



Materials Analytical Services, LLC

2008

Industrial Hygiene

Sampling Manual & List of Services



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## Introduction

For nearly two decades, Materials Analytical Services (MAS) has been the leader in the field of indoor air particulate characterization by microscopic methods (including PLM, PCM, SEM and TEM). In 2002, MAS announced the expansion of its Indoor Air Quality services to include an Industrial Hygiene division. All analyses in the Industrial Hygiene division are performed by qualified analytical chemists using appropriate analytical instrumentation. MAS is a AIHA accredited laboratory and actively participates in AIHA's Proficiency Analytical Testing (PAT) program for both organics and asbestos fiber counting, and is National Voluntary Laboratory Accreditation Program (NVLAP) certified in asbestos fiber identification by both polarized light microscopy (PLM) and transmission electron microscopy (TEM). MAS maintains stringent standards of quality control in compliance with AIHA policies and procedures. With an experienced Certified Industrial Hygienist on staff, MAS offers expert advice on sampling, evaluation, and exposure control in the workplace environment.

*Please visit our website at <http://www.mastest.com>*

### Quality Control

All analyses are performed to AIHA standards of quality control. The quality control program ensures the accuracy of analytical results through training, method selection, procedures, use of standard calibration curves, and analysis of blank and spiked samples. MAS participates in AIHA's Proficiency Analytical Testing (PAT) program for organics and asbestos fiber counting. MAS is also NVLAP certified in asbestos identification.

### Methodologies

MAS uses the most current NIOSH, OSHA, EPA and ASTM methodologies for the analysis of air and bulk samples. The sampling section of this manual contains specific information on collection media, flow rates, recommended air volumes, and special handling notes for analyses performed at MAS. This information is based on the validated methods cited and on MAS's experience. The recommended flow rates and sampling times are presented as guidelines and in most cases will provide an analytical detection limit at a fraction of the OSHA Permissible Exposure Limit (PEL) or the ACGIH Threshold Limit Value (TLV). Please note that recommended sampling volumes are based on expected air concentration ranges as given in the specified method, and that when sampling high concentrations of organic vapors on solid sorbent tubes, breakthrough may occur.

## Policies

### Blanks

A minimum of one blank should be submitted for each type of analysis requested in a given batch of samples. A blank should be opened and handled like the samples, only no air should be drawn through the blank. A fee will be charged for the analysis of the blanks as they are analyzed like samples.

### Breakthrough

Sorbent tubes and some sampling trains in series are analyzed as front and back sections with one result reported. If breakthrough occurs, it will be noted on the report.

### Chain of Custody

Chain of Custody forms are provided by MAS at no cost to the client. Detailed completion of the information on this form and assignment of unique identification numbers to all samples will eliminate unnecessary phone calls and delays.

### Confidentiality Policy

All analytical results are strictly confidential and will not be released to anyone other than the sample submitter without permission of the client. When results are to be released to a second party, please so indicate on the chain of custody form and provide contact information.

### Method Developments/Custom Analyses

Method developments for custom organic analytes are available in many cases. Method development and laboratory validation including desorption studies are typically charged on a negotiated per-hour basis. For analytes which are not commercially available in pure form, bulk samples of pure compound must be supplied by the client for use as calibration and spiking standards. Please call for pricing and information.

### Quantity Discounts

Submissions of 20 or more identical samples will receive a 10% discount. Further discounts for larger volume sample submissions can be negotiated, please call MAS for discussion.

## Policies (cont.)

### Pricing for Multiple Analytes

Prices listed in the manual are for the first component. The following fees will be charged for additional components on the same sample:

Inorganics by ICP	\$18.00
Inorganics by GFAA	\$20.00
Organic vapors by GC/FID	\$23.00
Liquid Chromatography	\$50.00

### Record Keeping

All analytical data, reports, and chain of custody forms are maintained on file permanently.

### Rush Analyses

Please see "Turnaround Times"

### Sampling Materials

For existing customers, there is no charge for common sampling materials and media returned to MAS for analysis. Charges do apply to some media such as passive organic vapor monitors and silver membrane filters. Sampling materials are shipped by Federal Express. Additional charges apply to next-day deliveries of sampling media. Certain specialty media are not routinely stocked at MAS, so please contact the lab as soon as possible so that we can arrange shipment from the manufacturer.

### Sampling Trains

Sampling trains consisting of a filter and a sorbent tube in series are charged separately if analyzed and reported separately.

## Policies (cont.)

### Toll Free Number

A toll free telephone number is available for easy access to technical information, to check work status, or to place an order.

800-421-8451

### Three Sample Minimum

A three sample minimum will be charged for any analyte or series of analytes in a single request. The total cost of analysis for less than three identical samples will be three times the unit cost.

### Turnaround Times

Fiber counting (PCM) and Asbestos Bulk ID (PLM) – 3 days, call for Rush pricing.

Inorganics by ICP - 5 days

Inorganics by GFAA - 5-7 days

Organics by GC/FID or HPLC - 5-7 days

Rush Charges for Inorganics/Organics

3 day turnaround – 1.5 x Price

Next Day – 2 x Price (Please call the lab to prearrange next day analyses.)

For samples arriving at the lab after 4:00 PM, turnaround time will begin on the following day. Weekends and holidays are not counted in turnaround times.

### Warranty

MAS cannot be responsible for accidental damage or loss of samples, and reserves the right to refuse samples which are not shipped properly or collected on the appropriate sampling medium. MAS will employ qualified personnel to analyze samples, and, where possible, will use established current analytical techniques. MAS makes no other warranties expressed or implied.

## Policies (cont.)

### Weekend Callout Fee

A callout fee in the amount of \$250.00 will be charged for weekend work. Please call to prearrange weekend work.

## Notes

- 1) MAS recommends that solid sorbent tubes be shipped cold by overnight delivery whenever possible. Excessive temperatures may cause migration, degradation, or loss of analyte from solid sorbent tubes.
- 2) When requesting multicomponent analytes such as Stoddard solvents, naphthas, mineral spirits, gasoline, etc., we recommend submission of a small (5 mL) sample of the pure distillate. This material should be shipped in a glass vial with a Teflon-lined screw cap. This will be used to calibrate the analytical instrument. Methods requiring this have been noted in the sampling procedures section.
- 3) Bulk samples from item 2 above should be shipped separately from the samples to prevent cross-contamination.
- 4) Samples to be analyzed for custom oil mist analysis must include a small (10 mL) sample of the pure, unused oil. This bulk sample should be shipped separately from the samples.
- 5) Air bag samples should be delivered to the lab as soon as possible after sampling. The bags should be kept dark and cool. If air shipment is used, it is critical that bags be filled no more than halfway.
- 6) Heavy dust deposits will hinder analysis of fiber count samples by phase contrast microscopy. Take shorter term samples if possible when high dust levels are anticipated.
- 7) In methodologies requiring transfer of a sample filter to a vial after sampling, tweezers should be used to make the transfer. Tweezers should be wiped with a clean, lint-free tissue between samples.
- 8) Treated filters have definite shelf-lives and will have their expiration dates indicated on the label. These filters must be stored and shipped cold and should not be used past their marked expiration.
- 9) Solid sorbent tubes have differing shelf-lives depending both on their date of manufacture and on whether or not they are treated. Untreated tubes generally have a shelf life of at least one year.

## Notes (cont.)

- 10) For respirable dust sampling by NIOSH 0600, commercially available cyclones may require either 2-piece or 3-piece cassettes and differing flow rates depending on their manufacturer. MAS recommends that you consult the manufacturer's literature for your cyclone or call us for technical assistance.
- 11) Certain analytes sampled on the same media may not be compatible when sampled together due to differing desorption methodologies. We recommend that you consult the specific method(s) being used or call us for technical assistance.

