OhioEPA
State of Ohio Environmental Protection Agency

Southwest District Office
40 South Main Street
Dayton, Ohio 45402-2086
(513) 285-6357
FAX (513) 285-6404

0000028

100982

George V. Voinovich
Governor

1 May 1992

RE: UNION ELEMENTARY SCHOOL
SAMPLING EVENT
SKINNER LANDFILL
BUTLER COUNTY

Mr. Thomas Hayden
Superintendent
5030 Tylersville Road
West Chester, Ohio 45069

Dear Mr. Hayden:

Ohio EPA sampled at the Union Township Elementary School located along Cincinnati-Dayton Road on 14 February 1992 as outlined in our 10 February 1992 correspondence. Please find enclosed the analytical results of the soil and stream sediment samples obtained as well as correspondence to the Agency explaining the significance of the dioxin results.

In brief, no evidence was found to indicate that the Skinner property has ever had any influence on the Union Township Elementary School property. While the samples were few and this was obviously not a full-scale investigation, it is safe to say that the children and staff in attendance at the school are in no danger of exposure from any contamination which may have migrated from the Skinner site at some time in the past.

If you have any questions or comments, please feel free to contact Kathy Fox at (513) 285-6357.

Sincerely,

Mark A. Lehar
Site Coordinator
Division of Emergency and Remedial Response

MAL

attachments

cc: Kathy Fox, DERR, SWDO
Sheila Sullivan, USEPA

Printed on recycled paper

BETZ

MAR 26 1992

ANALYTICAL SERVICES

P.O. BOX 4300 • 9669 GROGANS MILL ROAD • THE WOODLANDS, TX 77380 • 713-367-6201 • FAX 713-367-3189

Ohio EPA
1800 Watermark Dr.
Columbus, OH 43215

March 12, 1992

Attention: Steve McBride

Dear Mr. McBride,

Attached are the analytical results for your samples identified as C0219505 through C0219512, which were sampled on February 14, 1992, as part of Project B920214-1.

We at Betz appreciate the opportunity to serve you with quality analytical testing. If you have any questions about the results, please do not hesitate to contact me.

Idelis Z. Williams

Idelis Z. Williams
Project Manager
Betz Laboratories
(713) 367-6201
FAX (713) 367-3189

IZW:gmh

CASE NARRATIVE

SECTION I

Laboratory: Betz Analytical Services EPA Ohio Project No.: B920214-1

Lab No.: C0219505-C0219512 Contract No.: 880089-D

I. RECEIPT

A. Date: 2/19/92
B. No. of Samples: 4
C. Sample Type: soil
D. Analysis Requested: TAL Metals, Cyanide, TCL SV, Dioxins
E. Shipping Problems: none
F. Documentation Problems: none
G. QC Distribution:

LEVEL	MATRIX	VOA	SV	PEST	METALS
Low	Water				
	Soil				
Medium	Water				
	Soil				

II. PREPARATION

A. Analytical Levels: Low level soils

B. Extraction Problems: None

Lab No. C0219505-512

III. ANALYSIS

A. Analysis Problems: None

B. Surrogate Recoveries: All surrogate recoveries for semivolatiles within acceptable Q.C. limits.

IV. COMMENTS: The Dioxin sample was subcontracted out to Triangle Laboratories.

Idelis Z. Williams, Project Manager

03-12-92
Date

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Ohio EPA
1800 Watermark Dr.
Columbus, OH 43215

