

Final Report: Site Reclassification Investigation for Courtland, Kansas

prepared by
Environmental Science Division
Argonne National Laboratory



THE UNIVERSITY OF
CHICAGO

Argonne National Laboratory is managed by
The University of Chicago for the U. S. Department of Energy



United States Department of Agriculture

Work sponsored by Commodity Credit Corporation,
United States Department of Agriculture

**Final Report:
Site Reclassification Investigation
for Courtland, Kansas**

by
Applied Geosciences and Environmental Management Section
Environmental Science Division, Argonne National Laboratory

December 2005

Contents

Notation.....	iii
1 Introduction	1-1
2 Site Location and Description	2-1
2.1 Geologic and Hydrogeologic Setting	2-2
2.2 Contaminant History and Previous Investigations.....	2-2
3 Site Reclassification Investigation.....	3-1
4 Conclusion and Recommendations.....	4-1
5 References	5-1
Appendix A: Quality Control for Analysis of Water Samples.....	A-1

Tables

2.1 Analytical results for carbon tetrachloride and chloroform in groundwater and soil samples collected at Courtland, Kansas, 1998–2005.	2-4
3.1 Summary of site reclassification sampling at Courtland in September 2005.....	3-2
3.2 Results of analyses of groundwater samples from private wells for volatile organic compounds during Argonne’s site reclassification investigation at Courtland in September 2005	3-3

Figures

2.1 Locations of Courtland, Kansas, and the former CCC/USDA facility and other grain storage facilities at Courtland.	2-5
2.2 Concentrations of carbon tetrachloride in soil and groundwater samples collected at Courtland in 1998–2005.....	2-6
3.1 Carbon tetrachloride concentrations in groundwater samples collected during the site reclassification sampling at Courtland in September 2005.....	3-4

Notation

AGEM	Applied Geosciences and Environmental Management
BGL	below ground level
°C	degrees Celsius
CCC	Commodity Credit Corporation
COC	chain of custody
deg	degree(s)
EPA	U.S. Environmental Protection Agency
FSA	Farm Service Agency
ft	foot (feet)
gal	gallon(s)
in.	inch(es)
KDHE	Kansas Department of Health and Environment
µg/kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
µS/cm	microsiemen(s) per centimeter
mi	mile(s)
RPD	relative percent difference
SDG	sample delivery group
USDA	U.S. Department of Agriculture

Final Report: Site Reclassification Investigation for Courtland, Kansas

1 Introduction

The Commodity Credit Corporation (CCC), an agency of the U.S. Department of Agriculture (USDA), formerly operated a grain storage facility in Courtland, Kansas. Prior to 1986, commercial grain fumigants containing carbon tetrachloride were commonly used by the CCC/USDA and the grain industry to preserve stored grain.

In 1999, the Kansas Department of Health and Environment (KDHE) identified the former CCC/USDA operation as the likely source of carbon tetrachloride found in groundwater east of the former CCC/USDA facility in Courtland. Sampling by the KDHE in April 1998 had found carbon tetrachloride in the Garman residence lawn and garden well at a concentration of 2.1 µg/L and in the Hoard residence lawn and garden well at a concentration of 0.5 µg/L. Subsequent soil and groundwater sampling by the KDHE at the former CCC/USDA facility found no indication of a continuing source, and subsequent sampling of the affected wells showed generally declining contaminant levels.

At the request of the KDHE and the CCC/USDA, Argonne National Laboratory prepared a *Work Plan for Groundwater Sampling for Potential Site Reclassification, Courtland, Kansas* (Argonne 2004). The objective of the proposed work was to conduct a single groundwater monitoring event and collect information necessary to update the status of the previously detected groundwater contamination, in support of an evaluation of appropriate actions for reclassification of the status of this site from *active* to *resolved*, under the Intergovernmental Agreement between the KDHE and the USDA's Farm Service Agency (FSA). The reclassification would be in accordance with the KDHE's *Reclassification Plan* (Policy # BER-RS-024, online at <http://www.kdhe.state.ks.us/pdf/ber/scp/reclass.pdf>). The KDHE approved the *Work Plan* on August 8, 2005. Sampling was conducted on September 7, 2005.

2 Site Location and Description

The city of Courtland, Kansas, population 334, is located in northern Republic County, about 135 mi northwest of Topeka (Figure 2.1). Since 1969, Courtland has obtained its drinking water from Republic County Rural Water District #1 wells approximately 10 mi west, near Webber, Kansas, in Jewel County. These wells supply drinking water within a 4 -mi radius of Courtland. A number of private wells within the city are used for lawns and gardens.

The former CCC/USDA facility is located in the northwestern part of Courtland, north of Grant Avenue and east of the former Atchison, Topeka, and Santa Fe Railway tracks, which run generally north–south (Figure 2.1). According to the FSA Republic County office, the CCC/USDA operated a facility at this location from about 1948 to 1972 or 1973. However, neither the original 1948 lease nor the lease termination document could be located. The only lease document Argonne found in a visit to the courthouse was a copy of the 1961 lease between then-owner Mabel Arnold and CCC/USDA. That lease was to run for 10 years (to 1971). Arnold transferred the property to two of her children through a quit claim in 1962. The children sold the property to Norman and Doris Hoard in 1966. The Hoards, who are Courtland residents, are the present owners of the property. The facility originally included 28 wooden bins with a capacity of 3,000 bushels and 18 round steel bins with a capacity of 3,250 bushels. Total capacity was therefore estimated at 142,500 bushels. No grain bins remain at the site, and the area is currently an unfenced alfalfa field. The grain bins were removed and sold to local farmers.

Two commercial grain storage facilities south of the former CCC/USDA facility (Figure 2.1) are operated by United Grain Company. The company's *west facility* straddles the former Atchison, Topeka, and Santa Fe Railway tracks directly south of the former CCC/USDA facility. This west facility has been in operation since the late 1880s and has a storage capacity of 530,000 bushels. Circular concrete bin foundations are present along the western side of the former Atchison, Topeka, and Santa Fe Railway tracks. The date of construction and the use of these bins are not known precisely, though the bins are in evidence on aerial photos of the area taken in 1962–1996. The United Grain Company's *east facility* lies along the east-west tracks formerly operated by the Union Pacific Railroad and the Burlington Northern-Santa Fe Railroad on the southern boundary of Courtland. The east facility has a storage capacity of 704,000 bushels. The Kyle Railroad currently provides the rail service on this east-west line.

2.1 Geologic and Hydrogeologic Setting

Courtland is located in northern Republic County, in the Pliocene-Cretaceous groundwater province of the Great Plains. The entire county is drained by the Republican River, which generally trends northwest to southeast and lies approximately 5 mi east of the town. The assumed direction of groundwater flow is southeast, toward the river. Groundwater at the Courtland site is limited and localized in extent, yield, and quality. Locally, groundwater is encountered at a depth of approximately 7–10 ft below ground level (BGL).

Most wells in the Courtland vicinity were drilled before the requirement to supply the state with drilling records was in place. Lithologic logs from a series of test holes drilled in Republic County by the Kansas Geological Survey (Lohman 1948; Lohman and Fishel 1948) are the best source of subsurface data for the area. In a 90-ft well drilled at the United Grain Company's west facility in 1995, a limestone layer was encountered at 30 ft BGL and shaly limestone at 50 ft BGL. This is the nearest well to the former CCC/USDA facility for which subsurface information is available.

The soils in the Courtland area are silt loam of the Crete-Butler-Hastings association. The Crete series forms preferentially in loess deposited on nearly level uplands with slopes of less than 3 deg. Soils of the Crete series are typically 30–40 in. thick and are characterized by low vertical permeability and slow internal drainage. The topsoil in the area of the former CCC/USDA facility is a friable, dark colored, silty clay loam (10 in. thick) underlain by a 30-in.-thick subsoil consisting of three units (from top to bottom): (1) a dark grayish brown, silty clay loam; (2) a dense, dark grayish brown to grayish brown, plastic, silty clay; and (3) a light brownish gray silty clay loam, spotted with dark brown. A light brownish gray, friable, partially weathered calcareous loess (48 ft thick) underlies the Crete series. Beneath this unit is a mottled dark brown, yellow, and reddish brown silt loam with lime concretions.

2.2 Contaminant History and Previous Investigations

On April 12, 1998, as part of the CCC/USDA Private Well Sampling Program conducted by the KDHE, water samples were taken from lawn and garden wells at the Tim Garman residence (2.1 µg/L carbon tetrachloride and 0.7 µg/L chloroform) and the Norman Hoard (0.5 µg/L carbon tetrachloride) residence (Figure 2.2). The two wells were sampled again in May 1998. The Garman well analysis showed carbon tetrachloride at 1.6 µg/L and chloroform at

1.1 µg/L. No contamination was detected above the instrument detection limit (0.5 µg/L) in the resampling of the Hoard well (Table 2.1).

The KDHE conducted a site reconnaissance and evaluation in 1999. Water sampling was conducted at four private lawn and garden wells directly east of the former CCC/USDA facility (at the Tim Garman, Norman Hoard, Mike Johnson, and Ken Nelson residences) and at four Geoprobe sampling locations at and east of the former facility (P01-P04 in Figure 2.2). Among the eight well and Geoprobe groundwater samples, carbon tetrachloride was found above the instrument detection limit (0.5 µg/L) in only the Garman well sample (1.8 µg/L). The Geoprobe samples were collected by advancing rods to a depth of 17 ft, approximately 10 ft below the static water level. The rods were removed, and a temporary well with a 10-ft screen was installed.

Ten subsurface soil samples were collected with a Geoprobe at five locations within the former CCC/USDA facility's boundaries (Figure 2.2), at depth intervals of 10–12 ft BGL and 18–20 ft BGL. In field analyses with the KDHE's mobile gas chromatograph-electron capture detector system, carbon tetrachloride was not detected in any soil sample at a method detection limit of 0.2 µg/kg (KDHE 1999).

On the basis of the regional groundwater flow direction to the southeast and these results, the KDHE concluded that CCC/USDA was the likely source for carbon tetrachloride identified in the two private lawn and garden wells directly east of the former CCC/USDA facility. The site was referred to the KDHE's State Cooperative Program and was subsequently included in the Intergovernmental Agreement between the FSA and the KDHE, Appendix A, Part E (sites that require additional monitoring for reclassification), in May 2003.

