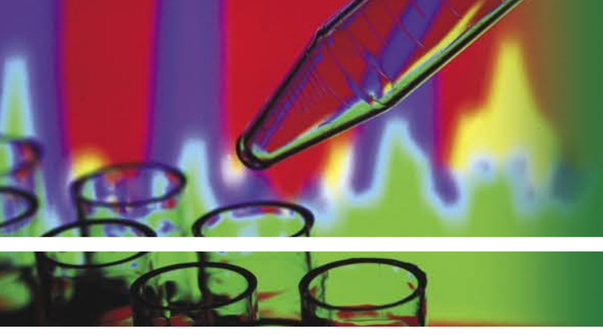
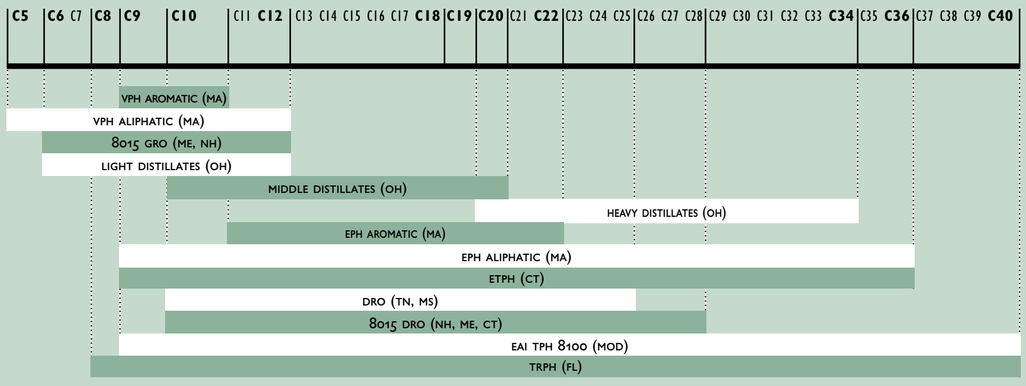


EASTERN ANALYTICAL, INC. AN EMPLOYEE OWNED COMPANY

HYDROCARBON

hydrocarbon spectrum



Hydrocarbons are organic chemical compounds that consist of the elements carbon (C) and hydrogen (H). Hydrocarbons contain a backbone consisting of carbon atoms, called a carbon skeleton (noted as Carbon Number) with hydrogen atoms attached to that backbone. Hydrocarbons, which are combustible, are the main components of fossil fuels, which include petroleum, coal, and natural gas.

At Eastern Analytical, Inc. we have the capability to measure hydrocarbon compounds in the C5 to C40 Carbon Number Range.

NHDES

nhdes recommended analytical methods

for petroleum contaminated sites

	WATER MATRIX ANALYTES	WATER MATRIX INITIAL ROUND	WATER MATRIX ALL OTHER SAMPLES	SOIL MATRIX [NOTE 2] ANALYTES	SOIL MATRIX [NOTE 2] INITIAL ROUND	SOIL MATRIX [NOTE 2] ALL OTHER SAMPLES
GASOLINE & SIMILAR WEIGHT PRODUCTS	VOC [note 4]	VOC	VOC	VOC [note 4]	VOC [note 8]	VOC [note 8]
				TPH as Gasoline	8015B-GRO [note 8]	8015B-GRO [note 8]
NO. 2, 4, 6 FUEL OIL, DIESEL, WASTE OIL & SIMILAR WEIGHT PRODUCTS [NOTE 5]	VOC [note 4]	VOC	VOC	VOC [note 4]	VOC [note 8]	VOC [note 8]
	PAH [note 6]	8310 or 525 or 8270 [note 7]	8310 or 525 or 8270 [note 7]	PAH [note 6]	8270 or 8310	8270 or 8310
				TPH as Fuel Oil	8015B-DRO	8015B-DRO
	Metals [note 5]	As requested by DES	As requested by DES	As, Ba, Cd, Cr, Pb, Hg, Se, Ag	6010 or 7060, 7080, 7130, 7190, 7420, 7470, 7740 cold vapor, 7760	6010 or 7060, 7080, 7130, 7190, 7420, 7470, 7740 cold vapor, 7760