Date Submitted: 2/19/92
Date Reported: 3/12/92
Project B920214-1

Attention: Steve McBride

Sample Description: Left-Center Field
Date Sampled: 2/14/92

Laboratory ID: C0219505

TEST	VALUE	UNITS	METHOD
Cyanide, total	< 0.010	mg/kg	EPA 9012
Aluminum, total	8860	mg/kg	EPA 6010
Antimony, total	< 10.0	mg/kg	EPA 6010
Arsenic, total	< 10.0	mg/kg	EPA 6010
Barium, total	51.3	mg/kg	EPA 6010
Beryllium, total	< 1.00	mg/kg	EPA 6010
Cadmium, total	< 1.00	mg/kg	EPA 6010
Calcium, total	4670	mg/kg	EPA 6010
Magnesium, total	2180	mg/kg	EPA 6010
Chromium, total	11.3	mg/kg	EPA 6010
Cobalt, total	6.88	mg/kg	EPA 6010
Copper, total	17.3	mg/kg	EPA 6010
Iron, total	15000	mg/kg	EPA 6010
Lead, total	18.4	mg/kg	EPA 6010
Mercury, total	< 0.100	mg/kg	EPA 7471
Manganese, total	560	mg/kg	EPA 6010
Nickel, total	13.0	mg/kg	EPA 6010
Potassium, total	1380	mg/kg	EPA 6010
Selenium, total	< 10.0	mg/kg	EPA 6010
Silver, total	< 2.00	mg/kg	EPA 6010
Sodium, total	< 100	mg/kg	EPA 6010
Vanadium, total	15.6	mg/kg	EPA 6010
Thallium, total	< 10.0	mg/kg	EPA 6010
Zinc, total	51.8	mg/kg	EPA 6010

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ANALYTICAL SERVICES

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Sample Description: Left-Center Field
Date Sampled: 2/14/92
Date Extracted: 2/20/92
Dilution: 1:10

Laboratory ID: C0219505
Date Analyzed: 3/6/92 23:13
Analyst: JAC

RECEIVED
APR 29 1992
SOUTHWEST DISTRICT

ACID EXTRACTABLE ORGANICS (EPA 8270)

Compound	ug/kg
Benzoic acid	ND*
4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methylphenol	ND
4-Methylphenol	ND
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,5-Trichlorophenol	ND
2,4,6-Trichlorophenol	ND

Limit of Detection is 3300 ug/kg, unless otherwise noted.
* = 5 times limit of detection.

Surrogate Recovery:		Limits:
2-Fluorophenol	- 72 %	24 - 113 %
Phenol-d5	- 74 %	25 - 121 %
2,4,6-Tribromophenol	- 70 %	19 - 122 %

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Sample Description: Left-Center Field
Date Sampled: 2/14/92
Date Extracted: 2/20/92
Dilution: 1:10

Laboratory ID: C0219505
Date Analyzed: 3/6/92 23:13
Analyst: JAC

BASE/NEUTRAL EXTRACTABLE ORGANICS (EPA 8270)

Compound	ug/kg
Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(ghi)perylene	ND
Benzyl alcohol	ND**
Butylbenzylphthalate	ND
Bis(2-chloroethyl)ether	ND
Bis(2-chloroethoxy)methane	ND
Bis(2-ethylhexyl)phthalate	ND
Bis(2-chloroisopropyl)ether	ND
4-Bromophenyl phenyl ether	ND
4-Chloroaniline	ND**
2-Chloronaphthalene	ND
4-Chlorophenyl phenyl ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Di-n-butyl phthalate	ND
1,3-Dichlorobenzene	ND
1,2-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND

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BASE/NEUTRAL EXTRACTABLE ORGANICS (EPA 8270)

(cont'd) Laboratory ID: C0219505

RECEIVED OHIO EPA
APR 29 1992
SOUTHWEST DISTRICT

Compound	ug/kg
3,3'-Dichlorobenzidine	ND**
Diethyl phthalate	ND
Dimethyl phthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-octyl phthalate	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorocyclopentadiene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
2-Methylnaphthalene	ND
Naphthalene	ND
2-Nitroaniline	ND*
3-Nitroaniline	ND*
4-Nitroaniline	ND*
Nitrobenzene	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

Limit of Practical Quantitation is 3300 ug/kg, unless otherwise noted.
* = 5 times limit of detection.
** = 2 times limit of detection.

