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Suite 201, 1090 King Georges Post Road,
Edison, NJ 08837 • (201) 225-6266

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-7367

MEMORANDUM

TO: ~~Tom Kady, EPA/ERT~~ Mark Pane, OSC Region II

FROM: Anthony Lombardo, ERT/TAT
Carl Armbruster, ERT/TAT

THRU: W. Scott Butterfield, ERT/TATL

DATE: September 14, 1987

SUBJECT: PRELIMINARY REPORT, ARKANSAS CHEMICAL, AIR ANALYSIS BY GC/MS.

TDD: 11-8709-02
PCS: 1055
DCN: TAT-11-G-029

Attached are the preliminary results for the analysis of tenax/CMS samples taken at Arkansas Chemical, Newark, NJ. This memo will be followed by an analytic report including results, procedures, and analytical data. Below is a brief outline of the procedures used and a discussion of the results.

1. Procedures

The analysis consisted of thermal desorption of an air sample on a Tenax/Carbon Molecular Sieve (CMS) tube followed by cryogenic focussing and GC/MS analysis. A Tekmar 5000 cryogenic trap and an HP 5993 GC/MS were used. Table 1 lists cryogen trap and GC/MS conditions.

433402

TABLE 1

INSTRUMENT CONDITIONS

A. Cryogenic Trap Conditions:

Purge Time	:	10 minutes
Furnace Desorb Temp.	:	240° C.
Desorb Time	:	8 minutes
Cryotrap-1 Temp.	:	-150° C.
Cryotrap-1 Desorb Temp.	:	250° C.
Cryotrap-1 Desorb Time	:	3.0 minutes
Cryotrap-2 Temp.	:	-150° C.
Cryotrap-2 Desorb Temp.	:	250° C. *
Cryotrap-2 Desorb Time	:	1.5 minutes *

B. GC/MS Conditions:

Temp.-1	:	30° C.
Time-1	:	3 minute
Rate	:	8° C./min.
Final Temp.	:	200° C.
Run Time	:	30 minutes
EM Voltage	:	2400
Mass Scan Range	:	35 to 300 AMU

Column: 30 M X 0.32 mmID, DB-624, fused silica capillary column (J&W Scientific)

*: Injection temp. and time.

The instrument was calibrated using vapor-phase standards provided by Scott Specialty Gases. Table 2 lists the standard components and concentrations. Ten ml aliquots of each standard was analyzed in duplicate prior to sample analysis. A surrogate standard of Bromochloromethane and P-Bromofluorobenzene was added to each standard and sample analysis. System blanks were analyzed between sample analysis to monitor system carry-over.

2. Discussion

The instrument shut down during the analysis of sample T-3. The instrument was restarted after about 4 minutes. Early-eluting compounds such as vinyl chloride and carbon disulfide would not be seen in this sample.

Analysis of system blanks showed some contamination due to system carry-over. The contamination was minimal and limited to aromatic hydrocarbons. Corrective measures could not be taken due to the time constraints associated with this analysis.

TABLE 2

SINGLE IONS AND CONCENTRATIONS
OF THE
CHLORINATED AND AROMATIC STANDARDS

COMPOUND	QUANTITATION MASS	CONCENTRATION (PPM, V/V)
A. CHLORINATED COMPONENTS:		
vinyl chloride	62	1.191
1,1-dichloroethene	61	0.848
trans-1,2-dichloroethene	61	0.945
1,1-dichloroethane	63	0.956
1,2-dichloroethane	62	1.021
trichloroethene	130	0.927
tetrachloroethene	166	1.028
trichlorofluoromethane	130	1.011
B. AROMATIC COMPONENTS:		
benzene	78	1.043
toluene	91	0.973
ethylbenzene	91	1.127
m-xylene	91	0.932
styrene	104	1.381
o-xylene	91	1.069
m-ethyltoluene	120	1.068

