

ERM) Environmental Laboratories

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Sample Handling Guide

Analysis	Method	Water/Liquid				Soil/Solid			
		Container	Quantity	Preservation ^{Note 11}	Hold Time	Container	Quantity	Preservation ^{Note 11}	Hold Time
Bacteria				Based on 40 CFR Part 136 Table II - 2010				Based on SW-846 Rev 4 - February 2007	
Coliforms, Total (MF)	SM 9222B	Sterile P	200mL	Cool <10°C; 0.0008% Sodium Thiosulfate	6 Hrs				
Coliforms, Total (Presence/Absence)	SM 9221D	Sterile P	200mL	Cool <10°C; 0.0008% Sodium Thiosulfate	6 Hrs				
Coliforms, Fecal (MF)	SM 9222D	Sterile P	200mL	Cool <10°C; 0.0008% Sodium Thiosulfate	6 Hrs				
Coliforms, Fecal (MPN)	SM 9221E	Sterile P	200mL	Cool <10°C; 0.0008% Sodium Thiosulfate	6 Hrs	Sterile P	200g	Cool <10°C	24 Hrs
Escherichia coli (E. coli)	Collert	Sterile P	200mL	Cool <10°C; 0.0008% Sodium Thiosulfate	6 Hrs				
Enterococci	Entero-lerf	Sterile P	200mL	Cool <10°C; 0.0008% Sodium Thiosulfate	6 Hrs				
Heterotrophic Plate Count - (Method Criteria)	SM 9215B	Sterile P	200mL	Cool <10°C; 0.0008% Sodium Thiosulfate	24 Hrs	Sterile P	200g	Cool <10°C	24 Hrs
Inorganic Tests									
Acidity	SM 2310B4(a)	P	500mL	Cool ≤6°C	14 D				
Alkalinity	SM 2320B	P	500mL	Cool ≤6°C	14 D				
Ammonia	SM 4500 NH ₃ B & D	P	500mL	Cool ≤6°C; H ₂ SO ₄ to pH<2	28 D				
BOD/CBOD	SM 5210B	P	1L each	Cool ≤6°C	48 Hrs				
Bromide	300/9056A	P	500mL	Cool ≤6°C	28 D	4 Oz G	100g	Cool ≤6°C	28 D
Chloride	300/9056A	P	500mL	Cool ≤6°C	28 D	4 Oz G	100g	Cool ≤6°C	28 D
Chlorine, Total Residual	SM 4500-Cl-D	G	1000mL	Cool ≤6°C; No Headspace	Immediate				
COD	SM 5220D	P	500mL	Cool ≤6°C; H ₂ SO ₄ to pH<2	28 D				
COD, LL	Hach 8000	P	500mL	Cool ≤6°C; H ₂ SO ₄ to pH<2	28 D				
Color	SM 2120B	P	500mL	Cool ≤6°C	48 Hrs				
Conductance, Specific	120.1/9050A	P	500mL	Cool ≤6°C	28 D				
Corrosivity	9040C	P	500mL		ASAP				
Corrosivity	9045D					4 Oz G	100g		ASAP
Cyanide, Amenable	9010B/9014	P	500mL	Cool ≤6°C; NaOH to pH>12 ^{Note 1}	14 D	4 Oz G	100g	Cool ≤6°C	14 D
Cyanide, Total	9010B/9014	P	500mL	Cool ≤6°C; NaOH to pH>12 ^{Note 1}	14 D	4 Oz G	100g	Cool ≤6°C	14 D
Cyanide, Available ^{Note 10}	SM 4500-CN-C/G	P	500mL	Cool ≤6°C; NaOH to pH>12 ^{Note 2}	14 D				
Cyanide, Total ^{Note 10}	SM 4500-CN-C/E	P	500mL	Cool ≤6°C; NaOH to pH>12 ^{Note 2}	14 D				