Surrogate Recovery:		Recovery Limits
Nitrobenzene-d5	71 %	23 - 120 %
2-Fluorobiphenyl	87 %	30 - 115 %
Terphenyl-d14	104 %	18 - 137 %

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Sample Description: Left-Center Field
Date Sampled: 2/14/92

Laboratory ID: C0219505
Date Analyzed: 2/25/92

DIOXINS AND FURANS

NAME	CONC(ppt)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		0.5				
12378-PeCDD	ND		0.5				
123478-HxCDD	ND		0.5				
123678-HxCDD	0.92				1.24	45:10	
123789-HxCDD	1.1				1.15	45:40	
1234678-HpCDD	21.9				0.96	50.12	B
OCDD	156				0.84	55:58	B
2378-TCDF	1.6				0.69	33:58	
12378-PeCDF	ND		0.4				
23478-PeCDF	EMPC			0.44			
123478-HxCDF	0.86				1.23	43:54	
123678-HxCDF	EMPC			0.30			B
234678-HxCDF	1.3				1.06	44:51	
123789-HxCDF	ND		0.4				
1234678-HpCDF	3.2				0.88	48:34	B
1234789-HpCDF	ND		0.5				
OCDF	15.5				0.89	56:14	B
Total TCDD	EMPC			0.61			
Total PeCDD	EMPC			1.9			
Total HxCDD	7.6	4		9.4	1.23		
Total HpCDD	38.2	2			1.00		
Total TCDF	4.1	4		9.5	0.69		
Total PeCDF	9.1	4		10.0	1.53		
Total HxCDF	4.7	4		7.6	1.14		
Total HpCDF	11.5	2			0.89		

B = Compound detected in blank but passed QA/QC
EMPC = Estimated maximum possible concentration

BETZ ANALYTICAL SERVICES

P.O. BOX 4300 • 9669 GROGANS MILL ROAD • THE WOODLANDS, TX 77380 • 713-367-6201 • FAX 713-367-3189

Sample Description: Soil Blank
Date Sampled: N/A

Laboratory ID: N/A
Date Analyzed: 2/25/92

DIOXINS AND FURANS

NAME	CONC(ppt)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		0.6				
12378-PeCDD	ND		0.8				
123478-HxCDD	ND		0.8				
123678-HxCDD	ND		0.5				
123789-HxCDD	ND		0.7				
1234678-HpCDD	18.1				0.94	50.11	
OCDD	148				0.89	55:57	
2378-TCDF	0.88				0.78	33:59	
12378-PeCDF	ND		0.6				
23478-PeCDF	ND		0.6				
123478-HxCDF	ND		0.5				
123678-HxCDF	ND		0.4				
234678-HxCDF	EMPC			0.86			
123789-HxCDF	ND		0.6				
1234678-HpCDF	2.4				1.01	48:33	
1234789-HpCDF	ND		0.8				
OCDF	EMPC			16.9			
Total TCDD	ND		0.6				
Total PeCDD	ND		0.8				
Total HxCDD	EMPC			1.5			
Total HpCDD	30.4	2			1.00		
Total TCDF	0.88	1		1.9	0.78		
Total PeCDF	EMPC			0.70			
Total HxCDF	0.60	1		2.7	1.32		
Total HpCDF	12.5	2			1.00		