TARGET COMPOUNDS
****

AIR ANALYSIS BY GC/MS
****

SITE NAME :ARKANSAS CHEMICAL

SAMPLE NAME/NUMBER :	TB-2	TB-1	T-3	SYSTEM	T-1	T-4	SYSTEM	T-2
LOCATION :	(FIELD B.)	(FIELD B)	(2)	BLANK			BLANK	
DATE ANALYZED :	9/10/87	9/10/87	9/10/87	9/10/87	9/10/87	9/10/87	9/10/87	9/10/87
DATE SAMPLED :	9/10/87	9/10/87	9/10/87	9/10/87	9/10/87	9/10/87	9/10/87	9/10/87
TIME SAMPLED :								
FRN:	25802	25803	25804	25805	25806	25807	25808	25809
parameter	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
methylene chloride	ND	bmdl	ND	ND	ND	ND	ND	ND
trans-1,2-dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	ND	ND	88	ND	bmdl	ND	ND	9
1,2-dichloroethane	ND	ND	ND	ND	ND	0.2	ND	ND
carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND
benzene	0.3	0.3	4.9	0.2	0.4	3	0.2	2.4
trichloroethene	ND	ND	1.5	ND	ND	0.9	ND	0.7
toluene	0.4	0.4	18	0.3	5.1	51	0.4	18
tetrachloroethene	0.2	0.2	8.8	BMDL	0.4	2.3	0.2	3.3
ethyl benzene	0.4	0.3	7.5	0.3	0.7	5.2	0.4	2.5
m&p-xylenes	0.3	0.3	20	0.4	1.4	13	0.4	6.5
o-xylene	0.2	0.2	3	0.2	0.2	1	0.2	0.9
styrene	1.7	2.2	3.8	2.3	3	3.6	2.5	3.9
meta ethyltoluene	0.4	0.3	2	0.3	0.5	2.5	0.3	1.3
trichlorofluoromethane	0.3	0.3	ND	ND	ND	1.7	ND	0.6
p-bromofluorobenzene %	95.4	87.3	90.8	66.3	74.0	74.6	64.6	65.5
bromochloromethane %	80.1	67.4	86.2	93.3	66.6	84.2	89.1	57.1

(1): Average of FRNs 25780 and 25800

(2): Sample T-3 shut down instrument at beginning of analysis; instrument was restarted after approx. 4 minutes. Early eluting sample components may have been lost.

Note: Results for 1,1,1- trichloroethane and methylene chloride are estimates.

NON-TARGET COMPOUNDS
****
AIR ANALYSIS RESULTS
****

SITE NAME	:	ARKANSAS CHEMICAL SITE, NEWARK,NJ		
SAMPLE NAME/NUMBER	:	TB-3		
LOCATION	:	FIELD BLANK		
SAMPLE VOLUME (CC)	:	2200	FRN	: 25802
QUANTITATION CONCENTRATION (PPB)	:	1000	DATE SAMPLED	: 9/10/87
QUANTITATION VOLUME (CC)	:	10.00	DATE ANALYZED	: 9/10/87
QUANTITATION SCAN, AREA	:	790 10309		

chemical name	scan	area	RT	RRT	ppb
C4 alkene/cycloalkane	7	415	1.43	0.09	bmdl
methylene chloride	139	340	3.52	0.24	bmdl
C10 alkane	847	3449	14.68	1.07	1.7

NON-TARGET COMPOUNDS
****
AIR ANALYSIS RESULTS
****

SITE NAME	:	ARKANSAS CHEMICAL SITE, NEWARK, NJ		
SAMPLE NAME/NUMBER	:	TB-2		
LOCATION	:	FIELD BLANK		
SAMPLE VOLUME (CC)	:	2200	FRN	: 25803
QUANTITATION CONCENTRATION (PPB)	:	1000	DATE SAMPLED	: 9/10/87
QUANTITATION VOLUME (CC)	:	10.00	DATE ANALYZED	: 9/10/87
QUANTITATION SCAN, AREA	:	789 9161		

chemical name	scan	area	RT	RRT	ppb
C4 alkene/cycloalkane	7	423	1.43	0.09	bmdl
methylene chloride	140	308	3.53	0.24	bmdl
siloxane	575	6035	10.40	0.75	3
siloxane	829	21819	14.40	1.05	11

NON-TARGET COMPOUNDS
****
AIR ANALYSIS RESULTS
****

SITE NAME : ARKANSAS CHEMICAL SITE, NEWARK, NJ
SAMPLE NAME/NUMBER : T-3
LOCATION :
SAMPLE VOLUME (CC) : 2200 FRN : 25804
QUANTITATION CONCENTRATION (PPB): 1000 DATE SAMPLED : 9/10/87
QUANTITATION VOLUME (CC) : 10.00 DATE ANALYZED: 9/10/87
QUANTITATION SCAN, AREA : 734 10309

