

OTHER SERVICES

List of Acronyms

AOAC	Association of Official Agricultural Chemists	NIOSH	National Institute of Occupational Safety and Health
API	American Petroleum Institute	OSHA	Occupational Safety & Health Administration
ASTM	American Society for Testing Materials	PAHs	Polynuclear Aromatic Hydrocarbons
BS&W	Bottom Sediment and Water	PCM	Phase Contrast Microscopy
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes	PCP	Pentachlorophenol
E or EPA	US Environmental Protection Agency	PLM	Polarized Light Microscopy
GC	Gas Chromatograph	PM-10	Particulate Matter Less than 10 Microns in Diameter
GC-FID	Gas Chromatograph Flame Ionization Detector	PVC	Polyvinyl Chloride
GC-PID	Gas Chromatograph Photo - Ionization Detector	QC	Quality Control
GC/ECD	Gas Chromatograph/Electron Capture Detector	SKC	SKC Incorporated
GC/FID	Gas Chromatograph/Flame Ionization Detector	SW or SW846	Test Methods for Evaluating Solid Waste, Physical & Chemical Methods
GC/MS	Gas Chromatograph/Mass Spectrometer	TDS	Total Dissolved Solids
ICP	Inductively Coupled Plasma	TSP	Total Suspended Particles
ICP-MS	Inductively Coupled Plasma-Mass Spectrometry	UOP	Universal Oil Products Co.
LPG	Liquefied Petroleum Gas	VOA	Volatile Organic Analysis
MA-VPH	Volatile Petroleum Hydrocarbons by Massachusetts Method	VPH	Volatile Petroleum Hydrocarbons
MCEF	Mixed Cellulose Ester Filter	XAD	Amerlite XAD™ (Rohm & Haas)
SDS	Safety Data Sheets		

OTHER SERVICES

1. CRUDE OIL AND PETROLEUM PRODUCTS

PARAMETER	METHOD
Sample cleanup, preparation, and separation of emulsions prior to analysis	-
Complete Crude Oil Analysis: BS & W, Gravity(API & Specific), Hempel Distillation, Pour Point, Sulfur, Viscosity at 100°F and 120°F	-
Ash, Loss at 775°C	ASTM D482
Bottom Sediment and Water (BS&W)	ASTM D1796
Cetane Number	ASTM D976
Chloride, Inorganic (water soluble)	E300.0 Mod
Chloride, Organic (1 ppm detection limit)	SW9076
Cloud Point	ASTM D2500
Engler distillation	ASTM D86
Fingerprint oils by chromatography (Carbon Scan identification of unknowns)	GC-FID– SimDist
Flashpoint, Pensky Martens Closed Cup	SW1010
Glycol (antifreeze) in oil or fuel	ASTM D2982
Gravity, API	ASTM D1298
Gravity, specific	ASTM D1298
Halogens, total (200 ppm detection limit)	SW9076
Hempel Distillation, modified, cuts at 392°F and 500°F	ASTM D285
Metals in oil, digestion	SW3050
Metals in oil, analysis of digestate, per metal	SW6010/ SW6020
Paraffin	UOP 46-64
Pour Point	ASTM D97
Simulated Distillation by GC/FID (carbon scan, product identification or fingerprinting)	GC-FID– SimDist
Sulfur, total in diesel or heavier oils (not available for volatile fuels)	ASTM D1552
Vapor Pressure, Reid	ASTM D323
Viscosity, per temperature	ASTM D445
Water by Karl Fisher	ASTM D1744

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2. OILFIELD WATER ANALYSIS

PARAMETER	PRICE
Sample cleanup, preparation, and separation of emulsions prior to analysis	Contact Lab
Routine Oilfield Water Analysis: Barium, Calcium, Iron, Magnesium, Potassium, Sodium, Strontium, pH, Specific Gravity, Sulfate, Total Dissolved Solids (calculated), Chloride, Carbonate, Bicarbonate, Resistivity	Contact Lab

3. NATURAL GAS AND LIQUEFIED PETROLEUM GAS (LPG) ANALYSIS

PARAMETER	METHOD	PRICE
Natural Gas Analysis: Methane through Hexanes plus, Nitrogen, Carbon Dioxide, Hydrogen Sulfide, BTU, Specific Gravity, Pseudo-critical temperature and pressure, Compressibility Factor, Molecular Weight (Oxygen available upon request).	GPA 2261-95	Contact Lab
Natural Gas Analysis plus Carbon Monoxide	GPA 2286-95	Contact Lab
Extended Natural Gas, C1 thru C10+ including Nitrogen, CO2 and Oxygen	GPA 2286-95	Contact Lab
Extended Natural Gas, C1 thru C10+ with BTEX including Nitrogen, CO2 and Oxygen	GPA 2286-95	Contact Lab
LPG Analysis: Ethane through Hexanes plus, Volume Ratio, Molecular Weight, Specific Gravity, Vapor Pressure, BTU.	ASTM D2163-87.	Contact Lab
Extended Natural Gas or Extended LPG analysis to include Heptanes thru Decanes Plus	GPA 2286-95	Contact Lab
Methane, Ethane, Propane in air at ppm concentrations.	GC-FID	Contact Lab

4. FEEDS

PARAMETER	METHOD	PRICE
Moisture	Loss at 40°C	Contact Lab
Nitrate	MSU Feed Laboratory Method-CuSO ₄ Extraction	Contact Lab
Protein	AOAC 7.033	Contact Lab
Sulfur	ASTM D1552	Contact Lab