TABLE 2.1 Analytical results for carbon tetrachloride and chloroform in groundwater and soil samples collected at Courtland, Kansas, 1998–2005.

Location	Date	Concentration ($\mu\text{g/L}$ in water; $\mu\text{g/kg}$ in soil)		Analytical Laboratory
		Carbon Tetrachloride	Chloroform	
<i>Private Well Groundwater Samples ($\mu\text{g/L}$)</i>				
Garman	04/12/98	2.1	0.7	KDHE
Garman	05/11/98	1.6	1.1	KDHE
Garman	10/06/99	1.8	0.6	KDHE
Garman	09/07/05	0.9	0.3	Argonne
Garman (replicate)	09/07/05	0.7	0.2	Argonne
Hoard	04/13/98	0.5	ND (0.5)	KDHE
Hoard	05/11/98	ND ^a (0.5)	ND (0.5)	KDHE
Hoard	10/06/99	ND (0.5)	ND (0.5)	KDHE
Hoard	09/07/05	ND (0.1)	ND (0.1)	Argonne
Johnson	10/28/99	ND (0.5)	ND (0.5)	KDHE
Johnson	09/07/05	ND (0.1)	ND (0.1)	Argonne
Nelson	12/14/99	ND (0.5)	ND (0.5)	KDHE
Nelson	09/07/05	ND (0.1)	ND (0.1)	Argonne
<i>Geoprobe Groundwater Samples ($\mu\text{g/L}$)</i>				
P01 (7–17 ft BGL)	10/27/99	ND (0.5)	ND (0.5)	KDHE
P02 (7–17 ft BGL)	10/27/99	ND (0.5)	ND (0.5)	KDHE
P03 (7–17 ft BGL)	10/27/99	ND (0.5)	ND (0.5)	KDHE
P04 (7–17 ft BGL)	10/28/99	ND (0.5)	ND (0.5)	KDHE
<i>Geoprobe Subsurface Soil Samples ($\mu\text{g/kg}$)</i>				
SP01 (10–12 ft BGL)	10/28/99	ND (0.2)	ND (0.2)	KDHE Field Lab
SP01 (18–20 ft BGL)	10/28/99	ND (0.2)	ND (0.2)	KDHE Field Lab
SP02 (10–12 ft BGL)	10/28/99	ND (0.2)	ND (0.2)	KDHE Field Lab
SP02 (18–20 ft BGL)	10/28/99	ND (0.2)	ND (0.2)	KDHE Field Lab
SP03 (10–12 ft BGL)	10/28/99	ND (0.2)	ND (0.2)	KDHE Field Lab
SP03 (18–20 ft BGL)	10/28/99	ND (0.2)	ND (0.2)	KDHE Field Lab
SP04 (10–12 ft BGL)	10/28/99	ND (0.2)	ND (0.2)	KDHE Field Lab
SP04 (18–20 ft BGL)	10/28/99	ND (0.2)	ND (0.2)	KDHE Field Lab
SP05 (10–12 ft BGL)	10/28/99	ND (0.2)	ND (0.2)	KDHE Field Lab
SP05 (18 –20 ft BGL)	10/28/99	ND (0.2)	ND (0.2)	KDHE Field Lab

^a ND, not detected at the instrument detection limit indicated in parentheses.

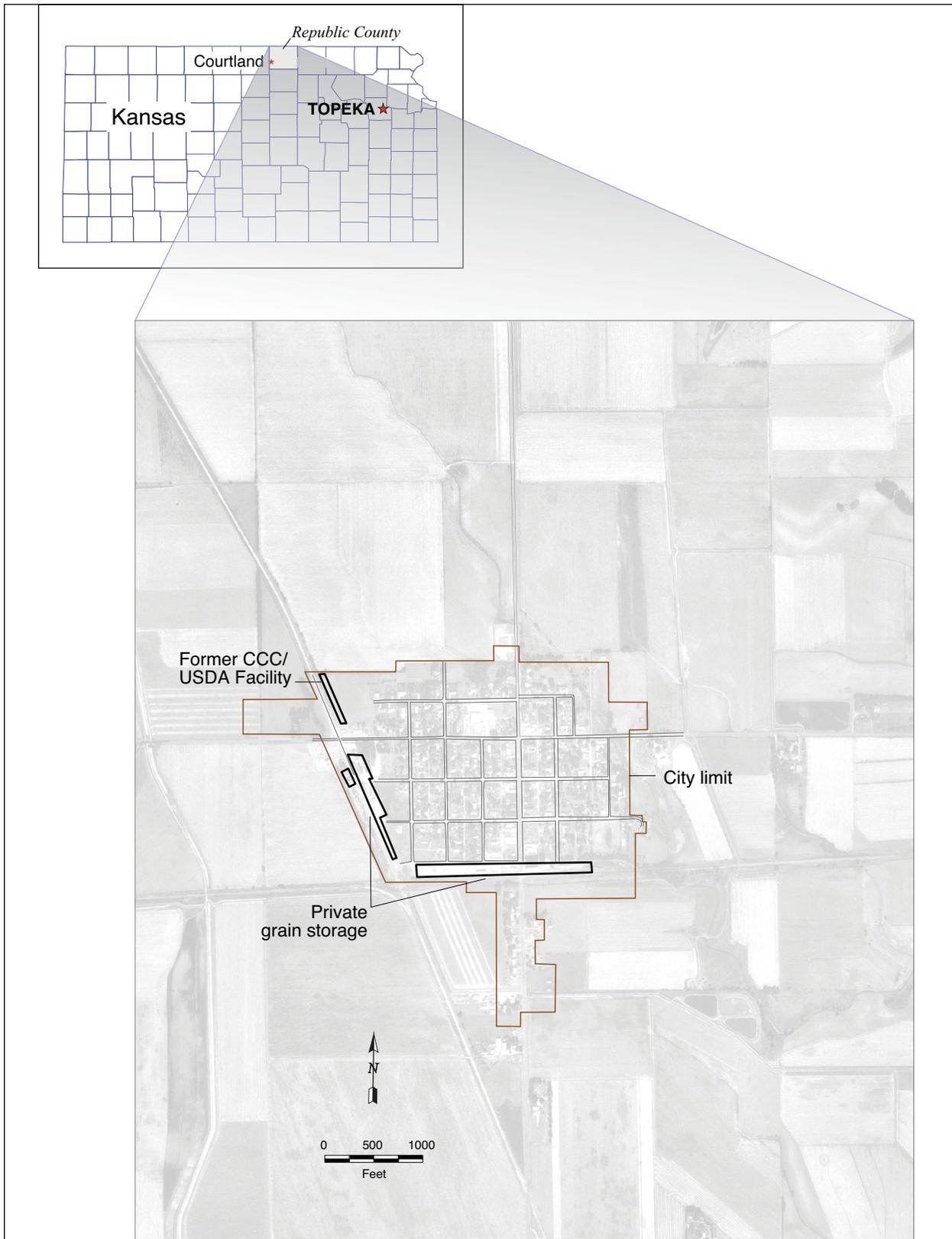


FIGURE 2.1 Locations of Courtland, Kansas, and the former CCC/USDA facility and other grain storage facilities at Courtland. Source of photograph: NDOP (1991).

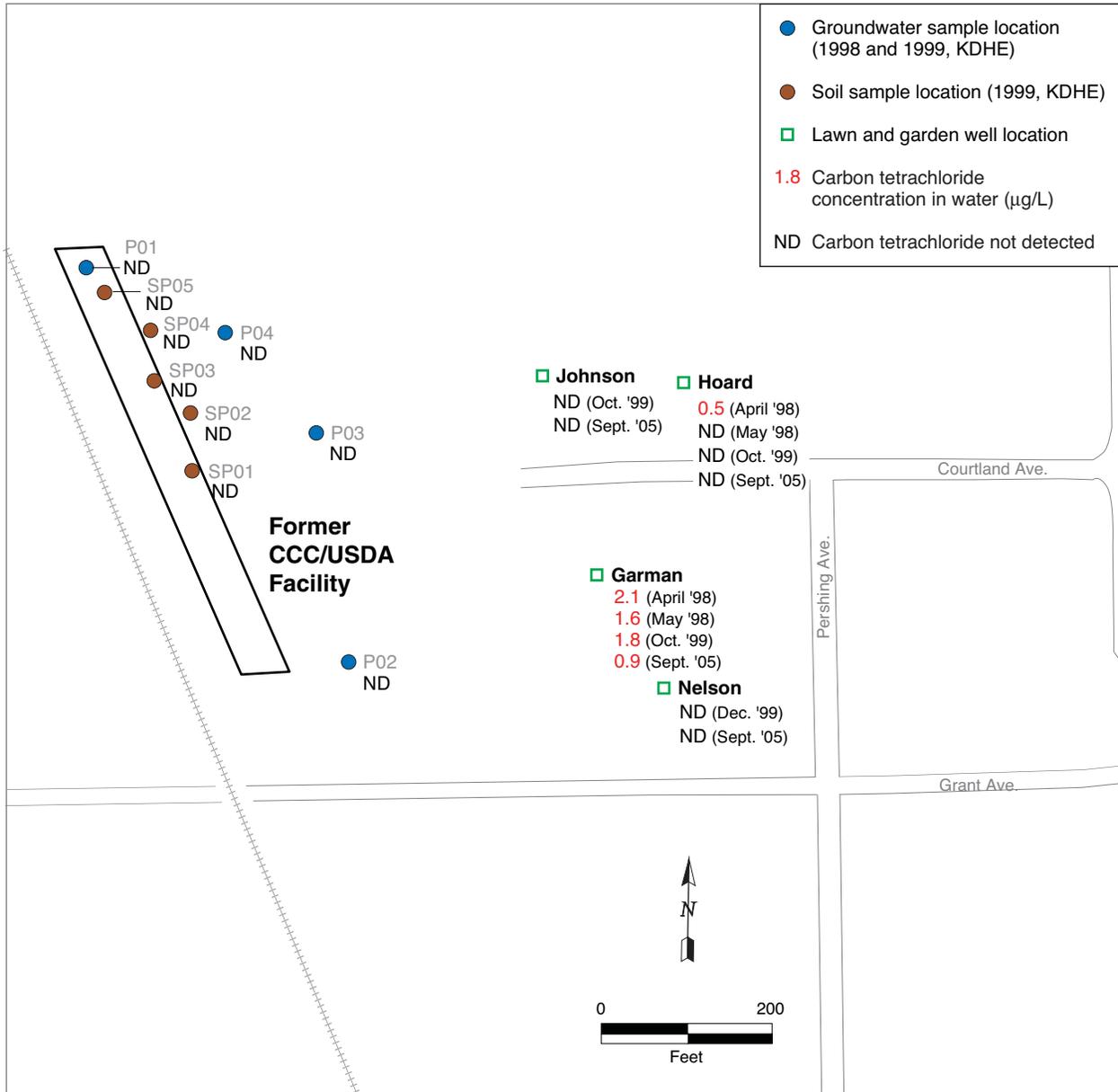


FIGURE 2.2 Concentrations of carbon tetrachloride in soil and groundwater samples collected at Courtland in 1998–2005.