EMPC = Estimated maximum possible concentration

BETZ ANALYTICAL SERVICES

P.O. BOX 4300 • 9669 GROGANS MILL ROAD • THE WOODLANDS, TX 77380 • 713-367-6201 • FAX 713-367-3189

Sample Description: Down Stream
Date Sampled: 2/14/92

Laboratory ID: C0219507

TEST	VALUE	UNITS	METHOD
Cyanide, total	< 0.010	mg/kg	EPA 9012
Aluminum, total	6980	mg/kg	EPA 6010
Antimony, total	< 10.0	mg/kg	EPA 6010
Arsenic, total	< 10.0	mg/kg	EPA 6010
Barium, total	55.7	mg/kg	EPA 6010
Beryllium, total	< 1.00	mg/kg	EPA 6010
Cadmium, total	< 1.00	mg/kg	EPA 6010
Calcium, total	39900	mg/kg	EPA 6010
Magnesium, total	4720	mg/kg	EPA 6010
Chromium, total	10.7	mg/kg	EPA 6010
Cobalt, total	9.08	mg/kg	EPA 6010
Copper, total	13.6	mg/kg	EPA 6010
Iron, total	15900	mg/kg	EPA 6010
Lead, total	13.7	mg/kg	EPA 6010
Mercury, total	< 0.100	mg/kg	EPA 7471
Manganese, total	875	mg/kg	EPA 6010
Nickel, total	11.0	mg/kg	EPA 6010
Potassium, total	944	mg/kg	EPA 6010
Selenium, total	< 10.0	mg/kg	EPA 6010
Silver, total	< 2.00	mg/kg	EPA 6010
Sodium, total	186	mg/kg	EPA 6010
Vanadium, total	15.1	mg/kg	EPA 6010
Thallium, total	< 10.0	mg/kg	EPA 6010
Zinc, total	42.3	mg/kg	EPA 6010

BETZ ANALYTICAL SERVICES

P.O. BOX 4300 • 9669 GROGANS MILL ROAD • THE WOODLANDS, TX 77380 • 713-367-6201 • FAX 713-367-3189

Sample Description: Down Stream
Date Sampled: 2/14/92
Date Extracted: 2/20/92
Dilution: 1:10

Laboratory ID: C0219507
Date Analyzed: 3/7/92 00:12
Analyst: JAC

ACID EXTRACTABLE ORGANICS (EPA 8270)

Compound	ug/kg
Benzoic acid	ND*
4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methylphenol	ND
4-Methylphenol	ND
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,5-Trichlorophenol	ND
2,4,6-Trichlorophenol	ND

Limit of Detection is 3300 ug/kg, unless otherwise noted.
* = 5 times limit of detection.

Surrogate Recovery:		Limits:
2-Fluorophenol	- 69 %	24 - 113 %
Phenol-d5	- 76 %	25 - 121 %
2,4,6-Tribromophenol	- 65 %	19 - 122 %

BETZ ANALYTICAL SERVICES

P.O. BOX 4300 • 9669 GROGANS MILL ROAD • THE WOODLANDS, TX 77380 • 713-367-6201 • FAX 713-367-3189

Sample Description: Down Stream
Date Sampled: 2/14/92
Date Extracted: 2/20/92
Dilution: 1:10

Laboratory ID: C0219507
Date Analyzed: 3/7/92 00:12
Analyst: JAC

BASE/NEUTRAL EXTRACTABLE ORGANICS (EPA 8270)

Compound	ug/kg
Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(ghi)perylene	ND
Benzyl alcohol	ND**
Butylbenzylphthalate	ND
Bis(2-chloroethyl)ether	ND
Bis(2-chloroethoxy)methane	ND
Bis(2-ethylhexyl)phthalate	ND
Bis(2-chloroisopropyl)ether	ND
4-Bromophenyl phenyl ether	ND
4-Chloroaniline	ND**
2-Chloronaphthalene	ND
4-Chlorophenyl phenyl ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Di-n-butyl phthalate	ND
1,3-Dichlorobenzene	ND
1,2-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND

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BASE/NEUTRAL EXTRACTABLE ORGANICS (EPA 8270)

(cont'd) Laboratory ID: C0219507

Compound	ug/kg
3,3'-Dichlorobenzidine	ND**
Diethyl phthalate	ND
Dimethyl phthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-octyl phthalate	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorocyclopentadiene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
2-Methylnaphthalene	ND
Naphthalene	ND
2-Nitroaniline	ND*
3-Nitroaniline	ND*
4-Nitroaniline	ND*
Nitrobenzene	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

Limit of Practical Quantitation is 3300 ug/kg, unless otherwise noted.

