5/14/85
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US EPA RECORDS CENTER REGION 5
513926

ACUREX Corporation

Energy & Environmental Division

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May 14, 1985
Acurex ID#: 8501-017A
Project: SAS 1141E

Subject: Method Detection Limit Study for Cartridge Extraction

Enclosed please find the method detection limits (MDL) for the priority pollutants and target compounds. MDLs were determined for spiked cartridges using the MDL procedure in SAS 1141E Protocol. In addition to the 7 replicates required in the procedure, 3 cartridge blanks were also extracted to determine background contamination levels for the priority pollutants and target compounds. The spiking level for the priority pollutants was 5 µg per cartridge; the spiking level of the stable-labeled isotopes was 50 µg per cartridge. The final volume of extracts was 2 mL. The method detection limits in Table 1 are for the cartridge extraction procedure and are given in ng/µL of extract. The following equation converts the MDL from ng/µL into µg per cartridge:

$$\text{MDL } (\mu g \text{ per cartridge}) = \text{MDL } (ng/\mu L \text{ extract}) \times 2 \text{ mL}$$

$V_{extract}$ was maintained constant at 2 mL for all samples. These detection limits apply to all of the cartridge samples.

The following is a list of deliverables.

1. Table 1 -- Method detection limits for the cartridge extraction procedure.

2. Table 2 -- Cartridge blank results.

555 Clyde Avenue, P.O. Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex 34-6391 TWX. 910-7796593

3. DFTPP (form, plot, list format) for 3/7/85, 3/15/85, 3/18/85, and 3/19/85.

4. Solvent blanks for 3/15/85; 3/18/85; and 3/19/85 (RIC; diagnostic report; quantitation report).

5. GC/MS standards for 3/15/85; 3/18/85; and 3/19/85 (RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report; calibration check forms)

6. Concentration data for 8501-017-21 -- MDL-21 spiked cartridge (data form; RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report).

7. Concentration data for 8501-017-22 -- MDL-22 spiked cartridge (data form; RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report).

8. Concentration data for 8501-017-23 -- MDL-23 spiked cartridge (data form; RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report).

9. Concentration data for 8501-017-24 -- MDL-24 spiked cartridge (data form; RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report).

10. Concentration data for 8501-017-25 -- MDL-25 spiked cartridge (data form; RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report).

11. Concentration data for 8501-017-26 -- MDL-26 spiked cartridge (data form; RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report).

12. Concentration data for 8501-017-27 -- MDL-27 spiked cartridge (data form; RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report).

13. Concentration data for 8501-017-28 -- MDL-28 blank cartridge (data form; RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report).

14. Concentration data for 8501-017-29 -- MDL-29 blank cartridge (data form; RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report).

15. Concentration data for 8501-017-30 -- MDL-30 blank cartridge (data form; RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report).

16. Five level calibration data performed on 3/7/85 (RICs, RT diagnostic reports; RP diagnostic reports, RT quantitation reports, RP quantitaion reports, five level calibration form).

Sincerely,

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

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Minnesota Pollution Control Association

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

Table Method detection limits for Cartridges

TRAVELER # 8501-017

PRIORITY POLLUTANT BNA'S	MDL (ng/µL) (1)				
ACENAPHTHENE	0.3				
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE	0.5				
HEXACHLOROBENZENE	0.3				
HEXACHLOROETHANE	2.2				
BIS(2-CHLOROETHYL)ETHER	1.9				
2-CHLORONAPHTHALENE	0.3				
2,4,6-TRICHLOROPHENOL	a				
P-CHLORO-M-CRESOL	2.7				
2-CHLOROPHENOL	1.1				
1,2-DICHLOROBENZENE	0.8				
1,3-DICHLOROBENZENE	0.8				
1,4-DICHLOROBENZENE	0.9				
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL	3.5				
2,4-DIMETHYLPHENOL	2.7				
2,4-DINITROTOLUENE	2.9				
2,6-DINITROTOLUENE	a				
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	0.3				
4-CHLOROPHENYL PHENYL ETHER	0.3				
4-BROMOPHENYL PHENYL ETHER	1.6				
BIS(2-CHLOROISOPROPYL) ETHER	2.4				
BIS(2-CHLOROETHOXY) METHANE	1.4				
HEXACHLOROBUTADIENE	2.3				
HEXACHLOROCYCLOPENTADIENE	2.4				
ISOPHORONE	0.7				
NAPHTHALENE	0.9				
NITROBENZENE	1.1				
2-NITROPHENOL	1.9				
4-NITROPHENOL	a				
2,4-DINITROPHENOL	a				
4,6-DINITRO-2-METHYLPHENOL	a				
N-NITROSODIMETHYL AMINE	5.6				
N-NITROSODIPHENYLAMINE	a				
N-NITROSODIPROPYLAMINE	0.3				
PENTACHLOROPHENOL	a				
PHENOL	3.6				
BIS(2-ETHYLHEXYL) PHTHALATE	4.1				