3 Site Reclassification Investigation

The objective of the 2005 site reclassification investigation was to conduct a single groundwater monitoring event to collect information necessary to update the status of the previously detected groundwater contamination at Courtland and to support evaluation of appropriate actions for reclassification of the status of this site from *active* to *resolved*. The *Work Plan* guiding this investigation (Argonne 2004) was prepared on behalf of the CCC/USDA, in response to the KDHE's request for groundwater sampling at Courtland and at six other former CCC/USDA facilities in Kansas. The KDHE approved the Courtland *Work Plan* on August 8, 2005.

Sampling at Courtland was conducted on September 7, 2005. Samples were collected from the four previously sampled lawn and garden wells: Garman, Hoard, Johnson, and Nelson. A blind replicate sample from the Garman well and a trip blank were also collected. Table 3.1 summarizes the samples collected in September 2005 and the final field measurements for temperature, pH, and conductivity made after the pre-sampling well purging.

The samples were held on ice overnight and shipped on September 8, 2005, for overnight delivery to Argonne, where analyses were conducted for volatile organic compounds, including carbon tetrachloride, chloroform, and methylene chloride by using U.S. Environmental Protection Agency (EPA) Method 524.2. The EPA methods are online (<http://www.epa.gov/epahome/index/>). Quality control parameters were met for the analyses.

In September 2005, contamination was detected only in the Garman well, at a carbon tetrachloride level of 0.9 µg/L and a chloroform level of 0.3 µg/L (Table 3.2). Similar concentrations were detected in the blind replicate of the Garman well sample. Methylene chloride was not detected in any of the samples collected in September 2005. The results for carbon tetrachloride in the September 2005 sampling are shown in Figure 3.1. The analytical data from the investigation and the quality control report are in Appendix A.

TABLE 3.1 Summary of site reclassification sampling at Courtland in September 2005.

Location	Sample	Sample Date	Sample Time	Sample Description	Temperature (°C)	pH	Conductivity (µS/cm)	Concentration (µg/L)		
								Carbon Tetra-chloride	Chloro-form	Methylene Chloride
Garman	CTDWGMN-W-19289	9/7/05	12:59	Tim Garman residence lawn and garden well (717 Courtland Avenue). Sample collected after purging of approximately 50 gal. Production pump prevented depth measurements. Depth reported by KDHE at 40 ft. Wellhead located under deck, according to owner. Sampled via garden hose.	18	6.69	2590	0.9 J ^a	0.3 J	ND ^b
Garman	CTQCDU-W-19287	9/7/05	12:59	Replicate of Garman private well sample CTDWGMN-W-19289.	NR ^c	NR	NR	0.7 J	0.2 J	ND
Hoard	CTDWHRD-W-19288	9/7/05	12:37	Norman Hoard residence lawn and garden well (712 Courtland Avenue). Sample collected after purging of approximately 50 gal. Production pump prevented depth measurements. Owner believes well is approximately 68 ft deep.	17.5	6.71	2330	ND	ND	ND
Johnson	CTDWJSN-W-19286	9/7/05	13:21	Mike Johnson residence lawn and garden well (724 Courtland Avenue). Sample collected after purging of approximately 75 gal. Production pump prevented depth measurements.	16	6.79	2770	ND	ND	ND
Nelson	CTDWNSN-W-19290	9/7/05	13:51	Ken Nelson residence lawn and garden well (720 Grant Avenue). Shallow, large-diameter, cistern-like well. Depth to water = 7.2 ft BGL. Depth of well = 11.75 ft BGL. Sample collected without purging, by using bailer lowered to bottom of well.	22.9	7.32	640	ND	ND	ND
QC	CTQCTB-W-19291	9/7/05	13:30	Trip blank sent to AGEM Laboratory with water samples listed on COC 1555. Prepared by using commercial distilled water opened in the field.	NR	NR	NR	ND	0.2 J	ND

^a Qualified J indicates an estimated concentration below the method quantitation limit of 1 µg/L.

^b ND, contaminant not detected at instrument detection limit of 0.1 µg/L.

^c NR, field measurement not recorded.

TABLE 3.2 Results of analyses of groundwater samples from private wells for volatile organic compounds during Argonne's site reclassification investigation at Courtland in September 2005.

Location	Date	Concentration (µg/L)		
		Carbon Tetrachloride	Chloroform	Methylene Chloride
Garman	09/07/05	0.9	0.3	ND ^a (0.1)
Garman (replicate)	09/07/05	0.7	0.2	ND (0.1)
Hoard	09/07/05	ND (0.1)	ND (0.1)	ND (0.1)
Johnson	09/07/05	ND (0.1)	ND (0.1)	ND (0.1)
Nelson	09/07/05	ND (0.1)	ND (0.1)	ND (0.1)

^a ND, not detected at the instrument detection limit indicated in parentheses.

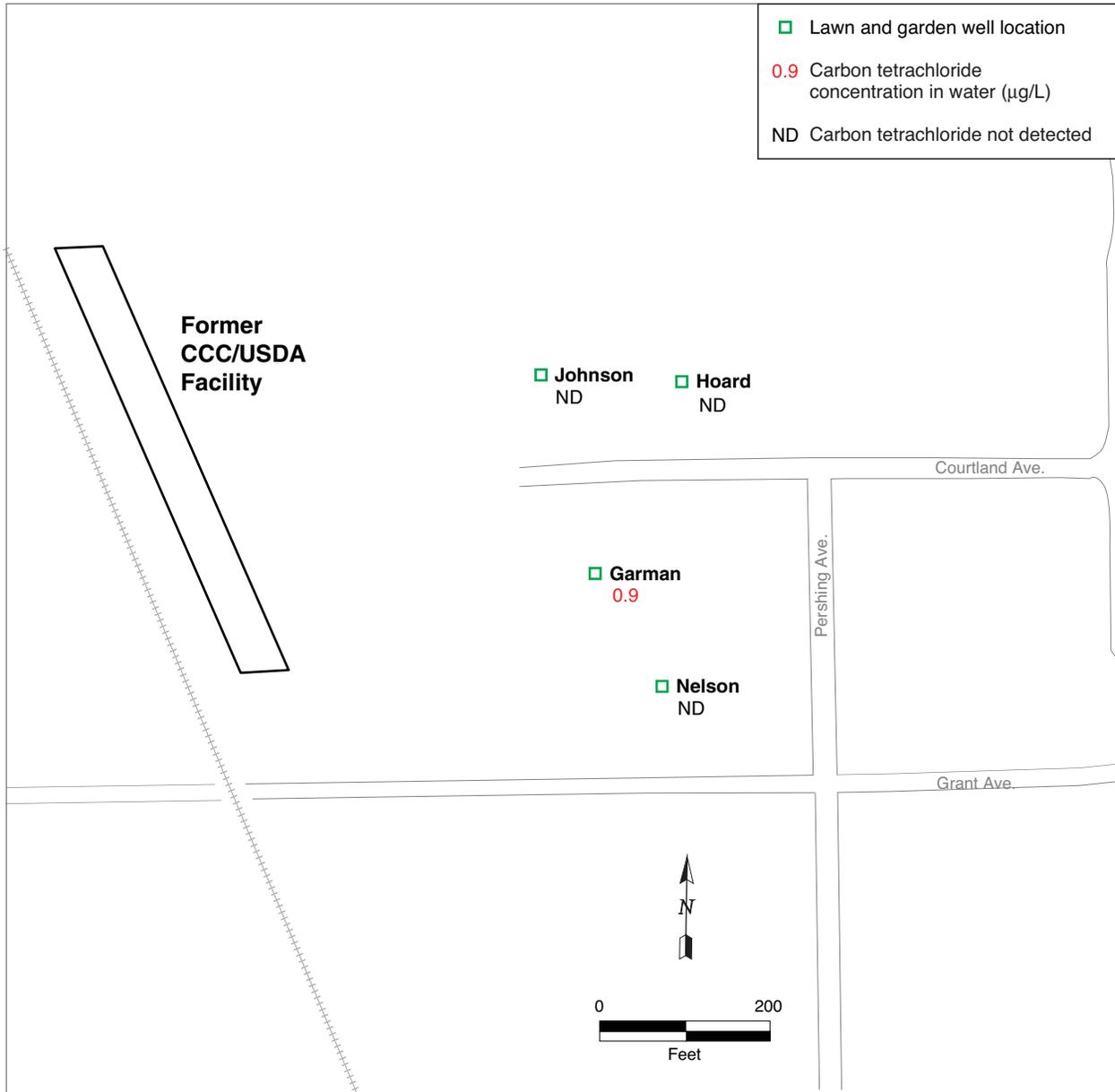


FIGURE 3.1 Carbon tetrachloride concentrations in groundwater samples collected during the site reclassification sampling at Courtland in September 2005.

4 Conclusion and Recommendations

In 1998, releases of carbon tetrachloride and chloroform to groundwater were documented in two private lawn and garden wells (the Garman and Hoard wells). Contaminant levels in these wells were below the regulatory limit of 5 µg/L. The KDHE identified the former CCC/USDA grain storage facility, located west of the private wells, as the likely source of the carbon tetrachloride contamination. Subsequent sampling of the Garman well has shown decreasing carbon tetrachloride levels from 2.1 µg/L in 1998 to the present level of 0.9 µg/L. Carbon tetrachloride is no longer present in the Hoard well. Two other nearby lawn and garden wells have consistently shown no carbon tetrachloride contamination. Groundwater and soil sampling by the KDHE on the former CCC/USDA property found no evidence of a continuing source.

