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APPENDICES

APPENDIX A

Standard test methods for organic matter of peat and other organic soils

1. Apparatus

- 1.1 Oven, capable of being regulated to a constant temperature of $105 \pm 5^\circ\text{C}$.
- 1.2 Muffle Furnace, capable of producing constant temperature of 550°C and 750°C .
- 1.3 Evaporator Dishes, of high silica or porcelain of not less than 100mL capacity.
- 1.4 Blender, high speed.
- 1.5 Aluminum Foil, heavy-duty.
- 1.6 Porcelain Pan, Spoons, and equipment of the like.
- 1.7 Desiccator.

2. Preparation of Sample

Place a representative field sample on a square rubber sheet, oil cloth, or equivalent material. Reduce the sample to the quantity required by quartering and place in a moisture proof container. Work rapidly to prevent moisture loss or perform the operation in a room with a high humidity.

3. Moisture content

- 3.1 Record the nearest 0.01 g the mass of a high silica or porcelain evaporating dish fitted with a heavy-duty aluminum foil cover. The dish shall have a capacity of not less than 100 ml.
- 3.2 Mix thoroughly the representative sample and place a test specimen of at least 50 g in the container described in 3.1. Crush soft lumps with a spoon or spatula. The thickness of peat in the container should not exceed 3 cm.
- 3.3 Cover immediately with the aluminum foil cover and record the mass to the nearest 0.01 g.
- 3.4 Dry uncovered for at least 16 h at 105°C or until there is no change in mass of the sample after further drying period in excess of 1 h. Remove from the oven, cover tightly, cool in a desiccator, and record the mass.

4. Calculation

Calculate the moisture content as follows:

$$\text{Moisture Content, \%} = [(A-B) \times 100] / A$$

Where:

A = mass of the as-received test specimen, g, and

B = mass of the oven-dried specimen, g.

5. Ash Content

5.1 Determine the mass of a covered high-silica or porcelain dish.

5.2 Place a part of or all of the oven-dried test specimen from a moisture determination in the dish and determine the mass of the dish and specimen.

5.3 Remove the cover and place the dish in a muffle furnace. Gradually bring the temperature in the furnace. Gradually bring the temperature in the furnace to 550°C and hold until the specimen is completely ashed (no change of mass occurs after a further period of heating).

5.4 Cover with the retained aluminum foil cover, cool in a desiccator, and determine the mass.

5.5 This test method should be used for all geotechnical and general classification purposes.

6. Calculation for Ash Content

$$\text{Ash Content, \%} = (C \times 100) / B$$

Where:

C = ash, g, and

B = oven-dried test specimen, g.

7. Calculation for Organic matter

$$\text{Organic matter, \%} = 100.0 - D$$

Where:

D = ash content, %.

APPENDIX B

Table B-1 HCB concentration (ppm) at designated time of control without yeast extract and no carbon-source supplementation set (50:50 of sludge:sediment ratio)

Time (weeks)	Sample1	Sample2	Sample3	Average	C/C ₀ *	2sd
0	1.054	1.005	0.890	0.983	1.000	0.168
2	1.004	0.984	0.916	0.968	0.985	0.092
4	0.984	0.968	0.880	0.944	0.960	0.112
6	0.861	1.005	0.867	0.911	0.927	0.162
9	0.760	0.795	0.857	0.804	0.818	0.098

Table B-2 HCB concentration (ppm) at designated time of control (no carbon-source supplementation) set (50:50 of sludge:sediment ratio)

Time (weeks)	Sample1	Sample2	Sample3	Average	C/C ₀ *	2sd
0	1.210	1.155	1.165	1.177	1.000	0.059
2	1.161	1.099	1.092	1.117	0.950	0.076
4	0.989	1.088	1.101	1.059	0.900	0.122
6	0.978	1.014	0.958	0.983	0.836	0.057
9	0.896	0.935	0.943	0.925	0.786	0.051

Table B-3 HCB concentration (ppm) at designated time of glucose supplementation set (50:50 of sludge:sediment ratio)

Time (weeks)	Sample1	Sample2	Sample3	Average	C/C ₀ *	2sd
0	0.752	0.715	0.704	0.724	1.000	0.050
2	0.700	0.651	0.650	0.667	0.922	0.058
4	0.551	0.542	0.431	0.508	0.702	0.133
6	0.189	0.203	0.250	0.214	0.296	0.064
9	0.172	0.332	0.258	0.254	0.351	0.160

