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Analysis REPORT
(TYPE OF REPORT)

REPORT NO.: MSL-5101
ESC-UAG-85-45

JOB/PROJECT NO.: 659

DATE: October 21, 1985

PERIOD COVERED:

TITLE: ANALYSIS OF SOIL AND OIL SAMPLES FROM WORLD HEADQUARTERS FOR AROCLORS

AUTHORS: B. Mason Hughes and C.K. Trang

ABSTRACT: Four soil samples from the Warson Warehouse and four oil samples from the Creve Coeur pilot plant were analyzed by electron capture gas chromatography for polychlorinated biphenyl content. Two of the oil samples contained concentrations of approximately 2ppm.

TECHNICAL APPROVAL: Paul S. Sherman /RWH
P.L. Sherman
Environmental Sciences Center
Senior Research Group Leader

APPROVED BY: William M Mees
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Environmental Sciences Center
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APPROVAL DATE: 10-31-85

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REPT. NO. MSL-5101
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AUTHORS: B.M. Hughes and C.K. Trang
TITLE: ANALYSIS OF SOIL AND OIL SAMPLES FROM WORLD HEADQUARTERS FOR AROCLORS
COPY NO.:

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ANALYSIS REPORT

DATE: October 21, 1985

LOG NUMBER: U-85-9-26-02 PROJECT NO: 760.18 - 659

TO: Mike Arnold

FROM:

Environmental Sciences Center
Monsanto Company
800 N. Lindbergh Blvd.
St. Louis, Mo. 63167

Phone No: (314) 694-1464

Title: Analysis of Aroclor Formulations in Four Soil and Four Oil Samples

Standard Sampling Method No(s): N.A.

Standard Extraction Method No(s): See sample dilution information in Analytical Request Information.

Standard Analysis Method No(s): EGAN02

Final Report File No(s): A65918

Table File No(s): B65918, C65918

Table 1 summarizes results from the analysis of soil and oil samples for Aroclor formulations. Table 2 summarizes QA/QC data obtained for this project. Note that two oil samples contain traces of Aroclor 1242 at concentrations less than 50 ug/g.

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

ANALYST APPROVAL: B. Mason Hughes

TABLE 1. Summary of PCB Concentrations in Oil and Soil Samples.

ESC Project No: 760.18 - 65918 Date: October 14, 1985

Sample I.D.	Surrogate Recoveries(%Recovery)		PCB Concentration (ug/g)				
	CL5-benzene	2,4,6-CL3-biphenyl	A1232	A1242	A1248	A1254	Total
Soil-12" North	102	100	ND(a)	ND(a)	ND(a)	ND(a)	ND(a)
" (DUP)	90	92	"	"	"	"	"
Soil-24" North	106	110	"	"	"	"	"
Soil-24" South	102	102	"	"	"	"	"
Soil-24" West	107	110	"	"	"	"	"
Method Blank	106	109	"	"	"	"	"
Oil-A	92	82	"	"	"	"	"
" (DUP)	86	80	"	"	"	"	"
Oil-B	79	85	"	1.54	"	"	1.54
Oil-C	96	101	"	1.86	"	"	1.86
ID#TTCL GSP	69	57	"	ND(a)	"	"	ND(a)
Method Blank	101	105	"	"	"	"	"

Footnotes:

a. ND= None Detected (<1.0 ug/g)

TABLE FILE NO: B65918:MH

MONS 023690

TABLE 2. Summary of Aroclor 1254 Spiking Concentrations and Recoveries in Quality Control Experiments for Oil and Soil Samples.

ESC Project No: 760.18 - 65918 Date: October 14, 1985

Sample I.D.	Surrogate Recoveries (%Recovery)		Aroclor 1254	
	CL5-benzene	2,4,6-CL3-Biphenyl	Amount Added (ug/g)	Recovery (%)
Soil-12" North (L. SP)	111	112	1.00	107
Soil-12" North (H. SP)	97	112	9.40	113
Oil-A (L. SP)	102	101	1.00	100
Oil-A (H. SP)	109	104	9.40	89

TABLE FILE NO: C65918:MH

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

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 RRF)(isomer area/internal standard area)

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.

DATE OF METHOD CREATION: 10/25/83, 2/3/84 Time Stamp - <851021.1100>

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

Time Stamp - <851021.1101>

MONSANTO COMPANY/ENVIRONMENTAL SCIENCES CENTER

ANALYSIS REQUEST

DATE: 9/26/85 LOG NO: U-85-09-26-02

REQUESTER: Mike Arnold PROJECT NO: 659

REPORT RESULTS TO: FILES/Mees, Sherman, Hughes, Trang

ANALYSIS REQUESTS SENT TO: Mees, Sherman, Hughes, Trang

SAMPLE PICKUP BY: Chi Trang

SAMPLE LOCATION: U Bldg

SAMPLE DESCRIPTION FOR 8 SAMPLES

SAMPLE IDENTIFICATION	NUMBER OF BOTTLES		ESC NUMBER(S)
Monsanto Co. Warson Warehouse 12" North NPB 2525396	1	.7835 g + 9.0 ml Benzene	PCB1467
" (Duplicate)		.8309 g + 9.0 ml Benzene	PCB1476
" (L. Spike)		.8169 g + 9.0 ml Benzene	PCB1477
" (H. Spike)		1.0200 g + 9.0 ml Benzene	PCB1478
Monsanto Co. Warson Warehouse 24" North NBP 2525396	1	.8667 g + 9.0 ml Benzene	PCB1468
Monsanto Co. Warson Warehouse 24" South NBP 2525396	1	1.0485 g + 9.0 ml Benzene	PCB1469
Monsanto Co. Warson Warehouse 24" West NBP 2525396	1	.8978 g + 9.0 ml Benzene	PCB1470
Method Blank		0.0 g +10 ml Benzene	PCB1475
Creve Coeur Pilot Plant-A	1	.8341 g + 9.0 ml Benzene	PCB1471
" (Duplicate)		1.1468 g + 9.0 ml Benzene	PCB1479
" (L. Spike)		.9263 g + 9.0 ml Benzene	PCB1480
" (H. Spike)		.8729 g + 9.0 ml Benzene	PCB1481
Creve Coeur Pilot Plant-B	1	.8297 g + 9.0 ml Benzene	PCB1472
Creve Coeur Pilot Plant-C	1	.8440 g + 9.0 mL Benzene	PCB1473

St. Charles Transformer ID#TTCL CSP	1	.9215 g + 9.0 ml Benzene	PCB1474
Method Blank		0.0 g + 10 ml Benzene	PCB1482

RECORDED BY: Chi Trang

REQUIRED ANALYSES: PCB

ANALYTICAL TECHNIQUES:

TECHNIQUE (EN)	DATE COMPLETED
X GC/EC (18)	10/21/85

QUALITATIVE: X SEMIQUANTITATIVE: QUANTITATIVE: X

REQUIRED QA/QC: SEE GOOD LABORATORY PRACTICES MANUAL

COMPLETION DATE REQUESTED:

COMMENTS:

SAMPLE DISPOSITION: -- DISCARD -- RETURN X HOLD FOR 60 DAYS -- OTHER----

SAFETY PRECAUTIONS: SEE SAFE LABORATORY PRACTICES MANUAL

ANALYSIS REQUEST FILE NAME: AA659:LI