9/18/86
N.

Engineers
Planners
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Scientists

US EPA RECORDS CENTER REGION 5
513922

September 18, 1986

MG156.35

Mr. Allen Scrivner
CH2M HILL, Inc.
P.O. Box 2090
Milwaukee, WI 53201-2090

RE: Analytical Data For Laboratory No. 8037

Dear Mr. Scrivner

On September 9, 1986 the CH2M Hill Montgomery Laboratory received four water samples with a request for analysis of selected organic parameters.

The analytical results and the associated surrogate quality control data are enclosed. No unusual difficulties were encountered during the analysis of these samples.

If you should have any questions concerning the data, please call.

Sincerely,

Harold E. Cole

Harold E. Cole
Manager, Organic Analysis

Enclosures
cc: Craig Vinson

ORGANIC ANALYSIS

SAMPLE INFORMATION

Lab No: 8037

Client: Reilly Tar

Address: CH2M Hill, Inc., P.O. Box 2090, Milwaukee, WI 53201-2090

Date Received: 9/9/86 Date Reported: 9/18/86

SAMPLE MATRICES: Water X Soil ____ Sludge ____ Other ____

ANALYSIS REQUESTED:

1. Priority Pollutants: Volatiles ____ Base/Neutrals ____ Acids ____ Pesticides ____ PCBs ____
2. SDWA Pesticides ____
3. SDWA Herbicides ____
4. Trihalomethanes ____
5. Ethylene Dibromide ____
6. Total Organic Halogen ____
7. Other: PAH, N, and S Heterocyclic Compunds 4 samples

ANALYTICAL INSTRUMENTATION

X Finnigan Models 4021, 5100, 4510 Gas Chromatographs/Mass Spectrometer/Data Systems equipped with Tekmar's LSC-2, LSC-3, and the 4200 Automatic Heated Sampler Module.

____ Varian Models 3700 and 6000 Gas Chromatographs equipped with flame ionization, electron capture, thermionic specific, flame photometric detectors and autosamplers. State of the art Varian Vista 402 Data System and Hewlett Packard integrators.

____ Dohrman DX-20 Total Organic Halide System.

____ Waters High Pressure Liquid Chromatograph with UV and Fluorescence detectors.

ANALYTICAL METHODOLOGY

1. Priority Pollutants: The water samples are analyzed in accordance with procedures described in Methods 608, 624, and 625, EPA-600/4-82-057 (1982). The soil samples are analyzed in accordance with procedures described in Methods 8080, 8240, and 8270, Test Methods for Evaluating Solid Waste, 1982.

2. Phenoxyacid Herbicides: Samples are analyzed in accordance with procedures outlined in Method 7, Federal Register, Vol.38, No.75, Part II, November 28, 1973.

3. Total Organic Halides: Samples are analyzed in accordance with procedures outlined in Method 9020, USEPA, Test Methods for Evaluating Solid Waste, 1982, SW-846, Second Edition.

4. Trihalomethanes: Samples are analyzed in accordance with procedures described in Method 501.2, Federal Register, Vol. 44, No. 231, Part II, November 29, 1979.

5. Ethylene dibromide: Water samples are analyzed in accordance with procedures outlined in Method 504, Federal Register (50 FR 46902), November 13, 1985.