Dry Weight	SM 2540G					4 Oz G	100g	Cool ≤6°C	7 D
Fluoride	300/9056A	P	500mL	Cool ≤6°C	28 D	4 Oz G	100g	Cool ≤6°C	28 D
Hardness	SM 2340B	P	500mL	HNO ₃ to pH<2	6 Mo				
Hexavalent Chromium	SM 3500-Cr-B	P	500mL	Cool ≤6°C; (NH ₄) ₂ SO ₄ Buffer to pH 9.3-9.7 ^{Note 13}	28 D ^{Note 13}				
Hexavalent Chromium	7196A	P	500mL	Cool ≤6°C	24 Hrs	4 Oz G	100g	Cool ≤6°C	30 D
Ignitability	1010A/1030	G	1L	Cool ≤6°C; Minimize Headspace		4 Oz G	100g		
Kjeldahl, Total and Total Organic Nitrogen	SM 4500 Norg C/ NH3 D	P	500mL	Cool ≤6°C; H ₂ SO ₄ to pH<2	28 D				
Nitrate	300/9056A	P	500mL	Cool ≤6°C	48 Hrs	4 Oz G	100g	Cool ≤6°C	48 Hrs
Nitrate-Nitrite	300/9056A	P	500mL	Cool ≤6°C; H ₂ SO ₄ to pH<2	28 D	4 Oz G	100g	Cool ≤6°C	
Nitrite	300/9056A	P	500mL	Cool ≤6°C	48 Hrs	4 Oz G	100g	Cool ≤6°C	48 Hrs
Oil and Grease/TPH	1664A/9070A/9071B	G	2L each	Cool ≤6°C; H ₂ SO ₄ to pH<2	28 D	4 Oz G	100g	Cool ≤6°C, Acidify to pH <2 When Practical	
Organic Carbon, Total	SM 5310C/9060A	P	500mL	Cool ≤6°C; H ₂ SO ₄ to pH<2	28 D				
Orthophosphate	300/9056A	P	500mL	Filter Immediately; Cool ≤6°C	48 Hrs	4 Oz G	100g	Cool ≤6°C	48 Hrs
Oxygen, Dissolved by Winkler Titration ^{Note 10}	SM 4500-O C	BOD Btl	600mL	Fix onsite; Store in dark	8 Hrs				
Paint Filter	9095A	P	1L			4 Oz G	100g		
pH, Hydrogen Ion	SM 4500H ⁺ B	P	500mL		Immediate				
Phenols	420.1/9065	G	1L	Cool ≤6°C; H ₂ SO ₄ to pH<2	28 D	4 Oz G	100g	Cool ≤6°C	28 D
Phosphorus, Total	SM 4500-P B.5/E	P	500mL	Cool ≤6°C; H ₂ SO ₄ to pH<2	28 D				
Reactivity	SW 846 Section 7.3	Amber G	1L	Cool ≤6°C		4 Oz G	100g	Cool ≤6°C	
Residue, Filterable (TDS)	SM 2540C	P	500mL	Cool ≤6°C	7 D				
Residue, Nonfilterable (TSS)	SM 2540D	P	500mL	Cool ≤6°C	7 D				
Residue, Settleable (SS)	SM 2540F	P	500mL	Cool ≤6°C	48 Hrs				
Residue, Total (TS)	SM 2540B	P	500mL	Cool ≤6°C	7 D				
Residue, Volatile (VS)	160.4	P	500mL	Cool ≤6°C	7 D				
Silica	200.7/6010B	P	500mL	Cool ≤6°C	28 D				
Sulfate	300/9056A	P	500mL	Cool ≤6°C	28 D	4 Oz G	100g	Cool ≤6°C	28 D
Sulfide ^{Note 10}	SM 4500-S ²⁻ F	P	1L	2N Zinc Acetate & 10N Sodium Hydroxide pH>9	7 D				
Sulfite	SM 4500-SO ₃ ²⁻ B	P	500mL	500mL Container – 5mL of 2% EDTA	Immediate				
Surfactants (MBAS)	SM 5540C	P	500mL	Cool ≤6°C	48 Hrs				
Temperature	SM 2550B	P	500mL		Immediate				
Turbidity	180.1	P	500mL	Cool ≤6°C	48 Hrs				