## Certified Industrial Hygienist Services

- **Materials Analytical Services (MAS) problem-solving expertise** backed with comprehensive analytical capabilities for asbestos, particulates, biologicals, and environmental chemical analysis for indoor air and workplace investigations.
- **Comprehensive Industrial Hygiene and Safety consultant services** to product and process development groups, industrial manufacturing, and building owners.
- **Industrial Hygiene and Safety Training** in ergonomics, respiratory protection, blood-borne pathogens, industrial hygiene practice, hazard communication, and several safety programs.
- **Complete Indoor Air Quality investigation services** to conventional and manufactured housing, commercial, and manufacturing contractors and owners.
- **Exposure Characterization Laboratory (ECL)** to assess work practice scenarios where worker exposures may be impacted. The work practice scenarios can be filmed and used for training and reference purposes.
- **Large and small environmental chambers and head space analyzers** to analyze particulate and volatile organic chemicals emissions from products such as furniture, carpet, building materials, paints, paper, finishes, etc.

## **Mailing & Shipping Address:**

**Materials Analytical Services  
3945 Lakefield Court  
Suwanee, GA 30024**

## **Telephone Numbers:**

**800-421-8451  
(770) 866-3200**

## **FAX Number:**

**(770) 866-3259**

## **Website & E-Mail Addresses**

**<http://www.mastest.com>**

**[mbennett@mastest.com](mailto:mbennett@mastest.com)**

AA	Atomic absorption	MCEF	Mixed cellulose ester filter
CT	Charcoal tube	MIN	Minimum
DNPH	Dinitrophenylhydrazine	MW	Matched weight
F/F	Fibers per field	OVS	OSHA versatile sampler
FID	Flame ionization detector	PCM	Phase contrast microscopy
FL	Fluorescence	PCT	Petroleum charcoal tube
FPM	Formaldehyde passive monitor	PLM	Polarized light microscopy
FTIR	Fourier transform infrared spectrophotometer	POVM	Passive organic vapor monitor
GC	Gas chromatography	POVMB	POVM with backup section
GFF	Glass fiber filter	PTFE	Teflon filter
GFAA	Graphite furnace atomic absorption	PVC	Polyvinyl chloride filter
Grav	Gravimetric	PW	Pre-weighed
HMP	2-(Hydroxymethyl) Piperidine	SGT	Silica gel tube
HPLC	High performance liquid chromatography	SKCPM	SKC passive monitor
IC	Ion Chromatography	SPM	Special method
ICP	Inductively coupled plasma	STPGP	OSHA stopgap method
IMP	Impinger	TR	Treated
IR	Infrared	UV	Ultraviolet
LGCT	Large charcoal tube	XAD-2	XAD-2 porous polymer tube
LGSGT	Large silica gel tube	XAD-7	XAD-7 porous polymer tube
LPM	Liters per minute	XRD	X-ray diffraction
MA	Mercury analyzer		

**Inorganic Acid Profile**  
**Quantitative Scan by Ion Chromatography**  
**Method: NIOSH 7903**  
**Fee: \$165.00**

Hydrobromic Acid  
Hydrochloric Acid  
Hydrofluoric Acid

Nitric Acid  
Phosphoric Acid  
Sulfuric Acid

**Sampling Requirements:**

**Collection Media**  
Silica Gel (Orbo 53)  
SKC 226-10-03

**Air Volume**  
100 Liters

**Sampling Rate**  
0.2 - 0.4 LPM

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**Aldehyde Profile**  
**Quantitative Scan by HPLC/UV**  
**Method: NIOSH 2532/EPA TO-11**  
**Fee: \$200.00**

Acetaldehyde  
Acrolein  
Butyraldehyde

Formaldehyde  
Glutaraldehyde  
Isovaleraldehyde

**Sampling Requirements:**

**Sampling media**  
DNPH Tube or Cartridge  
DNPH coated GFFs

**Air volume**  
16-30 Liters  
16-30 Liters

**Sampling rate**  
0.05 - 0.5 LPM  
0.2 - 1.0 LPM

**Diisocyanate Profile**  
**Quantitative Scan by HPLC/UV**  
**OSHA Methods 42 & 47**  
**Fee: \$165.00**

Hexamethylene Diisocyanate (HDI)  
Methylene Bisphenyl Isocyanate (MDI)

Toluene -2,4-Diisocyanate (2,4-TDI)  
Toluene -2,6-Diisocyanate (2,6-TDI)

**Sampling Requirements:**

**Collection Media**  
Coated GFF  
(open-faced)

**Air Volume**  
15 - 30 Liters

**Sampling Rate**  
0.2 - 1.0 LPM

**Polynuclear Aromatic Hydrocarbons**  
**Quantitative Scan by HPLC/UV & Fluorescence**  
**Method: NIOSH 5506**  
**Fee: \$295.00**

Acenaphthene  
Acenaphthylene  
Anthracene  
Benzo(k)fluoranthene

Benzo(g,h,i)perylene  
Benzo(a)pyrene  
Benzo(a)anthracene  
Benzo(b)fluoranthene

Chrysene  
Dibenz(a,h)anthracene  
Fluoranthene  
Fluorene

Indeno(1,2,3-cd)pyrene  
Naphthalene  
Phenanthrene  
Pyrene

**Sampling Requirements:**

**Collection Media**  
OVS Tube SKC 226-30-16

**Air Volume**  
200 - 1000 Liters

**Sampling Rate**  
2.0 LPM

Wrap tubes in aluminum foil after sampling to protect from light. Ship samples refrigerated by overnight delivery.

## Selected Polynuclear Aromatic Hydrocarbons

Quantitative Scan by HPLC/UV & Fluorescence

Method: OSHA 58

Fee: \$175.00

Anthracene  
Benzo(a)pyrene  
Chrysene

Phenanthrene  
Pyrene

### Sampling Requirements:

**Collection Media**  
GFF

**Air Volume**  
960 Liters

**Sampling Rate**  
2.0 LPM

Wrap tubes in aluminum foil after sampling to protect from light. Ship samples refrigerated by overnight delivery.

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## BTEX Profile

Quantitative Scan by GC/FID

Method: NIOSH 1501

Fee: \$100.00

Benzene  
Ethyl Benzene

Toluene  
Xylene

Total Hydrocarbons as Hexane

### Sampling Requirements:

**Collection Media**  
CT or POVM

**Air volume**  
5 - 15 Liters

**Sampling rate**  
0.05 - 0.2 LPM

**Glycol Profile**  
**Quantitative Scan by GC**  
**Method: NIOSH 5523**  
**Fee: \$85.00**

Butylene Glycol  
 Diethylene Glycol

Propylene Glycol  
 Triethylene Glycol

<b>Sampling Requirements:</b>	<b>Collection Media</b>	<b>Air Volume</b>	<b>Sampling Rate</b>
	OVS Tube SKC 226-57	5 - 60 Liters	0.5 - 2.0 LPM

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**Metals Profile**  
**Quantitative Scan by ICP**  
**Method: NIOSH 7300**  
**Fee: \$165.00**

Aluminum  
 Antimony  
 Arsenic  
 Barium  
 Beryllium  
 Cadmium  
 Calcium

Chromium  
 Cobalt  
 Copper  
 Iron  
 Lead  
 Magnesium  
 Manganese

Nickel  
 Potassium  
 Selenium  
 Thallium  
 Sodium  
 Vanadium  
 Zinc

<b>Sampling Requirements:</b>	<b>Collection Media</b>	<b>Air Volume</b>	<b>Sampling Rate</b>
	0.8 micron MCEF	240 - 960 Liters*	1.0 - 3.0 LPM

\*960 Liters recommended for adequate detection limit of Arsenic.

## RCRA Metals Profile

Quantitative Scan By ICP

Method: NIOSH 7300

Fee: \$95.00

Arsenic  
Barium  
Cadmium  
Chromium

Lead  
Selenium  
Silver

### Sampling Requirements:

**Collection Media**  
0.8 micron MCEF

**Air Volume**  
240 - 960 Liters\*

**Sampling Rate**  
1.0 - 3.0 LPM

\*960 Liters recommended for adequate detection limit of Arsenic.