chemical name	scan	area	RT	RRT	ppb
trichloromethane	34	17873	1.18	0.13	7.9
1,1,1-trichloroethane	52	199900	1.47	0.15	88
C7 alkane	161	7643	3.15	0.29	3.4
C8 alkane	350	19767	6.07	0.52	8.7
C8 alkene	371	14130	6.38	0.55	6.2
C8 alkene/cycloalkane	387	36418	6.63	0.57	16
C8 alkene/cycloalkane	434	37403	7.37	0.63	16
siloxane	489	10499	8.22	0.69	4.6
siloxane	499	27432	8.37	0.71	12
C8 alkene/cycloalkane	516	13807	8.63	0.73	6.1
chlorobenzene	589	8363	9.77	0.82	3.7
C9 alkane	635	12448	10.48	0.88	5.5
C9 alkene/cycloalkane	660	6262	10.87	0.91	2.8
C8 alkene/cycloalkane	695	1275	11.42	0.95	0.6
chlorotoluene	774	8689	12.63	1.05	3.8
siloxane	784	69003	12.80	1.06	30
C10 alkane	799	19053	13.03	1.08	8.4
C10 alkene/cycloalkane+siloxane	806	4377	13.15	1.09	1.9
C3 alkyl benzene	834	18987	13.58	1.12	8.4
alkene/cycloalkane	861	4466	14.00	1.16	2
C3 alkyl benzene	883	3172	14.35	1.19	1.4
chlorotoluene	893	4848	14.50	1.20	2.1
C11 alkane	942	10672	15.27	1.26	4.7

NON-TARGET COMPOUNDS
****
AIR ANALYSIS RESULTS
****

SITE NAME	:	ARKANSAS CHEMICAL SITE, NEWARK, NJ		
SAMPLE NAME/NUMBER	:	T-1		
LOCATION	:			
SAMPLE VOLUME (CC)	:	2200	FRN	: 25806
QUANTITATION CONCENTRATION (PPB)	:	1000	DATE SAMPLED	: 9/10/87
QUANTITATION VOLUME (CC)	:	10.00	DATE ANALYZED	: 9/10/87
QUANTITATION SCAN, AREA	:	759 10309		

chemical name	scan	area	RT	RRT	ppb
carbon disulfide	81	21873	3.10	0.18	9.6
methylene chloride	110	853	3.57	0.22	0.4
1,1,1-trichloroethane	269	830	6.07	0.41	0.4
C8 alkane	450	9299	8.93	0.63	4.1
C8 alkane	464	5479	9.15	0.64	2.4
C8 alkene/cycloalkane	479	13674	9.38	0.66	6
C8 alkane	508	13987	9.85	0.70	6.2
C8 alkene/cycloalkane	513	4461	9.93	0.70	2
C8 alkene/cycloalkane	526	2182	10.13	0.72	1
siloxane	545	4461	10.43	0.74	2
C8 alkene/cycloalkane	574	6017	10.90	0.78	2.7
C9 alkane	668	3359	12.38	0.89	1.5
siloxane	799	16971	14.45	1.05	7.5
C10 alkane	815	6313	14.70	1.07	2.8
C3 alkyl benzene	849	2545	15.25	1.11	1.1
C11 alkane	951	4523	16.85	1.23	2

NON-TARGET COMPOUNDS
****
AIR ANALYSIS RESULTS
****

SITE NAME : ARKANSAS CHEMICAL SITE, NEWARK, NJ
SAMPLE NAME/NUMBER : T-4
LOCATION :
SAMPLE VOLUME (CC) : 2200 FRN : 25807
QUANTITATION CONCENTRATION (PPB): 1000 DATE SAMPLED : 9/10/87
QUANTITATION VOLUME (CC) : 10.00 DATE ANALYZED: 9/10/87
QUANTITATION SCAN, AREA : 789 10309