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		Container	Quantity	Preservation ^{Note 11}	Hold Time	Container	Quantity	Preservation ^{Note 11}	Hold Time
Metals		Based on 40 CFR Part 136 Table II - 2010				Based on SW-846 Rev 4 - February 2007			
Cation Exchange Capacity	9080	P	500mL			4 Oz G	100g		
Hexavalent Chromium	SM 3500-Cr-B	P	500mL	Cool $\leq 6^{\circ}\text{C}$; (NH ₄) ₂ SO ₄ Buffer to pH 9.3-9.7 ^{Note 13}	28 D ^{Note 13}				
Hexavalent Chromium	7196A	P	500mL	Cool $\leq 6^{\circ}\text{C}$	24 Hrs	4 Oz G	100g	Cool $\leq 6^{\circ}\text{C}$	30 D
Mercury	245.1/7470A/7471A	P	500mL	HNO ₃ to pH<2	28 D	4 Oz G	100g	Cool $\leq 6^{\circ}\text{C}$	28 D
Metals except Chromium VI and Mercury	200.7/6010B/200.8/6020A	P	500mL	HNO ₃ to pH<2, or >24 hrs before analysis ^{Note 12}	6 Mo	4 Oz G	100g		6 Mo
Dissolved Metals	200.7/6010B/200.8/6020A	P	500mL	Filter, HNO ₃ to pH<2, or >24 hrs before analysis ^{Note 12}	Immediate				
Semivolatile Organics									
Carbamate Pesticides	632/8318M	Amber G	3L	Cool $\leq 6^{\circ}\text{C}$ ^{Notes 3 & 8}	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
Chlorinated Herbicides	615/8151A	Amber G	3L	Cool $\leq 6^{\circ}\text{C}$ ^{Note 3}	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
Glycols	8015M	Amber G	2L	Cool $\leq 6^{\circ}\text{C}$	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
Organochlorine Pesticides & PCBs	608/617/8081A/8082	Amber G	3L	Cool $\leq 6^{\circ}\text{C}$ ^{Notes 3 & 9}	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
Organophosphorus Pesticides	614/8141A	Amber G	3L	Cool $\leq 6^{\circ}\text{C}$ ^{Note 3}	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
PCBs	608/8082	Amber G	3L	Cool $\leq 6^{\circ}\text{C}$	365D (608)	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	
Polynuclear Aromatic Hydrocarbons	625/8270C/610/8310	Amber G	3L	Cool $\leq 6^{\circ}\text{C}$ ^{Note 3}	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
Semivolatiles by GCMS	625/8270C	Amber G	3L	Cool $\leq 6^{\circ}\text{C}$ ^{Note 3} / 625 adjust to pH 6-9	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
TPH TX 1005 - (TCEQ Protocol)	TX 1005	Tared VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$; HCL to pH<2	14 D	Tared VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$; after 2 D Freeze -12 $^{\circ}\text{C}$	14 D
TPH TX 1005 Dry Weight	SM 2540G					4 Oz G	100g	Cool $\leq 6^{\circ}\text{C}$	7 D
TPH TX 1006 - (TCEQ Protocol)	TX 1006	Tared VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$; HCL to pH<2	14 D	Tared VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$; after 2 D Freeze -12 $^{\circ}\text{C}$	14 D
TPH TX 1006 Dry Weight	SM 2540G					4 Oz G	100g	Cool $\leq 6^{\circ}\text{C}$	7 D
TPH DRO	8015B	Amber G	3L	Cool $\leq 6^{\circ}\text{C}$; HCL to pH<2	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
TPH DRO Oklahoma - (Method Protocol)	8000/8100	Amber G	3L	Cool $\leq 6^{\circ}\text{C}$; HCL to pH<2	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	7 D
TPH OA-2 - (Method Protocol)	OA-2	Amber G	3L	Cool $\leq 6^{\circ}\text{C}$	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
TOX (Aqueous) - EOX (Solid)	SM 5320/9020B	G ^{Note 2}	100mL	Cool $\leq 6^{\circ}\text{C}$; H ₂ SO ₄ to pH<2; No Headspace	28 D	4 Oz G ^{Note 7}	100g	Cool $\leq 6^{\circ}\text{C}$; Minimize Headspace	28 D
Volatile Organics									
Methanol	8015B	VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$; VOA; No Headspace	14 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
BTEX	602/8021B	VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$; HCL to pH<2; ^{Note 3} - No Headspace	14 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
BTEX + MTBE	602/8021B	VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$ ^{Note 3} - No Headspace	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
BTEX + MTBE	8260B	VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$ ^{Note 3} - No Headspace	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
TPH GRO	8015B/OA-1	VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$; HCL to pH<2; ^{Note 3} - No Headspace	14 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
Volatile Organics by GCMS	8260B	VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$; HCL to pH<2; ^{Notes 3 & 6} - No Headspace	14 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$	14 D
Volatile Organics - Protocol 1 ^{Note 10}	624	VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$ ^{Note 3} - No Headspace	3 D				
Volatile Organics - Protocol 2 ^{Note 10}	624	VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$ ^{Note 3} - No Headspace	14 D				
		VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$; HCL to pH<2; ^{Note 3} - No Headspace	14 D				
		VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$ ^{Notes 3 & 4} - No Headspace	14 D				
Volatile Organics - 5035 incl. Dry Weight	8260B or 8021B/5035								
Soil - 5g Sample - (TCEQ Protocol)						Tared VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$; Freeze -12 $^{\circ}\text{C}$ within 48 Hrs	14 D
Soil - 5g Sample w/Methanol						Tared VOA	1 ea	Cool $\leq 6^{\circ}\text{C}$; Methanol	14 D
Dry Weight Sample	SM 2540 G					4 Oz G	100g	Cool $\leq 6^{\circ}\text{C}$	7 D
TCLP/SPLP	1311/1312								
Metals except Mercury	6010B	P or G	1L	Cool $\leq 6^{\circ}\text{C}$ ^{See Note 5}	6 Mo	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$ ^{Note 5}	6 Mo
Mercury	7470A	P or G	1L	Cool $\leq 6^{\circ}\text{C}$ ^{See Note 5}	28 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$ ^{Note 5}	28 D
Volatiles	8260B	VOA	3 ea	Cool $\leq 6^{\circ}\text{C}$ ^{See Note 5}	14 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$ ^{Note 5}	14 D
Semivolatiles	8270C	Amber G	2L	Cool $\leq 6^{\circ}\text{C}$ ^{See Note 5}	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$ ^{Note 5}	14 D
Pesticides	8081A	Amber G	2L	Cool $\leq 6^{\circ}\text{C}$ ^{See Note 5}	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$ ^{Note 5}	14 D
Herbicides	8151A	Amber G	2L	Cool $\leq 6^{\circ}\text{C}$ ^{See Note 5}	7 D	9 Oz G	250g	Cool $\leq 6^{\circ}\text{C}$ ^{Note 5}	14 D
Complete TCLP/SPLP		Amber G	6L	Cool $\leq 6^{\circ}\text{C}$ ^{See Note 5}		2L G	2000g	Cool $\leq 6^{\circ}\text{C}$ ^{Note 5}	