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## Welding Fume Profile

Quantitative Scan by ICP

Method: NIOSH 7300

Fee: \$110.00

Silver  
Cadmium  
Chromium  
Copper

Iron  
Nickel  
Manganese  
Zinc

### Sampling Requirements:

**Collection Media**  
0.8 micron MCEF

**Air Volume**  
600 - 960 Liters

**Sampling Rate**  
1.0 - 3.0 LPM

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Acetaldehyde	DNPH Cartridge or Tube	2 - 30	0.2 - 1.0	NIOSH 2532M	HPLC	2	\$77.00
Acetic Acid	PTFE & Orbo 53	1 - 24	0.05 - 0.2	NIOSH 2011M	IC	5	\$46.00
	IMP (0.01 N NaOH)	120	0.8	OSHA ID 118	IC	7.5	\$46.00
Acetic Anhydride	Coated GFF - 2PP	1.0	0.05	OSHA 82M	GC / FID	10	\$39.00
Acetone	CT or POVM-B	0.5 - 3	0.01 - 0.2	NIOSH 1300	GC / FID	20	\$39.00
Acetonitrile	LGCT or POVM	3 - 25	0.01 - 0.2	NIOSH 1606	GC/FID	20	\$39.00
Acid Mist	See individual acid or Inorganic Acid Profile						
Acrolein	DNPH Cartridge or Tube	2 - 30	0.2 - 1.0	NIOSH 2532M	HPLC	0.5	\$77.00
Acrylamide (*1)	OVS Tube (SKC 226-57)	120	1	OSHA STPGP	HPLC	1	\$77.00
Acrylic Acid	XAD-8 (2 in series)	24	0.1	OSHA 28	HPLC	0.15	\$77.00
Aldehydes	See Aldehyde Profile						
Aluminum	0.8 micron MCEF	50 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Aluminum-GFAA	0.8 micron MCEF	20- 100	0.5 - 2.0	NIOSH 7013	GFAA	0.1	\$50.00
n-Amyl Acetate	CT or POVM	1- 10	0.01 - 0.2	NIOSH 1450	GC / FID	20	\$39.00
sec-Amyl Acetate	CT or POVM	1- 10	0.01 - 0.2	NIOSH 1450	GC / FID	20	\$39.00
Anthracene (*2)	GFF	960	2	OSHA 58	HPLC	0.12	\$77.00
Aniline	SGT	5- 30	0.02- 0.2	NIOSH 2002	GC / FID	10	\$39.00
	Tr GFF LgSGT	5- 30	0.1 - 0.2	NIOSH 2017	GC / FID	20	\$39.00
Antimony	0.8 micron MCEF	40 - 1000	1.0 - 3.0	OSHA ID 125	ICP	2	\$30.00
Antimony - GFAA	0.8 micron MCEF	1 - 100	0.5 - 2.0	OSHA ID 125M	GFAA	0.05	\$50.00
Arsenic	0.8 micron MCEF	800 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Arsenic - GFAA	0.8 micron MCEF	50 - 100	1.0 - 3.0	NIOSH 7300M	GFAA	0.05	\$50.00
Arsenic Trioxide as Arsenic	Na2Co3 Treated MCEF	30 - 1000	1.0 - 3.0	NIOSH 7901M	GFAA	0.05	\$50.00
Asbestos Bulk ID	Double Plastic Bag	----	----	EPA/600/R-93/116	PLM	1%	\$15.00
Asbestos Bulk ID (*3)	Double Plastic Bag	----	----	EPA/600/R-93/116	PLM	1%	\$6.00
Asbestos Bulk Point Count	Double Plastic Bag	----	----	NESHAP	PLM	0.10%	\$50.00
Asbestos Dust	25mm, 0.8 micron MCEF	----	----	ASTM D5575 - 95	TEM		\$250.00

\*1 Place filter into vial containing 1 mL methanol after sampling.

\*2 Wrap filters in foil after sampling to protect from light. Ship refrigerated by overnight delivery.

\*3 Price per layer.

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate,LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Asbestos Fiber Characterization, Qualitative	0.45 micron MCEF			SPM	TEM	Qualitative	Call
Asbestos Fiber Characterization, Qualitative	Bulk			SPM	TEM	Qualitative	Call
Asbestos Fiber Characterization, Qualitative	Water			SPM	TEM	Qualitative	Call
Asbestos Fiber Characterization, Qualitative	Soil			SPM	TEM	Qualitative	Call
Asbestos Fiber Count, PCM	See Fiber Count, Total						
Asbestos Fiber Count, TEM	25mm, 0.45 micron MCEF	1300-1800	10	AHERA	TEM	0.005 struct/cc	\$75.00
Asbestos Fiber Count, TEM, Indirect	25mm, 0.8 micron MCEF	400	0.5 - 16	EPA - Yamate	TEM		Call
Asbestos Fiber Count, TEM, Air	25-50mm 0.45 micron MCEF	500 - 5000	See Method	ISO 10312	TEM	0.005 struct/cc	\$150.00
Asbestos Fiber Count, TEM, Water Samples	1 L glass bottle Teflon liner	800 mL		EPA 100.1	TEM		\$100.00
Asphalt Fumes	Pre-weighed 2u PTFE	28 - 400	1 - 4	NIOSH 5042	GRAV	60	\$68.00
Barium	0.8 micron MCEF	50 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Benzene	CT or POVM	2 - 30	0.2	NIOSH 1501	GC / FID	2	\$39.00
Benzidine (*1)	GFF & Sp SGT	20 - 100	0.2	OSHA 65	HPLC	0.2	\$77.00
Benzo (a) pyrene (*2)	GFF	960	2	OSHA 58	HPLC	0.12	\$77.00
Benzyl Chloride	CT or POVM	6 - 50	0.01 - 0.2	NIOSH 1003	GC / FID	5	\$39.00
Beryllium	0.8 micron MCEF	200 - 1000	1.0 - 4.0	NIOSH 7300M	ICP	0.1	\$30.00
Beryllium - GFAA	0.8 micron MCEF	25 - 200	1.0 - 4.0	NIOSH 7102	GFAA	0.005	\$50.00
Biphenyl (Diphenyl)	Tenax 20/10	3 - 30	0.01 - 0.5	NIOSH 2530	GC / FID	2	\$39.00
Bismuth	0.8 micron MCEF	50 - 1000	1.0 - 3.0	P&CAM 173	ICP	2	\$30.00
Bisphenol A	GFF	300	1.6	NIOSH P333	HPLC	0.5	\$77.00
Boron, Soluble & Borates	0.8 micron MCEF	50 - 500	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Bromine	IMP (bicarb/carb)	80 - 240	0.5	OSHA ID 108	IC	7.5	\$46.00
	0.45 micron Ag membrane	15 - 360	0.3 - 1.0	NIOSH 6011	IC	5	\$46.00
Bromoform	CT or POVM	4 - 70	0.01- 0.2	NIOSH 1003	GC / FID	20	\$39.00
BTEX	See BTEX Profile						
1,3-Butadiene (*3)	Treated CT (SKC226-73) (*2)	3	0.01 - 0.05	OSHA 56	GC / FID	2	\$39.00
2-Butanone	See Methyl Ethyl Ketone						

\*1 Ship refrigerated by overnight delivery.

\*2 Wrap filters in foil after sampling to protect from light. Ship refrigerated by overnight delivery.

\*3 Ship refrigerated by overnight delivery.