Table B- 4 HCB concentration (ppm) at designated time of lactate supplementation set (50:50 of sludge:sediment ratio)

Time (weeks)	Sample1	Sample2	Sample3	Average	C/C₀*	2sd
0	1.196	1.142	0.944	1.094	1.000	0.265
2	0.982	0.934	0.875	0.930	0.850	0.108
4	0.821	0.722	0.798	0.781	0.713	0.103
6	0.581	0.541	0.544	0.555	0.508	0.045
9	0.427	0.396	0.393	0.405	0.370	0.038

Table B-5 HCB concentration (ppm) at designated time of ethanol supplementation set (50:50 of sludge:sediment ratio)

Time (weeks)	Sample1	Sample2	Sample3	Average	C/C₀*	2sd
0	1.183	1.175	1.114	1.157	1.000	0.076
2	1.047	0.927	0.918	0.964	0.833	0.144
4	0.907	0.894	0.821	0.874	0.755	0.093
6	0.657	0.636	0.670	0.654	0.565	0.034
9	0.627	0.611	0.614	0.617	0.534	0.017

Table B-6 HCB concentration (ppm) at designated time of formate supplementation set (50:50 of sludge:sediment ratio)

Time (weeks)	Sample1	Sample2	Sample3	Average	C/C₀*	2sd
0	1.108	1.039	0.918	1.022	1.000	0.192
2	1.102	0.979	0.944	1.008	0.987	0.166
4	0.933	0.872	0.839	0.881	0.862	0.095
6	0.561	0.631	0.625	0.606	0.593	0.078
9	0.653	0.632	0.618	0.634	0.621	0.035

Table B-7 HCB concentration (ppm) at designated time of acetate/butyrate/propionate supplementation set (50:50 of sludge:sediment ratio)

Time (weeks)	Sample1	Sample2	Sample3	Average	C/C ₀ *	2sd
0	0.809	0.755	0.633	0.732	1.000	0.181
2	0.732	0.677	0.612	0.674	0.920	0.120
4	0.636	0.592	0.518	0.582	0.795	0.120
6	0.528	0.435	0.467	0.477	0.651	0.094
9	0.465	0.520	0.585	0.523	0.715	0.120

Table B-8 HCB concentration (ppm) at designated time of 20:80 (sludge:sediment) with glucose supplementation set

Time (weeks)	Sample1	Sample2	Sample3	Average	C/C ₀ *	2sd
0	1.122	1.136	1.187	1.148	1.000	0.068
2	1.079	1.009	1.051	1.046	0.911	0.070
4	0.885	0.984	0.945	0.938	0.817	0.100
6	0.842	0.796	0.811	0.816	0.711	0.047
9	0.678	0.556	0.662	0.632	0.550	0.133

Table B-9 HCB concentration (ppm) at designated time of 50:80 (sludge:sediment) without glucose supplementation set

Time (weeks)	Sample1	Sample2	Sample3	Average	C/C ₀ *	2sd
0	1.006	1.066	0.993	1.022	1.000	0.078
2	0.957	0.890	0.900	0.916	0.896	0.073
4	0.927	0.864	0.942	0.911	0.892	0.082
6	0.933	0.770	0.798	0.834	0.816	0.174
9	0.696	0.750	0.728	0.725	0.709	0.054

* Average HCB concentration at varied time to initial HCB concentration

APPENDIX C

Table C-1 HCB extract concentration (ppm) and %Recovery of HCB from sediment contaminated with 10 ppm HCB, using extraction method from section 3.4

Time of extraction	sample1	sample2	sample3
1	0.688	0.925	0.758
2	0.313	0.363	0.306
3	0.224	0.252	0.189
4	0.177	0.141	0.174
5	0.159	0.133	0.2
6	0.103	0.077	0.114
Total	1.664	1.891	1.741
%Recovery	16.64	18.91	17.41

Table C-2 HCB extract concentration (ppm) and %Recovery of HCB from sediment contaminated with 50 ppm HCB, using extraction method from section 3.4

Time of extraction	sample1	sample2	sample3
1	7.102	5.558	7.288
2	5.014	4.411	3.417
3	2.122	2.762	2.215
4	1.685	2.055	1.448
5	1.147	1.244	1.453
6	0.45	1.053	0.67
Total	17.52	17.083	16.491
%Recovery	35.04	34.166	32.982

Table C-3 HCB extract concentration (ppm) and %Recovery of HCB from liquid contaminated with 10 ppm HCB, using liquid/liquid extraction.

Time of extraction	sample1	sample2	sample3
1	6.56	5.933	6.744
2	1.065	1.42	1.117
Total	7.625	7.353	7.861
%Recovery	76.25	73.53	78.61

Table C-4 HCB extract concentration (ppm) and %Recovery of HCB from liquid contaminated with 50 ppm HCB, using liquid/liquid extraction.

Time of extraction	sample1	sample2	sample3
1	30.012	33.04	30.45
2	6.644	4.125	6.233
3	1.133	0.85	1.341
Total	37.789	38.015	38.024
%Recovery	75.578	76.03	76.048

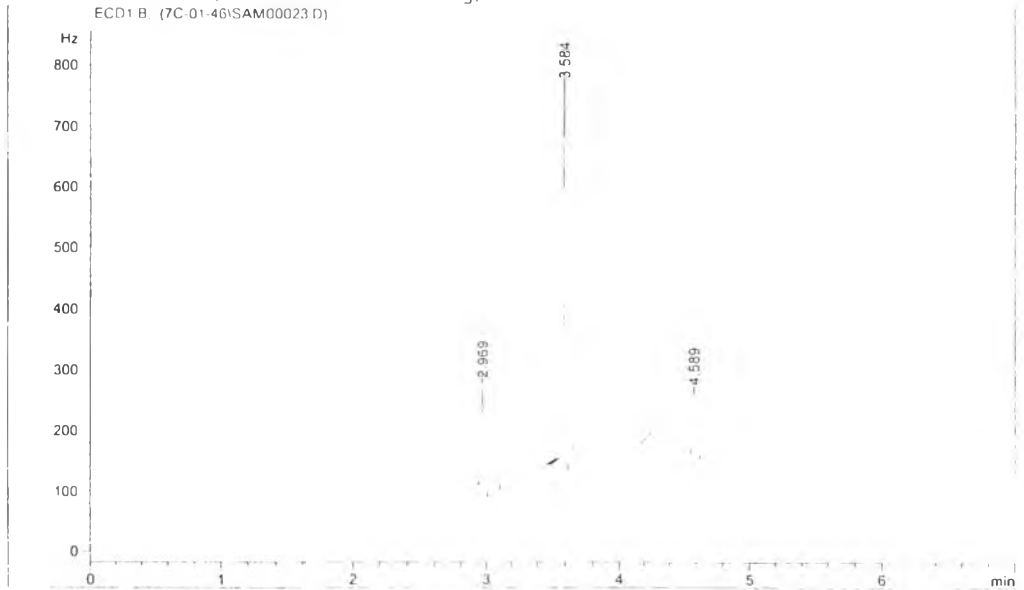
APPENDIX D

Chromatogram(s) of samples

Data File C:\HPCHEM\1\DATA\7C-01-46\SAM00023.D

Sample Name: E-t3-s3-e1

```
=====
Injection Date   : 1/7/2003 7:50:39 PM           Seq Line : 12
Sample Name     : E-t3-s3-e1                     Location  : Vial 3B
Acq. Operator   : Parinda                        Inj       : 2
                                                    Inj Volume: 1 µl
Acq. Method     : C:\HPCHEM\1\METHODS\F2.M
Last changed    : 1/6/2003 5:27:02 PM by Parinda
Analysis Method : C:\HPCHEM\1\METHODS\COOL_TUM.M
Last changed    : 4/26/2003 10:45:49 AM by chalatip
                  (modified after loading)
=====
```