[1] EPA method results must be reported to DES according to SW 846 current edition.
[2] Contaminated soil must be managed and analyzed in accordance with ENV-Wm 1608.
[3] Analytical methods used for all other samples must be able to detect all analytes discovered in the initial round. For the purpose of site closure, the analytical method shall be capable of detecting concentrations at or below the regulatory cleanup level.
[4] All VOC sample analysis must be for DES' "Petroleum and Hazardous Waste Remediation Full List of Analytes for Volatile Organics."
[5] Metals analysis must be performed on waste oil contaminated soils. Soil standards in the NHDES RCM Policy are based on total metals. Analysis for soils destined for off-site treatment are based on TCLP.
[6] PAH analysis shall be completed on all sampling locations during the initial round of sampling for soil and water.
[7] Ion-specific analysis may be required on 8270 tests for selected compounds in order to reach detection limits that are less than the AGQS.
[8] Soil samples collected for VOC analysis shall be preserved following EPA 5035 preservation methods.
[9] Additional field testing and laboratory analysis of geochemical indicators may be required on a site specific basis at the request of DES.

rev. September 2006

VOCs

	HOLD TIME	SAMPLE VOLUME	CONTAINER	PRESERVATIVE
AQUEOUS				
VOC	14 days	2x40 mL	VOC vials	HCl/Cool 4 ± 2°C
MA DEP VPH	14 days	2x40 mL	VOC vials	HCl/Cool 4 ± 2°C
ME GRO	14 days	2x40 mL	VOC vials	HCl/Cool 4 ± 2°C
GRO(8015)	14 days	2x40 mL	VOC vials	HCl/Cool 4 ± 2°C
Methane	14 days	2x40 mL	VOC vials	H_2SO_4/Cool 4 ± 2°C
SOIL				
VOC	14 days	2 oz	2 oz Glass	
VOC Method 5035**	14 days	5 g	20 ml preweighed, MEOH vial, 5 ml Syringe, 4 oz glass jar, (2) 40ml Sodium Bisulfate vials*	
MA DEP VPH	28 days	5 g	20 ml preweighed, MEOH vial, 5 ml Syringe, 4 oz glass jar, (2) 40ml Sodium Bisulfate vials*	
ME GRO	14 days	5 g	20 ml preweighed, MEOH vial, 5 ml Syringe, 4 oz glass jar, (2) 40ml Sodium Bisulfate vials*	
GRO(8015)	14 days	5 g	20 ml preweighed, MEOH vial, 5 ml Syringe, 4 oz glass jar, (2) 40ml Sodium Bisulfate vials*	

Organics must be collected in glass, not plastic! *Use syringe with end cap for % solids determination. **VOC Method 5035 is a Federal Requirement. As a minimum in New England, samples need a soil jar, a MeOH vial, and duplicate Sodium Bisulfate vials. The soil jar is for samples that contain calcareous material that effervesces in the MeOH. In the event Low Level is needed, Sodium Bisulfate vials are required. To date, MA and ME require MeOH and the Sodium Bisulfate vials.

524.2
1,1,1,2-Tetrachloroethane
1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,1-Dichloropropene
1,2,3-Trichlorobenzene
1,2,3-Trichloropropane
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene
1,2-Dibromo-3-chloropropane
1,2-Dibromoethane
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloropropane
1,3,5-Trimethylbenzene
1,3-Dichlorobenzene
1,3-Dichloropropane
1,4-Dichlorobenzene
2,2-Dichloropropane
2-Butanone (MEK)
2-Chlorotoluene
2-Hexanone
4-Chlorotoluene
4-Methyl-2-pentanone (MIBK)
Acetone
Benzene
Bromobenzene
Bromochloromethane
Bromodichloromethane
Bromoform
Bromomethane
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
Dibromochloromethane
Dibromomethane
Dichlorodifluoromethane
Diethyl Ether
Ethylbenzene
Ethyl-t-butyl ether (ETBE) (NH)
Hexachlorobutadiene
Isopropyl ether (DIPE) (NH)
IsoPropylbenzene
Methylene chloride
Methyl-t-butyl ether (MTBE)
mp-Xylene
Naphthalene
n-Butylbenzene
n-Propylbenzene
o-Xylene
p-Isopropyltoluene
sec-Butylbenzene
Styrene
tert-amyl methyl ether (TAME) (NH)
tert-Butyl Alcohol (TBA) (NH)
tert-Butylbenzene
Tetrachloroethene
Tetrahydrofuran (THF)
Toluene
trans-1,2-Dichloroethene
trans-1,3-Dichloropropene
Trichloroethene
Trichlorofluoromethane
Vinyl acetate
Vinyl chloride