CH2M HILL

A N A L Y T I C A L R E P O R T

PAH, N and S Heterocyclic Compounds

Sample Identification REILLY TAR - TRAVEL BLANK#1, 1030, GRAB

Lab No. :8037-1

Date Sampled :9/8/86

Date Extracted :9/12/86

Date Received :9/9/86

Date Analyzed :9/16/86

Compounds	MDL1 ng/l	Conc. ng/l	Compounds	MDL1 ng/l	Conc.2 ng/l
2,3-Benzofuran	*	BMDL	Anthracene	2.0	BMDL
2,3-Dihydro-1H-Indene	2.8	7.1	Acridine	3.6	BMDL
1H-Indene	2.0	BMDL	Phenanthridine	2.8	BMDL
Naphthalene	3.8	58	Carbazole	2.2	BMDL
Benzo(b)thiophene	2.0	BMDL	Fluoranthene	2.0	BMDL
Quinoline	2.0	4.7	Pyrene	2.0	BMDL
Isoquinoline	*	BMDL	Benzo(a)anthracene	2.0	BMDL
Indole	5.8	BMDL	Chrysene/Triphenylene	2.0	BMDL
2-Methylnaphthalene	4.0	14	Benzo(b & k)fluoranthene	2.0	BMDL
1-Methylnaphthalene	2.4	7.3	7,12-Dimethyl benzo(a)anthracene	*	BMDL
Biphenyl	2.0	BMDL	Benzo(e)pyrene	2.0	BMDL
Acenaphthylene	2.0	BMDL	Benzo(a)pyrene	2.0	BMDL
Acenaphthene	2.6	BMDL	Perylene	2.0	BMDL
Dibenzofuran	4.0	4.1	3-Methyl cholanthrene	*	BMDL
Fluorene	2.8	3.0	Indeno(1,2,3-cd)Pyrene	3.4	BMDL
Dibenzothiophene	*	BMDL	Dibenzo(a,h)anthracene	2.8	BMDL
Phenanthrene	2.0	BMDL	Benzo(g,h,i)perylene	2.0	BMDL

Percent Recovery of 1-Fluoronaphthalene =58

1MDL = Method Detection Limit
2BMDL = Below Method Detection Limit
ND = Not Detected
*Detection Limit not determined

Clark Brandon

REVIEW

Comments:

CH2M HILL

A N A L Y T I C A L R E P O R T

PAH, N and S Heterocyclic Compounds

Sample Identification REILLY TAR - TREATED DUP. #3, 1050, GRAB

Lab No. :8037-3

Date Sampled :9/8/86 Date Extracted :9/12/86

Date Received :9/9/86 Date Analyzed :9/16/86

Compounds	MDL1 ng/l	Conc. ng/l	Compounds	MDL1 ng/l	Conc.2 ng/l
2,3-Benzofuran	*	BMDL	Anthracene	1.0	BMDL
2,3-Dihydro-1H-Indene	1.4	15	Acridine	1.8	BMDL
1H-Indene	1.0	BMDL	Phenanthridine	1.4	BMDL
Naphthalene	1.9	5.6	Carbazole	1.1	BMDL
Benzo(b)thiophene	1.0	1.8	Fluoranthene	1.0	BMDL
Quinoline	1.0	BMDL	Pyrene	1.0	BMDL
Isoquinoline	*	BMDL	Benzo(a)anthracene	1.0	BMDL
Indole	2.9	BMDL	Chrysene/Triphenylene	1.0	BMDL
2-Methylnaphthalene	2.0	BMDL	Benzo(b & k)fluoranthene	1.0	BMDL
1-Methylnaphthalene	1.2	1.7	7,12-Dimethyl benzo(a)anthracene	*	BMDL
Biphenyl	1.0	BMDL	Benzo(e)pyrene	1.0	BMDL
Acenaphthylene	1.0	2.3	Benzo(a)pyrene	1.0	BMDL
Acenaphthene	1.3	6.4	Perylene	1.0	BMDL
Dibenzofuran	2.0	BMDL	3-Methyl cholanthrene	*	BMDL
Fluorene	1.4	2.3	Indeno(1,2,3-cd)Pyrene	1.7	BMDL
Dibenzothiophene	*	BMDL	Dibenzo(a,h)anthracene	1.4	BMDL
Phenanthrene	1.0	1.6	Benzo(g,h,i)perylene	1.0	BMDL

Percent Recovery of 1-Fluoronaphthalene =74

1MDL = Method Detection Limit
2BMDL = Below Method Detection Limit
ND = Not Detected
*Detection Limit not determined

Clark Brandon

REVIEW

Comments:

