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REPORT NO.: MDA-520

JOB/PROJECT NO.: 484.2170

DATE: 7 August 1984

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TITLE: ANALYSIS OF SOIL CORE SAMPLES

AUTHORS: B. M. Hughes

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ABSTRACT: Soil core samples from the Krummrich plant were analyzed for possible PCB concentrations. The results of these analyses are shown in this report.

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Senior Research Group Leader

APPROVED BY: R. F. Ivory
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MONS 023029

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ABSTRACT ONLY

H. A. Woltermann

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ACKNOWLEDGEMENT

Contributions of the following Dayton Laboratory personnel to this project are gratefully acknowledged:

Analyses: B. M. Hughes
D. McKenzie
C. Trang

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ANALYSIS REPORT

DATE: August 3, 1984

LOG NUMBER: 1-84-05-23-02 PROJECT NO: 484.21718

TO:

Krummrich/Ivory

FROM:

Environmental Sciences Center
Monsanto Company/Dayton Laboratory
1515 Nicholas Road
Dayton, Ohio 45418

Phone No: (513) 268-3411

Title: Analysis of Krummrich Soil Core Samples

Standard Sampling Method No(s): Samples supplied by customer.

Standard Extraction Method No(s): PCEX02

Standard Analysis Method No(s): ECAN02

Final Report File No(s): A21718

Table File No(s): B21718

Table 1 summarizes data from the top 2" of core samples received for Aroclor formulation analysis. Also included are copies of Extraction and Analytical Methods and Analytical Request Information generated for this project.

ANALYST(S): B. Mason Hughes, David McKenzie and Chi Trang

ANALYST APPROVAL: B Thaw Hughes

TABLE 1. Results of Capillary GC/EC Analyses of Arpclor Formulations in Krummrich Core Samples

ESC Project No: 484.21718 Date: June 26,1984

Sample I.D.	Concentration(ug/g)			
	Total Aroclors	Aroclor1248	Aroclor1254	Aroclor1260
KR#70 0-2"	74.98	48.01	ND	26.97
KR#71 0-2"	ND	ND	ND	ND
KR#72 0-2"	14.99	10.94	ND	4.05
KR#73 0-2"	6.95	4.86	ND	2.09
KR#74 0-2"	1353	ND	856	497
KR#75 0-2"	ND	ND	ND	ND
KR#76 0-2"	52.83	23.60	ND	29.23
KR#77 0-2"	53.55	38.78	ND	14.77
KR#77 High Spike	60.13	43.27	ND	16.86
KR#78 0-2"	431.77	216.86	ND	214.91
KR#79 0-2"	370.81	245.94	ND	124.87
KR Method Blank	ND	ND	ND	ND
KR#80 0-2"	328	119.81	ND	208.19
KR#81 0-2"	57.86	32.47	ND	25.39
KR#82 0-2"	173.14	127.23	ND	45.91
KR#82 Low Spike	190.40	131.58	ND	58.82
KR#82 High Spike	238.63	165.54	ND	73.09
KR#83 0-2"	154.11	101.74	ND	52.37
KR#84 0-2"	17.34	8.52	ND	8.82
KR#85 0-2"	90.41	49.80	ND	40.61
KR#86 0-2"	85.21	37.25	ND	47.96
KR#86 Duplicate	53.01	20.09	ND	32.92
KR#87 0-2"	109.06	40.67	ND	68.39
KR#88 0-2"	40.64	15.19	ND	33.45
KR#89 0-2"	2524	1479	ND	1045
KR#89 Duplicate	2392	1464	ND	928
KR#89 Low Spike	2397	1470	ND	927
KR Method Blank	ND	ND	ND	ND

EXPLANATION OF ABBREVIATIONS:

ND = none detected (<10 ug/g).

TABLE FILE NO: B21718

MONS 023032

The following pages describe Standard Extraction Methods and Standard Analysis Methods used for this project.

ESC Standard Extraction Method (SEM) TITLE: PCBs in Non-EC Active Matrices

ESC Standard Extraction Method No: PCEX02

MATRIX(X).(CES):	TYPICAL SAMPLE SIZE (g)	TYPICAL EXTRACT VOLUME (ml)
Soils and other non-EC active solids and solvents	0.5 - 5.0	10

TYPICAL ANALYTES: Aroclors 1232, 1242, 1248, 1254, 1260, 1262, trichlorobiphenyl isomers through octachlorobiphenyl isomers

ESC Standard Analysis Method Nos: ECAN01, ECAN02

INTERFERENCES: Any electron capturing species in the retention time region of trichlorobiphenyl isomers through octachlorobiphenyl isomers.

TYPICAL SURROGATES	TYPICAL RECOVERIES (%)
pentachlorobenzene	50 - 120
2,4,6-trichlorobiphenyl	50 - 120

APPARATUS AND MATERIALS:
Burdick and Jackson benzene or hexane for sample extraction or dilution.
Disposable glassware.
(See flow sheet for this extraction method in PCFS02.)

LIMITATIONS: Method applies only to matrices which do not contain interferring electron capturing species in the trichlorobiphenyl through octachlorobiphenyl isomer retention time region.

SAFETY PRECAUTIONS: See PCB handling protocols in laboratory safety manual.