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
2-Butoxyethanol	CT or POVM	1 - 10	0.01- 0.05	NIOSH 1403	GC / FID	20	\$39.00
2-Butoxyethyl Acetate	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1403M	GC / FID	20	\$39.00
n-Butyl Acetate	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1450	GC / FID	20	\$39.00
s-Butyl Acetate	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1450	GC / FID	20	\$39.00
t-Butyl Acetate	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1450	GC / FID	20	\$39.00
Butyl Acrylate	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1450M	GC / FID	20	\$39.00
n-Butyl Alcohol	CT or POVM	2 - 10	0.01 - 0.2	NIOSH 1401	GC / FID	20	\$39.00
s-Butyl Alcohol	CT or POVM	2 - 10	0.01 - 0.2	NIOSH 1401	GC / FID	20	\$39.00
t-Butyl Alcohol	CT or POVM	2 - 10	0.01 - 0.2	NIOSH 1400	GC / FID	20	\$39.00
Butyl Carbitol	CT or POVM	2 - 10	0.01 - 0.05	NIOSH 1403M	GC / FID	20	\$39.00
Butyl Cellosolve	See 2-Butoxyethanol						
Butyl Cellosolve Acetate	See 2-Butoxyethyl acetate						
Butylene Glycol	OVS tube (SKC226-57)	60 - 1000	0.5 - 1.0	NIOSH 5523	GC / FID	20	\$39.00
Butyl Glycidyl Ether	CT or POVM	15 - 30	0.01 - 0.2	NIOSH 1616	GC / FID	20	\$39.00
Butyl Methacrylate	XAD - 2	1 - 8	0.05 - 0.1	NIOSH 2537M	GC / FID	20	\$39.00
	CT	1 - 10	0.01 - 0.2	NIOSH 1450M	GC / FID	20	\$39.00
p-Tert-Butyl Toluene	CT or POVM	10 - 30	0.01 - 0.2	NIOSH 1501	GC / FID	20	\$39.00
Cadmium	0.8 micron MCEF	800 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	1	\$30.00
Cadmium - GFAA	0.8 micron MCEF	200 - 800	1.0 - 3.0	NIOSH 7048M	GFAA	0.01	\$50.00
Calcium	0.8 micron MCEF	100 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Camphor	CT or POVM	1 - 25	0.01 - 0.2	NIOSH 1301	GC/FID	2	\$39.00
Carbaryl	OVS Tube (SKC 226-30-16)	60	1	OSHA 63	HPLC	3	\$77.00
Caprolactam - Particulate	GFF	100	0.1 - 0.5	OSHA STPGP	HPLC	10	\$77.00
- Vapor + Particulate	OVS Tube (SKC 226-57)	100	0.1 - 0.5	OSHA STPGP	HPLC	10	\$115.00
Carbitol (DGMEE)	CT or POVM	10	0.01 - 0.05	NIOSH 1403M	GC / FID	20	\$39.00
Carbon Black	5 micron PVC (PW)	100 - 500	1.5 - 2.0	NIOSH 5000	Grav.	50	\$14.00
Carbon Tetrachloride	CT or POVM	3 - 150	0.01 - 0.2	NIOSH 1003	GC / FID	20	\$39.00

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Cellosolve	See 2-Ethoxyethanol						
Cellosolve Acetate	See 2-Ethoxyethyl Acetate						
Chlorine	IMP (bicarb/carb)	80 - 240	0.5	OSHA ID 108M	IC	5	\$46.00
	0.45 micron Ag membrane	15 - 90	0.3 - 1.0	NIOSH 6011	IC	2.5	\$46.00
Chlorine Dioxide	IMP (0.02% KI/buffer)	10 - 120	0.5	OSHA ID 202	IC	10	\$77.00
Chloroacetic Acid	Orbo 53	10 - 100	0.05 - 0.2	NIOSH 2008	IC	1	\$46.00
Chlorobenzene	CT or POVM	1.5 - 40	0.01 - 0.2	NIOSH 1003	GC / FID	10	\$39.00
Chlorobromomethane	CT	0.5 - 8	0.01 - 0.2	NIOSH 1003	GC / FID	20	\$39.00
Chlorodifluoromethane (R22)	CT or POVM	0.1 - 3.0	0.01 - 0.05	NIOSH 1020M	GC / FID	50	\$39.00
Chloroform	CT or POVM	1 - 50	0.01 - 0.2	NIOSH 1003	GC / FID	20	\$39.00
Chloroprene	CT	1.5 - 8	0.01 - 0.05	NIOSH 1002	GC / FID	20	\$39.00
Chromic Acid - Soluble Chromates (*1)	5.0 micron PVC	40 - 400	1.0 - 4.0	NIOSH 7600	SPEC	0.2	\$37.00
Chromium VI - Insoluble Chromates (*1)	5.0 micron PVC	200 - 400	1.0 - 4.0	NIOSH 7605	SPEC	0.025	\$75.00
Chromium VI - Insoluble Chromates (*1)	5.0 micron PVC	200 - 400	1.0 - 4.0	OSHA ID 215	SPEC	0.025	\$75.00
Chromium	0.8 micron MCEF	50 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Chromium-GFAA	0.8 micron MCEF	25 - 500	1.0 - 3.0	NIOSH 7024M	GFAA	0.05	\$50.00
Chrysene (*2)	GFF	960	2	OSHA 58	HPLC	0.12	\$77.00
Cobalt	0.8 micron MCEF	400 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Cobalt-GFAA	0.8 micron MCEF	25 - 400		NIOSH 7027M	GFAA	0.05	\$50.00
Copper - Fume	0.8 micron MCEF	40 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	1	\$30.00
- Dust	0.8 micron MCEF	40 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	1	\$30.00
Cresols, Total Isomers	XAD-7	24	0.1	OSHA 32	HPLC	30	\$77.00
Cumene	CT or POVM	10 - 30	0.01 - 0.2	NIOSH 1501	GC / FID	20	\$39.00
Cyclohexane	CT or POVM	2.5 - 5	0.01 - 0.2	NIOSH 1500	GC / FID	20	\$39.00
Cyclohexanol	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1402	GC / FID	20	\$39.00
Cyclohexanone	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1300	GC / FID	20	\$39.00
Cyclohexene	CT or POVM	5 - 7	0.01 - 0.2	NIOSH 1500	GC / FID	20	\$39.00
Decafluoropentane (R43)	LGCT	0.5 - 4	0.01 - 0.05	NIOSH 1018M	GC / FID	20	\$39.00
DETA	See Diethylenetriamine						

\*1 Filter must be placed in a glass vial immediately after sampling

\*2 Wrap cassette in aluminum foil to protect from light. Ship refrigerated by overnight delivery.

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Diacetone Alcohol	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1402	GC / FID	20	\$39.00
Diborane	5.0 micron PTFE/Oxid./CT	60 - 260	0.5 - 1.0	NIOSH 6006	ICP	4	\$40.00
Dibutylphthalate	0.8 micron MCEF	10 - 200	1.0 - 3.0	NIOSH 5020	GC / FID	50	\$39.00
2,2-Dichloro-1,1,1-Trifluoroethane	2 CT (Lg & Sm in series)	0.25 - 3.0	0.01 - 0.05	NIOSH 2516	GC / FID	50	\$39.00
o-Dichlorobenzene	CT or POVM	1 - 60	0.01 - 0.2	NIOSH 1003	GC / FID	10	\$39.00
p-Dichlorobenzene	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1003	GC / FID	10	\$39.00
Dichlorodifluoromethane (R12)	2 CT (Lg & Sm in series)	1 - 4	0.01 - 0.05	NIOSH 1018	GC / FID	50	\$39.00
1,1-Dichloroethane	CT or POVM	0.5 - 15	0.01 - 0.2	NIOSH 1003	GC / FID	20	\$39.00
1,2-Dichloroethane	CT or POVM	1 - 50	0.01 - 0.2	NIOSH 1003	GC / FID	10	\$39.00
1,1-Dichloroethylene	See Vinylidene Chloride						
1,1 Dichloro-1-fluoroethane (R141b)	2 CT (Lg & Sm in Series)	0.25 - 3	0.01 - 0.05	NIOSH 2516M	GC / FID	50	\$39.00
Dichlorofluoromethane (R21)	2 CT (Lg & Sm in Series)	0.25 - 3	0.01 - 0.05	NIOSH 2516	GC / FID	20	\$39.00
Dichloromethane	See Methylene Chloride						
1,2 Dichloropropane	See Propylene Dichloride						
1,2-Dichloro-1,1,2,2-Tetrafluoroethane (R114)	2 CT in Series (Lg & Sm)	1 - 4	0.01 - 0.05	NIOSH 1018	GC / FID	50	\$39.00
Diesel Fuel	See Kerosene						
Diethanolamine	Tr. XAD-2 (SKC 226-30-18)	10	0.1	OSHA STPGP	HPLC	2	\$77.00
Diethyl Ether	See Ethyl Ether						
Diethylamine	Tr XAD-7 (SKC 226-96)	10	0.2	OSHA 41	HPLC/FL	3	\$77.00
Diethylene Glycol (see also Glycol Profile)	OVS Cube (SKC226-57)	60	1	NIOSH 5523	GC / FID	20	\$39.00
Dithylene Glycol Mono Ethyl Ether	See Carbitol						
Diethylenetriamine (DETA)	Tr XAD-2 (SKC 226-30-18)	10	0.1	OSHA 60	HPLC	0.5	\$77.00
Di-2-Ethyl Hexyl Phthalate (DOP)	0.8 micron MCEF	10 - 200	1.0 - 3.0	NIOSH 5020	GC / FID	50	\$39.00
Diglycidyl Ether of Bisphenol A	GFF	290	1.6	NIOSH P333	HPLC	20	\$77.00
Diisobutyl Ketone	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1300	GC / FID	20	\$39.00
Dimethoxymethane (Methylal)	CT	1 - 3	0.01 - 0.2	NIOSH 1611	GC / FID	20	\$39.00
Dimethylacetamide	SGT	15 - 80	0.01 - 1.0	NIOSH 2004	GC / FID	20	\$39.00
	CT	10	0.2	OSHA 66	GC / FID	20	\$39.00