624
1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloropropane
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2-Butanone (MEK)
2-Chloroethylvinylether
2-Hexanone
4-Methyl-2-pentanone (MIBK)
Acetone
Acrolein
Acrylonitrile
Benzene
Bromodichloromethane
Bromoform
Bromomethane
Carbon tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
Dibromochloromethane
Ethylbenzene
Methylene chloride
Methyl-t-butyl ether (MTBE)
mp-Xylene
o-Xylene
Styrene
Tetrachloroethene
Toluene
trans-1,2-Dichloroethene
trans-1,3-Dichloropropene
Trichloroethene
Vinyl acetate
Vinyl chloride

8021B HALOCARBONS
1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloropropane
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2,2-Dichloropropane
2-Butanone (MEK)
2-Chlorotoluene
2-Hexanone
4-Chlorotoluene
4-Methyl-2-pentanone (MIBK)
Acetone
Benzene
Bromobenzene
Bromochloromethane
Bromodichloromethane
Bromoform
Bromomethane
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
Dibromochloromethane
Dibromomethane
Dichlorodifluoromethane
Diethyl Ether
Ethylbenzene
Ethyl-t-butyl ether (ETBE)
Hexachlorobutadiene
Isopropyl ether (DIPE)
IsoPropylbenzene
Methylene chloride
Methyl-t-butyl ether (MTBE)
mp-Xylene
Naphthalene
n-Butylbenzene
n-Propylbenzene
o-Xylene
p-Isopropyltoluene
sec-Butylbenzene
Styrene
tert-amyl methyl ether (TAME)
tert-Butyl Alcohol (TBA)
tert-Butylbenzene
Tetrachloroethene
Tetrahydrofuran (THF)
Toluene
trans-1,2-Dichloroethene
trans-1,3-Dichloropropene
trans-1,4-Dichloro-2-Butene (CT only)
Trichloroethene
Trichlorofluoromethane
Vinyl chloride

MA VPH
Methyl-t-butyl ether (MTBE)
Benzene
Toluene
Ethylbenzene
mp-Xylene
o-Xylene
Naphthalene
Unadjusted C5-C8 Aliphatics
Unadjusted C9-C12 Aliphatics
C5-C8 Aliphatics Hydrocarbons
C9-C12 Aliphatic Hydrocarbons
C9-C10 Aromatic Hydrocarbons

GRO RANGES
TPH (Gasoline Range C6-C12)
ME GRO (Gasoline Range C6-C12)

SVOCs

	HOLD TIME	SAMPLE VOLUME	CONTAINER	PRESERVATIVE
AQUEOUS				
TPH(8100)/DRO(8015)	7 days	1 liter	1 liter Glass	Cool 4 ± 2°C
PAH	7 days	1 liter	1 liter Amber Glass	Cool 4 ± 2°C
ABN	7 days	1 liter**	1 liter Amber Glass	Cool 4 ± 2°C
Pesticides/PCB	7 days	1 liter**	1 liter Amber Glass	Cool 4 ± 2°C
MA DEP EPH*	14 days / 40 days	2 liters	1 liter Amber Glass	1:1 HCl pH <2/Cool 4 ± 2°C
ME DRO*	7 days	1 liter	1 liter Amber Glass	1:1 HCl pH <2/Cool 4 ± 2°C
Oil & Grease 1664A HEM	28 days	1 liter	Glass	Sulfuric Acid/Cool 4 ± 2°C
TPH 1664A SGT	28 days	2 liters	Glass	Sulfuric Acid/Cool 4 ± 2°C
SOIL				
TPH	14 days	4 oz	4 oz Glass	Cool 4 ± 2°C
PAH	14 days	4 oz	4 oz Amber Glass	Cool 4 ± 2°C
ABN	14 days	4 oz	4 oz Amber Glass	Cool 4 ± 2°C
Pesticides/PCB	14 days	4 oz	4 oz Amber Glass	Cool 4 ± 2°C
MA DEP EPH	14 days / 40 days	4 oz	4 oz Amber Glass	Cool 4 ± 2°C
ME DRO	14 days	4 oz	4 oz Amber Glass	Cool 4 ± 2°C

*MA EPH and ME DRO require 1 aqueous sample in triplicate per batch of 20 for QA/QC. **2 Liters needed for ABN 625 and Pest/PCB 608.

DRO 8015
DRO (Diesel Range Organics C10-C28)

TPH 8100
TPH (C9-C40)

625 or 8270 ACID
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2-Chlorophenol
2-Methylphenol
2-Nitrophenol
3/4-Methylphenol
4,6-Dinitro-2-methylphenol
4-Chloro-3-methylphenol
4-Nitrophenol
Benzoic Acid
Pentachlorophenol
Phenol

625 or 8270 BASE NEUTRALS
1,2,4-Trichlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2,4-Dinitrotoluene
2,6-Dinitrotoluene
2-Chloronaphthalene
2-Methylnaphthalene
2-Nitroaniline
3,3'-Dichlorobenzidine
3-Nitroaniline
4-Bromophenyl-phenylether
4-Chloroaniline
4-Chlorophenyl-phenylether
4-Nitroaniline
Acenaphthene
Acenaphthylene
Anthracene
Azobenzene
Benzidine
Benzo[a]anthracene
Benzo[a]pyrene
Benzo[b]fluoranthene
Benzo[g,h,i]perylene
Benzo[k]fluoranthene
Benzyl alcohol
bis(2-Chloroethoxy)methane
bis(2-Chloroethyl)ether
bis(2-chloroisopropyl)ether
bis(2-Ethylhexyl)phthalate
Butylbenzylphthalate
Carbazole
Chrysene
Dibenz[a,h]anthracene
Dibenzofuran
Diethylphthalate
Dimethylphthalate
Di-n-butylphthalate
Di-n-octylphthalate
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Indeno[1,2,3-cd]pyrene
Isophorone
Naphthalene
Nitrobenzene
N-Nitrosodimethylamine
n-Nitroso-di-n-propylamine
n-Nitrosodiphenylamine
Phenanthrene
Pyrene
Pyridine
1,4-Dioxane* (Special Request Only)

MA EPH
Acenaphthylene
Acenaphthene
Fluorene
Phenanthrene
Anthracene
Fluoranthene
Pyrene
Benzo[a]anthracene
Chrysene
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[a]pyrene
Indeno[1,2,3-cd]pyrene
Dibenz[a,h]anthracene
Benzo[g,h,i]perylene
Naphthalene
2-Methylnaphthalene
C9-C18 Aliphatic Hydrocarbons
C11-C22 Aromatic Hydrocarbons
C19-C36 Aliphatic Hydrocarbons
C11-C22 Aromatic (Unadjusted)

8270 PAH
Naphthalene
2-Methylnaphthalene
Acenaphthylene
Acenaphthene
Fluorene
Phenanthrene
Anthracene
Fluoranthene
Pyrene
Benzo[a]anthracene
Chrysene
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[a]pyrene
Dibenz[a,h]anthracene
Indeno[1,2,3-cd]pyrene
Benzo[g,h,i]perylene

608 or 8082 PCB
PCB-1016
PCB-1221
PCB-1232
PCB-1242
PCB-1254
PCB-1248
PCB-1260

608 or 8081 PESTICIDES
Aldrin
alpha-BHC
beta-BHC
Lindane (gamma-BHC)
delta-BHC
Chlordane
4,4'-DDT
4,4'-DDE
4,4'-DDD
Dieldrin
Endosulfan I
Endosulfan II
Endosulfan Sulfate
Endrin
Endrin Aldehyde
Heptachlor
Heptachlor Epoxide
Methoxychlor
Toxaphene

CHEMISTRY

wet chemistry

PARAMETER	HOLD TIME	SAMPLE VOLUME	CONTAINER	PRESERVATIVE
BOD/CBOD	**48 hrs**	400 mL	Plastic	Cool 4 ± 2°C
pH	**Immediate***	25 mL	Plastic	Cool 4 ± 2°C
Specific Conductance	28 days	200 mL	Plastic	Cool 4 ± 2°C
Turbidity	**48 hrs**	100 mL	Plastic	Cool 4 ± 2°C
Solids (TS,TVS,TSS,TDS)	7 days	300 mL	Plastic	Cool 4 ± 2°C
Settleable Matter	**48 hrs**	1 Liter	Plastic	Cool 4 ± 2°C
Anions**	28 days	100 mL	Plastic	Cool 4 ± 2°C
Nitrate	**48 hrs**	50 mL	Plastic	Cool 4 ± 2°C
Nitrite	**48 hrs**	50 mL	Plastic	Cool 4 ± 2°C
Alkalinity	14 days	200 mL	Plastic	Cool 4 ± 2°C
Volatile Fatty Acids	14 days	125 mL	Plastic	Cool 4 ± 2°C
Phenols	28 days	250 mL	Glass	Sulfuric Acid/Cool 4 ± 2°C
TOC	28 days	100 mL	Glass	Sulfuric Acid/Cool 4 ± 2°C
Total Phosphorus	28 days	100 mL	HDPE	Sulfuric Acid/Cool 4 ± 2°C
Ammonia	28 days	200 mL	Plastic/Glass	Sulfuric Acid/Cool 4 ± 2°C
TKN	28 days	150 mL	Plastic/Glass	Sulfuric Acid/Cool 4 ± 2°C
COD	28 days	20 mL	Plastic/Glass	Sulfuric Acid/Cool 4 ± 2°C
Cyanide	14 days	200 mL	Plastic/Glass	Sodium Hydroxide/Cool 4 ± 2°C
Sulfide	7 days	250 mL	Plastic	Zinc Acetate/Sodium Hydroxide/ Cool 4 ± 2°C
Sulfite	**Immediate***	40 mL	VOC vial	Cool 4 ± 2°C
Bacteria	**Immediate***	100 mL	Sterile Container	Sodium Thiosulfate/Cool 4 ± 2°C
Solid Samples		**400 g**	**8 oz Plastic/Glass**	**Cool 4 ± 2°C**

*For samples with immediate hold time, please call us 24 hours in advance of delivery. **Fluoride, Chloride, Bromide, Sulfate

METALS

metals

PARAMETER	HOLD TIME	SAMPLE VOLUME	CONTAINER	PRESERVATIVE
Iron & Manganese (only)	180 days	20 mL	2 oz Plastic (total)	Nitric Acid
ICP Metals & Mercury	180 days	200 mL	8 oz Plastic	Nitric Acid
Mercury (only)	28 days	200 mL	8 oz Plastic	Nitric Acid
Hexavalent Chromium	**24 hrs**	400 mL	8 oz Plastic	Cool 4 ± 2°C
Solid Samples	**180 days**	**400 g**	**4 oz Plastic/Glass**	Cool 4 ± 2°C
Mercury (only)	28 days	400 g	4 oz Plastic/Glass	Cool 4 ± 2°C

Please indicate whether total or dissolved metals results are needed for Aqueous samples.

METALS
Aluminum
Antimony
Arsenic
Barium
Beryllium
Bismuth
Boron
Cadmium
Calcium
Cerium
Cesium
Chromium
Cobalt
Copper
Gold
Hardness, Ca (as CaCO3)
Hardness, Mg (as CaCO3)
Hardness, Total (as CaCO3)
Indium
Iron
Lead
Lithium
Magnesium
Manganese
Mercury
Molybdenum
Nickel
Phosphorus
Potassium
Rhodium
Rubidium
Scandium
Selenium
Silicon
Silver
Sodium
Strontium
Thallium
Tin
Titanium
Tungsten
Uranium
Vanadium
Yttrium
Zinc

SERVICES

value added services

COURIER SERVICES
EAI provides courier service throughout New Hampshire, Maine, Vermont and Massachusetts. We have courier vehicles and personnel available to meet your courier needs. We ask that an advance notice of at least 24 hours be provided for scheduling purposes.

AUTOMATED BOTTLE ORDER SCHEDULING
EAI can automatically provide you with everything you need to complete your next scheduled sampling round. Our internal tracking system will tell us when to prepare and deliver the appropriate supplies to you well in advance of your sample collection date. Call us for more details.

ELECTRONIC DATA DELIVERY
Electronic Data Delivery (EDD) continues to be our customer's preference for receiving analytical data. We have several EDD options available. EDDs are customizable to accommodate customer requests. If you have a unique EDD requirement, please call or email our Information Systems department.

nelap accredited laboratory

NELAC ID# NH1012

STATE CERTIFICATION THROUGHOUT NEW ENGLAND
Connecticut Maine Massachusetts
New Hampshire Rhode Island Vermont

ADDITIONAL SERVICES AVAILABLE
Direct Push (Geoprobe®) Sample Collection Rental Equipment

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