* = 5 times limit of detection.

** = 2 times limit of detection.

Surrogate Recovery:		Recovery Limits
Nitrobenzene-d5	67 %	23 - 120 %
2-Fluorobiphenyl	90 %	30 - 115 %
Terphenyl-d14	110 %	18 - 137 %

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Sample Description: Up Stream
Date Sampled: 2/14/92

Laboratory ID: C0219509

TEST	VALUE	UNITS	METHOD
Cyanide, total	< 0.010	mg/kg	EPA 9012
Aluminum, total	7390	mg/kg	EPA 6010
Antimony, total	< 10.0	mg/kg	EPA 6010
Arsenic, total	10.3	mg/kg	EPA 6010
Barium, total	70.2	mg/kg	EPA 6010
Beryllium, total	< 1.00	mg/kg	EPA 6010
Cadmium, total	< 1.00	mg/kg	EPA 6010
Calcium, total	47300	mg/kg	EPA 6010
Magnesium, total	5250	mg/kg	EPA 6010
Chromium, total	11.8	mg/kg	EPA 6010
Cobalt, total	12.3	mg/kg	EPA 6010
Copper, total	14.5	mg/kg	EPA 6010
Iron, total	20600	mg/kg	EPA 6010
Lead, total	17.3	mg/kg	EPA 6010
Mercury, total	< 0.100	mg/kg	EPA 7471
Manganese, total	1360	mg/kg	EPA 6010
Nickel, total	13.6	mg/kg	EPA 6010
Potassium, total	1150	mg/kg	EPA 6010
Selenium, total	< 10.0	mg/kg	EPA 6010
Silver, total	< 2.00	mg/kg	EPA 6010
Sodium, total	218	mg/kg	EPA 6010
Vanadium, total	17.8	mg/kg	EPA 6010
Thallium, total	< 10.0	mg/kg	EPA 6010
Zinc, total	42.9	mg/kg	EPA 6010

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Sample Description: Up Stream
Date Sampled: 2/14/92
Date Extracted: 2/20/92
Dilution: 1:10

Laboratory ID: C0219509
Date Analyzed: 3/7/92 01:11
Analyst: JAC

ACID EXTRACTABLE ORGANICS (EPA 8270)

Compound	ug/kg
Benzoic acid	ND*
4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methylphenol	ND
4-Methylphenol	ND
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,5-Trichlorophenol	ND
2,4,6-Trichlorophenol	ND

Limit of Detection is 3300 ug/kg, unless otherwise noted.
* = 5 times limit of detection.

Surrogate Recovery:		Limits:
2-Fluorophenol	- 69 %	24 - 113 %
Phenol-d5	- 73 %	25 - 121 %
2,4,6-Tribromophenol	- 66 %	19 - 122 %

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Sample Description: Up Stream
Date Sampled: 2/14/92
Date Extracted: 2/20/92
Dilution: 1:10

Laboratory ID: C0219509
Date Analyzed: 3/7/92 01:11
Analyst: JAC

BASE/NEUTRAL EXTRACTABLE ORGANICS (EPA 8270)

Compound	ug/kg
Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(ghi)perylene	ND
Benzyl alcohol	ND**
Butylbenzylphthalate	ND
Bis(2-chloroethyl)ether	ND
Bis(2-chloroethoxy)methane	ND
Bis(2-ethylhexyl)phthalate	ND
Bis(2-chloroisopropyl)ether	ND
4-Bromophenyl phenyl ether	ND
4-Chloroaniline	ND**
2-Chloronaphthalene	ND
4-Chlorophenyl phenyl ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Di-n-butyl phthalate	ND
1,3-Dichlorobenzene	ND
1,2-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND

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BASE/NEUTRAL EXTRACTABLE ORGANICS (EPA 8270)

(cont'd) Laboratory ID: C0219509

Compound	ug/kg
3,3'-Dichlorobenzidine	ND**
Diethyl phthalate	ND
Dimethyl phthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-octyl phthalate	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorocyclopentadiene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
2-Methylnaphthalene	ND
Naphthalene	ND
2-Nitroaniline	ND*
3-Nitroaniline	ND*
4-Nitroaniline	ND*
Nitrobenzene	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

Limit of Practical Quantitation is 3300 ug/kg, unless otherwise noted.
* = 5 times limit of detection.
** = 2 times limit of detection.