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Dimethylamine	Treated XAD-7 (SKC 226-96)	10	0.2	OSHA 34	HPLC/FL	0.5	\$77.00
N,N-Dimethylaniline	SGT	3 -30	0.02 - 1.0	NIOSH 2002	GC / FID	10	\$39.00
Dimethylformamide (DMF)	SGT	15 - 80	0.01 - 1.0	NIOSH 2004	GC / FID	20	\$39.00
	CT	10	0.2	OSHA 66M	GC / FID	20	\$39.00
1,4-Dioxane	CT or POVM	0.5 - 15	0.01 - 0.2	NIOSH 1602	GC / FID	10	\$39.00
Diphenyl	See Biphenyl						
Dipropylene Glycol Methyl Ether	CT or POVM	5 - 10	0.01 - 0.2	NIOSH 1403M	GC/ FID	20	\$39.00
Di-sec-Octyl Phthalate (DOP)	See Di-2-Ethyl Hexyl Phthalate						
Divinylbenzene	Treated CT (SKC226-73)	12	0.05	OSHA 89	GC / FID	20	\$39.00
Dust, Nuisance Total	5 micron PVC (PW)	50 - 1000	1.5 - 2.0	NIOSH 0500	Grav	50	\$14.00
	0.8 micron MCEF Matched Weight					100	\$14.00
Dust, Nuisance Resp.	5 micron PVC (PW) with cyclone	170 - 1000	1.7	NIOSH 0600	Grav	50	\$14.00
EDA	See Ethylenediamine						
Epichlorohydrin	CT or POVM	2 - 30	0.01 - 0.2	NIOSH 1010M	GC / FID	5	\$39.00
Ethanol	CT or POVM	0.1 - 1	0.01 - 0.5	NIOSH 1400	GC / FID	20	\$39.00
	Anasorb 747 (2 in Series)	5 - 12		OSHA 100		20	\$39.00
Ethanolamine (Monoethanolamine)	Tr. XAD-2 (SKC 226-30-18)	10	0.1	OSHA STPGP	HPLC	2	\$77.00
2-Ethoxyethanol (Cellosolve)	CT or POVM	10 - 50	0.1 - 0.5	OSHA 79	GC / FID	20	\$39.00
2-Ethoxyethyl Acetate	CT or POVM	10 - 50	0.1 - 0.5	OSHA 79	GC / FID	20	\$39.00
Ethyl Acetate	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1457	GC / FID	20	\$39.00
Ethyl Acrylate	CT or POVM	3 - 10	0.02- 0.2	NIOSH 1450	GC / FID	20	\$39.00
	TR CT (SKC 226-73)	3 - 10	0.02- 0.2	OSHA 92	GC / FID	10	\$39.00
Ethyl Alcohol	See Ethanol						
Ethyl Amyl Ketone	CT	10 - 25	0.01-0.2	NIOSH 1301	GC / FID	10	\$39.00
Ethyl Benzene	CT or POVM	10 - 24	0.2	NIOSH 1501	GC / FID	10	\$39.00
Ethyl Butyl Ketone	See 3-Heptanone						
Ethyl Chloride (Chloroethane)	2 LGCT in Series	0.5 - 3	0.02 - 0.05	NIOSH 2519	GC / FID	50	\$39.00
Ethyl Ether	CT or POVM	0.25 - 3	0.01 - 0.2	NIOSH 1610	GC / FID	20	\$39.00

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Ethylamine	Tr XAD-7 (SKC 226-96)	10	0.2	OSHA 36	HPLC/FL	1	\$77.00
Ethylene Chlorohydrin	Petroleum CT (SKC 226-38)	2 - 30	0.01 - 0.2	NIOSH 2513	GC / FID	20	\$39.00
Ethylene Dichloride	See 1,2-Dichloroethylene						
Ethylene Glycol	OVS Tube (SKC226-57)	5- 60	0.5 - 2.0	NIOSH 5523	GC / FID	20	\$55.00
Ethylenediamine (EDA)	Tr XAD-2 (SKC 226-30-18)	10	0.1	OSHA 60	HPLC	4	\$77.00
Fiber Count, Total	25mm 0.8 micron MCEF	480 -1000	0.5 - 16.0	NIOSH 7400A or B	PCM	0.06 F/F	\$25.00
Fibrous Glass (Synthetic Vitreous)	25mm 0.8 micron MCEF	480	0.5 - 16.0	NIOSH 7400B	PCM	0.06 F/F	\$25.00
Forane	2 CT in Series or POVM-B	10	0.1	OSHA 29	GC / FID	20	\$39.00
Formaldehyde	IMP, FPM, SKC PM DNPH Tube or Filter	60 - 400 2 - 30	0.2 - 1.0 0.2 - 1.0	NIOSH 3500 NIOSH 2016	SPEC HPLC	2 0.2	\$37.00 \$77.00
Formic Acid	PTFE & Orbo 53 Imp (0.01 N NaOH)	1 - 24 10 - 400	0.05 - 0.2 0.2 - 1.0	NIOSH 2011 OSHA ID 112	IC IC	5 15	\$46.00 \$46.00
Furfural	HMP Treated XAD-2	1 - 12	0.01 - 0.05	NIOSH 2529	GC / FID	50	\$39.00
Furfuryl Alcohol	Porpak Q Tube	3-25	0.05 - 0.5	NIOSH 2505	GC / FID	50	\$55.00
Gasoline	CT	1- 20	0.01 - 0.2	NIOSH 1550M	GC / FID	50	\$55.00
Glutaraldehyde	DNPH Tube DNPH Treated GFF's	1- 30 2- 30	0.05 - 0.5 1.0	NIOSH 2532 OSHA 64	HPLC HPLC / UV	0.2 0.2	\$77.00 \$77.00
Halothane	2 CT in Series or POVM-B	10	0.1	OSHA 29	GC / FID	75	\$39.00
HDI (*1)	Coated GFF	15 - 30	1.0	OSHA 42	HPLC / FL	0.12	\$77.00
Heptane	CT or POVM	4	0.2	NIOSH 1500	GC / FID	10	\$39.00
Heptyl Acetate (Axarel™)	CT	10	0.5	NIOSH 1450M	GC/ FID	20	\$39.00
Heptyl Alcohol	CT	10	0.05	NIOSH 1402	GC / FID	20	\$39.00
Hexamethylene Diisocyanate	See HDI.						
n-Hexane	CT or POVM	4	0.2	NIOSH 1500	GC / FID	10	\$39.00
2-Hexanone	CT or POVM	10	0.2	NIOSH 1300	GC / FID	20	\$39.00
Hexone	See Methyl Isobutyl Ketone						
Hydrazine	Tr Firebrick (226-42-02)	20	0.1 - 1.0	OSHA 20	HPLC	0.08	\$77.00
Hydrobromic Acid	Orbo 53	3 - 100	0.2 - 0.5	NIOSH 7903	IC	5	\$46.00

\*1 Sample open-faced. For TWA sampling, sample at 0.2 LPM for a maximum of 4 hours. Ship refrigerated by overnight delivery.