chemical name	scan	area	RT	RRT	ppb
C5 alkane	14	22094	2.05	0.10	11
C5 alkane	34	7104	2.37	0.12	3.5
carbon disulfide	82	20013	3.13	0.18	9.9
acetic acid methyl ester	107	2136	3.52	0.20	1.1
C8 alkane	450	76731	8.95	0.60	38
C8 alkane	463	46068	9.15	0.62	23
C8 alkene/cycloalkane	478	44209	9.38	0.64	22
C8 alkane	507	122301	9.85	0.67	61
siloxane	544	11953	10.45	0.71	5.9
C9 alkane	554	11111	10.45	0.73	5.5
C9 alkane	566	16331	10.78	0.74	8.1
C8 alkene/cycloalkane	572	35015	10.88	0.75	17
C9 alkene/cycloalkane	601	11969	11.35	0.78	5.9
C9 alkane	611	37770	11.50	0.79	19
C9 alkane	623	29917	11.70	0.81	15
C9 alkene/cycloalkane	691	1987	12.78	0.89	1
C10 alkane	719	27375	13.23	0.92	14
C9 alkene/cycloalkane	726	39986	13.35	0.93	20
C10 alkane	733	15846	13.45	0.93	7.9
C10 alkane	752	4730	13.77	0.96	2.3
C10 alkane	760	41793	13.88	0.97	21
C10 alkane	773	65650	14.10	0.98	33
C3 alkylbenzene & siloxane	796	33676	14.47	1.01	17
C10 alkene/cycloalkane	802	26162	14.57	1.02	13
C3 alkylbenzene	806	15697	14.63	1.02	7.8
C10 alkane	814	186328	14.77	1.03	92
C10 alkane/cycloalkane	938	26648	16.78	1.17	13
C11 alkane	946	160609	16.90	1.18	80

NON-TARGET COMPOUNDS
****
AIR ANALYSIS RESULTS
****

SITE NAME : ARKANSAS CHEMICAL SITE, NEWARK, NJ
SAMPLE NAME/NUMBER : T-2
LOCATION :
SAMPLE VOLUME (CC) : 2200 FRN : 25809
QUANTITATION CONCENTRATION (PPB): 1000 DATE SAMPLED : 9/10/87
QUANTITATION VOLUME (CC) : 10.00 DATE ANALYZED: 9/10/87
QUANTITATION SCAN, AREA : 756 10309

chemical name	scan	area	RT	RRT	ppb
2-methyl butane	12	7645	2.02	0.10	3.4
C5 alkane	31	3038	2.32	0.12	1.3
carbon disulfide	80	22754	3.10	0.18	10
hexane	158	9794	4.33	0.27	4.3
siloxane	201	3307	5.00	0.33	1.5
C6 alkene/cycloalkane	211	3549	5.17	0.34	1.6
methylene chloride	258	9520	5.90	0.40	4.2
1,1,1-trichloroethane	269	20345	6.08	0.41	9
C7 alkane	441	2482	8.80	0.62	1.1
C8 alkane	448	24292	8.92	0.63	11
C8 alkane	463	18441	9.15	0.64	8.1
C8 alkene/cycloalkane	478	33440	9.38	0.66	15
C8 alkane	506	35867	9.83	0.70	16
C8 alkene/cycloalkane	512	8675	9.93	0.70	3.8
C8 alkene/cycloalkane	525	4519	10.13	0.72	2
C9 alkane	554	4723	10.60	0.75	2.1
C9 alkene/cycloalkane	566	7678	10.78	0.77	3.4
C8 alkene/cycloalkane	572	15842	10.88	0.78	7
C9 cycloalkane	601	4950	11.35	0.81	2.2
C9 alkene/cycloalkane	611	6459	11.50	0.82	2.8
C7 alkene/cycloalkane	623	4673	11.70	0.84	2.1
chlorobenzene	632	4553	11.83	0.85	2
C9 alkane	666	14870	12.38	0.89	6.6
C9 alkene/cycloalkane	690	10131	12.75	0.92	4.5
C8 alkene/cycloalkane	718	3837	13.20	0.95	1.7
C9 alkene/cycloalkane	725	7691	13.32	0.96	3.4
C8 alkene/cycloalkane	751	1182	13.73	0.99	0.5
C10 alkene	772	11318	14.07	1.02	5
siloxane	795	20535	14.43	1.05	9.1
C10 alkane	812	32146	14.70	1.07	14
C3 alkyl benzene	845	15017	15.23	1.11	6.6
C10 alkene/cycloalkane	871	5219	15.65	1.14	2.3
C3 alkyl benzene	891	3372	15.97	1.16	1.5
chlorotoluene	900	3118	16.12	1.17	1.4
C9 alkene/cycloalkane	909	2989	16.25	1.19	1.3
C11 alkene/cycloalkane	939	4119	16.73	1.22	1.8
C11 alkane	946	24470	16.85	1.23	11
C4 alkyl benzene	968	4349	17.20	1.26	1.9