Sampling in 1998–2005 has demonstrated a consistent decline in the carbon tetrachloride concentrations to trace levels. Because residents in and around Courtland obtain their drinking water from the Republic County Rural Water District #1 wells (located approximately 10 mi west, near Webber, Kansas, in Jewel County), no health risk is posed by the remaining trace carbon tetrachloride contamination.

A reclassification of the former Courtland CCC/USDA facility from *active* to *resolved* status is recommended. Within the framework of the Intergovernmental Agreement between the FSA and the KDHE, the site can be transferred from Appendix A, Part E (sites that require additional monitoring for reclassification), to Appendix B (sites requiring no further action by the FSA).

5 References

Argonne, 2004, *Work Plan for Groundwater Sampling for Potential Site Reclassification, Courtland, Kansas*, ANL/ER/AGEM/CHRON-755, prepared for the Commodity Credit Corporation, U.S. Department of Agriculture, by Argonne National Laboratory, Argonne, Illinois, September 28.

KDHE, 1999, *Courtland USDA/CCC Site, Courtland, Republic County, Kansas, Site Reconnaissance and Evaluation*, Kansas Department of Health and Environment, Topeka, Kansas, December.

Lohman, S.W., 1948, "Cenozoic Geologic History," pp. 29-36 in *Ground-Water Resources of Republic County and Northern Cloud County, Kansas*, edited by V.C. Fishel, Bulletin 73, Kansas Geological Survey, University of Kansas Publications, Lawrence, Kansas, May.

Lohman, S.W., and V.C. Fishel, 1948, "Quaternary System," pp. 89-120 in *Ground-Water Resources of Republic County and Northern Cloud County, Kansas*, edited by V.C. Fishel, Bulletin 73, Kansas Geological Survey, University of Kansas Publications, Lawrence, Kansas, May.

NDOP, 1991, aerial photograph of Courtland, Kansas, National Digital Orthophoto Program, <http://www.ndop.gov>.

Appendix A:

Quality Control for Analysis of Water Samples

Appendix A:

Quality Control for Analysis of Water Samples

Four groundwater samples, a blind replicate groundwater sample, and a trip blank were collected on September 7, 2005, at Courtland, Kansas, for organic analysis at the Applied Geosciences and Environmental Management (AGEM) Laboratory at Argonne National Laboratory with EPA Method 524.2. As indicated on the attached chain-of-custody form, the samples were held on ice overnight and shipped on September 8, 2005, for overnight delivery. The samples were analyzed in one sample delivery group (SDG) on September 9, 2005.

For the purge-and-trap analyses, the volatile organic compounds in the groundwater sample were extracted (purged) from the sample matrix by bubbling an inert gas through the sample. The purged components were trapped in a specified sorbent tube. After purging, the sorbent tube was heated and back-flushed with an inert gas to desorb the components into a gas chromatograph-mass spectrometer system. The compounds eluting from the gas chromatograph column were identified by retention time and by comparison with reference library spectra. The concentration of each component was calculated by comparison of the mass spectrometer response for the quantitation ion to the response for corresponding calibration curves, internal standards, or both. The quality control procedures followed included analysis of an instrument calibration check standard, analysis of a laboratory blank, monitoring of surrogate spike recovery, and analysis of a blind replicate sample. Significant results include the following:

- Samples were received at the AGEM Laboratory with custody seals intact and at the appropriate temperature (4°C). All samples were analyzed within the required holding time.
- Contaminants of concern (carbon tetrachloride and chloroform) were not detected in a laboratory method blank analyzed with the samples. Chloroform was detected at trace concentration (0.2 µg/L) in the trip blank prepared with commercial distilled water. Carbon tetrachloride was not detected in the trip blank. Cross-contamination of the samples during shipment is not indicated.
- Analytical instrument calibration was monitored by the analysis of a calibration check standard. Table A.1 shows the relative percent difference

(RPD) values between the known and calculated concentrations of the standard. The concentrations of calibration check standards were within the acceptable range of $\pm 20\%$.

- Surrogate standard determinations were performed on samples and blanks by using surrogate spike compounds fluorobenzene, bromofluorobenzene, and 1,4-dichlorobenzene. Table A.1 shows the percent recoveries for these system-monitoring compounds for each analysis. The surrogate recoveries were within the acceptable range of $\pm 20\%$.
- Good precision in the analyses is indicated by the results reported for the sample and blind replicate from the Garman lawn and garden well. Carbon tetrachloride was detected in the sample and blind replicate at trace concentrations of $0.9 \mu\text{g/L}$ and $0.7 \mu\text{g/L}$, respectively. Chloroform was detected in the sample and blind replicate at trace concentrations of $0.3 \mu\text{g/L}$ and $0.2 \mu\text{g/L}$, respectively.

The analytical data from the AGEM Laboratory are considered representative of site conditions and are acceptable for determination of contaminant distribution in groundwater.

TABLE A.1 Results for quality control procedures to monitor organic analyses of water samples collected at Courtland, Kansas, and analyzed at the AGEM Laboratory by the purge-and-trap method.

Sample	Recovery of Surrogate Compounds ^a (%)			Measured Concentration and RPD Value for Calibration Check Standard			
	Fluoro- benzene	Bromo- fluoro- benzene	1,4-Dichloro- benzene	Carbon Tetrachloride		Chloroform	
				(µg/L)	RPD ^b	(µg/L)	RPD ^b
<i>SDG 05-9-9, analysis date September 9, 2005</i>							
20-µg/L standard	96	90	92	22.96	13.8	23.66	16.8
Laboratory blank	100	100					
CTDWJSN-W-19286	99	103	103				
CTQCDU-W-19287	102	107	108				
CTDWHRD-W-19288	102	105	109				
CTDWGMN-W-19289	96	96	96				
CTDWNSN-W-19290	91	94	95				
CTQCTB-W-19291	89	89	94				

^a Quality control range = 80–120%.

^b Quality control range = ±20%.