(1) internal standard calibration with phenanthrene-d_{10} as internal std

a/ to be determined at a concentration higher than 5 µg per cartridge

Table 1 (continued)

BENZYL BUTYL PHTHALATE	4.8				
DI-N-BUTYL PHTHALATE	2.7				
DI-N-OCTYL PHTHALATE	2.2				
DIETHYL PHTHALATE	3.1				
DIMETHYL PHTHALATE	1.4				
BENZO(A)ANTHRACENE	0.9				
BENZO(A)PYRENE	2.1				
BENZO(B)FLUORANTHENE	0.8				
BENZO(K)FLUORANTHENE	0.7				
CHRYSENE	1.3				
ACENAPHTHYLENE	0.8				
ANTHRACENE	0.2				
BENZO(GHI)PERYLENE	2.1				
FLUORENE	0.2				
PHENANTHRENE	0.6				
DIBENZO(AH)ANTHRACENE	0.6				
INDENO(123-CD)PYRENE	0.9				
PYRENE	0.5				
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	a				
2-METHYLPHENOL	3.5				
4-METHYLPHENOL	3.5				
2,4,5-TRICHLOROPHENOL	a				
2-METHYLNAPHTHALENE	1.5				
ANILINE	2.5				
BENZYL ALCOHOL	3.4				
4-CHLOROANILINE	a				
DIBENZOFURAN	1.5				
2-NITROANILINE	3.3				
3-NITROANILINE	a				
4-NITROANILINE	a				
Approximate DETECTION LIMIT					

a/ to be determined at a concentration higher than 5 µg per cartridge

(ng/μL)

Carbazole	0.3
4-Hydroxybiphenyl	1.8
1-Naphthylamine	a
Acridine	1.6
1,2,3-Trimethylbenzene	1.9
Quinoline	2.5
2,3,5-Trimethylphenol	1.4
3-Methyl-cholanthrene	0.5
7,12-Dimethylbenz(a)anthracene	5.2
1-Naphthol	2.5
2,3,4-Trichlorophenol	a
2,3,4,5-Tetrachlorophenol	a
4-Aminobiphenyl	a
Thiophene	NA
13H-Dibenzo(a,i)carbazole	NS

Table 1 (Concluded)

Field Surrogates	Percent Recovery
Acenaphthene-d_{10}	
Pyrene-D_{10}	
Perylene-d_{12}	
Naphthalene-d_8	
Phenol-d_5	
Carbazole-d_3	
Benzo(a)pyrene-d_{12}	
2-Naphthylamine-d_7	
Quinoline-d_7	
Dibenzo(a,h)anthracene-d_{12}	
1,2-Benz(a)anthracene-d_{12}	NS

Laboratory Surrogatges	Percent Recovery
Naphthol-d_7	
Acridine-d_9	
Pyridine-d_5	NA
Chrysene-d_{12}	
Fluoranthene-d_{10}	
Benzo(e)pyrene-d_{12}	