Surrogate Recovery:		Recovery Limits
Nitrobenzene-d5	66 %	23 - 120 %
2-Fluorobiphenyl	87 %	30 - 115 %
Terphenyl-d14	100 %	18 - 137 %

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Sample Description: Big Tree
Date Sampled: 2/14/92

Laboratory ID: C0219511

TEST	VALUE	UNITS	METHOD
Cyanide, total	< 0.010	mg/kg	EPA 9012
Aluminum, total	9590	mg/kg	EPA 6010
Antimony, total	< 10.0	mg/kg	EPA 6010
Arsenic, total	< 10.0	mg/kg	EPA 6010
Barium, total	57.1	mg/kg	EPA 6010
Beryllium, total	< 1.00	mg/kg	EPA 6010
Cadmium, total	< 1.00	mg/kg	EPA 6010
Calcium, total	4860	mg/kg	EPA 6010
Magnesium, total	2140	mg/kg	EPA 6010
Chromium, total	12.9	mg/kg	EPA 6010
Cobalt, total	8.48	mg/kg	EPA 6010
Copper, total	12.0	mg/kg	EPA 6010
Iron, total	15600	mg/kg	EPA 6010
Lead, total	31.7	mg/kg	EPA 6010
Mercury, total	< 0.100	ug/kg	EPA 7471
Manganese, total	688	mg/kg	EPA 6010
Nickel, total	12.7	mg/kg	EPA 6010
Potassium, total	1620	mg/kg	EPA 6010
Selenium, total	< 10.0	mg/kg	EPA 6010
Silver, total	< 2.00	mg/kg	EPA 6010
Sodium, total	< 100	mg/kg	EPA 6010
Vanadium, total	18.0	mg/kg	EPA 6010
Thallium, total	< 10.0	mg/kg	EPA 6010
Zinc, total	54.0	mg/kg	EPA 6010

BETZ ANALYTICAL SERVICES

P.O. BOX 4300 • 9669 GROGANS MILL ROAD • THE WOODLANDS, TX 77380 • 713-367-6201 • FAX 713-367-3189

Sample Description: Big Tree
Date Sampled: 2/14/92
Date Extracted: 2/20/92
Dilution: 1:10

Laboratory ID: C0219511
Date Analyzed: 3/7/92 02:10
Analyst: JAC

ACID EXTRACTABLE ORGANICS (EPA 8270)

Compound	ug/kg
Benzoic acid	ND*
4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methylphenol	ND
4-Methylphenol	ND
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,5-Trichlorophenol	ND
2,4,6-Trichlorophenol	ND

Limit of Detection is 3300 ug/kg, unless otherwise noted.
* = 5 times limit of detection.

Surrogate Recovery:		Limits:
2-Fluorophenol	- 67 %	24 - 113 %
Phenol-d5	- 74 %	25 - 121 %
2,4,6-Tribromophenol	- 74 %	19 - 122 %

BETZ ANALYTICAL SERVICES

P.O. BOX 4300 • 9669 GROGANS MILL ROAD • THE WOODLANDS, TX 77380 • 713-367-6201 • FAX 713-367-3189

Sample Description: Big Tree
Date Sampled: 2/14/92
Date Extracted: 2/20/92
Dilution: 1:10

Laboratory ID: C0219511
Date Analyzed: 3/7/92 02:10
Analyst: JAC

BASE/NEUTRAL EXTRACTABLE ORGANICS (EPA 8270)

Compound	ug/kg
Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(ghi)perylene	ND
Benzyl alcohol	ND**
Butylbenzylphthalate	ND
Bis(2-chloroethyl)ether	ND
Bis(2-chloroethoxy)methane	ND
Bis(2-ethylhexyl)phthalate	ND
Bis(2-chloroisopropyl)ether	ND
4-Bromophenyl phenyl ether	ND
4-Chloroaniline	ND**
2-Chloronaphthalene	ND
4-Chlorophenyl phenyl ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Di-n-butyl phthalate	ND
1,3-Dichlorobenzene	ND
1,2-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND

BETZ ANALYTICAL SERVICES

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BASE/NEUTRAL EXTRACTABLE ORGANICS (EPA 8270)

(cont'd) Laboratory ID: C0219511

Compound	ug/kg
3,3'-Dichlorobenzidine	ND**
Diethyl phthalate	ND
Dimethyl phthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-octyl phthalate	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorocyclopentadiene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
2-Methylnaphthalene	ND
Naphthalene	ND
2-Nitroaniline	ND*
3-Nitroaniline	ND*
4-Nitroaniline	ND*
Nitrobenzene	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

Limit of Practical Quantitation is 3300 ug/kg, unless otherwise noted.
* = 5 times limit of detection.
** = 2 times limit of detection.

Surrogate Recovery:		Recovery Limits
Nitrobenzene-d5	65 %	23 - 120 %
2-Fluorobiphenyl	88 %	30 - 115 %
Terphenyl-d14	100 %	18 - 137 %

TRIANGLE LABORATORIES OF RTP, INC.
801 CAPITOLA DRIVE
DURHAM, NC 27713

Phone: (919) 544-5729
Fax: (919) 544-5491

DATE :	* 28 FEBRUARY 1992
CLIENT ID :	* BETZ ANALYTICAL SERVICES
P.O. NUMBER :	* 65405
TLI PROJECT No. :	* 20202

CASE NARRATIVE
MODEL 8290X

ANALYSIS OF SAMPLES FOR THE PRESENCE OF

POLYCHLORINATED DIBENZO-p-DIOXINS

AND

DIBENZOFURANS

BY

HIGH-RESOLUTION GAS CHROMATOGRAPHY / HIGH-RESOLUTION MASS SPECTROMETRY

One solid sample was received from BETZ ANALYTICAL SERVICES in good condition February 21, 1992 and stored in a refrigerator at 4°C. The sample was extracted and analyzed according to procedures described in the Triangle Labs User Manual provided with this data package. Any particular difficulties encountered during the sample handling by Triangle Labs will be discussed in the QA/QC remark section below.

Quality Assurance/Quality Control Samples

A laboratory method blank -- identified as the TLI Blank -- is prepared along with the sample.

QA/QC Remarks

The release of this particular set of BETZ ANALYTICAL SERVICES analytical data by Triangle Labs was authorized by the Quality Assurance Officer who has reviewed each sample data package individually following a series of inspections/reviews conducted at two other levels of the data production line. When applicable, general deviations from acceptable QA/QC requirements are identified below. Comments on the effect of these deviations upon the validity and reliability of the results can be obtained from the User Manual (Data Quality Objectives; Section 5). Specific QA/QC Problems Associated with this Particular Project are:

Sample Preparation Laboratory: None

Mass Spectrometry: None

Data Review:

Analytes were found in the TLI Soil Blank at levels less than the Target Detection Limit. Blank contamination levels at the Target Detection Limit or less are acceptable under TLI guidelines; however, the OCDD isomer is not required to follow blank contamination criteria.

Addendum to Section 2.3 of the Data User's Manual

All sample and calibration analyses are conducted using a 2 uL injection volume, unless otherwise specified.

Addendum to Section 4.6 of the Data User's Manual

Effective December 15, 1989, Triangle Laboratories has adopted a new procedure for calculating the analyte specific detection limits. Under this new policy two representative noise height determinations are summed and multiplied by an empirically determined factor before the detection limit equation given in Section 4.6 of the Data User's Manual is applied. The effect of this procedure is to increase DB-225 analyses detection limits by a factor of 3.5, and DB-5 analyses detection limits by a factor of

5. This procedure will result in a more accurate estimate of detection limits.

The revised formula for DB-225 analyses is:

$$DL_{ai}^{DB-225} = \frac{2.5 * (3.5 * H_{ai}) * Q_{Bj}}{A_{Bj} * \overline{RRF} * W}$$

$$3.5 * H_{ai} = A_{noise}$$

The revised formula for DB-5 analyses is:

$$DL_{ai}^{DB-5} = \frac{2.5 * (5 * H_{ai}) * Q_{Bj}}{A_{Bj} * \overline{RRF} * W}$$

$$5 * H_{ai} = A_{noise}$$

The symbols are defined in Section 4.6 of the Data User's Manual.

As an example, consider a DB-225 confirmation analysis of a 10 g sample. The internal standard spike is 2000 pg, the 13C12-2,3,7,8-TCDF internal standard area is 12000 area units, the RRF is 1.215 and the noise height is 11 units. The 2,3,7,8-TCDF detection limit is:

$$DL_{TCDF}^{DB-225} = \frac{2.5 * (3.5 * 11) * 2000}{12000 * 1.215 * 10.0} = 1.3 \text{ ppt}$$

Should BETZ ANALYTICAL SERVICES have any questions or comments to formulate regarding this data package please feel free to contact us.

For Triangle Laboratories,

Laboratory Management	Quality Assurance Unit	Report Preparation/ Quality Control
Signed: Robert W. Smith	Diane Williford	Nancy Bragg
Title:		
Robert Smith	Diane Williford	Nancy Bragg
Process Control Manager	QA Specialist	Reporting Services Manager

BETZ ANALYTICAL SERVICES — Chain of Custody

P.O. Box 4300 • 9669 Grogans Mill Road • The Woodlands, TX 77380 • 713-367-6201 • Fax 713-367-3189

Client Name/Address: OHIO EPA/DERR 40 S. MAIN ST DAYTON, OH 45402-2026

Send Report to: STEVE McBRIDE OEPA/DERR COLUMBUS OHIO

P.O. Number:

Invoice to: OHIO EPA PAT CAMPBELL DERR, COLUMBUS

Samplers (Signature): [signature]

Project Number: B920214-1

Sta No.	Date	Time	Comp.	Grab	Station Location	Number of Containers	Semi VOLS (TCL)	METALS (TAL)	DIOXINS (8290)				Remarks
1 A	2/14/92	1400		X	LEFT-CENTER FIELD	1-4 oz	X						
1 B		1400			"	1-8 oz		X					7
1 C		1400			"	1 qt Amb.			X				PLEASE RETURN BLUE ICE
2 A		1415			DOWNSTREAM	1-4 oz	X						& COOLER TO:
2 B		1415			"	1-8 oz		X					
3 A		1435			UPSTREAM	1-4 oz	X						DERR, OHIO EPA
3 B		1435			"	1-8 oz		X					40 S. MAIN ST.
4 A		1425			BIG TREE	1-4 oz	X						DAYTON, OH 45402
4 B		1425			"	1-8 oz		X					
													2-20-92 Per Steve McBride
													run 8290 not 8280 for
					CHAIN OF CUSTODY								Dioxins.
					SEALED IN COOLER								SBO

Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
[signature]	2/19/92 10:00am				
Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Relinquished by (Signature)	Date / Time	Received for Laboratory by (Sig.)	Date / Time	Sample condition upon receipt:	
		M Scurlock	2/19/92 10:am	2°C	

Method of Shipment: Federal Express