1555

Med, CLR

MATRIX: WATER RECEIVING LAB: ASEM PROJECT/SITE: Courtland		Shipping Container No. POK 8389 239489 8A Shipping Info: POK 8389 239489 8A ANL Field Contact (Name & Temporary Phone): John Taylor 630 319 5543	
SAMPLER(S) (Signature) <i>BW Meschold</i>		ARGONNE NATIONAL LABORATORY CHAIN OF CUSTODY RECORD*	
DATE OF COLLECTION SAMPLE ID NUMBER(S)		ANALYSIS	REMARKS
		Number of containers	
7 SEP 05	CTDWJSSN-W-19286	6	
	CTDWJSSN-W-19287	6	
	CTDWJSSN-W-19288	6	
	CTDWJSSN-W-19289	6	
	CTDWJSSN-W-19290	6	
	CTDWJSSN-W-19291	6	
	CTDWJSSN-W-19292	6	
	CTDWJSSN-W-19293	6	
	CTDWJSSN-W-19294	6	
	CTDWJSSN-W-19295	6	
	CTDWJSSN-W-19296	6	
	CTDWJSSN-W-19297	6	
	CTDWJSSN-W-19298	6	
	CTDWJSSN-W-19299	6	
	CTDWJSSN-W-19300	6	
	CTDWJSSN-W-19301	6	
	CTDWJSSN-W-19302	6	
	CTDWJSSN-W-19303	6	
	CTDWJSSN-W-19304	6	
	CTDWJSSN-W-19305	6	
	CTDWJSSN-W-19306	6	
	CTDWJSSN-W-19307	6	
	CTDWJSSN-W-19308	6	
	CTDWJSSN-W-19309	6	
	CTDWJSSN-W-19310	6	
	CTDWJSSN-W-19311	6	
	CTDWJSSN-W-19312	6	
	CTDWJSSN-W-19313	6	
	CTDWJSSN-W-19314	6	
	CTDWJSSN-W-19315	6	
	CTDWJSSN-W-19316	6	
	CTDWJSSN-W-19317	6	
	CTDWJSSN-W-19318	6	
	CTDWJSSN-W-19319	6	
	CTDWJSSN-W-19320	6	
	CTDWJSSN-W-19321	6	
	CTDWJSSN-W-19322	6	
	CTDWJSSN-W-19323	6	
	CTDWJSSN-W-19324	6	
	CTDWJSSN-W-19325	6	
	CTDWJSSN-W-19326	6	
	CTDWJSSN-W-19327	6	
	CTDWJSSN-W-19328	6	
	CTDWJSSN-W-19329	6	
	CTDWJSSN-W-19330	6	
	CTDWJSSN-W-19331	6	
	CTDWJSSN-W-19332	6	
	CTDWJSSN-W-19333	6	
	CTDWJSSN-W-19334	6	
	CTDWJSSN-W-19335	6	
	CTDWJSSN-W-19336	6	
	CTDWJSSN-W-19337	6	
	CTDWJSSN-W-19338	6	
	CTDWJSSN-W-19339	6	
	CTDWJSSN-W-19340	6	
	CTDWJSSN-W-19341	6	
	CTDWJSSN-W-19342	6	
	CTDWJSSN-W-19343	6	
	CTDWJSSN-W-19344	6	
	CTDWJSSN-W-19345	6	
	CTDWJSSN-W-19346	6	
	CTDWJSSN-W-19347	6	
	CTDWJSSN-W-19348	6	
	CTDWJSSN-W-19349	6	
	CTDWJSSN-W-19350	6	
	CTDWJSSN-W-19351	6	
	CTDWJSSN-W-19352	6	
	CTDWJSSN-W-19353	6	
	CTDWJSSN-W-19354	6	
	CTDWJSSN-W-19355	6	
	CTDWJSSN-W-19356	6	
	CTDWJSSN-W-19357	6	
	CTDWJSSN-W-19358	6	
	CTDWJSSN-W-19359	6	
	CTDWJSSN-W-19360	6	
	CTDWJSSN-W-19361	6	
	CTDWJSSN-W-19362	6	
	CTDWJSSN-W-19363	6	
	CTDWJSSN-W-19364	6	
	CTDWJSSN-W-19365	6	
	CTDWJSSN-W-19366	6	
	CTDWJSSN-W-19367	6	
	CTDWJSSN-W-19368	6	
	CTDWJSSN-W-19369	6	
	CTDWJSSN-W-19370	6	
	CTDWJSSN-W-19371	6	
	CTDWJSSN-W-19372	6	
	CTDWJSSN-W-19373	6	
	CTDWJSSN-W-19374	6	
	CTDWJSSN-W-19375	6	
	CTDWJSSN-W-19376	6	
	CTDWJSSN-W-19377	6	
	CTDWJSSN-W-19378	6	
	CTDWJSSN-W-19379	6	
	CTDWJSSN-W-19380	6	
	CTDWJSSN-W-19381	6	
	CTDWJSSN-W-19382	6	
	CTDWJSSN-W-19383	6	
	CTDWJSSN-W-19384	6	
	CTDWJSSN-W-19385	6	
	CTDWJSSN-W-19386	6	
	CTDWJSSN-W-19387	6	
	CTDWJSSN-W-19388	6	
	CTDWJSSN-W-19389	6	
	CTDWJSSN-W-19390	6	
	CTDWJSSN-W-19391	6	
	CTDWJSSN-W-19392	6	
	CTDWJSSN-W-19393	6	
	CTDWJSSN-W-19394	6	
	CTDWJSSN-W-19395	6	
	CTDWJSSN-W-19396	6	
	CTDWJSSN-W-19397	6	
	CTDWJSSN-W-19398	6	
	CTDWJSSN-W-19399	6	
	CTDWJSSN-W-19400	6	
	CTDWJSSN-W-19401	6	
	CTDWJSSN-W-19402	6	
	CTDWJSSN-W-19403	6	
	CTDWJSSN-W-19404	6	
	CTDWJSSN-W-19405	6	
	CTDWJSSN-W-19406	6	
	CTDWJSSN-W-19407	6	
	CTDWJSSN-W-19408	6	
	CTDWJSSN-W-19409	6	
	CTDWJSSN-W-19410	6	
	CTDWJSSN-W-19411	6	
	CTDWJSSN-W-19412	6	
	CTDWJSSN-W-19413	6	
	CTDWJSSN-W-19414	6	
	CTDWJSSN-W-19415	6	
	CTDWJSSN-W-19416	6	
	CTDWJSSN-W-19417	6	
	CTDWJSSN-W-19418	6	
	CTDWJSSN-W-19419	6	
	CTDWJSSN-W-19420	6	
	CTDWJSSN-W-19421	6	
	CTDWJSSN-W-19422	6	
	CTDWJSSN-W-19423	6	
	CTDWJSSN-W-19424	6	
	CTDWJSSN-W-19425	6	
	CTDWJSSN-W-19426	6	
	CTDWJSSN-W-19427	6	
	CTDWJSSN-W-19428	6	
	CTDWJSSN-W-19429	6	
	CTDWJSSN-W-19430	6	
	CTDWJSSN-W-19431	6	
	CTDWJSSN-W-19432	6	
	CTDWJSSN-W-19433	6	
	CTDWJSSN-W-19434	6	
	CTDWJSSN-W-19435	6	
	CTDWJSSN-W-19436	6	
	CTDWJSSN-W-19437	6	
	CTDWJSSN-W-19438	6	
	CTDWJSSN-W-19439	6	
	CTDWJSSN-W-19440	6	
	CTDWJSSN-W-19441	6	
	CTDWJSSN-W-19442	6	
	CTDWJSSN-W-19443	6	
	CTDWJSSN-W-19444	6	
	CTDWJSSN-W-19445	6	
	CTDWJSSN-W-19446	6	
	CTDWJSSN-W-19447	6	
	CTDWJSSN-W-19448	6	
	CTDWJSSN-W-19449	6	
	CTDWJSSN-W-19450	6	
	CTDWJSSN-W-19451	6	
	CTDWJSSN-W-19452	6	
	CTDWJSSN-W-19453	6	
	CTDWJSSN-W-19454	6	
	CTDWJSSN-W-19455	6	
	CTDWJSSN-W-19456	6	
	CTDWJSSN-W-19457	6	
	CTDWJSSN-W-19458	6	
	CTDWJSSN-W-19459	6	
	CTDWJSSN-W-19460	6	
	CTDWJSSN-W-19461	6	
	CTDWJSSN-W-19462	6	
	CTDWJSSN-W-19463	6	
	CTDWJSSN-W-19464	6	
	CTDWJSSN-W-19465	6	
	CTDWJSSN-W-19466	6	
	CTDWJSSN-W-19467	6	
	CTDWJSSN-W-19468	6	
	CTDWJSSN-W-19469	6	
	CTDWJSSN-W-19470	6	
	CTDWJSSN-W-19471	6	
	CTDWJSSN-W-19472	6	
	CTDWJSSN-W-19473	6	
	CTDWJSSN-W-19474	6	
	CTDWJSSN-W-19475	6	
	CTDWJSSN-W-19476	6	
	CTDWJSSN-W-19477	6	
	CTDWJSSN-W-19478	6	
	CTDWJSSN-W-19479	6	
	CTDWJSSN-W-19480	6	
	CTDWJSSN-W-19481	6	
	CTDWJSSN-W-19482	6	
	CTDWJSSN-W-19483	6	
	CTDWJSSN-W-19484	6	
	CTDWJSSN-W-19485	6	
	CTDWJSSN-W-19486	6	
	CTDWJSSN-W-19487	6	
	CTDWJSSN-W-19488	6	
	CTDWJSSN-W-19489	6	
	CTDWJSSN-W-19490	6	
	CTDWJSSN-W-19491	6	
	CTDWJSSN-W-19492	6	
	CTDWJSSN-W-19493	6	
	CTDWJSSN-W-19494	6	
	CTDWJSSN-W-19495	6	
	CTDWJSSN-W-19496	6	
	CTDWJSSN-W-19497	6	
	CTDWJSSN-W-19498	6	
	CTDWJSSN-W-19499	6	
	CTDWJSSN-W-19500	6	
	CTDWJSSN-W-19501	6	
	CTDWJSSN-W-19502	6	
	CTDWJSSN-W-19503	6	
	CTDWJSSN-W-19504	6	
	CTDWJSSN-W-19505	6	
	CTDWJSSN-W-19506	6	
	CTDWJSSN-W-19507	6	
	CTDWJSSN-W-19508	6	
	CTDWJSSN-W-19509	6	
	CTDWJSSN-W-19510	6	
	CTDWJSSN-W-19511	6	
	CTDWJSSN-W-19512	6	
	CTDWJSSN-W-19513	6	
	CTDWJSSN-W-19514	6	
	CTDWJSSN-W-19515	6	
	CTDWJSSN-W-19516	6	
	CTDWJSSN-W-19517	6	
	CTDWJSSN-W-19518	6	
	CTDWJSSN-W-19519	6	
	CTDWJSSN-W-19520	6	
	CTDWJSSN-W-19521	6	
	CTDWJSSN-W-19522	6	
	CTDWJSSN-W-19523	6	
	CTDWJSSN-W-19524	6	
	CTDWJSSN-W-19525	6	
	CTDWJSSN-W-19526	6	
	CTDWJSSN-W-19527	6	
	CTDWJSSN-W-19528	6	
	CTDWJSSN-W-19529	6	
	CTDWJSSN-W-19530	6	
	CTDWJSSN-W-19531		

sequence.log

Simulate Run Sequence Fri Sep 09 10:14:24 2005

Instrument Name: GC/MS Instrument #1
Sequence File: C:\HPCHEM\1\SEQUENCE\DEFAULT.S
Comment: CORTLAND
Operator: CMR
Data Path: C:\HPCHEM\1\DATA\CT\
Method Path: C:\HPCHEM\1\METHODS\

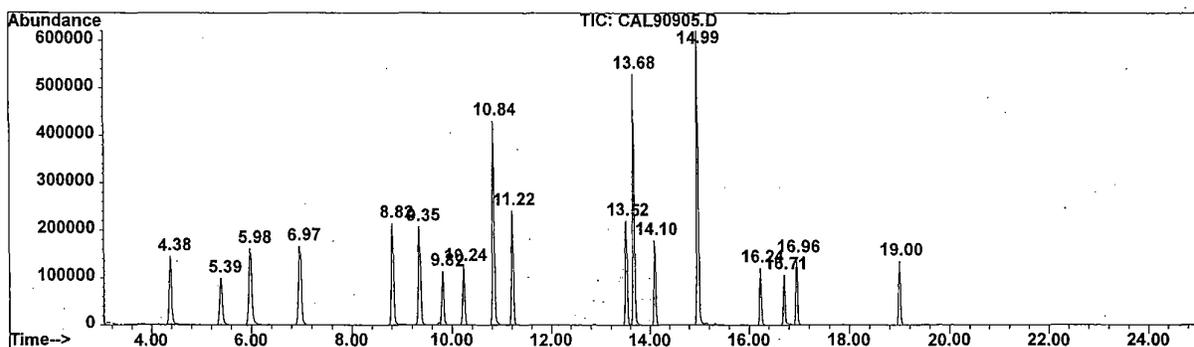
Line Type	Vial	DataFile	Method	Sample Name
1) Sample	1	90901	CAL14	LAB BLANK
2) Sample	2	90902	CAL14	CTDWJSN-W-09286
3) Sample	3	90903	CAL14	CTQCDU-W-09287
4) Sample	4	90904	CAL14	CTDWHRD-W-09288
5) Sample	5	90905	CAL14	CTDWGMN-W-09289
6) Sample	6	90906	CAL14	CTDWNSN-W-09290
7) Sample	7	90907	CAL14	CTDWNSN-W-09290 DUPL
8) Sample	8	90908	CAL14	CTQCTB-W-09291

Bytes Needed: 400000 Space on drive C: 352485376
Sequence Verification Done!