a/ to be determined at a concentration higher than 5μg per cartridge

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

TRAVELER # S501-017

PRIORITY POLLUTANT BNA'S	-21 ng/µL	-22 ng/µL	-23 ng/µL	-24 ng/µL	-25 ng/µL
ACENAPHTHENE	2.2	2.2	2.2	2.1	2.3
BENZIDINE	NA*	NA*	NA*	NA*	NA*
1,2,4-TRICHLOROBENZENE	2.8	2.7	2.7	2.7	3.1
HEXACHLOROBENZENE	2.2	2.2	2.2	2.1	2.4
HEXACHLOROETHANE	3.4	3.3	3.5	2.1	4.2
BIS(2-CHLOROETHYL)ETHER	3.6	3.6	3.4	3.5	4.2
2-CHLORONAPHTHALENE	2.3	2.2	2.3	2.1	2.4
2,4,6-TRICHLOROPHENOL	ND	ND	ND	ND	ND
P-CHLORO-M-CRESOL	3.0	2.8	2.7	2.9	3.3
2-CHLOROPHENOL	3.4	3.3	3.4	3.5	4.0
1,2-DICHLOROBENZENE	2.9	2.8	2.9	2.7	3.3
1,3-DICHLOROBENZENE	2.9	2.9	2.9	3.0	3.5
1,4-DICHLOROBENZENE	2.9	2.8	3.0	2.8	3.5
3,3-DICHLOROBENZIDINE	NA*	NA*	NA*	NA*	NA*
2,4-DICHLOROPHENOL	0.6	ND	ND	0.5	2.1
2,4-DIMETHYLPHENOL	2.9	2.2	1.4	0.6	0.9
2,4-DINITROTOLUENE	2.6	1.7	2.2	ND	2.3
2,6-DINITROTOLUENE	coeluting		with	acenaphthene-d_{10}	
1,2-DIPHENYLHYDRAZINE	NA	NA	NA	NA	NA
FLUORANTHENE	2.4	2.4	2.4	2.2	2.4
4-CHLOROPHENYL PHENYL ETHER	2.2	2.3	2.2	2.1	2.3
4-BROMOPHENYL PHENYL ETHER	2.1	2.2	2.1	1.1	2.5
BIS(2-CHLOROISOPROPYL) ETHER	4.8	2.7	4.1	2.5	3.6
BIS(2-CHLOROETHOXY) METHANE	2.9	2.8	2.9	2.9	2.3
HEXACHLOROBUTADIENE	1.6	2.9	3.1	2.9	3.3
HEXACHLOROCYCLOPENTADIENE	1.4	ND	1.8	1.4	1.5
ISOPHORONE	2.6	2.2	2.6	2.6	2.9
NAPHTHALENE	2.9	2.8	2.9	2.8	3.2
NITROBENZENE	3.2	3.0	3.3	3.2	3.6
2-NITROPHENOL	3.0	3.1	3.0	1.8	3.7
4-NITROPHENOL	ND	ND	ND	ND	ND
2,4-DINITROPHENOL	ND	ND	ND	ND	ND
4,6-DINITRO-2-METHYLPHENOL	ND	ND	ND	ND	ND
N-NITROSODIMETHYL AMINE	2.7	2.9	2.0	6.2	3.5
N-NITROSODIPHENYLAMINE	ND	ND	ND	ND	ND
N-NITROSODIPROPYLAMINE	2.6	2.7	2.6	2.4	2.6
PENTACHLOROPHENOL	ND	ND	ND	ND	ND
PHENOL	7.2	6.6	6.8	6.9	8.2
BIS(2-ETHYLHEXYL) PHTHALATE	2.1	4.3	4.2	3.5	6.1

(1) internal standard calibration with phenanthrene-d_{10} as internal std

"Note: These are the individual measurements that have been used to generate the data in Table 1.

Note: These are the individual measurements that have been used to generate the data in Table 1