PRINCETON SERVICE CENTER
U.S. Route 1
609-452-9050
TLX 84-3492

Princeton Testing Laboratory

P.O. Box 3108 Princeton, N.J. 08540

Environmental Analysis

SAMPLE ANALYSIS REPORT

For ENVIOSPONSE
GSA RARITAN DEPOT
WOODBRIDGE AVE.
BLD. 209 BAY F EDISON NJ 08837
Attention: MIKE MILLER

Report Date: 09/14/87

Job No.: 87G3452
Date Received: 09/10/87
Units: PPM IN AIR

TEST PERFORMED: NIOSH METHOD P&CAM 127

	COMPOUND	DET LMTS	C1 001	C2 002	C3 003
67-64-1	Acetone	0.01 ppm	0.030	0.036	0.008
67-66-3	Chloroform	0.05 ppm	ND	ND	ND
78-93-3	Methyl Ethyl Ketone	0.01 ppm	ND	ND	ND
123-91-1	p-Dioxane	0.01 ppm	ND	ND	ND
56-23-5	Carbon Tetrachloride	0.05 ppm	ND	ND	ND
79-01-6	Trichloroethylene	0.05 ppm	ND	ND	ND
71-43-2	Benzene	0.01 ppm	0.023	0.025	0.008
108-33-3	Toluene	0.01 ppm	0.014	0.015	ND
133-02-7	Xylenes	0.01 ppm	ND	0.010	ND
75-09-2	Methylene Chloride	0.05 ppm	ND	ND	ND
07-06-2	1,2-Dichloroethane	0.05 ppm	ND	ND	ND
71-55-2	1,1,1-Trichloroethane	0.05 ppm	ND	ND	ND
79-00-5	1,1,2-Trichloroethane	0.05 ppm	ND	ND	ND
127-18-4	Tetrachloroethylene	0.05 ppm	ND	ND	ND
100-42-5	Styrene	0.01 ppm	ND	ND	ND
...					
...					
SURROGATE RECOVERY DATA % RECOVERY					
...					
4-Bromofluorobenzene			96%	98%	95%
...					
...					
DATE RECEIVED:			9/10/87	9/10/87	9/10/87
...					
DATE ANALYZED:			9/10/87	9/10/87	9/10/87
...					
MDL MULTIPLIER:				1	1
...					

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

C OF C #00398

Note** sample #003 results are reported in mg because there was no air volume given.

PRINCETON SERVICE CENTER
U.S. Route 1
609-452-9050
TLX84-3492

princeton testing laboratory

P.O. Box 3108, Princeton, N.J. 08540

Environmental Analysis

SAMPLE ANALYSIS REPORT

For ENVIOSPONSE
GSA RARITAN DEPOT
WOODBRIDGE AVE.
BLD.209 BAY F EDISON, NJ 08837
Attention: MIKE MILLER

Report Date: 09/14/87

Job No.: 87G3452
Date Received: 09/10/87
Units: PPM IN AIR

TEST PERFORMED: NIOSH METHOD P&CAM 127

C4 FIELD BLANK

	COMPOUND	DET LMTS	004	005
67-64-1	Acetone	0.01 ppm	0.031	0.037
67-66-3	Chloroform	0.05 ppm	ND	ND
78-93-3	Methyl Ethyl Ketone	0.01 ppm	ND	ND
123-91-1	p-Dioxane	0.01 ppm	ND	ND
56-23-5	Carbon Tetrachloride	0.05 ppm	ND	ND
79-01-6	Trichloroethylene	0.05 ppm	ND	ND
71-43-2	Benzene	0.01 ppm	0.029	0.023
108-33-3	Toluene	0.01 ppm	0.016	ND
133-02-7	Xylenes	0.01 ppm	ND	ND
75-09-2	Methylene Chloride	0.05 ppm	ND	ND
107-06-2	1,2-Dichloroethane	0.05 ppm	ND	ND
71-55-2	1,1,1-Trichloroethane	0.05 ppm	ND	ND
79-00-5	1,1,2-Trichloroethane	0.05 ppm	ND	ND
127-18-4	Tetrachloroethylene	0.05 ppm	ND	ND
100-42-5	Styrene	0.01 ppm	ND	ND

...
...

SURROGATE RECOVERY DATA
% RECOVERY

...

4-Bromofluorobenzene		97%	94%
DATE RECEIVED:		9/10/87	9/10/87
DATE ANALYZED:		9/10/87	9/10/87
MDL MULTIPLIER:		1	1

C OF C #00398

NO QC EVALUATION HAS BEEN PERFORMED
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Charles Corcoran, Manager, Organic Lab.