Area Percent Report -- Sorted by Signal

Information from Data File:

File : C:\HPCHEM\1\DATA\CAL90905.D
Operator : CMR
Acquired : 9 Sep 05 9:41 am using AcqMethod CAL14
Sample Name: CAL CHECK
Misc Info :
Vial Number: 13
CurrentMeth: C:\HPCHEM\1\METHODS\CAL14.M



Retention Time	Area	Area %	Ratio %
Total Ion Chromatogram			
4.380	4862614	4.459	34.262
5.395	3747173	3.436	26.403
5.985	6588340	6.041	46.422
6.969	6548367	6.004	46.140
8.821	6842388	6.274	48.212
9.355	6740764	6.181	47.496
9.822	3322478	3.046	23.410
10.242	3375531	3.095	23.784
10.842	11424455	10.475	80.497
11.220	6633280	6.082	46.738
13.524	5430960	4.980	38.267
13.679	12535643	11.494	88.327
14.102	4427713	4.060	31.198
14.986	14192351	13.013	100.000
16.238	2929194	2.686	20.639
16.712	2738629	2.511	19.297
16.960	3315178	3.040	23.359
19.004	3407667	3.125	24.011

C:\HPCHEM\1\DATA\CAL90905.D

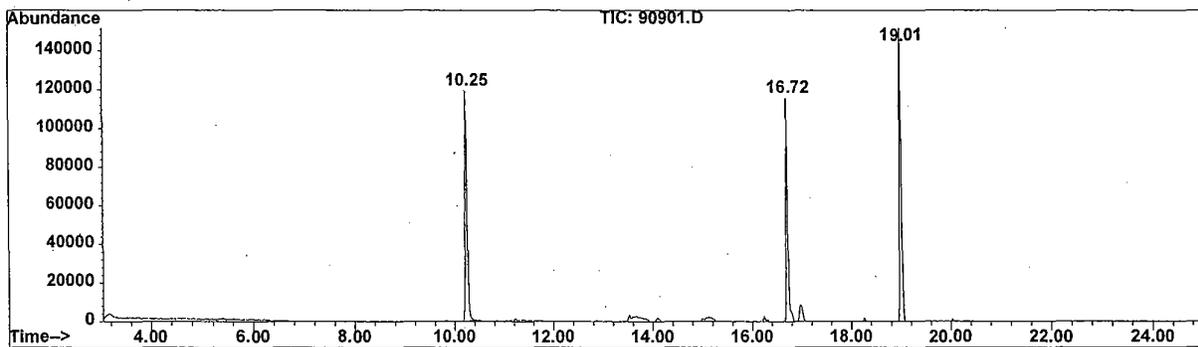
Operator **CMR**
Number of Compounds **19**.
Vial Number 13
Sample Name CAL CHECK
Data File Name CAL90905.D
Date Acquired 09/ 9/05 09:41

#	Name	Ret Time	Signal	Amount	Target Response
1)	Methylene Chloride	5.39	84	24.46	1739565
2)	1, 2-Dichloroethene	5.98	62	23.07	204797
3)	1, 1-Dichloroethane	6.97	63	23.49	3440587
4)	Chloroform	8.82	83	23.66	3534684
5)	Carbon Tetrachloride	9.35	117	22.96	2374057
6)	Benzene	9.74	78	0.00	89657
7)	1, 2-Dichloroethane	9.82	62	24.42	1613230
8)	Fluorobenzene	10.24	96	6.35	1789643 Internal Sta
9)	Trichloroethylene	10.84	97	22.46	1408614
10)	1, 2-Dichloropropane	11.22	63	24.26	1930389
11)	Toluene	12.87	TIC	0.00	86389
12)	1, 1, 2-Trichloroethane	13.52	83	23.91	970419
13)	Tetrachloroethylene	13.68	164	23.41	2025798
14)	Dibromochloromethane	14.10	129	23.22	1574328
15)	Chlorobenzene	14.99	112	22.72	5014783
16)	p-Bromofluorobenzene	16.71	174	5.86	551680
17)	Bromofluorobenzene	16.71	95	5.74	567787 Internal Sta
18)	1, 1, 2, 2-Tetrachloroethane	16.96	83	23.47	1165107
19)	1, 4-Dichlorobenzene-d4	19.00	152	5.61	621045 Internal Sta

Area Percent Report -- Sorted by Signal

Information from Data File:

File : C:\HPCHEM\1\DATA\CT\90901.D
Operator : CMR
Acquired : 9 Sep 05 10:15 am using AcqMethod CAL14
Sample Name: LAB BLANK
Misc Info :
Vial Number: 1
CurrentMeth: C:\HPCHEM\1\METHODS\CAL14.M



Retention Time	Area	Area %	Ratio %
Total Ion Chromatogram			
10.245	3549552	34.658	93.867
16.716	2910761	28.420	76.974
19.007	3781470	36.922	100.000

C:\HPCHEM\1DATA\CT90901.D

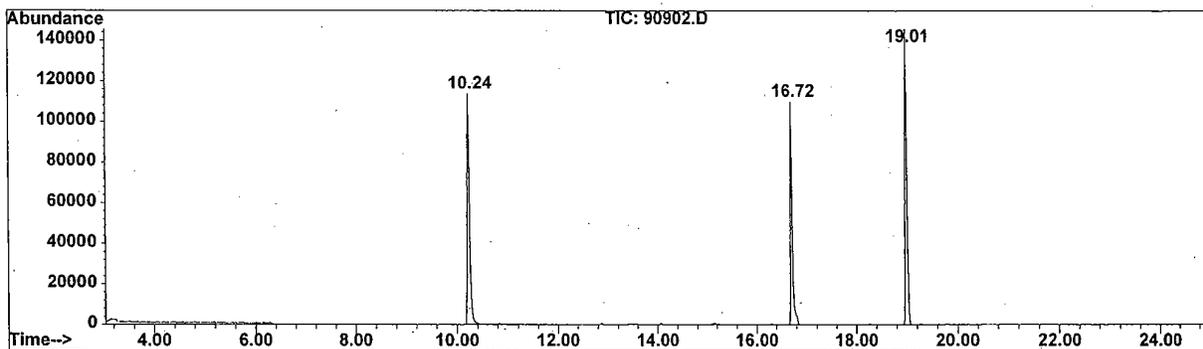
Operator **CMR**
Number of Compounds **19**.
Vial Number **1**
Sample Name **LAB BLANK**
Data File Name **90901.D**
Date Acquired **09/ 9/05 10:15**

#	Name	Ret Time	Signal	Amount	Target Response
1)	Methylene Chloride	0.00	84	0.00	0
2)	1, 2-Dichloroethene	0.00	62	0.00	0
3)	1, 1-Dichloroethane	0.00	63	0.00	0
4)	Chloroform	0.00	83	0.00	0
5)	Carbon Tetrachloride	0.00	117	0.00	0
6)	Benzene	0.00	78	0.00	0
7)	1, 2-Dichloroethane	0.00	62	0.00	0
8)	Fluorobenzene	10.25	96	6.55	1858454 Internal Sta
9)	Trichloroethylene	0.00	97	0.00	0
10)	1, 2-Dichloropropane	0.00	63	0.00	0
11)	Toluene	0.00	TIC	0.00	0
12)	1, 1, 2-Trichloroethane	0.00	83	0.00	0
13)	Tetrachloroethylene	0.00	164	0.00	0
14)	Dibromochloromethane	0.00	129	0.00	0
15)	Chlorobenzene	0.00	112	0.00	0
16)	p-Bromofluorobenzene	16.72	174	6.24	593151
17)	Bromofluorobenzene	16.72	95	6.28	629286 Internal Sta
18)	1, 1, 2, 2-Tetrachloroethane	16.99	83	2.49	153732
19)	1, 4-Dichlorobenzene-d4	19.01	152	6.09	677608 Internal Sta

Area Percent Report -- Sorted by Signal

Information from Data File:

File : C:\HPCHEM\1\DATA\CT\90902.D
Operator : CMR
Acquired : 9 Sep 05 10:45 am using AcqMethod CAL14
Sample Name: CTDWJSN-W-09286
Misc Info :
Vial Number: 2
CurrentMeth: C:\HPCHEM\1\METHODS\CAL14.M



Retention Time	Area	Area %	Ratio %
Total Ion Chromatogram			
10.241	3433050	33.633	88.998
16.716	2916834	28.576	75.615
19.007	3857457	37.791	100.000

C:\HPCHEM\1\DATA\CT190902.D

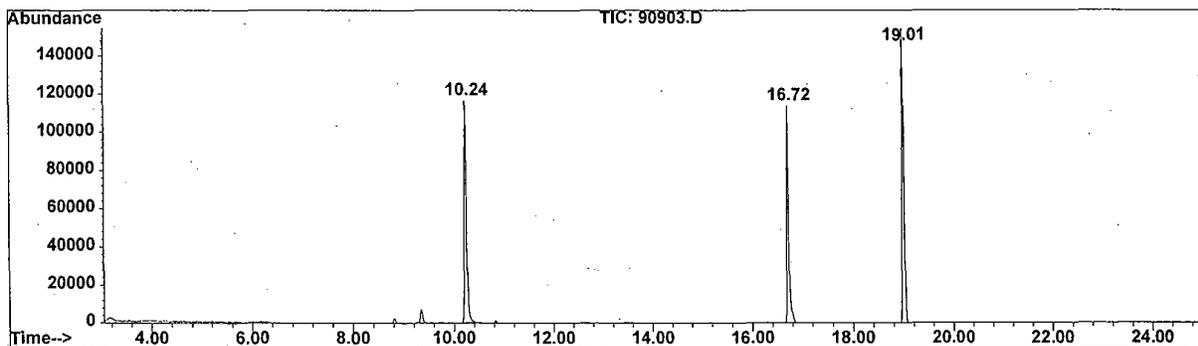
Operator **CMR**
Number of Compounds **19**.
Vial Number 2
Sample Name CTDWJSN-W-09286
Data File Name 90902.D
Date Acquired 09/ 9/05 10:45

#	Name	Ret Time	Signal	Amount	Target Response
1)	Methylene Chloride	0.00	84	0.00	0
2)	1, 2-Dichloroethene	0.00	62	0.00	0
3)	1, 1-Dichloroethane	0.00	63	0.00	0
4)	Chloroform	0.00	83	0.00	0
5)	Carbon Tetrachloride	0.00	117	0.00	0
6)	Benzene	0.00	78	0.00	0
7)	1, 2-Dichloroethane	0.00	62	0.00	0
8)	Fluorobenzene	10.24	96	6.47	1831172 Internal Sta
9)	Trichloroethylene	0.00	97	0.00	0
10)	1, 2-Dichloropropane	0.00	63	0.00	0
11)	Toluene	0.00	TIC	0.00	0
12)	1, 1, 2-Trichloroethane	0.00	83	0.00	0
13)	Tetrachloroethylene	0.00	164	0.00	0
14)	Dibromochloromethane	0.00	129	0.00	0
15)	Chlorobenzene	0.00	112	0.00	0
16)	p-Bromofluorobenzene	16.72	174	6.28	597246
17)	Bromofluorobenzene	16.72	95	6.47	650231 Internal Sta
18)	1, 1, 2, 2-Tetrachloroethane	0.00	83	0.00	0
19)	1, 4-Dichlorobenzene-d4	19.01	152	6.28	699472 Internal Sta