	-21	-22	-23	-24	-25
BENZYL BUTYL PHTHALATE	4.4	4.4	5.3	3.2	2.1
DI-N-BUTYL PHTHALATE	3.3	3.4	3.1	2.7	3.3
DI-N-OCTYL PHTHALATE	1.4	3.1	3.4	2.2	2.6
DIETHYL PHTHALATE	2.9	2.9	2.9	2.9	3.3
DIMETHYL PHTHALATE	1.4	0.3	0.5	1.0	0.8
BENZO(A)ANTHRACENE	2.4	2.1	2.6	2.4	1.8
BENZO(A)PYRENE	2.9	1.6	2.9	2.6	3.0
BENZO(B)FLUORANTHENE	2.3	2.2	2.1	2.0	2.8
BENZO(K)FLUORANTHENE	2.7	2.6	2.6	2.9	2.5
CHRYSENE	3.2	2.3	2.6	2.6	1.9
ACENAPHTHYLENE	2.2	2.1	2.2	1.8	1.5
ANTHRACENE	2.2	2.1	2.1	2.3	2.1
BENZO(GHI)PERYLENE	2.5	2.6	2.7	2.8	3.0
FLUORENE	2.1	2.2	2.2	2.0	2.2
PHENANTHRENE	2.2	2.3	2.1	1.8	2.3
DIBENZO(AH)ANTHRACENE	2.7	2.7	2.9	2.8	3.1
INDENO(123-CD)PYRENE	2.4	2.6	2.8	2.2	3.1
PYRENE	2.4	2.5	2.3	2.3	2.5
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND	ND	ND	ND	ND
2-METHYLPHENOL	3.1	0.8	3.1	0.7	3.7
4-METHYLPHENOL	2.9	0.4	3.2	1.0	3.6
2,4,5-TRICHLOROPHENOL	ND	ND	ND	ND	ND
2-METHYLNAPHTHALENE	2.4	2.3	2.4	2.4	2.6
ANILINE	3.2	2.9	2.5	1.9	3.7
BENZYL ALCOHOL	4.8	4.5	4.5	1.8	5.1
4-CHLOROANILINE	2.5	ND	2.3	ND	ND
DIBENZOFURAN	2.1	1.2	2.1	1.9	1.6
2-NITROANILINE	1.2	ND	1.8	ND	2.3
3-NITROANILINE	ND	ND	ND	ND	ND
4-NITROANILINE	ND	ND	ND	ND	ND
Approximate DETECTION LIMIT					

Note: These are the individual measurements that have been used to generate the data in Table 1

	-21	-22	-23	-24	-25
Carbazole	2.5	2.5	2.5	2.3	2.6
4-Hydroxybiphenyl	0.9	1.2	1.9	0.6	1.9
1-Naphthylamine	ND	ND	ND	ND	ND
Acridine	1.2	2.7	2.5	2.2	2.7
1,2,3-Trimethylbenzene	3.3	3.2	3.4	3.2	4.0
Quinoline	3.4	4.9	3.4	3.0	5.2
2,3,5-Trimethylphenol	1.3	2.4	2.6	2.7	2.3
3-Methyl-cholanthrene	3.0	3.2	2.9	2.9	3.2
7,12-Dimethylbenz(a)anthracene	6.9	4.3	9.8	7.7	8.7
1-Naphthol	1.8	ND	1.4	ND	1.9
2,3,4-Trichlorophenol	ND	ND	ND	ND	ND
2,3,4,5-Tetrachlorophenol	ND	ND	ND	ND	ND
4-Aminobiphenyl	ND	ND	ND	ND	ND
Thiophene	NA	NA	NA	NA	NA
13H-Dibenzo(a,i)carbazole	NS	NS	NS	NS	NS

Field Surrogates	Conc (Percent Recovery)				
Acenaphthene-d_{10}	22.8(91)	22.4(90)	22.6(90)	21.8(87)	15.3(61
Pyrene-D_{10}	23.6(94)	25.8(103)	24.4(98)	23.1(92)	24.1(96
Perylene-d_{12}	16.4(66)	16.9(68)	17.7(71)	13.5(54)	14.5(58
Naphthalene-d_8	26.6(106)	24.9(100)	26.5(106)	24.7(99)	27.2(10
Phenol-d_5	31.6(126)	31.0(124)	32.5(130)	33.6(134)	37.6(15
Carbazole-d_3	10.1(40)	20.3(81)	20.1(80)	19.3(77)	8.9(36
Benzo(a)pyrene-d_{12}	25.9(104)	26.2(105)	27.3(109)	22.9(92)	25.9(10
2-Naphthylamine-d_7	NS	NS	NS	NS	NS
Quinoline-d_7	40.0(160)	39.0(156)	39.7(159)	13.4(54)	42.2(16
Dibenzo(a,h)anthracene-d_{12}	12.2(49)	12.1(48)	12.9(52)	12.6(50)	13.8(5
1,2-Benz(a)anthracene-d_{12}	NS	NS	NS	NS	NS