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Hydrocarbons, Total as n-Hexane (*1)	CT or POVM	5 - 20	0.01 - 0.2	NIOSH 1500	GC / FID	20	\$55.00
Hydrochloric Acid	Orbo 53	3 - 100	0.2 - 0.5	NIOSH 7903	IC	2.5	\$46.00
Hydrofluoric Acid	Orbo 53	3 - 100	0.2 - 0.5	NIOSH 7903	IC	1	\$46.00
Hydrogen Bromide	See Hydrobromic Acid						
Hydrogen Chloride	See Hydrochloric Acid						
Hydrogen Fluoride	See Hydrofluoric Acid						
Hydrogen Sulfide	Orbo 34 & Pre-filter	2 - 28	0.1 - 1.5	NIOSH 6013	IC	5	\$46.00
Hydroquinone (*2)	0.8 micron MCEF	30 - 180	1.0 - 4.0	NIOSH 5004	HPLC	5	\$77.00
Iodine	Treated CT (SKC 226-67)	20 - 225	0.5 - 1.0	NIOSH 6005	IC	0.9	\$46.00
Iron Oxide as Iron	0.8 micron MCEF	150	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Isoamyl Acetate	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1450	GC / FID	20	\$39.00
Isoamyl Alcohol	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1402	GC / FID	20	\$39.00
Isobutyl Acetate	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1450	GC / FID	20	\$39.00
Isobutyl Alcohol	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1401	GC / FID	10	\$39.00
Isocyanates	See TDI, MDI, or HDI or Isocyanate Profile						
Isoflurane	See Forane						
Isooctane	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1500	GC / FID	10	\$39.00
Isophorone	Petroleum CT (SKC 226-38)	2 - 25	0.01 - 1.0	NIOSH 2508	GC / FID	20	\$39.00
Isopropyl Acetate	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1454	GC / FID	20	\$39.00
Isopropyl Alcohol	CT or POVM	0.2 - 3	0.01 - 0.2	NIOSH 1400	GC/FID	20	\$39.00
Isovaleraldehyde	DNPH Cartridge or Tube	2 - 30	0.2 - 1.0	NIOSH 2532M	HPLC	2	\$77.00
Kerosene (diesel fuel) (*3)	CT	1-20	0.01 - 0.2	NIOSH 1550	GC / FID	50	\$55.00
Lead	0.8 micron MCEF	400 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Lead - GFAA	0.8 micron MCEF	10 - 400	1.0 - 3.0	NIOSH 7105	GFAA	0.05	\$50.00
Lead - Ceramic Surfaces				ASTM C738-81	ICP		\$52.00
Lead - Wipes / Dust	Special Wipe	100 sq.cm.		NIOSH 7082	ICP	2	\$15.00
Lead - Paint Chips	Plastic Container	0.5-1 gm		NIOSH 7082	ICP	0.01%	\$15.00
Limonene	CT	10 - 25	0.02 - 0.05	NIOSH 1552	GC / FID	20	\$39.00

\*1 Analyte can also be requested as n-Decane or Toluene.

\*2 Stabilize filter immediately after sampling by immersing filter in vial containing 1% acetic acid.

\*3 Submit 5 mL of bulk separately.

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Lithium	0.8 micron MCEF	50 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Lithium Hydride	0.8 micron MCEF	160 - 500	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
MDI (*1)	Coated GFF	15 - 30	1	OSHA 47	HPLC/ FL	0.12	\$77.00
Magnesium - Fume	0.45 micron MCEF	50 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Maleic Anhydride (*2)	Treated XAD-2 & XAD-2	20	0.1	OSHA 25	HPLC	1.5	\$77.00
	Treated Filtr (SKC 225-9021)	60	0.5	OSHA 86	HPLC	3	\$77.00
Manganese	0.8 micron MCEF	100- 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Mercury	Hydrar Tube	20 - 100	0.15 - 0.25	NIOSH 6009	MA	0.03	\$50.00
	Sp PM	10 - 20	0.02	NIOSH 6009	MA	0.025	\$50.00
Mercury Particulate	0.8 micron MCEF	100 - 1000	1.0 - 3.0	NIOSH 6009	MA	0.025	\$50.00
Mesityl Oxide	CT or POVM	1 - 25	0.01 - 0.2	NIOSH 1301	GC / FID	20	\$39.00
Methanol	LGSGT	1 - 5	0.02 - 0.2	NIOSH 2000	GC/ FID	40	\$39.00
2-Methoxyethanol	CT or POVM	10 - 50	0.01 - 0.05	OSHA 79	GC / FID	20	\$39.00
Methyl Acetate	CT or POVM	2- 10	0.01 - 0.2	NIOSH 1458	GC / FID	20	\$39.00
Methyl Acrylate	CT or POVM	1 - 5	0.01 - 0.2	NIOSH 1459	GC / FID	20	\$39.00
	Tr CT (SKC 226-73)	3 - 10	0.02 - 0.2	OSHA 92	GC / FID	20	\$39.00
Methylal	See Dimethoxymethane						
Methyl Alcohol	See Methanol						
Methylamine	Tr XAD-7 (SKC 226-96)	10	0.2	OSHA 40	HPLC/FL	0.5	\$77.00
Methyl t-Amyl Ether	CT	5 - 10	0.05 - 0.2	NIOSH 1615M	GC / FID	20	\$39.00
Methyl n-Amyl Ketone	CT or POVM	1 - 25	0.05 - 0.2	NIOSH 1301	GC / FID	20	\$39.00
Methyl t-Butyl Ether	2 LGCT (in Series) or POVM	2 - 96	0.1 - 0.2	NIOSH 1615	GC / FID	20	\$39.00
Methyl Butyl Ketone	See 2-Hexanone						
Methyl Cellosolve	See 2-Methoxyethanol						
Methyl Cellosolve Acetate	See 2-Methoxyethyl Acetate						
Methyl Chloroform	CT or POVM	1 - 8	0.01 - 0.2	NIOSH 1003	GC / FID	10	\$39.00
Methyl Cyclohexane	CT	4	0.01 - 0.2	NIOSH 1500	GC / FID	20	\$39.00
Methyl Ethyl Ketone	Orbo 90 or PM (SKC 575-002)	2 - 12	0.01 - 0.2	NIOSH 2500	GC / FID	20	\$39.00
	2 SGT (in Series)	3	0.1	OSHA 16	GC / FID	20	\$39.00

\*1 Sample open-faced. For TWA sampling, sample at 0.2 LPM for a maximum of 4 hours. Ship samples refrigerated by overnight delivery.

\*2 Wrap tubes with tape to protect from light. Ship samples refrigerated ny overnight delivery.

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Methyl Isoamyl Ketone	CT or POVM	1 - 10	0.01- 0.2	NIOSH 1300M	GC/ FID	20	\$39.00
Methyl Isobutyl Carbinol	CT	5-10	0.05 - 0.2	NIOSH 1402	GC / FID	20	\$39.00
Methyl Isobutyl Ketone	CT or POVM	1- 10	0.01-0.2	NIOSH 1300	GC / FID	50	\$39.00
Methyl Methacrylate	Sp XAD-2 (SKC 226-30-06)	1- 8	0.01- 0.05	NIOSH 2537	GC / FID	20	\$39.00
	CT or POVM	1 - 10	0.01 - 0.05	NIOSH 1450M	GC / FID	20	\$39.00
Methyl Propyl Ketone	See 2-Pentanone						
n-Methyl Pyrrolidone (NMP)	CT	30 - 125	0.05- 0.2	NIOSH 1302	GC / FID	20	\$39.00
Methyl Styrene (alpha)	CT or POVM	3- 30	0.2	NIOSH 1501	GC / FID	20	\$39.00
Methylene Bisphenyl Isocyanate	See MDI						
Methylene Chloride	2 CT (in Series) or 3M POVMB	0.5 - 3	0.01 - 0.2	NIOSH 1005	GC / FID	10	\$39.00
	Anasorb CMS (226-121) or SKC PM (575-002)	10 Max	0.01 - 0.1	OSHA 80	GC / FID	10	\$39.00
Mineral Spirits (*1)	CT	20	0.01 - 0.2	NIOSH 1550	GC / FID	50	\$55.00
MOCA (*2)	13 mm GFF & SGT	50	0.2 - 1.0	NIOSH 236	HPLC	0.6	\$77.00
Molybdenum, Total	0.8 micron MCEF	50 - 1000	1.0- 3.0	NIOSH 7300M	ICP	2	\$30.00
MTBE	See Methyl-t-Butyl Ether						
Naphtha, Petroleum (*1)	CT or POVM	1 - 20	0.01 - 0.2	NIOSH 1550	GC / FID	50	\$55.00
Naphtha, VM & P (*1)	CT or POVM	1 - 20	0.01 - 0.2	NIOSH 1550	GC / FID	50	\$55.00
Naphthalene	Chrom 106 (SKC 226-110)	10 - 100	0.2	OSHA 35	GC / FID	40	\$39.00
	CT or POVM	100 - 200	0.2- 1.0	NIOSH 1501	GC / FID	100	\$39.00
Nickel & Compounds	0.8 micron MCEF	400 - 1000	1.0 - 3.0	NIOSH 7300	ICP	2	\$30.00
Nickel Carbonyl (as Ni)	Orbo 304 & pre-filter	10 - 80	0.05- 0.2	NIOSH 6007	GFAA	0.01	\$50.00
Nitric Acid	Orbo 53	3 - 100	0.2 - 0.5	NIOSH 7903	IC	5	\$46.00
Nitrobenzene	SGT	10 - 150	0.01 - 1.0	NIOSH 2005	GC/ FID	5	\$39.00
Nuisance Dust, Respirable	See Dust, Respirable						
Nuisance Dust, Total	See Dust, Total						
n-Octane	CT or POVM	4	0.01 - 0.2	NIOSH 1500	GC/ FID	20	\$39.00

\*1 Ship 5 mL of pure distillate separately.

\*2 Transfer filter to glass vial immediately after sampling. Ship refrigerated by overnight delivery.

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate,LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Oil Mist, Mineral	0.8 micron MCEF or 5 micron PVC or GFF	100 - 1000	1.0 - 3.0	NIOSH 5026	FTIR	50	\$52.00
Oil, Mist, Dust	Preweighed 5 micron PVC			NIOSH 0600	GRAV	50	\$14.00
Oil Mist, Custom (*1)	5 micron PVC or GFF	100 - 1000	1.0 - 3.0	NIOSH 5026	FTIR	50	\$90.00
Ozone (*2)	2 treated GFF (*2)	25 - 120	0.25 - 0.5	OSHA ID 124	IC	3.9	\$46.00
PAH	See PNA Profile						
Paraffin Wax Fumes	GFF	200 - 600	1.0	OSHA STPGP	GC/ FID	100	\$55.00
Particle Characterization / ID (Non-Asbestos PLM)	Double Plastic Bag or MCEF						\$70.00
Particle Sizing, Bulks	Double Plastic Bag	2 grams		Microscopy	PLM/PCM		\$150.00
Particulate Matter, Total Suspended	PW GFF, 8" x 10 "	1585 cubic meter -2450 cubic meter	1.1 - 1.7 M <sup>3</sup> /min	40CFR Pt 50 App B	Grav	1 mg	\$27.00
Particulates, Total, Respirable NOC	See Dust						
Pentachlorophenol (*3)	PTFE Filtr+ Sp XAD-7 (SKC 226-97)	50 - 100	0.2	OSHA 39	HPLC	10	\$77.00
n-Pentane	CT or POVM	2	0.05	NIOSH 1500	GC / FID	10	\$39.00
2-Pentanone	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1300	GC / FID	50	\$39.00
Perchloroethylene	See Tetrachloroethylene						
Petroleum Ether	CT	1 - 10	0.01 - 0.2	NIOSH 1550	GC / FID	20	\$55.00
Petroleum Distillates	See Gasoline, Stoddard Solvents or VM&P Naphtha						
Phenanthrene	GFF (*1)	960	2	OSHA 58	HPLC	0.12	\$77.00
Phenol	XAD-7	24	0.1	OSHA 32	HPLC	10	\$77.00
Phenyl Ether	CT or POVM	10 - 50	0.2	NIOSH 1617	GC / FID	10	\$39.00
Phenyl Ether / Biphenyl Mix	SGT	1 - 40	0.05 - 0.2	NIOSH 2013	GC / FID	10	\$39.00
Phenyl Glycidyl Ether	CT	80 - 150	0.1 - 1.0	NIOSH 1619	GC / FID	20	\$39.00
Phosphine	Sp Carbon w/KOH (226-31)	10 - 30	0.15 - 0.25	OSHA ID 180	IC	1.6	\$46.00
Phosphoric Acid	0.8 micron MCEF or Orbo 53	30 - 100 30 - 100	0.5 - 1.5 0.5	NIOSH 7903 NIOSH 7903	IC IC	10 10	\$46.00 \$46.00

\*1 Ship a 10 mL bulk of unused oil separately for standardization.

\*2 1.5 LPM for STEL.

\*3 Transfer filter into glass vial immediately after sampling and wrap with aluminum foil to protect from light.

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Phthalic Anhydride	0.8 micron MCEF	75-100	1.5	NIOSH S179	HPLC	40	\$77.00
	Sp Treated Filter	75	1	OSHA 90	HPLC	5	\$77.00
Platinum, Soluble Salts	0.8 micron MCEF	500 - 1000	1.0 - 3.0	NIOSH S191	GFAA	2	\$50.00
PNAs	See PNA Profile						
Polynuclear Aromatic Hydrocarbons	See PNA Profile						
Potassium & Compounds	0.8 micron MCEF	50 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
n-Propyl Acetate	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1450	GC / FID	10	\$39.00
n-Propyl Alcohol	CT or POVM	1 - 10	0.01 - 0.2	NIOSH 1401	GC / FID	20	\$39.00
n-Propyl Bromide	CT	2 - 4	0.02 - 0.05	NIOSH 1011M	GC / FID	20	\$39.00
Propylene Dichloride	CT or POVM	1 - 3.5	0.01 - 0.2	NIOSH 1013M	GC / FID	20	\$58.00
Propylene Glycol	OVS Tube (SKC 226-57)	5 - 60	0.5 - 2.0	NIOSH 5523	GC / FID	20	\$55.00
Propylene Glycol Methyl Ether	CT or POVM	5 - 10	0.2	OSHA 99	GC / FID	20	\$39.00
Propylene Glycol Methyl Ether Acetate	CT or POVM	5 - 10	0.2	OSHA 99	GC / FID	20	\$39.00
Propylene Oxide	CT or POVM	5	0.05 - 0.2	NIOSH 1612	GC / FID	20	\$39.00
Pyrene (*1)	GFF	960	2	OSHA 58	HPLC	0.12	\$77.00
Pyrethrum	GFF	20 - 400	1.0 - 4.0	NIOSH 5008	HPLC	20	\$77.00
Pyridine	CT	18 - 150	0.01 - 1.0	NIOSH 1613	GC / FID	20	\$39.00
Quartz	See Slica, Crystalline						
Ribavirin	GFF	40 - 1000	1.0 - 3.0	NIOSH 5027	HPLC	1	\$77.00
Selenium	0.8 micron MCEF	40 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Selenium - GFAA	0.8 micron MCEF	20 - 200	1.0 - 3.0	NIOSH 7300M	GFAA	0.05	\$50.00
Sevin	See Carbaryl						
Silica - Crystalline (*2)	5 micron PW PVC	300 - 900	1.7	NIOSH 7500	XRD	5	\$68.00
		- Quartz				5	
		- Cristobalite				5	
Silica - Crystalline Bulk	Plastic Bag	2 - 5 gms	N/A	NIOSH 7500M	XRD	1%	\$90.00
Silver	0.8 micron MCEF	50 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	1	\$30.00
Sodium & Compounds	0.8 micron MCEF	50 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00

\*1 Wrap filter in aluminum foil to protect from light. Ship refrigerated by overnight delivery.