Area Percent Report -- Sorted by Signal

Information from Data File:

File : C:\HPCHEM\1\DATA\CT\90903.D
Operator : CMR
Acquired : 9 Sep 05 11:15 am using AcqMethod CAL14
Sample Name: CTQCDU-W-09287
Misc Info :
Vial Number: 3
CurrentMeth: C:\HPCHEM\1\METHODS\CAL14.M



Retention Time	Area	Area %	Ratio %
Total Ion Chromatogram			
10.242	3538152	33.216	87.141
16.719	3053620	28.667	75.208
19.010	4060258	38.117	100.000

C:\HPCHEM\1\DATA\CT\90903.D

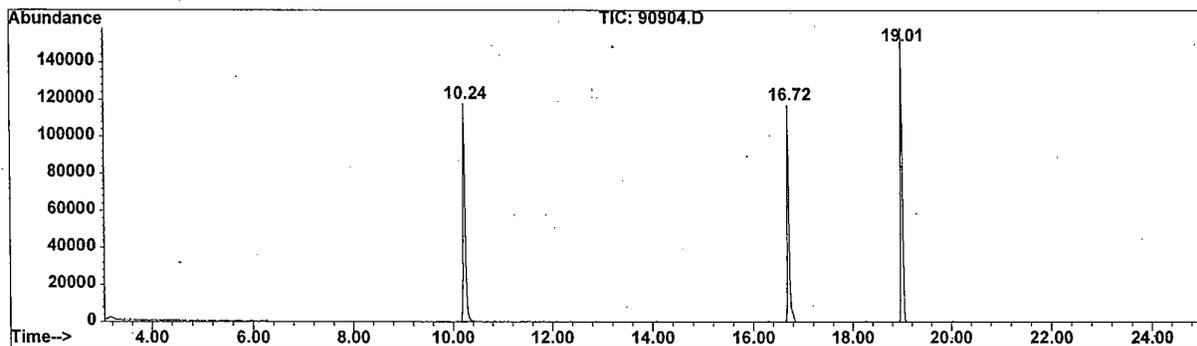
Operator **CMR**
Number of Compounds **19**.
Vial Number 3
Sample Name CTQCDU-W-09287
Data File Name 90903.D
Date Acquired 09/ 9/05 11:15

#	Name	Ret Time	Signal	Amount	Target Response
1)	Methylene Chloride	0.00	84	0.00	0
2)	1, 2-Dichloroethene	0.00	62	0.00	0
3)	1, 1-Dichloroethane	0.00	63	0.00	0
4)	Chloroform	8.82	83	0.20	44151
5)	Carbon Tetrachloride	9.35	117	0.70	83646
6)	Benzene	0.00	78	0.00	0
7)	1, 2-Dichloroethane	0.00	62	0.00	0
8)	Fluorobenzene	10.24	96	6.63	1886443 Internal Sta
9)	Trichloroethylene	0.00	97	0.00	0
10)	1, 2-Dichloropropane	0.00	63	0.00	0
11)	Toluene	0.00	TIC	0.00	0
12)	1, 1, 2-Trichloroethane	0.00	83	0.00	0
13)	Tetrachloroethylene	0.00	164	0.00	0
14)	Dibromochloromethane	0.00	129	0.00	0
15)	Chlorobenzene	0.00	112	0.00	0
16)	p-Bromofluorobenzene	16.72	174	6.48	618489
17)	Bromofluorobenzene	16.72	95	6.69	676134 Internal Sta
18)	1, 1, 2, 2-Tetrachloroethane	0.00	83	0.00	0
19)	1, 4-Dichlorobenzene-d4	19.01	152	6.55	731952 Internal Sta

Area Percent Report -- Sorted by Signal

Information from Data File:

File : C:\HPCHEM\1\DATA\CT\90904.D
Operator : CMR
Acquired : 9 Sep 05 11:46 am using AcqMethod CAL14
Sample Name: CTDWHRD-W-09288
Misc Info :
Vial Number: 4
CurrentMeth: C:\HPCHEM\1\METHODS\CAL14.M



Retention Time	Area	Area %	Ratio %
Total Ion Chromatogram			
10.239	3570636	33.464	87.931
16.718	3038704	28.479	74.831
19.009	4060735	38.057	100.000

C:\HPCHEM\1\DATA\CT190904.D

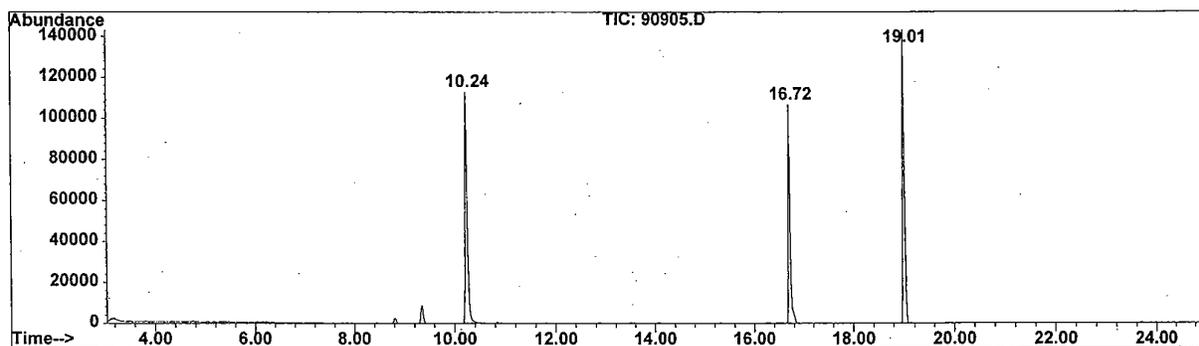
Operator **CMR**
Number of Compounds **19.**
Vial Number 4
Sample Name CTDWHRD-W-09288
Data File Name 90904.D
Date Acquired 09/ 9/05 11:46

#	Name	Ret Time	Signal	Amount	Target Response
1)	Methylene Chloride	0.00	84	0.00	0
2)	1, 2-Dichloroethene	0.00	62	0.00	0
3)	1, 1-Dichloroethane	0.00	63	0.00	0
4)	Chloroform	0.00	83	0.00	0
5)	Carbon Tetrachloride	0.00	117	0.00	0
6)	Benzene	0.00	78	0.00	0
7)	1, 2-Dichloroethane	0.00	62	0.00	0
8)	Fluorobenzene	10.24	96	6.64	1889127 Internal Sta
9)	Trichloroethylene	0.00	97	0.00	0
10)	1, 2-Dichloropropane	0.00	63	0.00	0
11)	Toluene	0.00	TIC	0.00	0
12)	1, 1, 2-Trichloroethane	0.00	83	0.00	0
13)	Tetrachloroethylene	0.00	164	0.00	0
14)	Dibromochloromethane	0.00	129	0.00	0
15)	Chlorobenzene	0.00	112	0.00	0
16)	p-Bromofluorobenzene	16.72	174	6.56	627752
17)	Bromofluorobenzene	16.72	95	6.56	660380 Internal Sta
18)	1, 1, 2, 2-Tetrachloroethane	0.00	83	0.00	0
19)	1, 4-Dichlorobenzene-d4	19.01	152	6.58	735775 Internal Sta

Area Percent Report -- Sorted by Signal

Information from Data File:

File : C:\HPCHEM\1\DATA\CT\90905.D
Operator : CMR
Acquired : 9 Sep 05 12:16 pm using AcqMethod CAL14
Sample Name: CTDWGMN-W-09289
Misc Info :
Vial Number: 5
CurrentMeth: C:\HPCHEM\1\METHODS\CAL14.M



Retention Time	Area	Area %	Ratio %
Total Ion Chromatogram			
10.242	3381552	34.630	93.441
16.719	2764476	28.310	76.390
19.010	3618910	37.060	100.000

C:\HPCHEM\1\DATA\CT190905.D

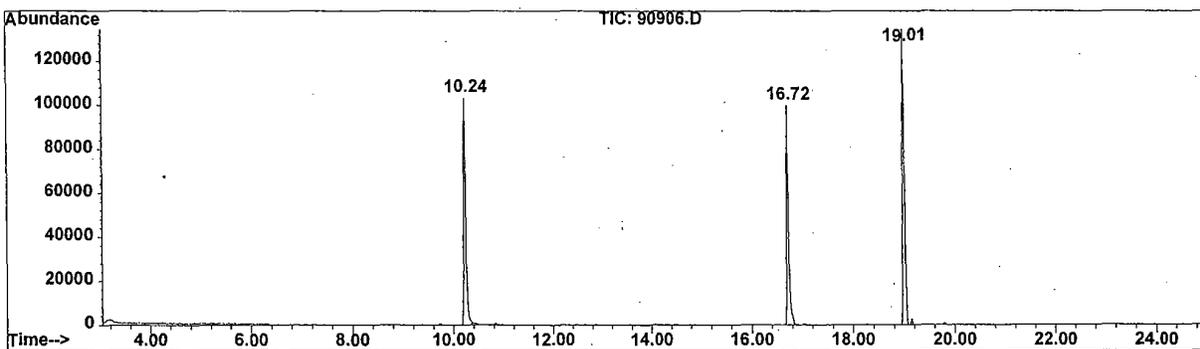
Operator **CMR**
Number of Compounds **19.**
Vial Number 5
Sample Name CTDWGMN-W-09289
Data File Name 90905.D
Date Acquired 09/ 9/05 12:16