Laboratory Surrogatges	Conc (Percent Recovery)				
Naphthol-d_7	19.0(76)	12.2(49)	17.3(69)	12.4(50)	19.4(78
Acridine-d_9	9.9(40)	21.3(85)	21.2(85)	18.1(72)	21.1(8
Pyridine-d_5	NA	NA	NA	NA	NA
Chrysene-d_{12}	21.5(86)	21.6(86)	21.4(86)	20.2(81)	21.5(8
Fluoranthene-d_{10}	8.8(35)	22.3(89)	22.5(90)	20.4(82)	21.6(8
Benzo(e)pyrene-d_{12}	NS	NS	NS	NS	NS

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

TRAVELER # 8501-017

PRIORITY POLLUTANT BNA'S	ng/µL -26	ng/µL -27	Ave (1)	SD	MDL
ACENAPHTHENE	2.0	2.1	2.16	0.10	0.29
BENZIDINE	NA*	NA*	--	--	--
1,2,4-TRICHLOROBENZENE	2.7	2.7	2.77	0.15	0.45
HEXACHLOROBENZENE	2.4	2.3	2.26	0.11	0.34
HEXACHLOROETHANE	2.6	2.5	3.09	0.72	2.16
BIS(2-CHLOROETHYL)ETHER	2.5	2.5	3.33	0.62	1.86
2-CHLORONAPHTHALENE	2.2	2.2	2.24	0.10	0.29
2,4,6-TRICHLOROPHENOL	ND	ND	--	--	--
P-CHLORO-M-CRESOL	2.2	0.6	2.50	0.90	2.71
2-CHLOROPHENOL	2.9	2.9	3.34	0.38	1.13
1,2-DICHLOROBENZENE	2.6	2.5	2.81	0.26	0.78
1,3-DICHLOROBENZENE	2.8	2.6	2.94	0.28	0.83
1,4-DICHLOROBENZENE	2.7	2.5	2.89	0.31	0.94
3,3-DICHLOROBENZIDINE	NA*	NA*	--	--	--
2,4-DICHLOROPHENOL	0.9	3.1	1.03	1.16	3.47
2,4-DIMETHYLPHENOL	2.5	2.5	1.86	0.89	2.67
2,4-DINITROTOLUENE	2.5	2.9	2.03	0.97	2.91
2,6-DINITROTOLUENE	Coeluting with acenaphthene-d_{10}				
1,2-DIPHENYLHYDRAZINE	NA	NA	--	--	--
FLUORANTHENE	2.5	2.4	2.39	0.09	0.27
4-CHLOROPHENYL PHENYL ETHER	~~1.8~~ 2.4	2.4	2.27	0.11	0.33
4-BROMOPHENYL PHENYL ETHER	2.6	2.6	2.17	0.52	1.57
BIS(2-CHLOROISOPROPYL) ETHER	3.7	3.6	3.57	0.79	2.36
BIS(2-CHLOROETHOXY) METHANE	1.9	1.9	2.51	0.47	1.41
HEXACHLOROBUTADIENE	1.4	2.9	2.59	0.76	2.27
HEXACHLOROCYCLOPENTADIENE	2.1	2.5	1.53	0.79	2.36
ISOPHORONE	2.3	2.4	2.51	0.23	0.70
NAPHTHALENE	2.4	2.4	2.77	0.29	0.86
NITROBENZENE	2.6	2.7	3.09	0.35	1.05
2-NITROPHENOL	2.7	2.9	2.86	0.63	1.90
4-NITROPHENOL	ND	ND	--	--	--
2,4-DINITROPHENOL	ND	ND	--	--	--
4,6-DINITRO-2-METHYLPHENOL	ND	ND	--	--	--
N-NITROSODIMETHYL AMINE	2.4	ND	2.81	1.86	5.57
N-NITROSODIPHENYLAMINE	ND	ND	--	--	--
N-NITROSODIPROPYLAMINE	2.7	2.6	2.60	0.10	0.30
PENTACHLOROPHENOL	ND	ND	--	--	--
PHENOL	5.0	4.8	6.50	1.21	3.63
BIS(2-ETHYLHEXYL) PHTHALATE	2.7	2.7	3.66	1.35	4.05

(1) internal standard calibration with phenanthrene-d_{10} as internal std.