\*2 Dust must also be requested to calculate % silica.

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Stoddard Solvent (*1)	CT or POVM	1 - 20	0.01 - 0.2	NIOSH 1550	GC / FID	50	\$55.00
Strontium	0.8 micron MCEF	50 - 1000	1.0 - 3.0	NIOSH 7300 M	ICP	2	\$30.00
Styrene	TR CT (226-73) or POVM	5 - 15	0.01 - 0.2	OSHA 89	GC / FID	40	\$39.00
Sulfur Dioxide	Anasorb 747 (KOH treated) (SKC 226-80) & PTFE Filter	12 - 24	0.1	OSHA ID 200	IC	4.2	\$46.00
Sulfuric Acid	0.8 micron MCEF	30 - 100	0.5 - 1.5	NIOSH 7903	IC	5	\$46.00
	Orbo 53	30 - 100	0.2 - 0.5	NIOSH 7903	IC	5	\$46.00
TDI, 2,4, & 2,6 (*2)	Coated GFF	15 - 170	0.2 - 1.0	OSHA 42	HPLC / FL	0.12	\$77.00
Tellurium	0.8 micron MCEF	80 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
TETA	See Triethylenetetramine						
1,1,2,2-Tetrabromoethane	SGT	50	0.2 - 1.0	NIOSH 2003	GC / FID	50	\$39.00
Tetrachloroethylene	CT or POVM	0.2 - 40	0.01 - 0.2	NIOSH 1003	GC / FID	20	\$39.00
Tetraethyl Lead (as Lead)	LGCT	30 - 200	0.01 - 1.0	SPM	ICP	0.8	\$60.00
1,1,1,2-Tetrafluoroethane (R134a)	CT	0.5 - 2.0	0.01 - 0.035	NIOSH 1016	GC / FID	50	\$39.00
Tetrahydrofuran	CT or POVM	1 - 9	0.01 - 0.2	NIOSH 1609	GC / FID	10	\$39.00
Thallium	0.8 micron MCEF	80 - 1000	1.0 - 3.0	NIOSH 7300	ICP	2	\$30.00
Thallium - GFAA	0.8 micron MCEF	20 - 100	1.0 - 3.0	NIOSH 7841	GFAA	0.05	\$50.00
Tin	0.8 micron MCEF	20 - 1000	1.5	OSHA ID 125	ICP	2	\$30.00
Tin, Total Organo Tin (*3) Compounds as Tin	XAD -2 & GFF	50 - 500	1.0 - 5.0	NIOSH 5504M	GFAA	0.5	\$60.00
Titanium	0.8 micron MCEF	50 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Titanium Dioxide	0.8 micron MCEF	100 - 1000	1.5	NIOSH S385M	ICP	3.3	\$30.00
Toluene	CT or POVM	2 - 15	0.02 - 0.2	NIOSH 1501	GC/FID	10	\$39.00
Toluene Diisocyanate	See TDI						
o-Toluidine	SGT	10 - 150	0.02 - 1	NIOSH 2002	GC/FID	20	\$39.00
Total Hydrocarbons (VOC's)	See Hydrocarbons, Total						
1,1,1-Trichloroethane	See Methyl Chloroform						
1,1,2-Trichloroethane	CT or POVM	2 - 60	0.01 - 0.2	NIOSH 1003	GC / FID	20	\$39.00

\*1 Ship a 5 mL pure distillate separately.

\*2 Sample open-faced. For TWA sampling, sample at 0.2 LPM for a maximum of 4 hours. Ship sample refrigerated by overnight delivery.

\*3 Ship samples refrigerated by overnight delivery.

Analyte	Recommended Collection Media	Suggested Volume, L	Sampling Rate, LPM	Analytical Method	Analytical Technique	ug Limit of Quantitation	Fee
Trichloroethylene	CT or POVM	1 - 30	0.01 - 0.2	NIOSH 1022	GC / FID	10	\$39.00
Trichlorofluoromethane (R11)	CT or POVM	0.3 - 7	0.01 - 0.05	NIOSH 1006	GC / FID	50	\$39.00
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	CT or POVM-B	0.1 - 3	0.01 - 0.05	NIOSH 1020	GC / FID	30	\$39.00
Triethylene Glycol	XAD-7 / GFF (OVS)	60 - 200	0.5 - 1.0	NIOSH 5523	GC / FID	10	\$39.00
Triethylenetetramine (TETA)	Tr XAD-2 (SKC 226-30-18)	10	0.1	OSHA 60	HPLC	0.5	\$77.00
Trimellitic Anhydride	Sp Treated Filter	480	2	OSHA 98	HPLC	0.5	\$77.00
1,2,4-Trimethyl Benzene	CT	10 - 30	0.01 - 0.2	NIOSH 1501	GC / FID	20	\$39.00
Tungsten, Total	0.8 micron MCEF	20 - 1000	1.0 - 3.0	NIOSH 7074	ICP	2	\$50.00
-Insoluble compounds	0.8 micron MCEF	20 - 1000		NIOSH 7074	ICP	2	\$60.00
-Soluble compounds	0.8 micron MCEF	20 - 1000		NIOSH 7074	ICP	2	\$50.00
Turpentine (*1)	CT	1 - 10	0.01 - 0.2	NIOSH 1551	GC/ FID	50	\$55.00
Valeraldehyde	DNPH Treated GFFs	3	0.05	OSHA 85	HPLC	3	\$90.00
Vanadium	0.8 micron MCEF	50 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Vanadium Pentoxide	0.8 micron MCEF	300 - 1000	0.2 - 3.5	NIOSH S388M	ICP	3.6	\$30.00
Vinyl Acetate (*2)	Orbo 92	24	0.1	NIOSH 1453	GC/ FID	20	\$39.00
Vinyl Bromide	LGCT	2 - 10	0.01 - 0.2	NIOSH 1009	GC/ FID	2	\$39.00
Vinyl Chloride (*2)	2 CT (in Series) or POVM-B	0.7 - 5.0	0.05	NIOSH 1007	GC/ FID	2 3	\$39.00
Vinyl Toluene	CT or POVM	10 - 24	0.01 - 0.2	NIOSH 1501	GC / FID	150	\$39.00
Vinylidene Chloride	CT or POVM	2.5 - 7.0	0.01 - 0.2	NIOSH 1015	GC / FID	10	\$39.00
n-Vinyl 2-Pyrrolidone (NVP)	CT	12	0.1	NIOSH 1302	GC / FID	20	\$39.00
Welding Fume Particulates	5 microns PVC (PW) or MW MCEF	200 - 1000	1 - 3	NIOSH 0500	Grav	50 100	\$14.00
Wood Dust	5 micron PVC (PW)	100 - 500	1.5 - 2.0	NIOSH 0500	Grav	50	\$14.00
Xylene, all isomers	CT or POVM	2 - 30	0.02 - 0.2	NIOSH 1501	GC / FID	10	\$39.00
Yttrium	0.8 micron MCEF	20 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Zinc	0.8 micron MCEF	20 - 1000	1.0 - 3.0	NIOSH 7300M	ICP	2	\$30.00
Zinc Oxide	See Zinc						
Zirconium	0.8 micron MCEF	20 - 1000	1.5	NIOSH 7300M	ICP	2	\$30.00

\*1 Ship 5 mL of pure distillate separately.

\*2 Ship refrigerated by overnight delivery.