P=Polyethylene; G=Glass; g=grams; mL=milliliters; Hrs=Hours; L=liters; D=Days; Mo=Month

Note 1 - Test for chlorine and treat with 0.1N sodium arsenite only if present.

Note 2 - Test for chlorine and sulfide and treat only if present. Treat chlorine with sodium arsenite and sulfide with HCL and volatilization.

Note 3 - Test for chlorine and treat with sodium thiosulfate to a 0.008% solution only if present.

Note 4 - Adjust to pH 4-5. Use dilute sodium hydroxide to raise the pH and dilute hydrochloric acid to lower it.

Note 5 - Sample must be cooled to $\leq 6^{\circ}\text{C}$ but not frozen unless this causes an irreversible change in the physical or chemical nature of the sample in which case the entire sample must be extracted.

Note 6 - If carbonaceous material is present or if Vinyl chloride, Styrene or 2-Chloroethyl vinyl ether are of interest either collect a second set of vials without acid preservative or collect one set without acid preservative and analyze within 7 days.

Note 7 - Container must be muffed at 400 $^{\circ}\text{C}$ prior to use.

Note 8 - Adjust pH to 4-5 with 0.1N chloroacetic acid for Method 8318M.

Note 9 - Method 608 requires the addition of sodium thiosulfate to a 0.008% solution if analyzing for aldrin.

Note 10 - Requires special sample handling. Please contact Customer Service for details.

Note 11 - Cooled to the temperature range indicated but not frozen unless it can be demonstrated that this does not effect the parameter being measured.

Note 12 - Must be acid preserved at time of collection for Methods 6010B and 6020A.

Note 13 - No chemical preservative (ammonium sulfate buffer solution) required if sample analyzed within 24 hours of sample collection.

Please contact **ERM)** Environmental Laboratories for special sampling considerations associated with many of these analyses or to request complete sampling kits and supplies.

Please visit our web site at www.ermilab.com for additional information or the Customer Access Center to request sampling kits and supplies on-line.