Note: These are the individual measurements that have been used to generate the data in Table 1

Note: These are the individual measurements that have been used to generate the data in Table 1

	-26	-27			
BENZYL BUTYL PHTHALATE	0.9	1.9	3.17	1.61	4.82
DI-N-BUTYL PHTHALATE	0.9	2.2	2.70	0.90	2.70
DI-N-OCTYL PHTHALATE	1.9	1.8	2.34	0.73	2.18
DIETHYL PHTHALATE	1.0	0.8	2.39	1.03	3.08
DIMETHYL PHTHALATE	0.3	1.3	0.80	0.45	1.36
BENZO(A)ANTHRACENE	2.7	2.4	2.34	0.30	0.91
BENZO(A)PYRENE	1.5	1.6	2.30	0.70	2.09
BENZO(B)FLUORANTHENE	2.2	2.4	2.29	0.26	0.78
BENZO(K)FLUORANTHENE	2.9	2.2	2.63	0.24	0.73
CHRYSENE	2.9	2.8	2.61	0.42	1.27
ACENAPHTHYLENE	1.9	2.1	1.97	0.26	0.77
ANTHRACENE	2.1	2.1	2.14	0.08	0.24
BENZO(GHI)PERYLENE	1.2	1.4	2.31	0.71	2.14
FLUORENE	2.1	2.1	2.13	0.08	0.23
PHENANTHRENE	2.3	2.3	2.19	0.19	0.56
DIBENZO(AH)ANTHRACENE	2.7	2.5	2.77	0.19	0.57
INDENO(123-CD)PYRENE	2.7	2.5	2.61	0.29	0.87
PYRENE	2.7	2.6	2.47	0.15	0.45
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND	ND	--	--	--
2-METHYLPHENOL	2.5	2.4	2.33	1.16	3.48
4-METHYLPHENOL	2.5	2.5	2.30	1.17	3.52
2,4,5-TRICHLOROPHENOL	ND	ND	--	--	--
2-METHYLNAPHTHALENE	1.1	2.1	2.19	0.50	1.50
ANILINE	1.4	1.7	2.47	0.85	2.54
BENZYL ALCOHOL	3.4	3.6	3.96	1.13	3.40
4-CHLOROANILINE	ND	0.5	--	--	--
DIBENZOFURAN	1.2	0.9	1.57	0.48	1.45
2-NITROANILINE	2.5	2.5	1.47	1.10	3.31
3-NITROANILINE	ND	ND	--	--	--
4-NITROANILINE	ND	ND	--	--	--
Approximate DETECTION LIMIT					

Note: these are the individual measurements that have been used to generate the data in Table 1

	-26	-27	Ave	SD	MDL
Carbazole	2.5	2.4	2.47	0.10	0.29
4-Hydroxybiphenyl	2.2	1.3	1.43	0.59	1.76
1-Naphthylamine	ND ~~1.9~~ NA*	ND	--	--	--
Acridine	2.5	2.7	2.36	0.54	1.62
1,2,3-Trimethylbenzene	2.3	2.2	3.09	0.63	1.90
Quinoline	4.1	3.9	4.00	0.84	2.52
2,3,5-Trimethylphenol	2.0 ~~6.9~~ NA*	~~7.7~~ NA* 2.0	2.19	0.47	1.42
3-Methyl-cholanthrene	2.9	2.7	2.97	0.18	0.54
7,12-Dimethylbenz(a)anthracene	8.1	7.9	7.63	1.72	5.16
1-Naphthol	1.6	1.7	1.20	0.83	2.50
2,3,4-Trichlorophenol	ND	ND	--	--	--
2,3,4,5-Tetrachlorophenol	ND	ND	--	--	--
4-Aminobiphenyl	ND	ND	--	--	--
Thiophene	NA	NA	--	--	--
13H-Dibenzo(a,i)carbazole	NS	NS	--	--	--

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	21.7	22.0
Pyrene-D_{10}	26.8	25.6
Perylene-d_{12}	15.7	11.9
Naphthalene-d_8	21.1	20.9
Phenol-d_5	21.3	21.2
Carbazole-d_3	19.7	19.2
Benzo(a)pyrene-d_{12}	24.2	22.5
2-Naphthylamine-d_7	NS	NS
Quinoline-d_7	32.2	31.5
Dibenzo(a,h)anthracene-d_{12}	11.3	10.0
1,2-Benz(a)anthracene-d_{12}	NS	NS