Area Percent Report

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
```

Signal 1: ECD1 B.

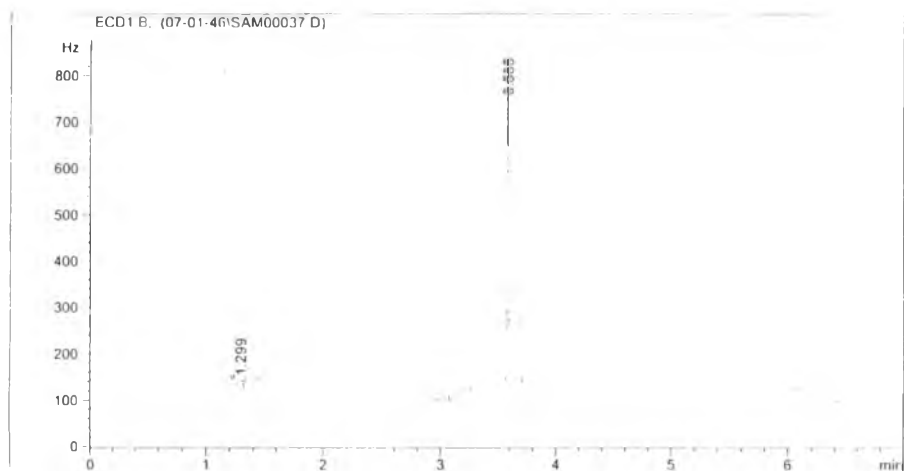
Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	2.969	BP	0.0158	149.44690	177.25511	11.42648
2	3.584	BV	0.0246	1038.70984	652.26257	79.41813
3	4.589	VB	0.0181	119.74343	115.12688	9.15540

Totals : 1307.90017 944.64456

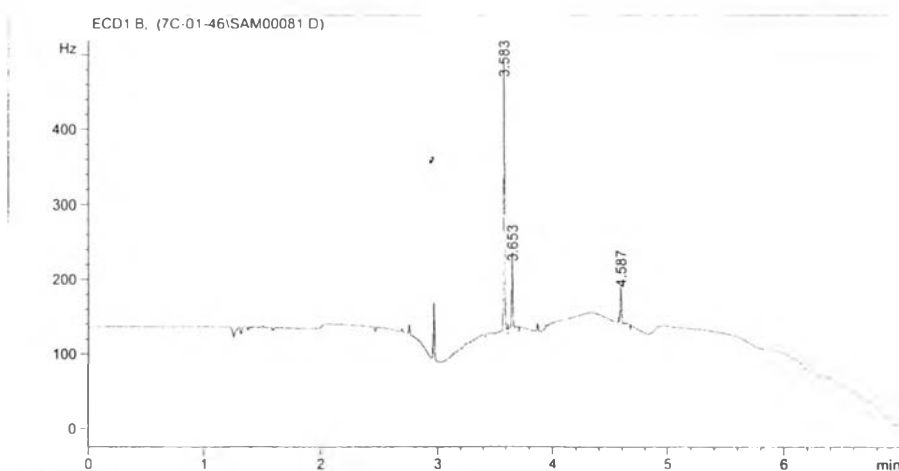
Results obtained with enhanced integrator!

*** End of Report ***

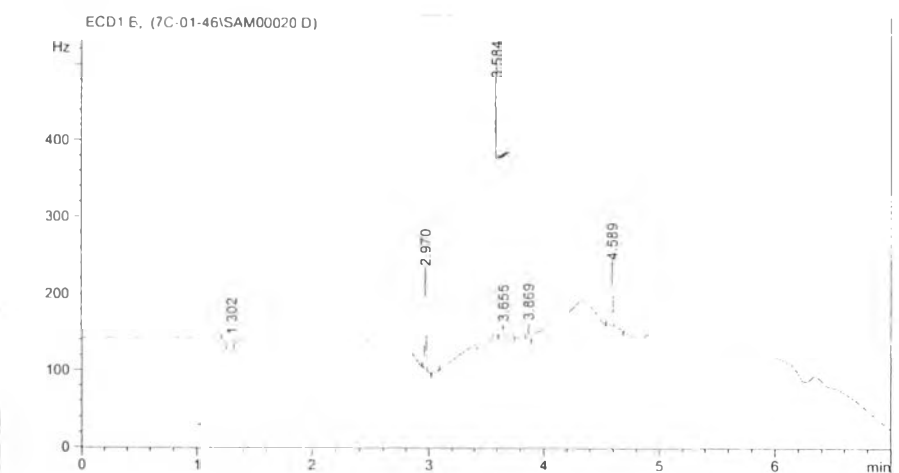
HCB standard solution



Sample of glucose supplementation set



Sample of lactate supplementation set



BIOGRAPHY

Miss Parinda Tungmee was born on August 13, 1979 in Sukhothai, Thailand. She attended Udomdarunee School in Sukhothai and graduated in 1996. She received her Bachelor's Degree in Environmental Engineering from Faculty of Engineering, King Mongkut's University of Technology Thonburi in 2001. She pursued her Master Degree study in the International Postgraduate Programs in Environmental Management, Inter-Department of Environmental Management, Chulalongkorn University, Bangkok, Thailand in May 2001. She was awarded Master Degree of Science in Environmental Management in April 2003.

