitrile	0.07	GC/ECD	AN10522, TN10431, AN819
Dibromochloromethane	0.1	GC/ECD or MS	AN10441, AN51899
Dichloroacetate	0.05	GC/ECD	AN10522, TN10431, AN819
Dichloroacetonitrile	0.02	GC/ECD	AN10522, TN10431, AN819
Dichloromethane	0.02	GC/ECD or MS	AN10441
Dichlorprop	0.1	GC/ECD or MS	AN10522, TN10431, AN819
Di(2-ethylhexyl)phthalate	0.008	GC/ECD or MS	AN10522, TN10431, AN819
Dimethoate	0.006	GC- MS	AN10522, TN10431, AN819
Edetic acid	0.6	potentiometric stripping analysis	
Endrin	0.0006	GC/ECD or MS	AN1004, AN10401, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
Epichlorohydrin	0.0004 (P)	GC-MS	AN10441
Ethylbenzene	0.3 (C)	GC/ECD or MS	AN10441
Fenoprop	0.009	GC/ECD or MS	AN10441
Hexachlorobutadiene	0.0006	GC-MS	AN10441
Hydroxyatrazine	0.2	GC/ECD or MS	AN10522, TN10431, AN819
Isoproturon	0.009	HPLC, LC-MS/MS	
Lindane	0.002	GC/ECD or MS	AN1004, AN10401, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
MCPA	0.002	GC or HPLC	AN10522, TN10431, AN819
Mecoprop	0.01	GC or HPLC	AN10522, TN10431, AN819
Methoxychlor	0.02	GC/ECD or MS	AN1004, AN10401, AN10401, AN20708, AN10522, TN10431, AN819, AN52389
Metolachlor	0.01	LC-MS/MS	AN1138
Microcystin-LR	0.001 (P)	LC-MS/MS	AN379, AN569
Molinate	0.006	GC-MS	AN10522, TN10431, AN819
Monochloramine	3	Spectrophotometer	
Monochloroacetate	0.02	GC or IC	AN630
Nitrilotriacetic acid	0.2	Spectrophotometry, GC-MS	
N-Nitrosodimethylamine	0.0001	GC-MS	AN10522, TN10431, AN819
Pendimethalin	0.02	GC	
Pentachlorophenol	0.009	GC/ECD or MS	AN20737, AN10522, TN10431, AN819
Simazine	0.002	GC/ECD or MS LC-MS/MS	AN10522, TN10431, AN819, AN437
Sodium dichloroisocyanurate	50 as sodium dichloroisocyanurate; 40 as cyanuric acid	HPLC, LC-MS/MS for decomposition product, cyanuric acid	
Styrene	0.02 (C)	GC/ECD or MS	AN10522, TN10431, AN819
Terbuthylazine	0.007	GC-MS	AN10522, TN10431, AN819
Tetrachloroethene	0.04	GC/ECD or MS	AN10522, TN10431, AN819
Toluene	0.7 (C)	GC/ECD or MS	AN10441
Trichloroacetate	0.2	GC, IC	AN630
Trichloroethene	0.02 (P)	GC/ECD	AN10441
Trifluralin	0.02	GC-MS	AN10522, TN10431, AN819
Trihalomethanes	The sum of the ratio of the concentration of each to its respective guideline value should not exceed 1	GC/ECD or MS	AN10441
Vinyl chloride	0.0003	GC/ECD or MS	AN10441
Xylenes	0.5 (C)	GC/ECD or MS	AN10441

Notes:
All the contaminants are from Guideline for Drinking-water Quality, Fourth Edition.
A: Provisional guideline value (calculated guideline value is less than quantifiable level);
C: If the concentrations of the substance < or = the health-based guideline value, water appearance, taste or odor can be affected;
D: Provisional guideline value (disinfection is likely to raise level exceeding the guideline value);
P: Provisional guideline value due to uncertainties in the health database;
T: Provisional guideline value (calculated guideline value is lower than the level achieved through practical treatment methods or source protection)

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

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