DATES OF METHOD CREATION AND UPDATES: 10/31/83, 2/3/84

FLOW SHEET PCFS02

FOR ESC EXTRACTION METHOD PCEX02

SAMPLE ID: --(See Tables)---------- NRC EXTRACT # -(See Tables)-

---------- LOG NO: --(See Tables)----

EXTRACTION DATE and TIME: ----------

FINAL WEIGHT ----------

WEIGH OUT SAMPLE INTO A 14 OR 40 mL PIERCE VIAL [ ]

INITIAL WEIGHT ----------

SAMPLE WEIGHT -(See Tables)---

SURROGATE SPIKE OF SAMPLE [ ]

--(See Tables)----

ADD 10 mL BENZENE TO SAMPLE. [ ]

ULTRASONICATE SAMPLE FOR 1/2 HOUR IN A SOUND BATH. [ ]

PLACE 1 mL OF THE EXTRACT INTO A 1 1/2 mL VIAL FOR ANALYSIS. [ ]

NITROGEN BLOW DOWN IF REQUIRED TO --(See Tables)--mL [ ]

EXTRACT NO: --(See Tables)--

DATE/TIME COMPLETED ----------

ANALYST: ---(See Tables)-----

ESC JOB NO: --(See Tables)--

MONS 023035

ESC Standard Analysis Method (SAM) ESC Standard Analysis Method No:
TITLE: Aroclor Formulations in Solvents ECAN02

ANALYTICAL INSTRUMENT AND MODE OF OPERATION: HP-5880 Capillary GC/EC Interfaced to an HP-3357-LAS Laboratory Data System

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TYPICAL ANALYTE	TYPICAL INSTRUMENT LEVEL OF DETECTION (LOD) (ug/ml)	TYPICAL PRECISION @ 10X LOD (%)	TYPICAL ACCURACY @ 10X LOD (%)
Aroclor formulations 1232, 1242, 1248, 1254, 1260, and 1262	0.1	30	30

INTERFERENCES AND LIMITATIONS: Any electron capturing species in the retention time region of trichlorobiphenyl through octachlorobiphenyl isomers are potential interferences. Exact retention times of most likely PCB isomers can be obtained from the analysis of Aroclor 1248, Aroclor 1254 or Aroclor 1260 formulations.

CHROMATOGRAPHIC COLUMN: 30-meter fused silica J&W DB-5 (0.25 uM) with wide bore (0.32mm).

COLUMN TEMPERATURE PROGRAM: 130(1)/4/300 INJECTION TYPE: Splitless

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CALIBRATION AND STANDARDIZATION: Use internal standard quantitation technique and calibrate instrument response factors from authentic Aroclor formulation standards. Use a minimum of 10 PCB isomers for the determination of formulation identity and quantity.

CALCULATIONS: Formulation concentration = (isomer area)/(isomer RRF)

where: RRF is the relative response factor for the appropriate PCB isomer in a given formulation. Formulation concentration is obtained from the average of at least 10 such calculations.

SAFETY PRECAUTIONS: See PCB handling protocols in laboratory safety manual.

DATES OF METHOD CREATION AND METHOD UPDATES: 10/25/83, 2/3/84

The following pages describe Analytical Request information generated for this project.

NRC ENVIRONMENTAL SCIENCES CENTER

ANALYSIS REQUEST

DATE: MAY 23, 1984 LOG NO: 1-84-05-23-02

REQUESTER: KRUMMRICH/IVORY

PROJECT NO: 484.21718

REPORT RESULTS TO: FILES/MEES,IVORY,BROOKS

ANALYSIS REQUESTS SENT TO: FILES,IVORY,BROOKS,HUGHES

SAMPLE PICKUP BY: D. MCKENZIE

SAMPLE LOCATION:

SAMPLE DESCRIPTION FOR 20 SAMPLES

SAMPLE IDENTIFICATION	NUMBER OF BOTTLES	ESC NUMBER(S)
#87	1	PCB477
#77	1	PCB462
#77 High Spike		PCB463
#79	1	PCB474
#80	1	PCB470
Method Blank		PCB466
#73	1	PCB471
#71	1	PCB457
#75	1	PCB476
#76	1	PCB473
#72	1	PCB467
#74	1	PCB472
#70	1	PCB469
#83	1	PCB468
#84	1	PCB458
#85	1	PCB464
#89	1	PCB459
#89 Duplicate		PCB460
#89 Low Spike		PCB461
#86	1	PCB451
#86 Duplicate		PCB452
#81	1	PCB453
#80	1	PCB465
#78	1	PCB475
#82	1	PCB454
#82 Low Spike		PCB455
#82 High Spike		PCB456
Method Blank		PCB478

RECORDED BY: P. MUPP

REQUIRED ANALYSES: AROCLOR PCB (ANALYZE TOP 2" -HOLD REST OF CORE)

MONS 023038

ANALYTICAL TECHNIQUES:

	DATE COMPLETED
X GC/EC (18)	8/3/84

QUALITATIVE: YES SEMIQUANTITATIVE: QUANTITATIVE: YES

REQUIRED QA/QC:

COMPLETION DATE REQUESTED:

COMMENTS: Data tables sent To Krummrich June 26, 1984.

SAMPLE DISPOSITION: X HOLD FOR 30 DAYS

SAFETY PRECAUTIONS:

ANALYSIS REQUEST FILE NAME: AA2170:L1

MONS 023039