OTHER SERVICES

5. SPECIAL SERVICES

SERVICE	PRICE
Scale Analysis: Identification of unknown materials i.e. scale, deposits, or other inorganic substances, semi-quantitative analysis (does not include quantitative analysis for organic chemicals)	Contact Lab
Sample filtering/preservation in the lab, per sample bottle or fraction	
Clerical services, per hour	
Sampling or courier services, per hour	
Staff chemist, per hour	
Senior chemist, per hour	
Overtime, evening, weekend, holidays – Could apply under certain circumstances	
Mileage, per mile	
3 rd Party/Electronic Invoicing Submissions	

6. INDUSTRIAL HYGIENE LABORATORY SERVICES

PARTICULATES	METHOD	PRICE
Particulates, Total*	NIOSH 0500	Contact Lab
Particulates, Respirable*	NIOSH 0600	Contact Lab
Silica, Crystalline Respirable - X-ray Diffraction*	NIOSH 7500	Contact Lab

NOTES: *Cost includes pre-weighed PVC cassettes.

METALS			METHOD	PRICE
Metals by ICP/ICP-MS - Digestion of 37 mm mixed cellulose ester filter (MCEF)			NIOSH 7300	Contact Lab
Metals by ICP/ICP-MS – Digestion of wipe samples			NIOSH 9100/ SW3050	Contact Lab
Metals by ICP/ICP-MS – Analysis of digestate, per metal			SW6010/SW6020	Contact Lab
Metals available by ICP Scan			NIOSH 7300	Contact Lab
Aluminum	Cobalt	Manganese	Sodium	
Beryllium	Copper	Molybdenum	Thallium	
Cadmium	Iron	Nickel	Titanium	
Calcium	Lead	Phosphorus	Vanadium	
Chromium	Magnesium	Silver	Zinc	
Lead in paint			SW3050/ SW6010/SW6020	Contact Lab

NOTES: Other metals available on request – see *Waters* sections

OTHER SERVICES

6. INDUSTRIAL HYGIENE LABORATORY SERVICES (Continued)

PARAMETER	METHOD
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) - Charcoal tube or passive diffusion monitor ¹ .	NIOSH 1501 SW8015C
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) – Tedlar Bag ¹	SW8021B / GC
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) – Tedlar Bag ¹	SW8260B GC/MS
Formaldehyde – 3M passive diffusion monitor ¹	NIOSH 3500M Colorimetric
Gasoline Range Organics (GRO) – Charcoal Tube or Tedlar Bag ¹	SW8015C / GC
Methane in air, ppm concentrations – Tedlar Bag ¹	SW8015M
Organic Vapor Scan – Single compound	SW8260B Mod.
Organic Vapor Scan – Short list	SW8260B Mod.
Organic Vapor Scan – Long list	SW8260B Mod.
Compounds Available For Analysis by Organic Vapor Scan (by sorbent tube, passive diffusion monitor ¹ or tedlar bag ¹)	
Acetone	1,2-Dichlorobenzene
Benzene	1,3-Dichlorobenzene
Bromobenzene	1,4-Dichlorobenzene
Bromochloromethane	1,2-Dichloroethane
Bromodichloromethane	cis-1,2-Dichloroethene
Bromoform	1,2-Dichloropropane
n-Butylbenzene	1,3-Dichloropropane
sec-Butylbenzene	2,2-Dichloropropane
tert-Butylbenzene	1,1-Dichloropropene
Carbon Tetrachloride	cis-1,3-Dichloropropene
Chlorobenzene	trans-1,3-Dichloropropene
Chloroform	Ethylbenzene
2-Chlorotoluene	Hexachlorobutadiene
4-Chlorotoluene	2-Hexanone
Chlorodibromomethane	Isopropylbenzene
1,2-Dibromo-3-chloropropane	p-Isopropyltoluene
1,2-Dibromoethane	Methyl ethyl ketone
Dibromomethane	Methyl isobutyl ketone
Radon in indoor air, Charcoal canister	Gamma Spec.
Volatile Petroleum Hydrocarbons (VPH) – Tedlar Bag ¹	MA-VPH GC/FID

(1). Additional charge for media - See "Other Services" Section 10 "Supplies"

OTHER SERVICES

7. AIR SAMPLING EQUIPMENT RENTAL

EQUIPMENT	RENTAL RATE	
	3 DAY	WEEK
Pump - Low or High Flow (0.2 to 3.5 LPM)	Contact Lab	Contact Lab
Pumps are pre- and post-calibrated. Personal and area sampling accessories and battery chargers are included.		
Cyclone Sampler (SKC) or Calibration Sleeve - respirable particulates monitoring	Contact Lab	Contact Lab
Sensidyne Gas Sampling Pump with Flow Finish Indicator	Contact Lab	Contact Lab
Sensidyne Colorimetric Indicator Tubes, Box of 10	Cost + 20%	

8. AMBIENT AIR QUALITY LABORATORY SERVICES

SERVICE	PRICE
Conditioning and pre-weighing of a quartz filter (PM-10) - includes filter	Contact Lab
Conditioning and pre-weighing of glass fiber filter (TSP) – includes filter	Contact Lab
Conditioning and post - weighing, concentration calculation of PM-10 or TSP filters	Contact Lab
Metals analysis on quartz or glass fiber filter – digestion	Contact Lab
Metals by ICP/ICP-MS – analysis of digestate, per metal	Contact Lab

9. MEDIA SUPPLIES

Sample collection media such as charcoal tubes, pre-weighed filter cassettes for particulates and cassettes for metals analysis are provided at no cost. There will be a nominal charge for specialized sorbent tubes and passive diffusion monitor badges. Because of QC, there will be a surcharge for media not supplied by our laboratory if it requires desorption efficiency determinations.	Per Quote
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