CH2M HILL

A N A L Y T I C A L R E P O R T

PAH, N and S Heterocyclic Compounds

Sample Identification REILLY TAR - TREATED #2, 1040, GRAB

Lab No. :8037-2

Date Sampled :9/8/86

Date Extracted :9/12/86

Date Received :9/9/86

Date Analyzed :9/16/86

Compounds	MDL1 ng/l	Conc. ng/l	Compounds	MDL1 ng/l	Conc.2 ng/l
2,3-Benzofuran	*	BMDL	Anthracene	1.0	BMDL
2,3-Dihydro-1H-Indene	1.4	15	Acridine	1.8	BMDL
1H-Indene	1.0	BMDL	Phenanthridine	1.4	BMDL
Naphthalene	1.9	4.5	Carbazole	1.1	BMDL
Benzo(b)thiophene	1.0	1.6	Fluoranthene	1.0	BMDL
Quinoline	1.0	BMDL	Pyrene	1.0	BMDL
Isoquinoline	*	BMDL	Benzo(a)anthracene	1.0	BMDL
Indole	2.9	BMDL	Chrysene/Triphenylene	1.0	BMDL
2-Methylnaphthalene	2.0	BMDL	Benzo(b & k)fluoranthene	1.0	BMDL
1-Methylnaphthalene	1.2	BMDL	7,12-Dimethyl benzo(a)anthracene	*	BMDL
Biphenyl	1.0	BMDL	Benzo(e)pyrene	1.0	BMDL
Acenaphthylene	1.0	2.1	Benzo(a)pyrene	1.0	BMDL
Acenaphthene	1.3	6.3	Perylene	1.0	BMDL
Dibenzofuran	2.0	BMDL	3-Methyl cholanthrene	*	BMDL
Fluorene	1.4	2.2	Indeno(1,2,3-cd)Pyrene	1.7	BMDL
Dibenzothiophene	*	BMDL	Dibenzo(a,h)anthracene	1.4	BMDL
Phenanthrene	1.0	1.1	Benzo(g,h,i)perylene	1.0	BMDL

Percent Recovery of 1-Fluoronaphthalene =67

1MDL = Method Detection Limit
2BMDL = Below Method Detection Limit
ND = Not Detected
*Detection Limit not determined

Clark Brandon

REVIEW

Comments:

CH2M HILL

A N A L Y T I C A L R E P O R T

PAH, N and S Heterocyclic Compounds

Sample Identification REILLY TAR - FEED #4, 1100, GRAB

Lab No. :8037-4

Date Sampled :9/8/86

Date Extracted :9/12/86

Date Received :9/9/86

Date Analyzed :9/16/86

Compounds	MDL1 ng/l	Conc. ng/l	Compounds	MDL1 ng/l	Conc.2 ng/l
2,3-Benzofuran	*	BMDL	Anthracene	4.0	130
2,3-Dihydro-1H-Indene	5.6	710	Acridine	7.2	BMDL
1H-Indene	4.0	40	Phenanthridine	5.6	BMDL
Naphthalene	7.6	17	Carbazole	4.4	BMDL
Benzo(b)thiophene	4.0	270	Fluoranthene	4.0	250
Quinoline	4.0	BMDL	Pyrene	4.0	240
Isoquinoline	*	BMDL	Benzo(a)anthracene	4.0	7.4
Indole	11.6	BMDL	Chrysene/Triphenylene	4.0	7.8
2-Methylnaphthalene	8.0	BMDL	Benzo(b & k)fluoranthene	4.0	BMDL
1-Methylnaphthalene	4.8	100	7,12-Dimethyl benzo(a)anthracene	*	BMDL
Biphenyl	4.0	240	Benzo(e)pyrene	4.0	BMDL
Acenaphthylene	4.0	490	Benzo(a)pyrene	4.0	BMDL
Acenaphthene	5.2	900	Perylene	4.0	BMDL
Dibenzofuran	8.0	570	3-Methyl cholanthrene	*	BMDL
Fluorene	5.6	820	Indeno(1,2,3-cd)Pyrene	6.8	BMDL
Dibenzothiophene	*	100	Dibenzo(a,h)anthracene	5.6	BMDL
Phenanthrene	4.0	640	Benzo(g,h,i)perylene	4.0	BMDL

Percent Recovery of 1-Fluoronaphthalene =51

1MDL = Method Detection Limit
2BMDL = Below Method Detection Limit
ND = Not Detected
*Detection Limit not determined

Clark Brandon
REVIEW

Comments: