

## OTHER SERVICES

### List of Acronyms

AOAC	Association of Official Agricultural Chemists	MSDS	Material Safety Data Sheets
API	American Petroleum Institute	NIOSH	National Institute of Occupational Safety and Health
ASTM	American Society for Testing Materials	OSHA	Occupational Safety & Health Administration
BS&W	Bottom Sediment and Water	PAHs	Polynuclear Aromatic Hydrocarbons
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes	PCM	Phase Contrast Microscopy
BTU	British Thermal Unit	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)

# OTHER SERVICES

## 1. CRUDE OIL AND PETROLEUM PRODUCTS

PARAMETER	METHOD	PRICE
Sample cleanup, preparation, and separation of emulsions prior to analysis	-	\$100.00/hr
<b>Complete Crude Oil Analysis:</b> BS & W, Gravity(API & Specific), Hempel Distillation, Pour Point, Sulfur, Viscosity at 100°F and 120°F	-	350.00
Ash, Loss at 775°C	ASTM D482	20.00
Asphaltenes	UOP 46	100.00
Benzene in Gasoline	GC-PID	150.00
Bottom Sediment and Water (BS&W)	ASTM D96	30.00
BTU	ASTM D240	100.00
Cetane Number	ASTM D976	120.00
Chloride, Inorganic (water soluble)	E325.3 Mod.	40.00
Chloride, Organic (1 ppm detection limit)	ASTM D4929B	200.00
Cloud Point	ASTM D2500	60.00
Cloud Point below 0°F	ASTM D2500	80.00
Engler distillation	ASTM D86	100.00
Fingerprint oils by chromatography (Carbon Scan identification of unknowns)	GC-FID	100.00
Flashpoint, Pensky Martens Closed Cup	SW 1010	60.00
Glycol (antifreeze) in oil or fuel	ASTM D2982	50.00
Gravity, API	ASTM D287	20.00
Gravity, specific	ASTM D1298	20.00
Halogens, total (200 ppm detection limit)	ASTM D808	90.00
Hempel Distillation, modified, cuts at 392°F and 500°F	ASTM D285	120.00
Metals in oil, digestion	SW 3050	25.00
Metals in oil, analysis of digestate, per metal	SW 6010/ SW 6020	10.00
Paraffin	UOP 46-64	150.00
Pour Point	ASTM D97	60.00
Simulated Distillation by GC/FID (carbon scan, product identification or fingerprinting)	GC-FID	100.00
Sulfur, total in diesel or heavier oils (not available for volatile fuels)	ASTM D1552	30.00
Vapor Pressure	ASTM D323	150.00
Viscosity, per temperature	ASTM D445	40.00
Water by Karl Fisher	ASTM D1744	100.00

## OTHER SERVICES

### 2. OILFIELD WATER ANALYSIS

PARAMETER	PRICE
Sample cleanup, preparation, and separation of emulsions prior to analysis	\$100.00/hr
<b>Routine Oilfield Water Analysis:</b> Barium, Calcium, Iron, Magnesium, Potassium, Sodium, Strontium, pH, Specific Gravity, Sulfate, Total Dissolved Solids (calculated), Chloride, Carbonate, Bicarbonate, Resistivity	200.00

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

PARAMETER	METHOD	PRICE
<b>Natural Gas Analysis:</b> Methane through Hexanes plus, Nitrogen, Carbon Dioxide, Hydrogen Sulfide, BTU, Specific Gravity, Pseudo-critical temperature and pressure (Oxygen available upon request).	GPA 2261-95	\$90.00
Natural Gas Analysis plus Carbon Monoxide	GPA 2286-95	120.00
<b>LPG Analysis:</b> Ethane through Hexanes plus, Volume Ratio, Molecular Weight, Specific Gravity, Vapor Pressure, BTU.	ASTM D2163-87.	90.00
Extended Natural Gas or Extended LPG analysis to include Heptanes thru Decanes Plus	GPA 2286-95	130.00
Methane, Ethane, Propane in air at ppm concentrations.	GC-FID	50.00

### 4. FEEDS

PARAMETER	METHOD	PRICE
Moisture	Loss at 40°C	\$10.00
Nitrate	MSU Feed Laboratory Method-CuSO <sub>4</sub> Extraction	20.00
Protein	AOAC 7.033	25.00
Sulfur	ASTM D1552	30.00

### 5. SPECIAL SERVICES

SERVICE	PRICE
<b>Scale Analysis:</b> Identification of unknown materials i.e. scale, deposits, or other inorganic substances, semi-quantitative analysis (does not include quantitative analysis for organic chemicals)	\$220.00
Sample filtering/preservation in the lab, per sample bottle or fraction	10.00
Clerical services, per hour	50.00
Sampling or courier services, per hour	By Quote
Staff chemist, per hour	125.00
Senior chemist, per hour	200.00
Overtime, evening, weekend, holidays – add	50% Minimum
Mileage, per mile	By Quote

# OTHER SERVICES

## 6. SUPPLIES

32 ounce bottle, glass	4.00
16 ounce bottle, glass	4.00
4 ounce bottle, glass (soil jars)	2.50
VOA vials	2.50
32 ounce bottle, plastic	1.20
16 ounce bottle, plastic	0.75
8 ounce bottle, plastic	0.75
1 gallon container, plastic	1.50
Preservative ampule, 8 mL Sulfuric Acid	2.00
Preservative ampules: HNO <sub>3</sub> – nitric acid (red cap), H <sub>2</sub> SO <sub>4</sub> - sulfuric acid (yellow cap), HCl - hydrochloric acid (blue cap), H <sub>3</sub> PO <sub>4</sub> - phosphoric acid (white cap), NaOH - sodium hydroxide (green cap), or zinc acetate (purple cap).	1.30

## 7. INDUSTRIAL HYGIENE LABORATORY SERVICES

PARTICULATES	METHOD	PRICE
Particulates, Total*	NIOSH 0500	\$30.00
Particulates, Respirable*	NIOSH 0600	30.00
Silica, Crystalline Respirable - X-ray Diffraction*	NIOSH 7500	By Quote
<b>NOTES:</b> *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	\$25.00
Metals by ICP/ICP-MS – Digestion of wipe samples			NIOSH 9100/ SW 3050	25.00
Metals by ICP/ICP-MS – Analysis of digestate, per metal			SW 6010/SW 6020	10.00
Metals available by ICP Scan			NIOSH 7300	200.00
Aluminum	Cobalt	Manganese	Sodium	
Beryllium	Copper	Molybdenum	Thallium	
Cadmium	Iron	Nickel	Titanium	
Calcium	Lead	Phosphorus	Vanadium	
Chromium	Magnesium	Silver	Zinc	
Lead in paint			SW 3050/ SW 6010/SW 6020	35.00
<b>NOTES:</b> Other metals available on request – see <i>Waters</i> sections				

# OTHER SERVICES

## 7. INDUSTRIAL HYGIENE LABORATORY SERVICES, continued

PARAMETER	METHOD	PRICE
Asbestos, Bulk Identification – Polarized Light Microscopy 1-3 Layers	E600/M4- 82-020 or RTI 600/R-93/E116	\$30.00
Asbestos, In Soil – Polarized Light Microscopy	Point Count	75.00
Asbestos, Fiber Count – Phase Contrast Microscopy	NIOSH 7400A	30.00
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) - Charcoal tube or passive diffusion monitor <sup>1</sup> .	NIOSH 1501 SW 8015B	120.00
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) – Tedlar Bag <sup>1</sup>	SW 8021B / GC	75.00
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) – Tedlar Bag <sup>1</sup>	SW 8060B GC/MS	90.00
Formaldehyde – 3M passive diffusion monitor <sup>1</sup>	NIOSH 3500M Colorimetric	60.00
Gasoline Range Organics (GRO) – Charcoal Tube or Tedlar Bag <sup>1</sup>	SW 8015M / GC	75.00
Methane in air, ppm concentrations – Tedlar Bag <sup>1</sup>	SW 8015M	50.00
Organic Vapor Scan – Single compound	SW 8260B Mod.	120.00
Organic Vapor Scan – Short list	SW 8260B Mod.	150.00
Organic Vapor Scan – Long list	SW 8260B Mod.	220.00
<b>Compounds Available For Analysis by Organic Vapor Scan</b> (by sorbent tube, passive diffusion monitor <sup>1</sup> or tedlar bag <sup>1</sup> )		
Acetone	1,2-Dichlorobenzene	Naphthalene
Benzene	1,3-Dichlorobenzene	n-Propylbenzene
Bromobenzene	1,4-Dichlorobenzene	Styrene
Bromochloromethane	1,2-Dichloroethane	1,1,1-2-Tetrachloroethane
Bromodichloromethane	cis-1,2-Dichloroethene	1,1,2,2-Tetrachloroethane
Bromoform	1,2-Dichloropropane	Tetrachloroethene
n-Butylbenzene	1,3-Dichloropropane	Toluene
sec-Butylbenzene	2,2-Dichloropropane	1,2,3-Trichlorobenzene
tert-Butylbenzene	1,1-Dichloropropene	1,2,4-Trichlorobenzene
Carbon Tetrachloride	cis-1,3-Dichloropropene	1,1,1-Trichloroethane
Chlorobenzene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane
Chloroform	Ethylbenzene	Trichloroethene
2-Chlorotoluene	Hexachlorobutadiene	1,2,3-Trichloropropane
4-Chlorotoluene	2-Hexanone	1,3,5-Trimethylbenzene
Chlorodibromomethane	Isopropylbenzene	1,2,4-Trimethylbenzene
1,2-Dibromo-3-chloropropane	p-Isopropyltoluene	m+p-Xylenes
1,2-Dibromoethane	Methyl ethyl ketone	o-Xylene
Dibromomethane	Methyl isobutyl ketone	-
Pentachlorophenol (PCP) – Sorbent Tube <sup>1</sup>	OSHA 39M	200.00
Polynuclear Aromatic Hydrocarbons (PAHs) - (GS/MS substituted for GC/FID specified in method) – Sorbent Tube <sup>1</sup>	NIOSH 5515M GC/MS	250.00
Radon in indoor air, Charcoal canister	Gamma Spec.	40.00
Volatile Petroleum Hydrocarbons (VPH) – Tedlar Bag <sup>1</sup>	MA-VPH GC/FID	120.00

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

# OTHER SERVICES

## 8. AIR SAMPLING EQUIPMENT RENTAL

EQUIPMENT	RENTAL RATE	
	3 DAY	WEEK
Pump - Low or High Flow (0.2 to 3.5 LPM) Pumps are pre- and post-calibrated. Personal and area sampling accessories and battery chargers are included.	\$75.00	\$125.00
Cyclone Sampler (SKC) or Calibration Sleeve - respirable particulates monitoring	10.00	20.00
Sensidyne Gas Sampling Pump with Flow Finish Indicator	50.00	75.00
Sensidyne Colorimetric Indicator Tubes, Box of 10	Cost + 20%	

## 9. AMBIENT AIR QUALITY LABORATORY SERVICES

SERVICE	PRICE
Conditioning and pre-weighing of a quartz filter (PM-10) - includes filter	\$16.00
Conditioning and pre-weighing of glass fiber filter (TSP) – includes filter	20.00
Conditioning and post - weighing, concentration calculation of PM-10 or TSP filters	10.00
Metals analysis on quartz or glass fiber filter – digestion	50.00
Metals by ICP/ICP-MS – analysis of digestate, per metal	10.00

## 10. 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.	
3M 3500 Passive Diffusion Monitor	\$17.00
3M 3721 Formaldehyde Passive Diffusion Monitor	29.00
PAH sampling media (XAD-2 Sorbent Tube, Teflon Filter)	10.00
PCP sampling media (XAD-7 Sorbent Tube, 3 tubes/set)	12.00
Tedlar bags	15.00
Transducer charts, per box	25.00
Field data sheets and envelopes for particulate monitoring, each	1.00

## 11. OTHER SERVICES AVAILABLE - By Quote

MSDS Sheet Preparation	Radiation Safety Officer
Safety Consulting and Training	Indoor Air Quality Assessments
Microscopic Exam, Miscellaneous	-----