#	Name	Ret Time	Signal	Amount	Target Response
1)	Methylene Chloride	0.00	84	0.00	0
2)	1, 2-Dichloroethene	0.00	62	0.00	0
3)	1, 1-Dichloroethane	0.00	63	0.00	0
4)	Chloroform	8.82	83	0.30	53040
5)	Carbon Tetrachloride	9.35	117	0.90	111315
6)	Benzene	0.00	78	0.00	0
7)	1, 2-Dichloroethane	0.00	62	0.00	0
8)	Fluorobenzene	10.24	96	6.34	1785459 Internal Sta
9)	Trichloroethylene	0.00	97	0.00	0
10)	1, 2-Dichloropropane	0.00	63	0.00	0
11)	Toluene	0.00	TIC	0.00	0
12)	1, 1, 2-Trichloroethane	0.00	83	0.00	0
13)	Tetrachloroethylene	0.00	164	0.00	0
14)	Dibromochloromethane	0.00	129	0.00	0
15)	Chlorobenzene	0.00	112	0.00	0
16)	p-Bromofluorobenzene	16.72	174	6.04	571471
17)	Bromofluorobenzene	16.72	95	6.08	605901 Internal Sta
18)	1, 1, 2, 2-Tetrachloroethane	0.00	83	0.00	0
19)	1, 4-Dichlorobenzene-d4	19.01	152	5.88	653131 Internal Sta

Area Percent Report -- Sorted by Signal

Information from Data File:

File : C:\HPCHEM\1\DATA\CT\90906.D
Operator : CMR
Acquired : 9 Sep 05 12:46 pm using AcqMethod CAL14
Sample Name: CTDWNSN-W-09290
Misc Info :
Vial Number: 6
CurrentMeth: C:\HPCHEM\1\METHODS\CAL14.M



Retention Time	Area	Area %	Ratio %
Total Ion Chromatogram			
10.238	3153537	33.581	88.439
16.717	2671634	28.449	74.924
19.009	3565792	37.970	100.000

C:\HPCHEM1\DATA\CT190906.D

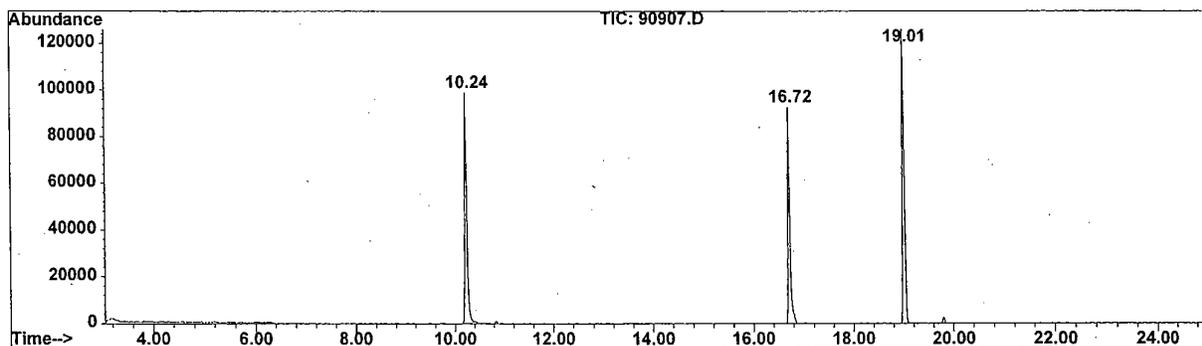
Operator **CMR**
Number of Compounds **19**.
Vial Number **6**
Sample Name **CTDWNSN-W-09290**
Data File Name **90906.D**
Date Acquired **09/ 9/05 12:46**

#	Name	Ret Time	Signal	Amount	Target Response
1)	Methylene Chloride	0.00	84	0.00	0
2)	1, 2-Dichloroethene	0.00	62	0.00	0
3)	1, 1-Dichloroethane	0.00	63	0.00	0
4)	Chloroform	0.00	83	0.00	0
5)	Carbon Tetrachloride	0.00	117	0.00	0
6)	Benzene	0.00	78	0.00	0
7)	1, 2-Dichloroethane	0.00	62	0.00	0
8)	Fluorobenzene	10.24	96	6.07	1689899 Internal Sta
9)	Trichloroethylene	0.00	97	0.00	0
10)	1, 2-Dichloropropane	0.00	63	0.00	0
11)	Toluene	0.00	TIC	0.00	0
12)	1, 1, 2-Trichloroethane	0.00	83	0.00	0
13)	Tetrachloroethylene	0.00	164	0.00	0
14)	Dibromochloromethane	0.00	129	0.00	0
15)	Chlorobenzene	0.00	112	0.00	0
16)	p-Bromofluorobenzene	16.72	174	5.82	546891
17)	Bromofluorobenzene	16.72	95	5.92	588617 Internal Sta
18)	1, 1, 2, 2-Tetrachloroethane	0.00	83	0.00	0
19)	1, 4-Dichlorobenzene-d4	19.01	152	5.83	646101 Internal Sta

Area Percent Report -- Sorted by Signal

Information from Data File:

File : C:\HPCHEM\1\DATA\CT\90907.D
Operator : CMR
Acquired : 9 Sep 05 1:17 pm using AcqMethod CAL14
Sample Name: CTDWNSN-W-09290 DUPL
Misc Info :
Vial Number: 7
CurrentMeth: C:\HPCHEM\1\METHODS\CAL14.M



Retention Time	Area	Area %	Ratio %
Total Ion Chromatogram			
10.238	2957075	33.499	88.414
16.720	2525718	28.612	75.517
19.012	3344584	37.889	100.000

C:\HPCHEM1\DATA\CT90907.D

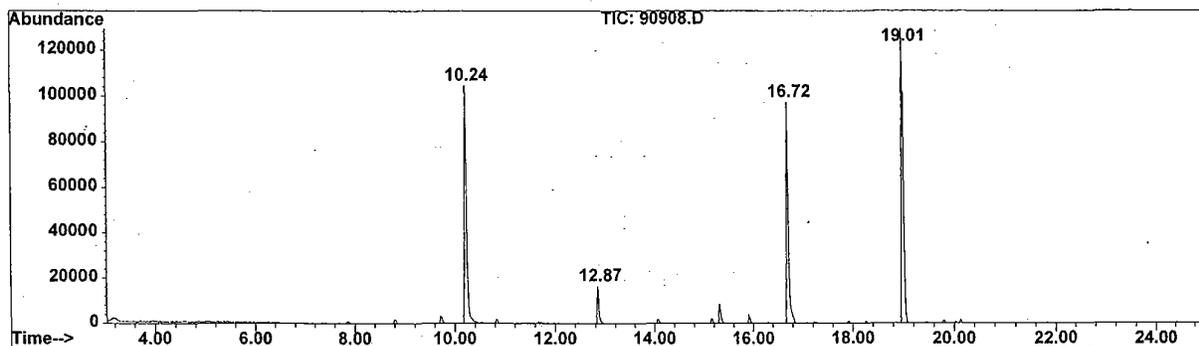
Operator **CMR**
Number of Compounds **19**.
Vial Number 7
Sample Name CTDWNSN-W-09290 DUPL
Data File Name 90907.D
Date Acquired 09/ 9/05 13:17

#	Name	Ret Time	Signal	Amount	Target Response
1)	Methylene Chloride	0.00	84	0.00	0
2)	1, 2-Dichloroethene	0.00	62	0.00	0
3)	1, 1-Dichloroethane	0.00	63	0.00	0
4)	Chloroform	0.00	83	0.00	0
5)	Carbon Tetrachloride	0.00	117	0.00	0
6)	Benzene	0.00	78	0.00	0
7)	1, 2-Dichloroethane	0.00	62	0.00	0
8)	Fluorobenzene	10.24	96	5.82	1603254 Internal Sta
9)	Trichloroethylene	0.00	97	0.00	0
10)	1, 2-Dichloropropane	0.00	63	0.00	0
11)	Toluene	0.00	TIC	0.00	0
12)	1, 1, 2-Trichloroethane	0.00	83	0.00	0
13)	Tetrachloroethylene	0.00	164	0.00	0
14)	Dibromochloromethane	0.00	129	0.00	0
15)	Chlorobenzene	0.00	112	0.00	0
16)	p-Bromofluorobenzene	16.72	174	5.56	518721
17)	Bromofluorobenzene	16.72	95	5.63	554853 Internal Sta
18)	1, 1, 2, 2-Tetrachloroethane	0.00	83	0.00	0
19)	1, 4-Dichlorobenzene-d4	19.01	152	5.44	600782 Internal Sta

Area Percent Report -- Sorted by Signal

Information from Data File:

File : C:\HPCHEM\1\DATA\CT\90908.D
Operator : CMR
Acquired : 9 Sep 05 1:47 pm using AcqMethod CAL14
Sample Name: CTQCTB-W-09291
Misc Info :
Vial Number: 8
CurrentMeth: C:\HPCHEM\1\METHODS\CAL14.M



Retention Time	Area	Area %	Ratio %
Total Ion Chromatogram			
10.239	3156484	32.561	89.474
12.872	417424	4.306	11.832
16.718	2592426	26.742	73.485
19.011	3527821	36.391	100.000

C:\HPCHEM\1\DATA\CT\90908.D

Operator **CMR**
Number of Compounds **19**.
Vial Number **8**
Sample Name **CTQCTB-W-09291**
Data File Name **90908.D**
Date Acquired **09/ 9/05 13:47**

#	Name	Ret Time	Signal	Amount	Target Response
1)	Methylene Chloride	0.00	84	0.00	0
2)	1, 2-Dichloroethene	0.00	62	0.00	0
3)	1, 1-Dichloroethane	0.00	63	0.00	0
4)	Chloroform	8.81	83	0.20	34921
5)	Carbon Tetrachloride	0.00	117	0.00	0
6)	Benzene	9.74	78	0.00	64598
7)	1, 2-Dichloroethane	0.00	62	0.00	0
8)	Fluorobenzene	10.24	96	5.97	1654777 Internal Sta
9)	Trichloroethylene	0.00	97	0.00	0
10)	1, 2-Dichloropropane	0.00	63	0.00	0
11)	Toluene	12.87	TIC	0.00	417497
12)	1, 1, 2-Trichloroethane	0.00	83	0.00	0
13)	Tetrachloroethylene	0.00	164	0.00	0
14)	Dibromochloromethane	0.00	129	0.00	0
15)	Chlorobenzene	0.00	112	0.00	0
16)	p-Bromofluorobenzene	16.72	174	5.74	538631
17)	Bromofluorobenzene	16.72	95	5.69	562376 Internal Sta
18)	1, 1, 2, 2-Tetrachloroethane	0.00	83	0.00	0
19)	1, 4-Dichlorobenzene-d4	19.01	152	5.77	639066 Internal Sta