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	14.4	15.8
Acridine-d_9	21.0	21.8
Pyridine-d_5	NA	NA
Chrysene-d_{12}	22.3	19.6
Fluoranthene-d_{10}	22.9	22.3
Benzo(e)pyrene-d_{12}	NS	NS

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked

TRAVELER # 8501-017-28,29,30

PRIORITY POLLUTANT BNA'S	-28 ng/µL	-29 ng/µL	-30 ng/µL		
ACENAPHTHENE	ND	ND	ND		
BENZIDINE	NA*	NA*	NA*		
1,2,4-TRICHLOROBENZENE	ND	ND	ND		
HEXACHLOROBENZENE	↓	↓	↓		
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE	↓	↓	↓		
3,3-DICHLOROBENZIDINE	NA*	NA*	NA*		
2,4-DICHLOROPHENOL	ND	ND	ND		
2,4-DIMETHYLPHENOL	↓	↓	↓		
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE	↓	↓	↓		
1,2-DIPHENYLHYDRAZINE	NA	NA	NA		
FLUORANTHENE	ND	ND	ND		
4-CHLOROPHENYL PHENYL ETHER	↓	↓	↓		
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE	↓	↓	↓		
NAPHTHALENE	0.2	0.3	0.3		
NITROBENZENE	ND	ND	ND		
2-NITROPHENOL	↓	↓	↓		
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL	↓	↓	↓		
PHENOL	2.6	3.2	2.9		
BIS(2-ETHYLHEXYL) PHTHALATE	ND	ND	ND		

(1) internal standard calibration with phenanthrene-d_{10} as internal std

Table Cartridge blank results

Table 2 (continued)

BENZYL BUTYL PHTHALATE	ND	ND	ND		
DI-N-BUTYL PHTHALATE		0.6			
DI-N-OCTYL PHTHALATE		ND			
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND	ND	ND		
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT					

Table 2 (concluded)

	-28	-29	-30
Carbazole	ND	0.4	0.4
4-Hydroxybiphenyl	↓	ND	ND
1-Naphthylamine	↓	↓	↓
Acridine	↓	↓	↓
1,2,3-Trimethylbenzene	↓	↓	↓
Quinoline	↓	↓	↓
2,3,5-Trimethylphenol	↓	↓	↓
3-Methyl-cholanthrene	↓	↓	↓
7,12-Dimethylbenz(a)anthracene	↓	↓	↓
1-Naphthol	↓	↓	↓
2,3,4-Trichlorophenol	↓	↓	↓
2,3,4,5-Tetrachlorophenol	↓	↓	↓
4-Aminobiphenyl	↓	↓	↓
Thiophene	NA	NA	NA
13H-Dibenzo(a,i)carbazole	NA	NA	NA
Field Surrogates	Conc (ng/μL) / (Percent Recovery)		
Acenaphthene-d_{10}	20.3/81	22.4/90	23.6/94
Pyrene-D_{10}	25.9/104	21.9/88	24.7/99
Perylene-d_{12}	16.6/66	13.8/55	12.7/51
Naphthalene-d_8	19.9/80	21.9/88	24.5/98
Phenol-d_5	20.4/82	24.6/98	26.5/106
Carbazole-d_3	19.6/78	22.5/90	22.8/91
Benzo(a)pyrene-d_{12}	28.6/114	24.4/98	23.5/94
2-Naphthylamine-d_7	NS	NS	NS
Quinoline-d_7	30.5/122	35.8/143	37.7/151
Dibenzo(a,h)anthracene-d_{12}	10.9/87	8.6/69	7.8/62
1,2-Benz(a)anthracene-d_{12}	NS	NS	NS
Laboratory Surrogatges	Percent Recovery		
Naphthol-d_7	15.4/62	25.9/104	16.2/65
Acridine-d_9	21.9/88	22.5/90	23.0/92
Pyridine-d_5	NA	NA	NA
Chrysene-d_{12}	21.5/86	19.5/78	19.1/76
Fluoranthene-d_{10}	22.7/91	22/88	22.9/92
Benzo(e)pyrene-d_{12}	NS	NS	NS

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked