Second Five-Year Review Report
For
Industrial Waste Processing Superfund Site
Pinedale, Fresno County, California

Prepared by: US Army Corps of Engineers, Seattle District
Seattle, Washington

Prepared for: US Environmental Protection Agency, Region 9, San Francisco, CA

July 2009

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Five-Year Review Report

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For
Industrial Waste Processing Superfund Site
City of Pinedale
Fresno County, California

July 2009

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9/29/09

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Acronyms and Abbreviations

ARARs	Applicable or Relevant and Appropriate Requirements
bgs	Below ground surface
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm/sec	centimeters per second
DCE	dichloroethylene
DHS	California Department of Health Services
DOH	California Department of Health (currently DHS)
DTSC	Department of Toxic Substances Control
ESC	Environmental Strategies Corporation
FDPU	Fresno Department of Public Utility
FRI	focused remedial investigation
FYR	Five-Year Review
GAC	Granular activated carbon
IWP	Industrial Waste Processing
MCL	maximum contaminant level
µg/L	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NPL	National Priority List
O&M	Operations and Maintenance
PIA	Pinedale Industrial Area
PRP	potentially responsible party
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RSL	Regional Screening Levels
RWQCB	Regional Water Quality Control Board
RWQCBCVR	California Regional Water Quality Control Board Central Valley Region
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
Site	Industrial Waste Processing Superfund Site
SJVOAPCD	San Joaquin Valley Unified Air Pollution Control District
SOU	Soils Operable Unit
TBC	to be considered
TCA	trichloroethane
TCE	Trichloroethylene
TAT	technical assistance team
TTLC	total threshold limit concentration
USACE	United States Army Corps of Engineers
EPA	U.S. Environmental Protection Agency
VOC	Volatile organic compound

Executive Summary

The U.S. Environmental Protection Agency, Region 9 (EPA) has conducted the second five-year review (FYR) of the Industrial Waste Processing (IWP or the Site) Superfund Site, in Pinedale, Fresno County, California. The purpose of this review is to determine whether the removal actions implemented at the site are protective of human health and the environment. This five-year review was performed as a matter of policy because the removal action resulted in leaving hazardous substances, pollutants, or contaminants onsite above levels that allow for unlimited use and unrestricted exposure. The methods, findings, and conclusions of the review are documented in this report. In addition, this report summarizes issues identified during the review and includes recommendations and follow-up actions to address them. The triggering action for this review was the completion of the first FYR report on September 28, 2004.

The 1/2-acre Industrial Waste Processing site was a recycling facility from 1967 to 1981. From approximately 1977 to 1983, IWP distributed industrial solvents, and after 1983 IWP was used for chemical storage. Chemicals stored at the site included alcohols, acetone, toluene, benzene, trichloroethene (TCE), and tetrachloroethene (PCE). Improper storage and handling of these chemicals are considered to be the main source of contamination. The surrounding population within a 3 mile radius of the site is approximately 68,000. An estimated 348,000 people depend on the groundwater for drinking water.

In 1988, a time-critical removal action was completed resulting in removal of 19,000 gallons of hazardous liquids and 290 cubic yards of contaminated soils. Soil samples were collected following removal of the contaminated soils. Results from these samples indicated that lead and zinc remained at concentrations above the total-threshold limit concentration. Because of the residual contamination, the Site was placed on the National Priorities List in 1990 and EPA assumed the lead responsibility for oversight of further investigation and cleanup activities. A remedial investigation/feasibility study (RI/FS) was completed in June 1995 which indicated that on-site surface and subsurface soils contained metals and volatile organic compounds (VOCs) at concentrations above the Preliminary Remediation Goals (PRGs). Following the RI/FS, a non-time critical removal action was undertaken. The non-time critical removal action included excavation, removal, and disposal of lead and TCE contaminated soils; backfilling with clean material; and confirmation sampling. EPA provided a certificate of concurrence for the excavation work on January 27, 1999, which documented that all portions of the planned removal action (RA) for soil were completed in accordance with the Action Memorandum and Consent Decree.

In 2001, the IWP site was sold to and redeveloped by Pacific Tent & Awning, a manufacturer of fabric awnings and accessories. The property is zoned as commercial/light industrial. The site currently houses an 8,192-square feet warehouse/office facility that covers approximately 80 percent of the site area. The remainder of the site is covered with asphalt, concrete, and a limited amount of landscaping.

An investigation of a VOC-contaminated groundwater plume at the nearby Pinedale Industrial Area (PIA) was also being conducted by the California Department of Toxic Substances Control (DTSC) concurrently with removal activities at the site. As part of the groundwater

investigation, a monitoring well was installed inside the warehouse at the IWP site and analytical results indicated that VOCs were present in groundwater in this well above the maximum contaminant levels (MCLs). A groundwater extraction and treatment system is currently operating to remediate groundwater at the PIA site. Information from a 2008 groundwater monitoring report, indicates that the TCE plume has decreased in size and otherwise migrated downgradient to locations no closer than 750 feet from the IWP site. As a result of this groundwater extraction, local water table elevations have dropped resulting in the monitoring well at the IWP site to be dry. In 2008, the well was decommissioned. Since 1988, the characterization and remediation of the PIA site has been overseen by California DTSC.

In September 2004, EPA completed the first five-year review of the response action at IWP Superfund Site. Based on a recommendation in the first five-year review, EPA conducted indoor and ambient air sampling at the site and used the data to evaluate the potential for vapor intrusion to indoor air risk. The results indicated that there was a complete vapor intrusion pathway with concentrations exceeding EPA screening levels. Recommended actions were implemented in 2008 in the Pacific Tent and Awning facility to close and seal the monitoring well, seal the wall openings for plumbing fixtures, and increase air circulation in the bathrooms. EPA conducted indoor and ambient air sampling at the site in April 2009. Results for PCE were below or equal to EPA screening levels for air, and were non-detect for TCE.

The remedy at the IWP site is protective of human health and the environment in the short-term. Exposure pathways that could result in unacceptable risks are currently being controlled. The most recent indoor air samples were at or below EPA's indoor air screening levels. To be protective in the long-term, a vapor intrusion assessment strategy should be developed and implemented. Institutional Controls may be needed if there are hazardous substances still remaining above levels that allow for unrestricted use. A Decision Document will be needed to implement any new remedies needed to ensure long-term protection.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: Industrial Waste Processing (IWP) Superfund Site

EPA ID *(from WasteLAN)*: CAD980736284 **CERCLIS ID:** 09G9

Region: 9	**State:** CA	**City/County:** Pinedale/Fresno

SITE STATUS

NPL status: ☒ Final ☐ Deleted ☐ Other (specify)

Remediation status (choose all that apply): ☐ Under Construction ☐ Operating ☒ Complete

Multiple OUs?* ☐ YES ☒ NO	**Construction completion date:** August 1998

Has site been put into reuse? ☒YES ☐ NO

REVIEW STATUS

Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author name: Travis Cain

Author title: Remedial Project Manager	**Author affiliation:** EPA Region 9

Review period:** October 29, 2008 to September 28, 2009

Date(s) of site inspection: 1/8/2009

Type of review: Policy;

Review number: ☐ 1 (first) ☒ 2 (second) ☐ 3 (third) ☐ Other (specify) _____

Triggering action:

☐ Actual RA Onsite Construction at OU #____ ☐ Actual RA Start at OU#____

☐ Construction Completion ☒ Previous Five-Year Review Report

☐ Other (specify)

Triggering action date *(from WasteLAN)*: September 28, 2004

Due date *(five years after triggering action date)*: September 28, 2009

* ["OU" refers to operable unit.]

**[Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, continued

Issues:

1. Hazardous substances may be present in subsurface soils at levels that pose a risk with unrestricted (e.g., residential) use or unlimited exposure (e.g., unlimited digging).

2. Existing information is insufficient to determine if subsurface site contaminants are contributing to indoor air risks. Indoor air concentrations in a commercial building on the site are at or below EPA risk screening levels. However, these levels were achieved by improving ventilation and sealing potential vapor intrusion pathways. Although vapor intrusion in the on-site building is currently controlled, there could be risks if the current building was altered or a new building constructed without similar controls.

Recommendations:

1. Determine whether or not hazardous substances are present in subsurface soils at levels that do not allow for unrestricted use or unlimited exposure. If so, a decision document should be completed that selects additional remedial action, which may include institutional controls.

2. Determine whether contaminated indoor air is related to site contamination. If so, develop a remedial action plan and prepare a decision document.

Protectiveness Statement(s):
The remedy at the IWP site is protective of human health and the environment in the short-term. Exposure pathways that could result in unacceptable risks are currently being controlled. The most recent indoor air samples were at or below EPA's indoor air screening levels. However, the source of indoor air contamination is unknown, so further investigation is needed to develop a strategy to ensure long term protectiveness. This could include selection of further remedial actions in a Record of Decision.

Other Comments: None

Industrial Waste Processing Superfund Site
Pinedale, California
Second Five-Year Review Report

I. Introduction

This is the second Five-Year Review report of Removal Actions for the Industrial Waste Processing Superfund Site in Pinedale, California. The first Five-Year Review report, completed in 2004, was the triggering action for this review.

The purpose of a Five-Year Review (FYR) report is to determine whether the remedy at a Superfund site continues to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in the FYR reports. In addition, FYR reports identify issues found during the review, if any, and identify recommendations to address those issues.

The United States Environmental Protection Agency is preparing this FYR report pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121(c) states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such a review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.*

The purpose and focus of FYRs are further defined in EPA Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-03B-P (EPA 2001).

The EPA Region 9 has conducted a review of this site. This review was conducted by the U.S. Army Corps of Engineers (USACE), on behalf of EPA, between November 2008 and September

2009. The Seattle District USACE project delivery team (PDT) prepared this FYR through an Interagency Agreement (IAG) between EPA Headquarters and USACE.

This second FYR report is a policy review, following five years after the completion of the first FYR report signed September 28, 2004. This policy review is required because the removal action occurred after the Superfund Amendments Reauthorization Act (SARA) and resulted in hazardous substances being left on site above levels that allow for unlimited use and unrestricted exposure. The first FYR report was triggered by the presence of elevated concentrations of volatile organic compounds (VOCs) that remain in soils at the site above the preliminary remediation goal (PRG) level established by the EPA.

II. Site Chronology

The following table summarizes, in chronological order, the major milestones or notable events for the Industrial Waste Processing Superfund Site.

Table 1 – Chronology of Site Events

Event	Date
IWP operated as a chemical reclamation facility for glycols and solder wastes and as a distributor of various chemical solvents for Ashland Oil.	1967-1983
IWP operated as a chemical storage area.	1983 - 1988
California Department of Health (now DTSC) and Fresno County Department of Health performed a joint inspection of the facility.	July 1986
DTSC conducted a Site investigation; lead and zinc found to be present in on-site soils at levels exceeding their respective total threshold limit concentration (TTLC) standards. DTSC's Site mitigation unit submitted an incident report to EPA.	May 1988
EPA conducted a preliminary assessment of the Site to compile an inventory and map materials at the Site and concluded that the Site required an immediate response action.	June 7, 1988
EPA determined that the second phase of the Site assessment would be conducted concurrently with a EPA-directed removal action.	June 1988
EPA technical assistance team (TAT) performed a time-critical removal action at the Site, removing the drums, tanks, and piles of waste left on the Site when IWP ceased operations.	June 1988
Subsurface sampling of soils was conducted by EPA TAT to determine the extent of vertical and lateral migration of contaminants from the surface. Eighteen soil borings were advanced on site, and two borings were advanced off site.	July 1988
As part of DTSC's groundwater investigation, Weston, on behalf of DTSC, conducted a soil gas sampling survey of IWP and neighboring Vendo and Calcot sites.	March 1989
IWP is proposed to be listed on the National Priorities List (NPL).	October 26, 1989
DTSC completed a sampling plan calling for on-site soil investigation and installation of three monitoring wells upgradient and three downgradient of the Site.	May 1990
Metcalf and Eddy installed one monitoring well for the California Department of Health Services (DHS) at the IWP Site as part of the Pinedale groundwater investigation.	August 1990
IWP added to the NPL.	August 30, 1990

Event	Date
DTSC prepared a preliminary health assessment and concluded the IWP Site is characterized as a Category C or Indeterminate Public Health Hazard.	August 1991
EPA began an investigation of residual soil contamination at the Site.	1992
Twelve potentially-responsible parties (PRPs) enter into a consent order with EPA.	May 12, 1993
EPA issued an Administrative Order on Consent for the Soils Operable Unit (SOU), requiring a remedial investigation/feasibility study (RI/FS).	May 1993
Environmental Strategies Corporation (ESC) conducted Phase 1 geotechnical investigation to determine the general characteristics of the soils from the surface to 10 feet below ground surface (bgs).	August 1993
ESC conducted Phase II geotechnical investigation to determine the physiochemical properties of the soils from the surface to 10 feet bgs to approximate 119 feet bgs, where groundwater was encountered.	December 1-7, 1993
EPA requested that two additional samples be collected and analyzed for lead from the area immediately adjacent to the previously-collected samples.	August 8, 1994
Supplemental Phase II activities were conducted and additional two soil samples were collected from the surface of the Site and analyzed for total organic carbon.	August 11, 1994
A final RI/FS for the SOU, which included a human health risk assessment, was submitted to EPA by Bechtel Environmental Inc. and its subcontractor ICF Kaiser Engineers.	May 1995
EPA distributed a fact sheet describing the proposed non-time critical removal action.	July 1995
EPA held a public meeting.	August 1995
EPA signed an Action Memorandum for a non-time-critical removal action based on the RI/FS to remove and dispose of lead and trichloroethene (TCE)-contaminated soil at concentrations greater than 400 milligrams per kilogram (mg/kg) and 7 mg/kg, respectively.	September 28, 1995
PRPs signed a Consent Decree and agree to perform a removal of the surface soil as described in the Action Memorandum.	April 1996
EPA approved PRPs Removal Action Work plan, Removal Action Field Sampling Plan, Removal Action Quality Assurance Project Plan, and the Site-specific Health and Safety Plan.	January 7, 1998
On-site construction began, to remove and dispose of lead and trichloroethene (TCE) - contaminated soil at concentrations greater than 400 milligrams per kilogram (mg/kg) and 7 mg/kg, respectively.	January 21, 1998
EPA performed pre-final/final inspection.	August 7, 1998
Field activities for Site removal action completed.	August 30, 1998
PRPs submitted a Remedial Action Report to EPA.	November 11, 1998
EPA approved the Remedial Action Report.	January 17, 1999
EPA began a groundwater investigation for IWP.	January 25, 1999
Bechtel Environmental Inc. submitted the Final Focused Remedial Investigation (FRI) Report for the groundwater investigation to EPA.	May 1999
FRI performed to assess whether or not the IWP was a significant contributor to the Pinedale Industrial Area volatile organic compound (VOC) plume.	September 28, 1999
Preliminary Close-Our Report signed by EPA	September 28, 1999
Site sold and redeveloped.	2001

Event	Date
Five-year review Site inspection conducted.	May 10, 2004
First five-year review completed.	September 2004
CH2M Hill conducted a vapor intrusion investigation	September 2006
CH2M Hill submitted a technical memorandum to EPA regarding data evaluation from the vapor intrusion investigation.	February 15, 2007
CH2M Hill conducted a building and foundation inspection and evaluation to find potential conduits for vapor migration	April 3, 2007
CH2M Hill submitted a trip report to EPA for the building and foundation inspection and evaluation	April 25, 2007
DTSC decommissioned the on-site well	September 2008
Second Five-year review Site inspection conducted.	January 8, 2009
EPA conducts vapor intrusion investigation	April 30, 2009
Second five-year review completed.	September 2009

III. Background

Physical Characteristics

The Site is approximately 0.5 acre, located at 7140 North Harrison Street in Pinedale, a town about 6 miles north of Fresno, California (Figure 1). As of 2009, approximately 500,000 people resided within Fresno.

The San Joaquin River is located approximately 0.5 mile northwest of the Site. The Forkner Canal is approximately 2,000 feet to the north of the Site, and the Bullard Canal is located approximately 2,000 feet to the south. Based upon limited landscaping both at the Site and the surrounding properties, it is unlikely that any significant ecological receptors would be supported.

Land and Resource Use

IWP, formally known as "Chem-Serve," occupied an approximately 0.5-acre site on North Harrison Street in the community of Pinedale. From approximately 1967 to 1983, IWP was a chemical reclamation facility for glycols and solder wastes. From 1977 to 1983, IWP operated as a distributor of various chemical solvents for Ashland Oil. From 1983 to 1988, the Site was used for storage of chemicals and equipment.

In 2001, the Site was sold to Pacific Tent & Awning, a manufacturer and distributor of fabric awnings and accessories. Pacific Tent & Awning developed the Site in 2001. The Site currently houses an 8,192-square-foot warehouse/office facility that covers approximately 80 percent of the Site area. The remainder of the Site has been covered by asphalt, concrete, and landscaping.

The Site is located in a highly-developed area with a mix of commercial, industrial, and residential use. The Site itself is zoned commercial/light industrial, which it has been historically. Single-family residences are located approximately 200 feet west of the Site. The Site is bound on the north, east, and south by newly-developed office facilities on the former Calcot Ltd. property. The Vendo Company is located approximately 1,000 feet east of the Site, adjacent to the former Calcot Ltd. Property (Figure 2).

Adjacent to the site, Calcot Ltd. and Vendo Company form the Pinedale Industrial Area (PIA), located above a regional groundwater VOC plume (Figure 3). The PIA groundwater treatment program has been under the regulatory authority of the Department of Toxic Substances Control (DTSC) since 1988. The PIA treatment system consists of off-site (downgradient from IWP) and onsite (cross gradient from IWP) groundwater pump-and-treat systems using granular-activated carbon (GAC) and air strippers. Following treatment to concentrations below the maximum contaminant levels (MCLs), groundwater is injected back into the aquifer, which is the designated Fresno public water supply.

Several recharge basins located within 1 mile of the Site are used intermittently to promote recharge to the groundwater aquifer. The groundwater aquifer underlying the Site is a sole-source aquifer used for public drinking water purposes by the City of Fresno. Within 2,000 feet of the Site there are three inactive municipal water supply wells (PCWD-1, PCWD-2, and PCWD-3) and one private water well, PGW-11 (Figure 3).

Geology

The Site is located in the San Joaquin River alluvial plain in Central Valley Physiographic province of California. The province is a structural trough extending approximately 450 miles through central California from Redding in the north, to the Tehachapi Mountains in the south. The valley averages 50 miles in width and is bordered by the coastal ranges to the west and the Sierra Nevada range to the east.

Central Valley lithology is characterized by thick sequences of consolidated sedimentary and marine units and alluvial sediments, eroded from the surrounding mountains and deposited in a westward dipping monocline over crystalline basement rocks. The combined depth of consolidated and unconsolidated sedimentary units in the Central Valley ranges from approximately 3,000 feet beneath the IWP Site to over 15,000 feet west of Fresno. No active faults are known to exist in the Fresno area.

Older alluvium deposits overlie the continental deposits as a series of combined alluvial fans between the San Joaquin and King River drainage systems, creating a complex sequence of channel and overbank deposits. Beneath the Site, these sediments are believed to be over 1,000 feet thick. A 50-foot-thick younger alluvial deposit, deposited by the San Joaquin River, overlies the older alluvial deposit. Both alluvial deposits are composed of silt and fine sand overbank deposits, with discontinuous channel deposits of coarser sand and gravel with cobbles. Layers of hardpan have been detected in the uppermost portion of the younger alluvium beneath the Site. Borehole logging during the 1995 and 1999 remedial investigations identified relatively consistent sequences of soils beneath the IWP Site. The studies indicate that the upper 10 to 30

feet of sediments beneath the Site are primarily silts and clays with one or more hardpan layers in the upper 20 feet. The hardpan layer ranges in permeability from 2 X 10^{-4} to 3 x 10^{-6} centimeters per second (cm/sec) and is continuous, with the exception of a small area in the north-central portion of the Site. According to the 1995 remedial investigation, the hardpan layers beneath the Site inhibit the downward and lateral movement of infiltrating water and the upward movement of vapors in the vadose zone.

Hydrogeology

Regionally, alluvial sediments are present from the water table (120 feet below ground surface [bgs]) to at least 300 feet bgs, comprising a single aquifer. Numerous wells have been installed in this aquifer on adjacent Calcot and Vendo Properties to monitor the PIA plume. Wells have been installed near the water table, called the A-zone and at deeper depths up to 300 feet bgs, known as the B-zone.

Regionally, groundwater recharge at the Site occurs through percolation of surface water in the San Joaquin River channel, in nearby recharge basins, and through leakage of canals. Percolation of rainfall or irrigation water is impeded by the regional indurated hardpan layers. At IWP, a sealant on the soil surface was installed from 1988 that inhibited percolation of rainfall (Bechtel 1995). A regional groundwater divide is located south of the San Joaquin River and is the result of extensive groundwater recharge occurring through the river channel. South of the Site in southwest Fresno, and north of the Site in Madera County, there are large regional cones of depression due to the municipal and agricultural groundwater pumping.

Locally, the dominant groundwater flow direction is to the southwest under unconfined conditions at a gradient of 0.0009 foot per foot (Hargis 1992; Bechtel 1999). Shallow groundwater was encountered beneath the Site at approximately depths of 119 feet bgs and 128 feet bgs during the 1995 and 1999 remedial investigations, respectively.

History of Contamination

The Site, formerly known as "Chem-Serve," was a recycling facility that reclaimed various industrial waste materials. From approximately 1967 to 1981, IWP reclamation activities included solvents from printing operations, glycols from fluids used in natural gas dehydration, and lead solder and zinc from waste solder flux generated by the metal can manufacturing industry. From 1977 to 1983, IWP operated as a distributor of various chemical solvents for Ashland Oil Company. After 1983, the Site was used for storage of chemicals and equipment. Chemicals stored at the Site included alcohols, acetone, toluene, benzene, TCE, and tetrachloroethylene (PCE). Spills, leaking drums, and improper storage of hazardous wastes are believed to be the main cause of contamination at the Site.

In July 1986, Fresno County Department of Health and the California Department of Health Services (now the DTSC) conducted a Site inspection in response to a citizen complaint. During the inspection, DTSC noted the presence of various tanks, waste piles, and process equipment containing crude oil, ethylene glycol, and zinc chloride. DTSC also identified various containers

of flammable liquids such as xylene, isopropanol, and naphtha. In response to these observations, DTSC representatives collected three solder samples and analyzed the samples for zinc and lead. Zinc and lead were detected at concentrations above the California total threshold limit concentration (TTLC) standards established to determine hazardous levels.

In response to additional citizen complaints, on May 13, 1988, DTSC returned to the Site to conduct a more extensive Site investigation. Areas of concern identified during the investigation included open containers of asbestos, approximately 300 drums containing solvents (some leaking), two waste piles of lead, and contaminated soil beneath surface waste. Following the investigation, DTSC issued an incident report and contacted the EPA Emergency Response Division. The EPA Emergency Response Division and DTSC then conducted a joint inspection on June 7, 1988.

Initial Response

On June 7, 1988, EPA conducted a preliminary assessment of the Site. During the preliminary assessment, the EPA contractor compiled an inventory of materials, mapped the Site, and collected surface and subsurface soil samples. EPA found that some of the surface and subsurface soil samples collected at the time contained lead and/or TCE.

Based upon the results found by EPA during the preliminary assessment, it was determined that a time-critical removal action was necessary. In August 1988, drums, tanks, sumps, containers, and the top 3 inches of contaminated soil were removed. A total of 19,000 gallons of hazardous liquids and 290 cubic yards of contaminated soil were also removed from the Site. Nine waste streams were sent off site for treatment or disposal, including acidic solids and sludge, base solids and sludge, halogenated liquids, solidified solvent sludge (>1,000 mg/kg halogenation), solidified solvent sludge (<1,000 mg/kg halogenation), asbestos, drums and piles of lead solder and surface soil, sterno waste, and tank oil. Following removal and sampling, a sealant was placed on the soil over the entire Site to prevent contaminant migration. Sampling results from surface soil and samples collected during the removal action confirmed that lead and zinc were present in on-site soil at levels exceeding their respective TTLC standards. Waste oils and water containing various halogenated compounds were also detected in samples collected from drums and tanks. The removal eliminated the immediate threat from the waste but did not address the residual contamination in the soil.

The Site was proposed for the National Priorities List (NPL) on October 26, 1989 and finalized on the NPL in August 30, 1990. At that time, EPA assumed lead responsibility for oversight of Site investigation and cleanup activities.

In 1992, EPA began an investigation of residual soil contamination at the Site. During May 1993, EPA issued an Administrative Order on Consent for the Soils Operable Unit (SOU), requiring a Remedial Investigation/Feasibility Study (RI/FS). From May 1993 until June 1995, 12 potentially responsible parties (PRPs) for the Site conducted an RI/FS that included a human health risk assessment for the contaminated soil. In September 1995 EPA signed an Action Memorandum for a non-time-critical removal action at the IWP Site for the SOU. The Action

Memorandum proposed excavation and disposal of surface soil contaminated with lead and volatile organic compounds (VOCs) and no action (natural degradation) for VOCs in soils.

Basis for Taking Action

The basis for taking action at the IWP Site was to address the residual soil contamination of hazardous substances that potentially posed a threat to human health and the environment via inhalation, ingestion, and direct contact. Results of the 1995 RI/FS showed that surface and subsurface soils contained metals and VOCs, some of which are probable human carcinogens.

During Phase I of the 1995 RI/FS, drainage ways and downwind off-site locations immediately south of the site were sampled for total lead and/or metals. Some soil samples exceeded the PRG; therefore, during the Phase II additional investigation, off-site samples were collected 10 feet outside the fence line on each side of the site. Eighteen off-site surface sample locations exceeded the PRG for lead.

The RI/FS showed that the detected average lead concentration was 2,140 mg/kg in surface soil. This exceeded the 400 mg/kg 1995 preliminary remediation goal (PRG) level established for lead by the EPA. Other on-site sampling results from the upper vadose zone (soil from the surface to 10 feet bgs) showed presence of VOCs exceeding their respective PRG levels. The results with corresponding maximum detected values in parentheses were: TCE (1,200 mg/kg), PCE (120 mg/kg), methylene chloride (1,000 mg/kg), and 1,1,2,2-tetrachloroethane (0.97 mg/kg). The highest concentration of TCE detected in the lower vadose zone (soil from 10 feet to 119 feet bgs) was 0.11 mg/kg.

Zinc was detected at concentrations greater than its PRG at locations where elevated lead concentrations were also present. Lead was therefore used as the primary indicator to evaluate the extent of contamination.

A human health risk assessment was conducted as a part of the 1995 RI/FS. Cancer risk and hazard indices were calculated using the validated data for chemicals detected at the IWP Site provided in the Draft 1994 RI/FS. An evaluation of the potential adverse human health effects due to lead concentrations found at the Site included both the Integrated Exposure Uptake Biokinetic and Cal/EPA.

Based upon the risk assessment findings, the risks associated with ingestion of arsenic in soil contributed the greatest to average exposures; however, because the on-site concentrations were within regional background concentrations, arsenic was not an issue. Potential for ingestion of zinc was found to contribute the most to the overall hazard index calculation. In addition, overall risk estimates associated with inhalation of TCE in ambient air contributed the greatest reasonable maximum exposures. Therefore, the findings of the risk assessment were that the chemicals and pathways contributing the most to overall hazard index were the ingestion of zinc in soil and the inhalation of TCE in ambient outdoor air. Despite these risk elements, the risk assessment concluded that the overall carcinogenic risk was within an acceptable risk range (cancer risk ranging from 4×10^{-5} to 1×10^{-7}).

As part of the risk assessment, potential exposure to VOCs in indoor air was evaluated semi-quantitatively using measured site-specific total soil concentrations taken from the 1994 Draft RI/FS to calculate an estimated soil gas concentrations. The future concentrations of VOCs within a residence located on the IWP Site were estimated by multiplying a conservative attenuation factor by the estimated soil gas concentrations. The model assumed that future property development would include a residence with a basement. This scenario was not included in the overall risk assessment because the models used were not considered valid by EPA at the time. The conclusion at that time was that the model used may have underestimated inhalation risks because VOCs were assumed to be in equilibrium with that sorbed onto the soil, and based on soil concentration measurements.

The potential contributors of vinyl chloride and chromium were not included in the risk assessment. Vinyl chloride, a biodegradation product of TCE, was not detected in samples from 1-10 feet bgs. Chromium was not included in cancer risk estimates because toxicity criteria were not available. Reasonable maximum exposure risks for chromium in soil from 0 to 5.5 feet bgs reveal that exclusion of potential risks may underestimate risks by a factor of 2.
The Integrated Exposure Uptake Biokinetic modeling for lead suggested that adverse health effects to hypothetical residential children attributable to 0 to 0.5 feet bgs detected lead concentrations are possible. Exposure to lead below 1 foot bgs, however, was not expected to result in adverse health effects. The major adverse effects in humans caused by lead include alterations in hematopoietic and nervous systems.

Even though the risks were found to be within the risk range, the main basis for action was a result of risk assessment findings showing potential increased carcinogenic risk of child residents to VOCs (by inhalation) or lead (by ingestion). The estimated volume of on-site lead and/or TCE impacted surface soil was 741 cubic yards with an average depth of one foot. Lead impacted off-site surface soil was estimated as 47 square yards limited to the top three inches of soil.

IV. Remedial Actions

Remedy Selection

The following sections summarize the response activities conducted subsequent to the initial emergency response removal action conducted in 1988. Although the 1988 removal action was successful in limiting any imminent threat, it did not address residual soil contamination in the soils operable unit (SOU).

In September 1995, EPA signed an Action Memorandum for a non-time-critical removal action at the Site for the SOU. In a 1996 Consent Decree between EPA and the PRPs, the PRPs agreed to perform a non-time-critical removal action at the Site. The 1995 RI/FS, which included a human health risk assessment for the soil, fulfilled the requirement for an engineering evaluation and cost analyses, which generally precedes a non-time-critical removal action.

The PRP's work plan, which is included as part of the 1995 Action Memorandum, was approved on October 30, 1997 by the EPA. EPA selected a non-time-critical removal action for the upper vadose zone soils containing lead and TCE above remedial action levels at the Site. The remedial action objective (RAO) was set at 400 mg/kg for lead and 7 mg/kg for TCE. The removal action consisted of excavation, disposal, and backfilling impacted areas on and off site. The Action Memorandum proposed no action for residual VOCs contamination in the deeper soil on the assumption that the volatiles would naturally degrade over time due to their low concentrations Lead was limited to the surface soil.

The removal action was conducted during 1998 in conformance with the 1995 Action Memorandum for a non-time-critical removal action.

In 1999, EPA performed a focused remedial investigation (FRI) to determine whether or not contamination from IWP had contributed to the PIA VOC plume. During the 1999 FRI, additional surface and subsurface soil, soil gas, and groundwater samples were collected. Further investigation was performed during Phase II of the FRI activities. Three soil borings at 110 feet bgs were drilled; soil and groundwater samples were analyzed for VOCs. Based on the findings of this investigation, the FRI concluded that contamination at IWP had not contributed to the regional PIA groundwater plume. Therefore, no further action response at the IWP Site under CERCLA was warranted.

Remedy Implementation

Non-Time Critical Removal Action

The non-time-critical removal action work plan was approved by EPA January 7, 1998. The work plan called for excavation and off site disposal of TCE- and lead-impacted soil at concentrations greater than their respective RAOs up to a depth of two feet, confirmation sampling, and backfilling with clean fill.

Environmental Strategies Corporation (ESC), on behalf of the PRPs, performed the non-time-critical removal action from January 21, 1998 to August 30, 1998. ESC obtained all permits prior to commencing associated field activities. Various debris, including a 9-foot-square concrete pad and investigation-derived waste, located on the eastern portion of the Site, were removed and disposed of at an EPA-approved facility. To comply with health and safety requirements, both dust control measures and air sampling and analyses were used during the excavation process.

On January 23, 1998, due to heavy rain and saturated soils, ESC constructed a temporary road, consisting of geotextile fabric and base rock, to allow truck access to the Site from the Calcot property. Due to heavy rain, the excavation site required draining through the use of portable water pumps that pumped the water to the on-site tanks. The water was characterized and discharged through the Fresno Department of Public Utilities (FDPU). ESC obtained a discharge permit from the FDPU authorizing discharge to the Fresno Regional Wastewater Treatment Facility.

The excavation started on January 22, 1998 at the western boundary of the Site, following the sampling grid from the 1995 RI/FS (VSB01 through VSB28), and proceeded easterly towards the Calcot property. At the end of each work day, excavation areas were covered with plastic sheeting to limit dust generation and inhibit infiltration of precipitation.

Fifty-seven confirmation samples were collected and analyzed for lead, of which seven samples were analyzed for TCE. During excavation, 1 foot of soil was removed, and samples were collected approximately 3 inches below grade for lead and 6 inches below grade for TCE. At seven locations, lead and/or TCE exceeded RAOs, and the additional excavation to 2 feet bgs was performed. At a north-central location of the property, a 15 ft by 20 ft section of soil was excavated to 5 feet bgs, where the shallow hardpan was encountered. The results of confirmation samples collected following excavation show that soil at concentrations greater than RAOs for TCE and lead was removed from the site.

Approximately 2,352 tons of contaminated soil and debris were excavated from the Site to an average depth of 2 feet below original grade. The area located around remedial investigation boring SB14 was excavated to the hardpan layer at approximately 5 feet bgs.

Off-site, areas where 16 out of 18 samples exceeded the PRG for lead during the RI/FS were excavated to an average of 1 foot below original grade at an approximate 5-foot radius around the fence line of the site. Two areas— one along North Harrison Avenue and along the eastern property border— were not excavated. The selected removal action did not address these areas, because it was concluded that isolated elevated concentrations were not attributable to IWP.

All excavated material was handled as hazardous waste and transported to US Ecology Facility in Beatty, Nevada (EPA ID Number NVT330010000) for disposal.

The PRP work plan included a requirement to test the backfill material prior to placement at the Site; therefore, ESC collected samples from different potential backfill source areas to ensure that the backfill used at the Site was not contaminated. These samples were analyzed for VOCs, semivolatiles, and metals. All samples contained arsenic at concentrations greater than the PRG of 0.32 mg/kg. Backfill sample #4 contained the least amount of arsenic, at a concentration of 1.4 mg/kg. Background samples collected during the RI/FS contained arsenic levels ranging from 1.4 mg/kg to 3.2 mg/kg, with a 95 percent upper confidence level (mean) of 2.7 mg/kg. Therefore, because the concentration in backfill sample #4 was less than background (naturally occurring) concentrations, and there were neither VOCs nor semivolatile organic compounds in the sample, this material was used to backfill the entire site.

Due to the heavy rainy season from January through May 1998, the base of the excavation was allowed to dry, and backfilling was performed from July 21-24,1998. Approximately 1,560 cubic yards of backfill sample #4 fill material were placed at an average thickness of 2 feet across the Site.

Following backfilling and final grading, the area was hydro-seeded with native barley/grain mixture that does not require irrigation.

The total cost of the 1998 removal action was $776,400. The cost was greater than estimated in the RI/FS due to increased volume of excavation and inclement weather.

The non-time-critical removal action was intended to address the residual soil contamination at the Site and reduce the present and future on-site risk to human health and the environment. This was achieved by removal and off-site disposal of all soil that exceeded the RAOs for lead concentrations above 400 mg/kg and TCE concentrations above 7 mg/kg. Lead was limited to the surface soil and concentrations of VOCs in the subsurface soil were very low.

Upon completion of the excavation, backfilling, and hydro-seeding, on August 7, 1998, the EPA and DTSC conducted a pre-final inspection of the Site. Complete documentation of all work related to both demolition and excavation was provided to EPA by ESC on behalf of the PRPs. EPA and DTSC concurrently determined that all the construction activities had been completed to EPA and DTSC's satisfaction; therefore, a final inspection was not necessary.

EPA provided a certificate of completion for the excavation work on January 27, 1999, which documents EPA's concurrence that all portions of the removal action for soil were completed in accordance with the Action Memorandum and Consent Decree. On a letter dated September 21, 1999, DTSC agreed with EPA's decision.

The key reference documents that satisfy the removal action for soils are:

- *Remedial Action Report for Removal Action* (November 11, 1998).
- EPA Certification of Completion Letter (January 27, 1999).

Groundwater

The IWP site is located near the PIA, which is located above a groundwater VOC plume. The PIA is a non-NPL site that has been under the regulatory authority of the DTSC since 1988. When first delineated, the PIA site included an approximately 2-mile-long plume of TCE-contaminated groundwater. This plume originated approximately 0.5 mile upgradient (northeast) of the IWP site and extended approximately 1.5 miles downgradient (southwest) of the IWP site.

The 1999 Focused Remedial Investigation (FRI) was performed to assess if IWP was a significant contributor to the regional TCE PIA groundwater plume. The FRI concluded that IWP was not a significant contributor to the regional PIA VOC plume because of decreasing soil gas and groundwater concentrations with depth and VOC concentrations in groundwater orders of magnitude less than source areas within the plume. The 2008 groundwater plume, shown in Figure 3, indicates that the IWP site is approximately 750 feet cross-gradient from the plume and extends for slightly more than a mile downgradient. IWP is no longer above the groundwater plume.

System Operations and Maintenance

The Remedial Action Report for Removal Action included a plan for operations and maintenance (O&M) that provided for inspection of the Site's security fence and vegetative cover on a semiannual basis. The purpose of these inspections was to check for breaches in both the security access and the vegetative cover. The inspections were to be conducted during the months of April and October. However, during this five-year review period, monitoring did not occur.

In 2001, the Site was sold to and redeveloped by Pacific Tent & Awning, a manufacturer and distributor of fabric awnings and accessories. The property remains zoned for commercial/light industrial use. The Site currently houses an 8,192-square-foot warehouse/office facility that covers approximately 80 percent of the Site area. The remainder of the Site has been covered by asphalt, concrete, and landscaping (landscape covering is in compliance with city ordinances). Observations during the site inspection indicated the site to be well-maintained and in good operational order.

V. Progress Since the Last Five-Year Review

Previous Protectiveness Statement

The remedy at the Soils Operable Unit of the Industrial Waste Processing Superfund Site is expected to be protective, however, the potential for vapor intrusion to indoor air risk should be re-evaluated using the currently available draft guidance (Subsurface Vapor Intrusion Guidance, EPA, November 2002). If the results of the evaluation yield an unacceptable risk, then corrective actions will be required. It is expected that these actions will take approximately one year to complete, at which time a protectiveness determination will be made.

Status of Recommendations and follow-up actions from last review

Two recommendations were made in the previous five-year review (2004). An evaluation of their progress is presented below.

1. Statement. *The O&M requirement to conduct semi-annual monitoring of the Site fence and vegetative cover may no longer be warranted because of the Site redevelopment and based upon observations made during the May 10, 2004 Site inspection. The property continues to be used for commercial/light industrial purposes and the new property owner maintains a manufacturing/office facility which was constructed in 2001. The Site is covered with the building slab, asphalt and/or landscaping and is almost completely surrounded with a fence (the front of the building does not have fencing so as to allow for access from the street). The property appears to be very well maintained.*

   Follow up Action and Status of Recommendation. No formal monitoring has been conducted since the 2004 Five Year Review. It is recommended that formal monitoring be conducted at

each 5 year review. Semi-annual monitoring is not longer warranted, unless the site use is changed, at which time the need for monitoring will be re-evaluated.

2. Statement. *Because of the present availability of guidance relating to vapor intrusion to indoor air, it is recommended that the current EPA-approved screening model from this 2002 guidance document be applied. Using available site-specific data, both the industrial and residential scenarios should be evaluated. If the results yield a toxicity level for TCE indicating either an immediate/short term or chronic/long-term unacceptable exposure risk, the corrective measures will be required.*

   Follow up Action and Status of Recommendation. Sampling and analysis of indoor air was conducted at the IWP site in September 2006 to address issues regarding the indoor air vapor intrusion pathway identified in the first Five-Year Review. The results were used to evaluate the potential risk to human health with reference to the following documents:

   - EPA *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils* - 2002
   - California Human Health Screening Levels, DTSC (2005)
   - Environmental Screening Levels, San Francisco Regional Water Quality Control Board (2005)

   The results from the 2006 sampling indicated that there was a complete vapor intrusion pathway allowing "humans to be exposed to vapors". EPA believed the source of the elevated indoor air concentrations was the on-site monitoring well, which could act as a conduit from the groundwater to the building. Subsequent work was completed in the building to mitigate the exposure. The work included sealing the well and other potential vapor intrusion pathways and enhancing ventilation. Following this work, indoor air samples were collected in 2009. Results from both sampling events are included in the Data Review section.

The activities conducted at IWP since the last Five-Year Review are as follows:

- In September 2006, ambient and indoor air samples were collected at the Industrial Waste Processing site in response to recommendations presented in the 2004 Five-year Review Report (see Attachment 6, Technical Memorandum: Data Evaluation from the Vapor Intrusion Investigation). The objective was to evaluate the risk to human health from selected VOCs in indoor air, using both industrial and residential scenarios. The results are discussed below, under Status of Recommendations. Eight samples were collected: two ambient (outdoor) and six indoor. Two of the samples were from the headspace of a monitoring well, located inside the warehouse. Screening levels for PCE were exceeded in indoor samples, as well as samples from the headspace of monitoring wells.

- In April 2007, a visual inspection of the building and foundation was conducted at the site to identify all potential entry routes for VOC contaminated soil gases. The findings and recommendations were presented in a technical memorandum, Trip Report: Building Inspection and Evaluation, April 25, 2007.

- In 2007, the property owner completed nearly all the recommendations listed in the April 2007 technical memorandum, including caulking all wall openings for plumbing lines, removing fibers from the fan gratings, and replacing the light/exhaust fan switch in both bathrooms with a timer switch. There are two outstanding recommendations: the ventilation fans in the men's and women's bathrooms do not continually operate during normal working hours, (though the fans operate for a longer period than the rooms are occupied) and the trap primer in the mens bathroom has not been operated.

- The monitoring well was decommissioned in September 2008, by a drilling contractor for the Pinedale Industrial Area Groundwater Treatment Program's (PIA) responsible party. The surface casing was removed, the well and annulus filled with bentonite slurry and finished with a concrete patch filled to match the surrounding concrete slab of the manufacturing building.

- In April 2009, ambient and indoor air samples were collected at the IWP site. The objective was to evaluate the effect of sealing off identified and potential vapor intrusion pathways. PCE was detected in all indoor samples ranging from 0.66 to 2.1µg/m^3. The maximum PCE value is at the screening level. No other VOCs were detected.

- Groundwater remediation and monitoring activities continue at the PIA, administered by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). The Semi-Annual Groundwater Remediation and Monitoring Report - October 2008 (Attachment 7) Figure 16 (see Figure 3, this report) shows the TCE plume extends (>5 µg/L) through three groundwater bearing zones. This figure indicates that the IWP site is approximately 750 feet cross-gradient from the plume and is no longer above the plume.

VI. Five-Year Review Process

Administrative Components

The Industrial Waste Processing Superfund Site Five-Year Review team was led by Travis Cain, the EPA Remedial Project Manager (RPM), Region 9, and included personnel from the USACE, Seattle District. Emile Pitre and Richard Garrison, both with the USACE, Seattle District, assisted with the review as representatives of the support agency.

Components of Review

By November 2008, the review team had been formed, and had established the review schedule and its major components including:

- Community Notification
- Document Collection and Review;
- Data Assessment/Analysis;
- Site Inspection;

- Five-Year Review Report Development and Review;

Community Notification

The community will be notified of the five-year review process following the release of this document; EPA will produce and distribute a fact sheet to the community near the site. The fact sheet will summarize the findings of the five-year review and instructions on how to access a copy of the review. The fact sheet will be presented in English and in Spanish.

Document Review

A review of reports pertinent to this five-year review was conducted by the review team. Documents reviewed included,

- Removal Report
- Previous Five-Year Review
- Applicable Local, State, and Federal Regulations
- Vapor Intrusion Investigation Reports
- Building Inspection and Evaluation Trip Report
- Pinedale Industrial Area Groundwater Treatment Program Semi-Annual Groundwater Remediation and Monitoring Report – October 2008.

Data Review and Evaluation

Analytical data generated since the last five-year review have been ambient and indoor air samples collected at the Industrial Waste Processing site in response to recommendations presented in the 2004 Five-year Review Report. The results are summarized in Tables 2 and 3.

Table 2 – Comparison of Air 2006 Sample Results with Indoor Air Screening Levels for Vapor Intrusion Pathway
Industrial Waste Processing (IWP) Superfund Site, Fresno, California

Analyte		**Toxicity Status**	**Maximum Concentrations from analytical results (a)**			**Highest ND Reporting Limit**	**US EPA Indoor Air Industrial Screening Levels (b)**	
ND			Ambient	Indoor	Well		Industrial	Residential
1,1-DCA		NC (C in CA)	ND	ND	0.62	0.04	770	150
cis-1,2-DCE		NC	ND	ND	0.77	0.04	51	37
1,1,1-TCA		NC	0.14	0.12	0.58	0.054	22000	5200
TCE		C	0.065	0.18	1.0	0.016	6.1	1.2
PCE		C	2.0	**7.3**	**37**	0.068	2.1	0.412

Units for all columns containing numbers are in $\mu g/m^3$.

DCA-dichloroethane, DCE-dichloroethene, TCA-trichloroethane, TCE-trichloroethene, PCE-tetrachloroethene

NC- Non-cancer, C-Cancer

(a) Results from September 12-13, 2006 indoor and ambient air sampling event.

(b) Regional Screening Level (RSL) Table Ind Air APRIL 2009; http://www.epa.gov/region09/superfund/prg/index.html

All screening levels represent a target excess lifetime cancer risk of 1 x 10^{-6} or non-cancer hazard quotient of 1.0, except for ESLs where target hazard quotient+=0.2.

Bold and highlighted indicates that at least one screening level value is exceeded.

Based on the sampling results, recommendations to seal identified and suspected exposure pathways were mostly completed and another round of indoor and ambient air samples were collected at the site. The results are summarized in Table 3.

Table 3 – Comparison of 2009 Air Sample Results with Current Indoor Air Screening Levels for Vapor Intrusion Pathway
Industrial Waste Processing (IWP) Superfund Site, Fresno, California

Analyte	Maximum Concentrations from analytical results (a)		Highest ND Reporting Limit	US EPA Indoor Air Industrial Regional Screening Levels (b)	
	Ambient	Indoor		Industrial	Residential
1,1-DCA	ND	ND	0.04	770	150
TCE	ND	ND	0.27	6.1	1.2
PCE	ND	2.1	0.34	2.1	0.412

Units for all columns containing numbers are in $\mu g/m^3$.

DCA-dichloroethane, , TCE-trichloroethene, PCE-tetrachloroethene

(a) Results from April 30, 2009 indoor and ambient air sampling event.

(b) Regional Screening Level (RSL) Table Ind Air APRIL 2009; http://www.epa.gov/region09/superfund/prg/index.html

Site Inspection

A site inspection was conducted on January 8, 2009 to gather information about the site's status. The review team visually inspected and documented the conditions of the site, the remedy, and the surrounding area for inclusion into the second five-year review. Emile Pitre and Rick Garrison of the USACE, Seattle District, and Mike Mygind, property owner were present for the site inspection. See Attachment 4 for the Site Inspection Checklist. Photos from this site inspection are presented in Attachment 3.

The site appeared to be well-maintained and in good operational order. The site owner showed the measures that were implemented as recommended in the Building Inspection and Evaluation trip report. The manufacturing building, where the indoor air sampling was conducted, is approximately 80 feet by 40 feet and about 15 feet high. The building is clean and well-lit with a few employees occupied with the production of awnings. The team observed a concrete patch where a monitoring well was abandoned, the sealing of openings in the bathrooms, and new timer switches for the light and fan in both bathrooms. Outside, the entire site is covered with

asphalt and structures, and thus no exposures to the replacement foundation soil were apparent, with one exception. A 10 foot by 10 foot patch of asphalt, located in the center of the parking lot, was temporarily removed for utility repair. It is believed there was little to no risk to workers because during the removal action one to two feet of soil was removed, and all confirmatory sample results were below RAOs. Linear depressions were constructed along the north and south limits of the property to collect surface drainage to the city sewer line. Mr. Mygind, the site owner, noted that to meet the city's building requirement for surface drainage, the owner was required to excavate into the native soils. The rest of the structures and parking lot were constructed directly on the replacement soils.

Interviews

No formal interviews were conducted for this five-year-review.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?
Answer: Yes.

All soil removal actions have been completed, as mandated in the Action Memorandum. The soil removal action, which consisted of excavation and placement of clean fill, was completed to the satisfaction of EPA, as documented in the January 27,1999 Certificate of Completion. Soil was removed to the RAO; therefore, the remedy is functioning as intended.

The current state of each objective outlined in the Action Memorandum and any indicators of remedy problems are described below.

A.1 Removal Action Performance and Monitoring Results
There is no on-going monitoring program requirement of shallow soil because it has met the RAOs. As noted in the 2004 Five Year Review, the Removal Action Report specified semiannual monitoring of the Site fence and vegetative cover. However, redevelopment covered most of the Site with impermeable surfaces, and observations made during the 2004 and 2008 Site inspection indicated no problems. Therefore, monitoring of the fence and vegetative cover is no longer warranted, except during 5-year reviews or when the land use changes.

A.2 System Operations and Maintenance:
There is no active, ongoing remedial system in place since the remedy was a removal action. Therefore, there are no formal operations or maintenance components to the remedy.

A.3 Costs of System Operations, Maintenance, and Monitoring:
There are no system operations and maintenance costs as per A.2, above. Table 4 displays the costs for the vapor intrusion investigations that were completed in the last five years.

Table 4 – Vapor Intrusion Investigation Costs

Activity	Estimated Cost
Vapor Intrusion Investigation 2006	$37,000
Vapor Intrusion Investigation 2009	$30,000

A.4 Opportunities for Optimization:
There are no opportunities for system optimization as per A.2, above.

A.5 Early Indicators of Potential Remedy Problems:
The only current mechanism in place to monitor for potential remedy problems is during the site inspection of each five-year review. It is then that each remediated area (see Attachment 3) is observed for signs of disturbance which may impact the protectiveness of the remedy.

A.6 Implementation of Institutional Controls and Other Measures:
The Action Memorandum did not require institutional controls. However, institutional controls may be necessary at the Site to address exposure to contamination remaining in the subsurface soils and potential vapor intrusion risks.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid?

Answer: Yes

Changes in Standards and To Be Considered. Applicable or relevant and appropriate requirements (ARARs) cited in the Action Memorandum were reviewed to evaluate changes in the ARARs since the last five-year review. There have been no changes in regulatory standards since the first five-year review.

Changes in Exposure Pathways, Toxicity and Other Contaminant Characteristics.

The results of the 2006 Vapor Intrusion Investigation (VII) indicated there is a complete vapor intrusion pathway allowing for "humans to be exposed to vapors." PCE was detected in surface soil samples prior to the 1998 soil removal action. TCE was not considered a risk. The likely conduits allowing for the vapor intrusion to occur were the DTSC well located inside the warehouse, DHS-IWP-A, and the floor drain located in the men's bathroom (there is not a floor drain in the women's bathroom).

Per the 2006 VII recommendations, the well located inside the warehouse building was plugged and abandoned and an inspection of the building foundation was conducted, with particular attention being paid to identifying all potential entry routes for VOC contaminated soil gases, such as cracks in concrete walls or slabs, gaps in fieldstone walls, construction joints between walls and slabs, annulus space around utility pipes, open sumps, etc. All possible entry points were subsequently sealed off to prevent the entrance of soil gas, fibers were removed from the fan gratings, and the light/exhaust fan switch was replaced in both bathrooms with a timer switch. Additional indoor air sampling was conducted to confirm if the implemented recommendations

were effective. PCE was detected in all indoor samples ranging from 0.66 to 2.1 µg/m^3, at or below the industrial screening levels for vapor intrusion. No other VOCs were detected.

Changes in Land Use. Since the last five-year review there have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. The property is used for commercial/light industrial which has been the historical zoning for the Site. The assumptions made in the 1995 RI/FS were generally based on future land use as residential property. Because it is still possible that future land use could be residential, these assumptions remain valid.

Remedial Action Objectives. The remediation goals from the Action Memorandum are still valid for the site.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Answer: No.

Technical Assessment Summary

According to the data reviewed and information obtained from the site inspection, the remedy is functioning as intended by the Action Memorandum. There have been no changes in the ARARs, standards or To Be Considered that should affect the protectiveness of the remedy. The potential for unacceptable risk because of the presence of PCE in two areas of the manufacturing building has been mitigated following the implementation of recommendations and confirmed with additional air sampling.

VIII. Issues

Table 5 – Issues of the 2009 Five-Year Review

Issue	Affects Protectiveness? (Y or N)	
	Current	**Future**
Hazardous substances may be present in subsurface soils at levels that pose a risk with unrestricted (e.g., residential) use or unlimited exposure (e.g., unlimited digging). Currently there are no deed restriction	N	Y
Existing information is insufficient to determine if subsurface site contaminants are contributing to indoor air risks. Indoor air concentrations in a commercial building on the site are at or below EPA risk screening levels. However, these levels were achieved by improving ventilation and sealing potential vapor intrusion pathways. Although vapor intrusion in the on-site building is currently controlled, there could be risks if the current building was altered or a new building constructed without sufficient controls for vapor intrusion.	N	Y

IX. Recommendations and Follow-up Actions

Table 6 – Recommended Follow-Up Actions

Issue	Recommendations/ Follow-Up Actions	Party Responsible	Oversight Agency	Planned Completion Date
Currently there are no restrictions on land use	Determine whether hazardous substances are present in subsurface soils at levels that do not allow for unrestricted use or unlimited exposure.	EPA	EPA	12/30/2010
	If so, a decision document should be completed that selects additional remedial action, which may include institutional controls.	EPA	EPA	9/30/2012
Indoor air concentrations exceed USEPAs indoor air residential screening levels. However, the source of the contamination is not known.	Determine whether contaminated indoor air is related to site contamination.	EPA	EPA	12/30/2010
	If so, develop a remedial action plan and prepare a decision document.	EPA	EPA	9/30/2012

X. Protectiveness Statement(s):

The remedy at the IWP site is protective of human health and the environment in the short-term. Exposure pathways that could result in unacceptable risks are currently being controlled. The most recent indoor air samples were at or below EPA's indoor air screening levels. However, the source of indoor air contamination is unknown, so further investigation is needed to develop a strategy to ensure long term protectiveness. This could include selection of further remedial actions in a Record of Decision.

XI. Next Review

Statutory Five-year reviews are not required for this Site because the response action was a removal, and no remedial action has taken place. However, because the removal action left hazardous substances, pollutants, or contaminants on site, further investigation is needed to determine whether residual contaminants pose a risk that requires further action. EPA will conduct a third Five-year review as a matter of policy in 2014.

Figures

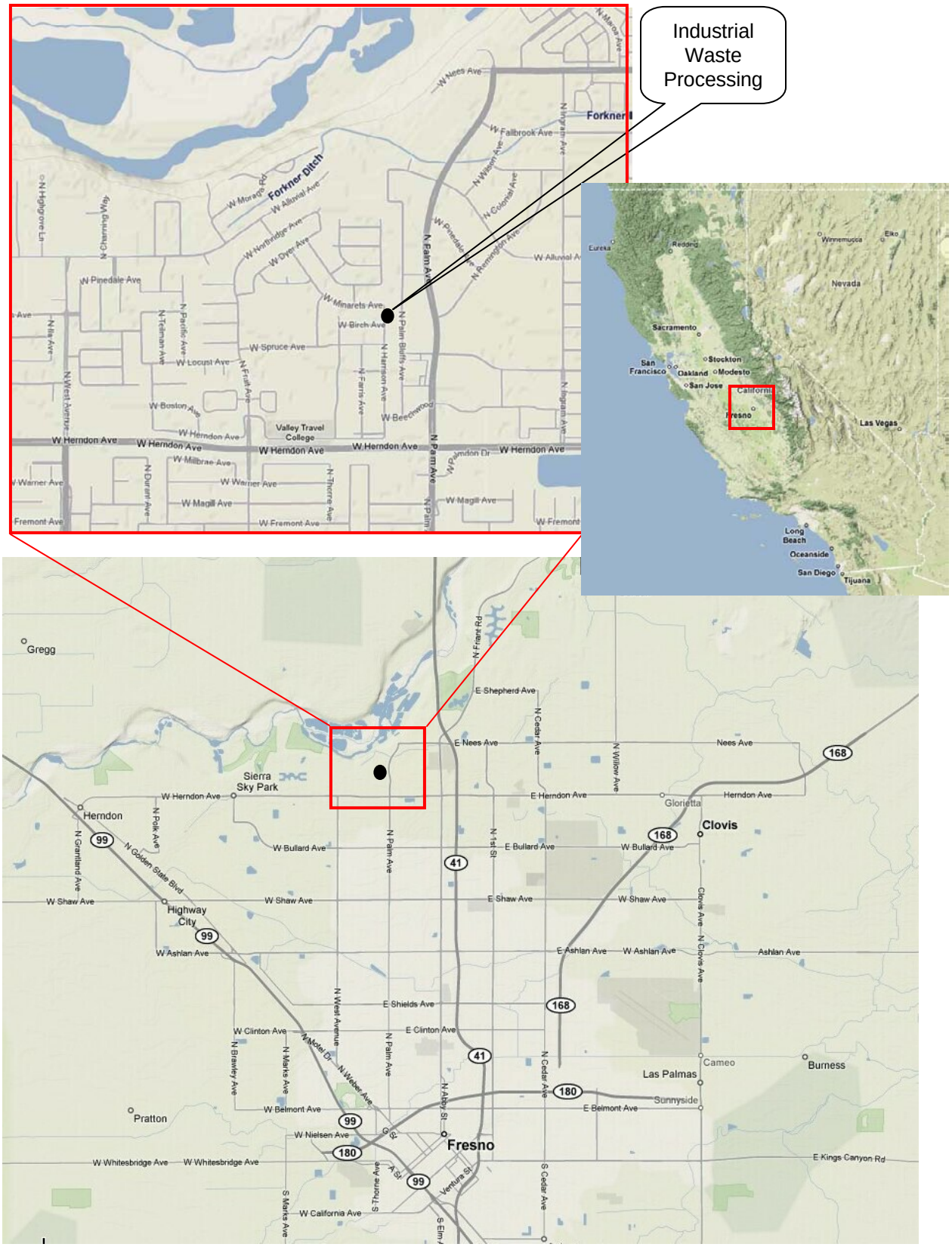
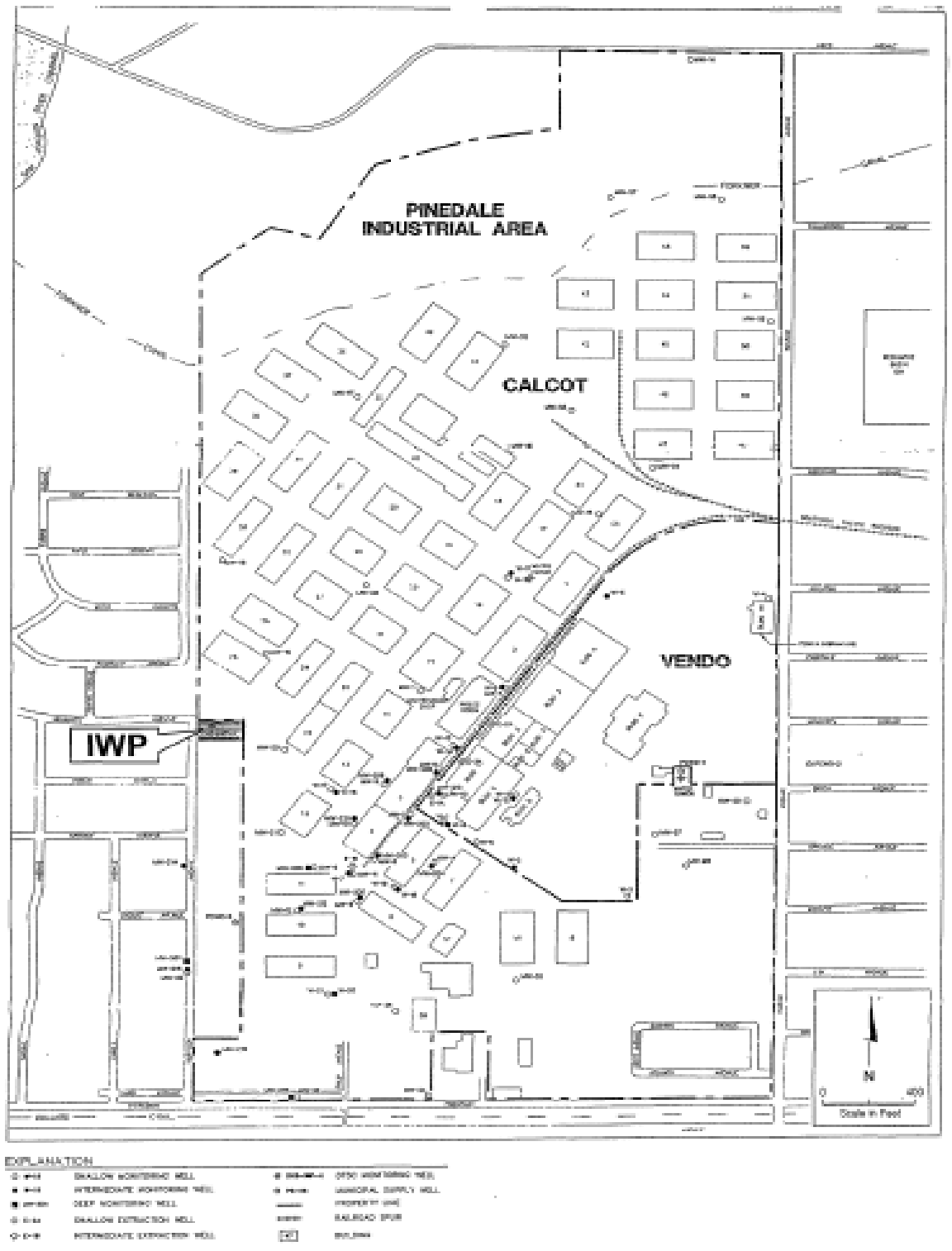


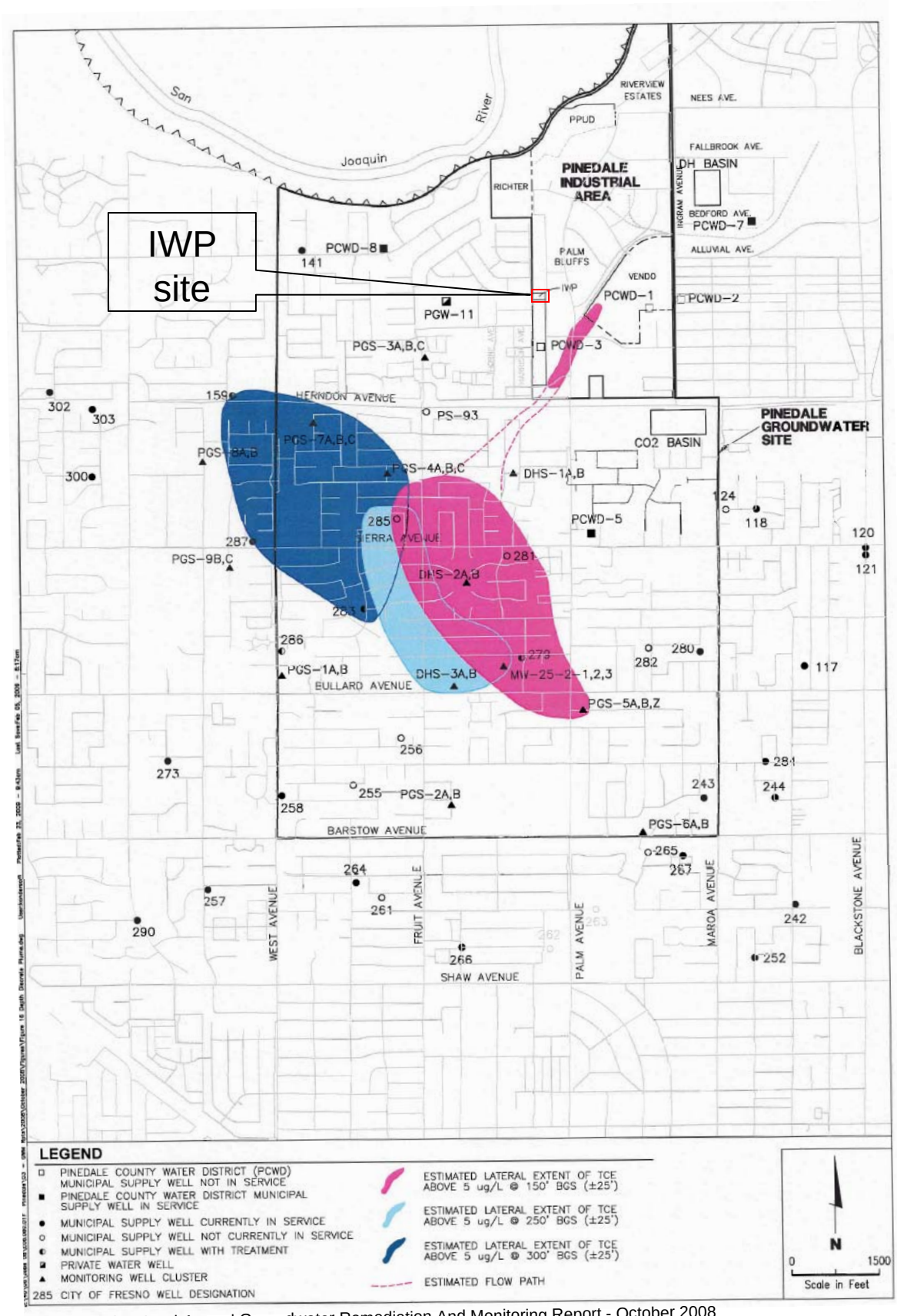
Figure 1
Location Map



Source: Dames & Moore, 1998

Figure 2 – Pinedale Industrial Area

CH2MHILL



Source: BSK, Semi-Annual Groundwater Remediation And Monitoring Report - October 2008

Figure 3
TCE Plume Extent – Pinedale Groundwater Site

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Attachment 1

List of Documents Reviewed

1. Applicable Local, State, and Federal Regulations

2. *Data Evaluation from the Vapor Intrusion Investigation at Industrial Waste Processing Superfund Site, Fresno*. February 15, 2007. Technical Memorandum prepared by CH2M Hill, Inc. for EPA Region 9.

3. EPA Certification of Completion Letter (January 27, 1999).

4. *First Five-Year Review,* September 2004. Prepared by CH2M Hill, Inc. for EPA Region 9.

5. *Pinedale Industrial Area Groundwater Treatment Program Semi-Annual Groundwater Remediation and Monitoring Report – October 2008*. Prepared by BSK, Inc. for The Vendo Company.

6. *Preliminary Closeout Report* (September 28, 1999)

7. *Remedial Action Report for Removal Action* (November 11, 1998)

8. *Trip Report: Building Inspection and Evaluation, Industrial Waste Processing Superfund Site, Fresno, California*. April 25, 2007. Technical Memorandum prepared by CH2M Hill, Inc. for EPA Region 9.

Attachment 2

ARARs Review Summary

ARARs Review Summary, Industrial Waste Processing Site

Medium	Source/ARAR	Applicable or Relevant and Appropriate	Requirement Synopsis	Initial Comment on Application	Current ARAR Evaluation
Action-Specific ARARs					
Air	Clean Air Act / San Joaquin Valley Unified Air Pollution Control District, Rule 8020, Rule 8040	Applicable	Limits emissions of fine particulate matter from construction, demolition, excavation, and landfill disposal sites through the control of fugitive dust emissions.	For controlling particulate matter emissions from fugitive dust sources	This was action-specific and the actions are past. All excavation activities have been completed.
All	Federal Resource Conservation and Recovery Act (RCRA) / California Hazardous Waste Control Act, 22 CCR §66262.34(a)(1(A))	Relevant and Appropriate	Requires that waste may be stored a the Site for less than 90 days without a permit provided that the waste is placed in containers or tanks and the pertinent container of tank requirements are met.	For handling of the excavated contaminated soils prior to transportation	This was action-specific and the actions are past. All hazardous waste has been removed from the Site.
All	RCRA / California Hazardous Waste Control Act, 22 CCR §66262.30-33	Relevant and Appropriate	Requires that prior to transportation of hazardous waste off-site, the waste must be packaged, labeled, marked, and placarded in accordance with specified Department of Transportation (DOT) regulations	For preparing to ship wastes off-site	This was action-specific and the actions are past. All hazardous waste has been removed from the Site.

Attachment 3

Site Visit/Trip Report, with Photographs

A site inspection was conducted on 8 January 2009 to gather information about the site's status. The review team visually inspected and documented the conditions of the site, the remedy, and the surrounding area for inclusion into the second five-year review. Emile Pitre and Rick Garrison of the USACE, Seattle District, and the Mike Mygind, property owner were present for the site inspection. See Attachment 4 for the Site Inspection Checklist. Photos from this site inspection are presented in Attachment 3.

Observations during the site inspection indicated the site to be well-maintained and in good operational order. The owner showed what remedies were completed as recommended in the Building Inspection and Evaluation trip report. The manufacturing building, where the indoor air sampling was conducted, is approximately 80 feet by 40 feet and about 15 feet high. The building is clean and well-lit with a few employees occupied with the production of awnings. We observed a concrete patch where a monitoring well was abandoned, the sealing of openings in the bathrooms, and new timer switches for the light and fan in both bathrooms. Outside, the entire site is covered with asphalt and structures, so there is little opportunity for exposures to the replacement foundation soil, with one exception. A 10 foot by 10 foot patch of asphalt was temporality removed for utility repair. Linear depressions were constructed along the north and south limits of the property to collect surface drainage to the city sewer line. Mr. MyGind noted that meeting this building requirement meant excavating into the native soils. Otherwise, the rest of the structures and parking lot were constructed directly on the replacement soils.

Photo 1: Manufacturing building. Door to mens bathroom that had elevated levels of TCE vapor. Note the concrete patch on the floor, under the table, where the monitoring well was decommissioned.

Photo 2: Manufacturing building looking in the opposite direction of Photo 1.

Photo 3: Sealing with caulk around plumbing fixture in wall.
Compare with "before" photos in Attachment 7.

Photo 4: Sealing with caulk around plumbing fixture in wall.

Photo 5: Light and fan now controlled with timer switch in both bathrooms.

Photo 6: IWP site and main access to business. Indoor sampling occurred in the manufacturing building, with the roll-up doors

Photo 7: Front of business. Utility repair required temporary removal of asphalt, with direct exposure to replacement soil.

Photo 8: Backside of manufacturing building. Utility repair required temporary removal of asphalt, with direct exposure to replacement soil.

Attachment 4

Site Inspection Checklist

I. SITE INFORMATION

Site name: Industrial Waste Products	**Date of inspection: 8 January 2009**
Location and Region: Fresno, CA Region 9	**EPA ID: CAD980736284**
Agency, office, or company leading the five-year review: USACE Seattle District	**Weather/temperature: Overcast / 50°F**

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- ☐ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls
- ☒ Other: **Soil excavation; soil offsite treatment; site cover and containment**

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. ~~O&M site manager~~ Mike Mygind (Name) Property & Business Owner (Title) 8 January 2009 (Date)
   Interviewed ☒ at site ☐ at office ☐ by phone Phone no. 559-436-8147
   Problems, suggestions; ☐ Report attached _____

2. **O&M staff** _____n/a _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

   Agency _____no agency contacted_____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone no.)
   Problems; suggestions; ☐ Report attached _____

4. **Other interviews** (optional) ☐ Report attached. **No interviews conducted**

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - ☐ O&M manual — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ As-built drawings — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Maintenance logs — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

2. **Site-Specific Health and Safety Plan** — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Contingency plan/emergency response plan — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

3. **O&M and OSHA Training Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

4. **Permits and Service Agreements**
   - Air discharge permit — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Effluent discharge — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Waste disposal, POTW — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Other permits_____ — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

7. **Groundwater Monitoring Records** — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks **On file with EPA Administrative Record**

8. **Leachate Extraction Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

9. **Discharge Compliance Records**
   - Air — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Water (effluent) — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

10. **Daily Access/Security Logs** — ☐ Readily available — ☐ Up to date — ☒ N/A

    Remarks_____

IV. O&M COSTS N/A

1. **O&M Organization**
   - ☐ State in-house
   - ☐ Contractor for State
   - ☐ PRP in-house
   - ☐ Contractor for PRP
   - ☐ Federal Facility in-house
   - ☐ Contractor for Federal Facility
   - ☐ Other_____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☒ Location shown on site map ☐ Gates secured ☐ N/A
   Remarks **Unrestricted access to site on east side. No damage to fencing.**

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A
   Remarks **No signs displayed**

C. Institutional Controls (ICs) None

1. **Implementation and enforcement**

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate ☐ N/A

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident
   Remarks: No remedial operations of concern

2. **Land use changes on site** ☐ N/A
   Remarks **No changes**

3. **Land use changes off site** ☐ N/A
   Remarks_**Yes – Area continues to be developed; multiple active construction 0.5 N to NE**

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A
   Remarks: **Fire sprinkler repair in parking lot, having to tear out a 10 ft x 10 ft section of pavement**

B. Other Site Conditions

Remarks **Site capped with asphalt, cement and building structures**

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable ☒ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☒ N/A

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

_____

C. Treatment System Applicable (only for Monitoring Wells) N/A

D. Monitoring Data

1. Monitoring Data
   ☐ Is routinely submitted on time ☐ Is of acceptable quality
2. Monitoring data suggests:
   ☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ All required wells located ☐ Needs Maintenance ☒ N/A
   Remarks_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

Ambient and indoor air samples were collected in September 2006 showing exceedance of VOC screening level values detected in and near the well head space of a flush mounted monitoring well located in the warehouse. Elevated levels of VOCs were also detected in the men's bathroom. Some of the recommendations included closing the well, seal the annular space where the plumbing comes into the bathrooms, and to run the bathroom fans continuously during business hours. During the site visit, we observed:

- **Mr. Mygind tells us that the well was decommissioned in September 2008, by well drilling crew who removed the protective casing, and filled the well with bentonite slurry. We observed a concrete patch at the former well location. No decommissioning report is available.**
- **All wall openings for plumbing line, in both bathrooms, were caulked by the owner. The caulking material was DAP acrylic-latex which contains 1.7% WT VOCs. The HMIS rating for health hazard is 1 (slight hazard). No insulating material was sprayed inside the wall prior to caulking. No cracks or other openings were sealed.**
- **Mr. Mygind replaced the light/exhaust fan switch in both bathrooms with a timer switch. His thinking is that the employees will turn the timer on for a period well after they come out of the bathroom. Fibers were removed from the fan gratings.**
- **Mr. Mygind reports that he has not operated the trap primer in the floor drain of the men's room.**
- **He states that no air sampling has been conducted since these removal activities.**

The site was once within the plume of contaminated groundwater as described in the first 5YR. The plume has since decreased in size and otherwise migrated to locations away from the IWP site. PIA is the contamination source and remediation is overseen by DTSC. IWP is not a PRP, but cooperated with the state to allow a monitoring well on the IWP site until it was decommissioned in September 2008. Sample results show exceedance of VOCs until the well went dry in the past few years.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

1. **Decommissioning of the state's monitoring well - as described by the property owner - indicates that this was completed appropriately and should effectively prevent any vapor intrusion along this pathway.**
2. **All openings for plumbing coming through the walls of both bathrooms have been thoroughly caulked and appear to provide an effective vapor barrier from the underlying soils.**
3. **The owner installed a timer switch in each bathroom with the intention of providing longer, active air circulation even when nobody is in the room. However, the recommendation called for active ventilation during the entire business hours. We don't rule out that the current method, combined with sealing may be sufficient.**
4. **At the time of this site inspection air sampling needed to be conducted to show if these recommendations are sufficiently effective. A subsequent round of air sampling demonstrated the recommendations were effective.**
5. **The pavement and building construction on site are generally in good condition. The owner says the material used to replace the excavated, contaminated soils is still in place, except along the property line where some excavation was required to provide runoff drainage, as required by the city. The buildings and pavement were constructed directly on the replacement soil materials.**

B.	Adequacy of O&M
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. **No O&M is required nor implemented for this site, other than periodic inspection of the pavement by the building owner.**

C.	Early Indicators of Potential Remedy Problems
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. **A follow up round of air sampling is necessary to determine if the indoor air mitigation measures are sufficiently protective. Following this site inspection, additional air sampling was conducted.**
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. **A follow up round of air sampling is necessary to determine if the indoor air mitigation measures are sufficiently protective.**

Attachment 5

Technical Memorandum: Data Evaluation from the Vapor Intrusion Investigation

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Data Evaluation from the Vapor Intrusion Investigation at Industrial Waste Processing Superfund Site, Fresno, California

PREPARED FOR: Travis Cain/ EPA

PREPARED BY: Caroline Ziegler/CH2M HILL

EPA WORK ASSIGNMENT: 249-ANLA- 09G9

DATE: February 15, 2007

Introduction

In September 2006, ambient and indoor air samples were collected at the Industrial Waste Processing (IWP) Superfund site located at 7140 North Harrison Avenue, Fresno, CA (Figure 1). These samples were collected in response to recommendations presented in the September 2004 Five-year Review Report for the site which stated that some follow-up action relating to the potential for vapor intrusion to indoor air should be conducted. This technical memorandum has been prepared to provide site background, document the data collection/evaluation and to present conclusions/recommendations.

Site History and Current Background

The size of the IWP site is approximately 0.5 acre. From approximately 1967 to 1981, IWP distributed industrial solvents, and after 1983, IWP was used for chemical storage. Chemicals stored at the site included alcohols, acetone, toluene, benzene, trichloroethene (TCE), and tetrachloroethene (PCE). Improper storage and handling of these chemicals are considered to be the main source of contamination.

In 1988, a time-critical removal action was completed resulting in removal of 19,000 gallons of hazardous liquids and 290 cubic yards of contaminated soils. Soil samples were collected following removal of the contaminated soils. Results from these samples indicated that lead and zinc remained at concentrations above the total-threshold limit concentration. Because of the residual contamination, the Site was placed on the National Priorities List in 1990 and EPA assumed the lead responsibility for oversight of further investigation and cleanup activities.

A remedial investigation/feasibility study (RI/FS) was completed in June 1995 which indicated that on-site surface and subsurface soils contained metals and volatile organic compounds (VOCs) at concentrations above the Preliminary Remediation Goals (PRGs). Following the RI/FS a non-time critical removal action was undertaken. The non-time critical removal action included excavation, removal, and disposal of lead and TCE contaminated soils; backfilling with clean material; and confirmation sampling. EPA

provided a certificate of concurrence for the excavation work on January 27, 1999, which documented that all portions of the planned remedial action (RA) for soil were completed in accordance with the Action Memorandum and Consent Decree.

In 2001, the IWP site was sold to and redeveloped by Pacific Tent & Awning, a manufacturer of fabric awnings and accessories. The property is zoned as commercial/light industrial. The site currently houses an 8,192-square ft warehouse/office facility that covers approximately 80 percent of the site area. The remainder of the site is covered with asphalt, concrete, and a limited amount of landscaping.

An investigation of a VOC-contaminated groundwater plume at the nearby Pinedale Industrial Area (PIA) was also being conducted concurrently with removal activities at the site. As part of the groundwater investigation, a monitoring well was installed inside the warehouse at the IWP site and analytical results indicated that VOCs were present in groundwater in this well above the maximum contaminant levels (MCLs). A groundwater extraction and treatment system is currently operating to remediate groundwater at the PIA site. As a result of this groundwater extraction, local water table elevations have dropped resulting in the monitoring well at the IWP site to be dry. Since 1988, the characterization and remediation of the PIA site has been overseen by the California Department of Toxic Substances Control (DTSC).

In September 2004, EPA completed the first five-year review of the response action at IWP Superfund Site. The five-year review was performed as a matter of policy because the removal action resulted in leaving hazardous substances, pollutants, or contaminants onsite above levels that allow for unlimited use and unrestricted exposure. The purpose of the five-year review was to ensure that the response action remained protective of human health and the environment. The five-year review concluded that the remedy at the Soils Operable Unit is expected to be protective, however, the potential for vapor intrusion to indoor air risk should be re-evaluated using currently available draft guidance, *Subsurface Vapor Intrusion Guidance* (EPA 2002).

Data Collection

The objectives for the proposed data collection activities were to:

- Evaluate the risk from selected VOCs in indoor air to occupants of the buildings now located at the former IWP Superfund Site.
- Collect samples to determine the indoor air VOC concentration.
- Collect outdoor air (ambient) samples to determine the background VOC concentrations at the site.
- Collect a headspace sample from the dry monitoring well (DHS-IWP-A) inside the warehouse building.
- Identify potential sources for chlorinated VOCs other than vapor intrusion inside and outside the structure.

These sampling activities were completed in accordance with the DTSC's *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC 2004). An EPA-approved *Field Sampling Plan* (FSP) (CH2M HILL 2006a) was prepared which specifically outlines procedures to field personnel for conducting the sampling and to provide documentation of the field procedures that were employed as part of this investigation. Additional essential information on required field documentation and QA/QC procedures is provided in the site-specific Quality Assurance Project Plan (QAPP) (CH2M HILL 2006b).

Pre-Sampling Survey and Preparation

A pre-sampling visual survey and interview with plant personnel was conducted on February 23, 2006 to identify potential sources (such as consumer products and chemicals used in current operations) of chlorinated VOCs and other VOCs within the structure that is located at 7140 N. Harrison Avenue.

The site currently houses a 8,192-square ft warehouse/office facility that covers most of the site. The remainder of the site is covered with asphalt, concrete, and some limited landscaping.

Important pre-sampling activities will include:

- Acquisition of materials and fabricating a tight fitting, sealed well cap that will allow sampling of the head space of the dry monitoring well.
- Acquisition of materials and fabricating of tubing "T"s for simultaneous collection of field duplicates.
- Preparation of the Summa canisters for sampling.
- Installation of the wellhead sampling assembly, including Summa canisters.
- Coordinating with an EPA-approved laboratory to analyze the air samples.

Wellhead Sampling Cap Assembly

Materials to construct the well head sampling cap were obtained as outlined in the FSP. No glues, epoxy, solvents, or other potentially VOC containing material were used in assembly or installation of this sampling apparatus.

Assembly was begun by drilling a ¼-inch diameter hole into the center of the top of the 4-inch PVC end cap. Teflon™ tape was wrapped around the ¼-inch NPT threaded fitting, and then screwed into the 4-inch diameter PVC end cap. Each Teflon tubing length was roughly 3 feet in length, to allow sufficient ability to move and place the Summa canisters. The silicon tubing section was only slightly longer than necessary to still allow use of the hose clamp and connection of the purge pump. The wellhead sampling cap was designed to allow simultaneous collection the sample and a duplicate. The length of the tubing used in the sampling assembly was recorded in the field notebook.

Field Duplicate Sampling "T"s Assembly

Field duplicate sampling "T" were fabricated prior to sampling. The materials required for each "T" were obtained as outlined in the FSP.

Assembly of the field duplicate sampling "T" was as follows. Two 3-foot sections of Teflon™ tubing were cut. Each section of the "T" was inserted into the T-union and secured. When the sampling was conducted, two tubing sections were attached to the normal sample and field duplicate Summa canisters. The one remaining open end of the "T" tubing union connector was the common sampling point as the 2 canisters collected their samples simultaneously.

Canister Preparation

All canisters were inspected for canister integrity, checked to make sure that a flow regulator was provided, and that the certification paper work was provided. Each canister was pre-labeled with the sampling location ID. Using a pressure gauge provided by the laboratory the pressure of each canister was checked and recorded on the field sampling form (Attachment A). To accomplish the pressure check, a vacuum gauge was attached directly to the canister without the flow controller in place; the canister valve was opened; the pressure recorded; the valve closed, and the pressure gauge removed. On the morning of the sampling event but prior to beginning canister deployment, the flow regulator was attached to the air sampling Summa canisters. Note, flow regulators were not used with the wellhead sampling canisters. The Standard Operating Procedure for Summa Canister Sampling was reviewed and followed per the FSP.

Sampling Activities

CH2M HILL staff deployed the indoor and outdoor air sampling equipment as quickly as possible at the beginning of a workday on September 12, 2006. The sampling locations are found in Figure 2. All samples were collected in pre-cleaned, certified 6-liter Summa canisters. Each Summa canister was fitted with a pre-cleaned 8-hour flow regulator that was certified with each specific canister. Each flow regulator had a built in pressure gauge. Duplicate air samples were "T'd" together with previously assembled tubing "T's". This assembly was used to conduct duplicate sampling at the WI-01/WI-02 sampling location.

- Six samples were collected from within the building and included:
    - A normal sample and a duplicate (2 samples) adjacent to the dry monitoring well and the lunch area, WI-01 and WI-02.
    - One sample in the southwest quadrant of the warehouse, WI-04.
    - One in the bathroom, this is to evaluate the potential leakage along piping that may penetrate the slab, WI-03.
    - A normal sample and a duplicate (2 samples) from the head space of the dry well, DW-01 and DW-02.
- Two ambient air samples were collected at two outdoor locations to aid in determining the level of background concentration not associated with vapor intrusion from groundwater and/or soil gas. One ambient air sampling was collected at the front of the office, AA-01. The other ambient air sample was collected on the roof top of the warehouse, AA-02.
- One trip blank was collected for quality control purposes. The trip blank will be

received from the laboratory pre-filled with clean air and returned to the laboratory as such. The purpose of this sample was in order to evaluate potential contamination of the Summa canisters during transit.

The sampling time-line was as follows:

Sampling Time-Line: Deployment of Sample Canisters

At the beginning of the work day the sample canisters were deployed inside and outside the building at 8:00 am September 12, 2006. To the extent possible the air sample inlet was placed approximately 3.3 feet above the ground surface. All pre-sampling documentation was completed prior to this event. The exact time (to the nearest minute) the sample valve was opened was recorded on the field sampling form. Care was taken to ensure the valve was fully opened.

Sampling Time-Line: Observations and Interviews

During sample collection the field team member made a thorough inspection for all materials and supplies in the building that may contribute to VOC concentrations in air inside the building. The field team member interviewed employees at the facility about chemicals stored or used at the facility, or activities or materials that may contribute to indoor air VOCs concentrations. Compounds and materials that may contribute to indoor air VOC concentration include but are not limited to paints, solvents, thinners, cleaning compounds, glues, recently dry-cleaned clothing, materials that have been recently painted or glued (even if this occurred away from the site). Relevant information from observations and interviews was recorded in the field notebook (Attachment A). The chemicals found in the warehouse included acetone, black enamel, oily waste, water-based paint, Marsh K solvent, spray paint, lacquer, motor oil, spray cans of solvent, "Nozzle Kleen" and "Gold Galvanize", plus weed killer. A review of the Material Data Safety Sheets (MSDSs) did not indicate the presence of any VOCs that are contaminants of concern at the site.

Sampling Time-Line: Termination of Sample Collection

The sampling valve was closed as near as possible to 8-hours after the sampling valve was opened. The valves were closed firmly to ensure a seal, but not over-tightened as this could damage the pin valve. The flow regulators were removed. The post-sampling pressure was measured using the pressure gauge provided by the laboratory. The final pressure was recorded on the field sampling form. After completion of sample and pressure measurements the bass plug was tightened over the swage fitting.

Sampling Time-Line: Well Headspace Sampling Assembly Installation

The installation of the well headspace sampling assembly was installed after completion of the indoor and ambient air sampling pm September 12, 2006. The reason for doing the headspace sampling after was to ensure that (1) VOCs are not released to the interior of the building during removal of the well cap and installation of the headspace sampling assembly just prior indoor air sampling, and (2) during indoor air sampling the well head is in the standard configuration.

Installation of the wellhead sampling cap was done at least 12 hours prior to sampling of the headspace of the dry monitoring to allow re-equilibration of the headspace after exposure to

the indoor air at the warehouse. When placing the 4-inch PVC cap on the wellhead, 4-inch unperforated Teflon™ tape was used to obtain a better seal. Once the wellhead sampling assembly was in place, two Summa canisters were attached to the tubing and assembly and the purge tubing hose clamp was closed.

Sampling Time-Line: Well Headspace Sampling

At 8:00 am on September 13, 2006, fifteen (15) hours after installation of the well head assembly, the dry well headspace was sampled. The sampling procedures were as follows:

- Prior to attaching the hand purge pump, the sampler ensured that the pump was set to evacuate (vacuum) and not to blow, since most pumps allow this setting to be changed.
- Using the silicon tubing, the hand purge pump was attached to the free end of the sampling assembly. Care was taken to not open the clamp prior to attachment of the purge pump.
- The hose clamp was opened, and 4 tubing volumes using the hand purge pump were purged. In order to determine the required purge volume the fact that 3/16-inch ID tubing has 0.144 milliliters (mL) of volume per inch (0.00879 $inch^2$ per inch) was taken into consideration.
- Immediately after completing purging, the hose clamp at the purge pump was closed. Sampling began by opening the valves on both Summa canisters at the same time. Since no flow regulator was used, the valves were only partially opened to moderate the flow rate. The valves were open roughly the same amount so the sampling duration was equal. While the valves were open audible hissing was noticeable.
- The sampling start time was recorded on the field sampling form.
- At the beginning of sampling, in the air in the general vicinity of the sampling assembly a brief burst from a office equipment cleaning aerosol can that contained 1,1-diflouroethane was sprayed. 1,1-diflouroethane is a non-toxic Freon compound which is rarely present in ambient air. For this reason, it makes an ideal leak detection compound.
- A second or two after the audible hissing ceased, the Summa valve was closed.
- Using the laboratory provided pressure gauge, the final pressure on the sampling data sheet was recorded.
- After completion of sample and pressure measurements the bass plug was tightened over the swage fitting.

Field Documentation and QA/QC

A field notebook was maintained that provides a brief description and time line of activities that occur during this sampling event (Attachment A). Summa canister labels contained the sample ID, sample date, and the pressure at the start and termination of sampling. All canisters were assigned a unique ID. The completed Summa Canister Field Sampling Forms are provided in Attachment A. This form was used to log in complete information to the extent that it was available and relevant. All Summa canisters were shipped to the EPA-approved laboratory, Air Technology Laboratories, Inc. in City of Industry, California using chain-of-custody procedures. Canisters were sealed in shipping boxes using a chain-of-custody (COC) seal. The chain-of-custody form was completed to the extent of the information available and the sampling method recorded was TO-15 SIM for VOCs and 1,1-

difluoroethane (see Attachment B). The samples were shipped by FedEx on September 13, 2006 to the Air Technology laboratory for analysis of the noted constituents.

Data Evaluation

The sampling and analysis of indoor air conducted at the IWP Superfund Site in September 2006 was undertaken to address issues remaining regarding the indoor air vapor intrusion pathway identified in the IWP Five-Year Review (EPA 2004). The data results are being used to address the potential risk to human health.

The preliminary laboratory analytical results were received by e-mail from Air Technology Laboratories, Inc. (ATL) on September 29, 2006. The complete final data report was sent by e-mail on October 3, 2006 with hardcopies and electronic data deliverables (EDDs) sent subsequently. The laboratory analytical data report is attached to this memorandum (Attachment C). A third party review of the analytical data , Tier 3 was prepared by ICF International/Laboratory Data Consultants (ICF) and sent to the EPA Superfund Project Manager on November 16, 2006.

A copy of the review memorandum prepared by ICF is found in Attachment D. All results were found to be acceptable except for the field duplicate analysis taken inside well DHS-IWP-A. Some outlier analytes were reported including 1,1-dichloroethane, cis-1,2-dichloroethene, and 1,1-difluoroethane. The 1,1-difluoroethane results were found due to its use in determining leaks into the cap system that was devised for sampling at the well head. The results would seem to indicate that there was not an impervious seal on the well head while the sampling was being conducted. The results for both 1,1-dichloroethane and cis-1,2-dichloroethene were well below any risk range screening level values for indoor air (see Table 1 below).

All of the results were compared to screening levels used to evaluate human health risk from the following documents:

- *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils* (EPA 2002)
- California Human Health Screening Levels (CHHSLs) (DTSC 2005)
- Environmental Screening Levels (ESLs) (San Francisco Regional Water Quality Control Board [SFRWQCB] 2005)

Table 1 represents a comparison of the maximum concentrations found in conducted the TO-15 SIM analysis on the seven total samples, two ambient (outside of the building at ground level and on the roof), four indoor (inside, with one duplicate), and one taken from the well headspace which was also a duplicate. The well headspace sample results were the highest of all the results. Of the two ambient air samples, the results from the roof sample, AA-02, were higher and of the four indoor air samples the maximum 1,1-trichloroethane result of 0.12 $\mu g/m^3$ was found in the duplicate samples taken near the dry monitoring well and employee lunch area, WI-01 and WI-02. The maximum values for both trichloroethene (TCE), 0.18 $\mu g/m^3$, and tetrachloroethene (PCE), 7.3 $\mu g/m^3$, were found inside the men's

bathroom area. The PCE values near the dry monitoring well and lunch room area ranged from 6.9 to 7.1 μg/m^3, very close to the maximum value found in the bathroom.

Table 1. Comparison of Air Sample Results with Current Indoor Air Screening Levels for Vapor Intrusion Pathway
Industrial Waste Processing (IWP) Superfund Site, Fresno, California

Analyte	Toxicity Status	Maximum Concentrations from analytical results (a)			Highest ND Reporting Limit	US EPA Indoor Air Residential Screening Level (b)	DTSC Residential CHHSLs (c)	SF-RWQCB Residential ESLs (d)
		Ambient	Indoor	Well				
1,1-DCA	NC (C in CA)	ND	ND	0.62	0.04	500	NA	1.5
cis-1,2-DCE	NC	ND	ND	0.77	0.04	35	36.5	7.3
1,1,1-TCA	NC	0.14	0.12	0.58	0.054	2200	2290	460
TCE	C	**0.065**	**0.18**	**1.0**	0.016	0.022	1.22	1.2
PCE	C	**2.0**	**7.3**	**37**	0.068	0.81	0.412	0.4

Units for all columns containing numbers are in μg/m^3.

DCA-dichloroethane, DCE-dichloroethene, TCA-trichloroethane, TCE-trichloroethene, PCE-tetrachloroethene

NC- Non-cancer, C-Cancer

(a) Results from September 12-13, 2006 indoor and ambient air sampling event.

(b) Target indoor air levels from "Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils", USEPA (2002).

(c) From "California Human Health-Based Screening Levels (CHHSLS)" for indoor air, DTSC (2005).

(d) Environmental Screening Levels (ESLs) for indoor air from San Francisco RWQCB (2005).

All screening levels represent a target excess lifetime cancer risk of 1 x 10^{-6} or non-cancer hazard quotient of 1.0, except for ESLs where target hazard quotient+=0.2.

Bold and highlighted indicates that at least one screening level value is exceeded.

Figure 2 represents the sampling locations and the air results for the indoor and ambient air samples.

A more detailed analysis of the TCE and PCE constituents was conducted to calculate the risk to human health both under the residential and industrial scenarios for each of the screening level scenarios. The risk calculations tables are attached (Attachment E). Table 2 summarizes the cancer risk ratio findings for the TCE and PCE constituents only at each of the seven sampling locations on the IWP Superfund Site.

Table 2. Comparison of TCE and PCE Cancer Risk Ratios based on Air Sample Results
Industrial Waste Processing (IWP) Superfund Site, Fresno, California

Location/Constituent		PRGs (a)	CHHSLs (b)		ESLs (c)	
		Residential	Industrial	Residential	Industrial	Residential
AA-01, Ambient ground	TCE	5.52×10^{-8}	2.60×10^{-8}	4.34×10^{-8}	2.59×10^{-8}	4.36×10^{-8}
	PCE	9.06×10^{-7}	4.18×10^{-7}	7.04×10^{-7}	4.26×10^{-7}	7.15×10^{-7}
AA-02, Ambient Roof	TCE	6.67×10^{-8}	3.19×10^{-8}	5.33×10^{-8}	3.18×10^{-8}	5.34×10^{-8}
	PCE	6.25×10^{-6}	2.89×10^{-6}	4.85×10^{-6}	2.94×10^{-6}	4.93×10^{-6}
WI-01(avg.), Inside Warehouse near well head	TCE	5.73×10^{-8}	2.73×10^{-8}	4.55×10^{-8}	2.72×10^{-8}	4.56×10^{-8}
	PCE	**2.21×10^{-5}**	**1.02×10^{-5}**	**1.71×10^{-5}**	**1.04×10^{-5}**	**1.74×10^{-5}**
WI-02, Inside Warehouse near well head	TCE	6.77×10^{-8}	3.19×10^{-8}	5.33×10^{-8}	3.18×10^{-8}	5.34×10^{-8}
	PCE	**2.16×10^{-5}**	9.96×10^{-6}	**1.67×10^{-5}**	**1.01×10^{-5}**	**1.70×10^{-5}**
WI-03, Men's bathroom	TCE	1.87×10^{-7}	8.82×10^{-8}	1.48×10^{-7}	8.81×10^{-8}	1.48×10^{-7}
	PCE	**2.28×10^{-5}**	**1.05×10^{-5}**	**1.77×10^{-5}**	**1.07×10^{-5}**	**1.80×10^{-5}**
WI-04, Inside Warehouse near SW corner	TCE	3.33×10^{-7}	1.57×10^{-8}	2.62×10^{-8}	1.57×10^{-8}	2.63×10^{-8}
	PCE	9.06×10^{-7}	4.18×10^{-7}	7.04×10^{-7}	4.26×10^{-7}	7.15×10^{-7}
DW-01, Well Headspace	TCE	1.04×10^{-6}	4.90×10^{-7}	8.20×10^{-7}	4.89×10^{-7}	8.22×10^{-7}
	PCE	**1.16×10^{-4}**	**5.34×10^{-5}**	**8.98×10^{-5}**	**5.43×10^{-5}**	**9.12×10^{-5}**
DW-02, Well Headspace	TCE	9.68×10^{-7}	4.56×10^{-7}	7.62×10^{-7}	4.55×10^{-7}	7.64×10^{-7}
	PCE	**9.99×10^{-5}**	**4.62×10^{-5}**	**7.77×10^{-5}**	**4.70×10^{-5}**	**7.89×10^{-5}**

TCE-trichloroethene, PCE-tetrachloroethene

(a) Preliminary Remediation Goals, Region 9. The ambient air PRG is applicable to both indoor and outdoors and is based on a residential exposure scenario using standard Superfund exposure factors and the Cal-modified toxicity value, (EPA, 2004).

(b) From "California Human Health-Based Screening Levels (CHHSLS)" for indoor air, DTSC (2005).

(c) Environmental Screening Levels (ESLs) for indoor air from San Francisco RWQCB (2005).

Bold and highlighted indicates that the sample result falls within the cancer risk management range.

Conclusions/Recommendations

The results would indicate that there is a complete vapor intrusion pathway allowing for "humans to be exposed to vapors originating from site contamination". The pathway would also appear to pose the potential for unacceptable risk as it relates to the presence of PCE in two areas of the warehouse, near the well head and lunch area and in the men's bathroom. The likely conduits allowing for the vapor intrusion to occur are the DTSC well located inside the warehouse, DHS-IWP-A, and the floor drain located in the men's bathroom (there is not a floor drain in the women's bathroom). The risk estimate is overly conservative for the men's bathroom area because the inhalation rate used in the calculation (20 m^3/day) assumes more than the time that one would usually spend in a bathroom. If this rate were adjusted to a more likely scenario assumption of 1 hour per day, the risk estimate would actually be much lower and likely outside of the risk management range.

It is recommended that the well located inside the warehouse building be properly plugged and abandoned (P&A'd). The EPA understands that this task would be conducted by DTSC. It is also recommended that an inspection of the building foundation be conducted, with particular attention being paid to identifying all potential entry routes for VOC contaminated soil gases, such as cracks in concrete walls or slabs, gaps in fieldstone walls, construction joints between walls and slabs, annulus space around utility pipes, open sumps, etc. All possible entry points should then be sealed off, if possible, to prevent the entrance of soil gas and either an exhaust or supply ventilation system review should be made of the building, especially in the bathroom area. If a ventilation fan is installed or enhanced it should be sized to allow for an appropriate air exchange frequency (one air exchange per every 15 minutes). Any sealing/caulking materials should not contain VOCs.

Subsequent to application of the recommended mitigation measures including plugging the well, sealing/caulking any possible entry points and installation/enhancement of a ventilation system, the warehouse and the bathroom sampling locations should be re-sampled. While the re-sampling takes place the ventilation system should be operating to ensure that it is allowing for appropriate air exchange. The results from this re-sampling effort should then be compared against risk screening levels as before. If an unacceptable risk is still present, additional mitigation measures will need to be considered. Table 3 contains the proposed schedule and responsibility matrix.

Table 3. Issue, Recommendations and Follow-Up Actions
Industrial Waste Processing (IWP) Superfund Site, Fresno, California

Issue	Recommendations and Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date
Potential for unacceptable risk as a result of vapor intrusion due to presence of PCE in indoor air	Plug and abandon well DHS-IWP-A located inside warehouse building.	DTSC	EPA	April 2007
	Inspect building foundation for potential entry points and seal or caulk with non-VOC materials.	Property Owner	EPA	March 2007
	Install or enhance ventilation system.	Property Owner	EPA	April 2007
	Re-sample indoor air.	EPA	EPA	May 2007

References

CH2M HILL. 2006a. *Field Sampling Plan: Vapor Intrusion Investigation for Industrial Waste Processing Superfund Site, 7140 N. Harrison Ave, Fresno, California*. July.

CH2M HILL. 2006b. *Quality Assurance Project Plan, Industrial Waste Processing Superfund Site, Vapor Intrusion Investigations, California*. May.

California Department of Toxic Substances Control (DTSC). 2004. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*. December.

California Department of Toxic Substances Control (DTSC). 2005. *Use of California Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties*. January,

United States Environmental Protection Agency (EPA). 2002. *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils.* November.

San Francisco Regional Water Quality Control Board (SFRWQCB). 2005. *Screening for Environmental Concerns at sites with Contaminated Soil and Groundwater*. February.

Attachments

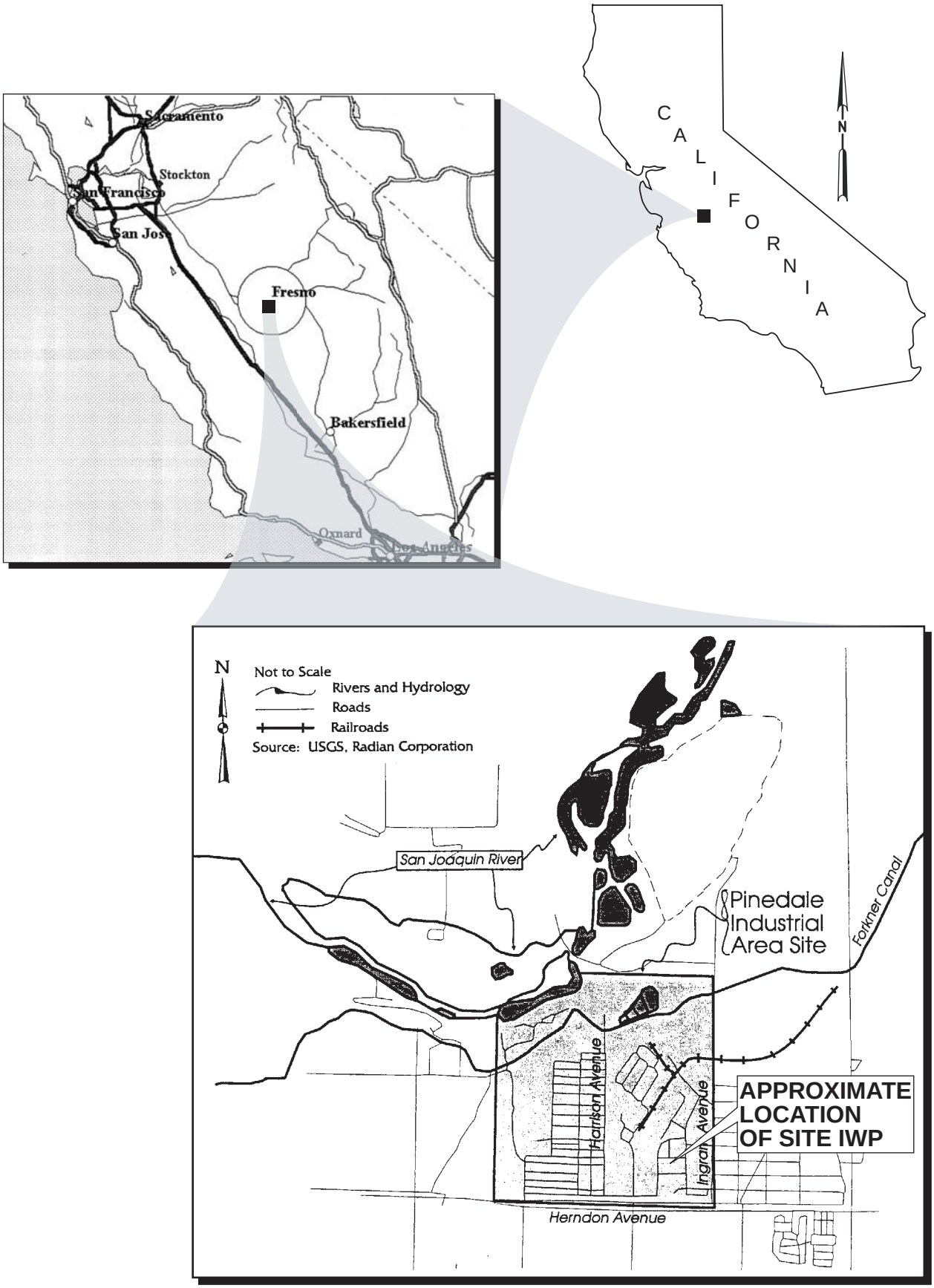
A. Field Sampling Log Forms and Field Notebook

B. Chain of Custody Form

C. Laboratory Report

D. ICF Data Review Memo

E. Risk Calculation Tables

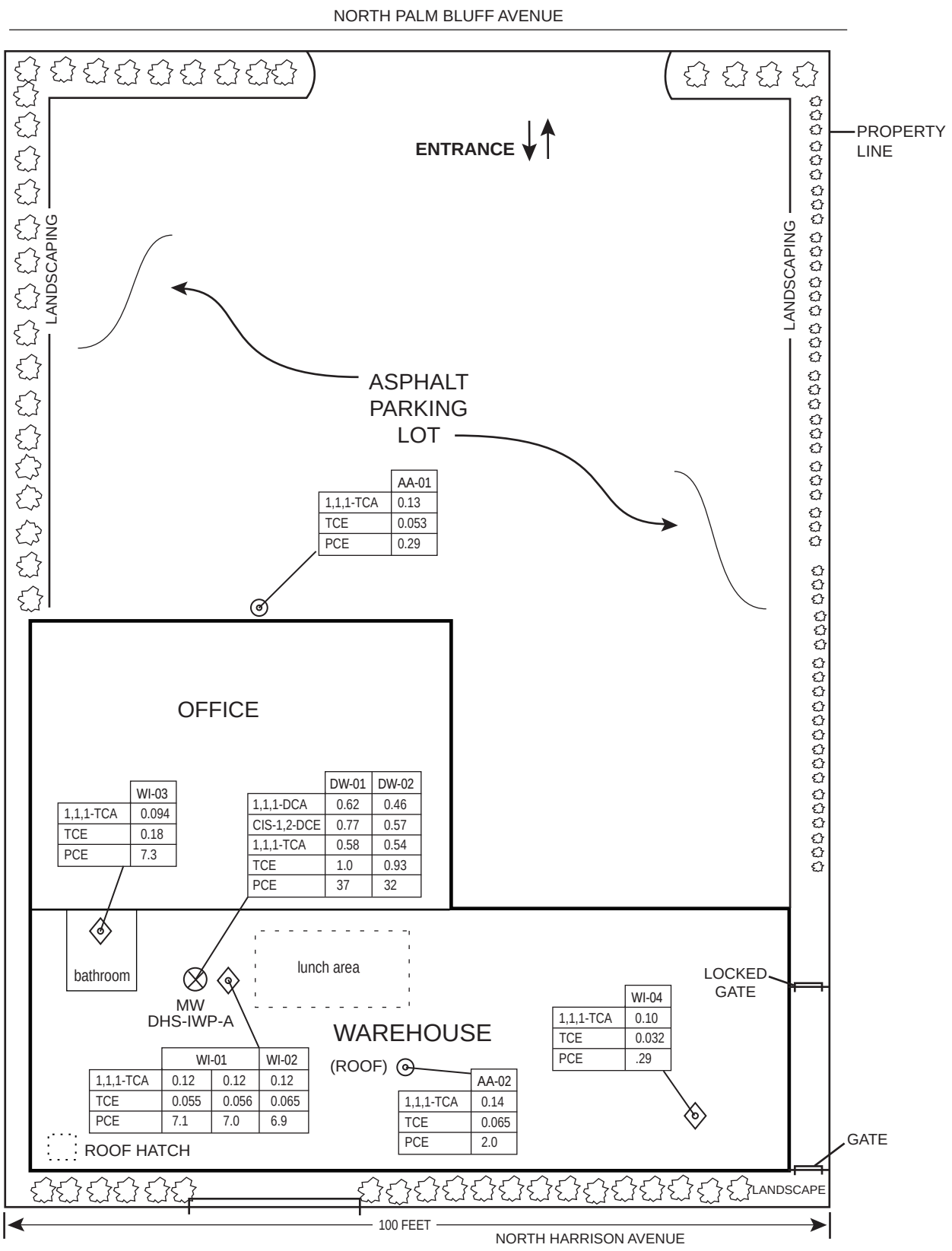


Source: Army Corps of Engineers, Omaha District, July 1993

FIGURE 1
LOCATION MAP
INDUSTRIAL WASTE PROCESSING
FRESNO, CALIFORNIA

CH2MHILL

315448.FR.01 Fig-1-Location Map.ai 06/29/04 HR SFO



LEGEND

- INDOOR SAMPLING LOCATION
- OUTDOOR SAMPLING LOCATION
- DRY MONITORING WELL (HEADSPACE/AIR SAMPLING LOCATION)

Notes: All results are in units of µg/m³ (micrograms/meters cubed) .

TCA = TRICHLOROETHANE
TCE = TRICHLOROETHENE
PCE = TETRACHLOROETHENE
DCA = DICHLOROETHANE
DCE = DICHLOROETHENE

NOT TO SCALE

FIGURE 2
AIR SAMPLING RESULTS
IWP SUPERFUND SITE
PINEDALE, CALIFORNIA

Source: CA DOHS, Fresno Office, Bechtel.

CH2MHILL

ES052006006BAO_fig2_airsam_results.ai_110706_ll

Attachment A
Field Sampling Log Forms and Field Notebook

CH2MHILL

SUMMA Canister Sampling Log

Location ID: AA-01	Date: 12SEP06
Project No.: 339175.EN.01	Project or Client: CH2M HILL IWP
Field Crew: DAVID HODSON	Location Address/Description:

Sampling System

Canister Serial No.: 1442	Other Info:
Canister Certification Date: 5 SEP06	
Canister Leak Check Date: 5 SEP06	
Flow Controller Serial No.: ~~ERR 2511~~ 2039	
Associated Duplicate Location ID (if applicable): NA	

Sampling Log

Parameter	Start	Stop
Local Time	750	1530
Label Dummy Time for Label	750	1550
Canister Pressure (in Hg)	-30	-2
Ambient Temperature °F	74	92
Flow Rate (mL/min)	12.5	12.5

Observations and Comments:

[redacted] DH

Laboratory Analytical Method(s):

TO-15 SIM for VOCs + [redacted] DH

Sampler Signature: David A Hodson

* Add leak detection gas

CH2MHILL

SUMMA Canister Sampling Log

Location ID: AA-02	Date: 12SEP06
Project No.: 339175.EN.01	Project or Client: CH2M HILL / IWP
Field Crew: DAVID HODSON	Location Address/Description:

Sampling System

Canister Serial No.: 1354	Other Info:
Canister Certification Date: 5 SEP 06	
Canister Leak Check Date: 5 SEP 06	
Flow Controller Serial No.: 2032	
Associated Duplicate Location ID (if applicable): NA	

Sampling Log

Parameter	Start	Stop
Local Time	815	1615
Label Dummy Time for Label	815	1615
Canister Pressure (in Hg)	-30	-16
Ambient Temperature	75	92
Flow Rate (mL/min)	12.5	12.5

Observations and Comments:

[redacted] DH

Laboratory Analytical Method(s):

TO-15 SIM for VOCs + [redacted] DH

Sampler Signature: David Hodson

* Add leak detection gas

CH2MHILL

SUMMA Canister Sampling Log

Location ID: WI-01	Date: 12 SEP 06
Project No.: 339175.EN.01	Project or Client: IWP Superfund
Field Crew: DAVID HODSON	Location Address/Description:

Sampling System

Canister Serial No.: 3579	Other Info:
Canister Certification Date: 5 SEP 06	
Canister Leak Check Date: 5 SEP 06	
Flow Controller Serial No.: 2005	
Associated Duplicate Location ID (if applicable): ~~NA~~ DH WI-02	

Sampling Log

Parameter	Start	Stop
Local Time	810	1610
Label Dummy Time for Label	810	1610
Canister Pressure (in Hg)	-30	-7
Ambient Temperature	75	92
Flow Rate (mL/min)	12.5	12.5

Observations and Comments:

[redacted] DH

Laboratory Analytical Method(s):

TO-15 SIM for VOCs + [redacted] DH

Sampler Signature: David Hodson

* Add leak detection gas

CH2MHILL

SUMMA Canister Sampling Log

Location ID: WI-02	Date: 12SEP06
Project No.: 339175.EN.01	Project or Client: IWP Superfund
Field Crew: DAVID HODSON	Location Address/Description:

Sampling System

Canister Serial No.: 1407	Other Info:
Canister Certification Date: 5SEP06	
Canister Leak Check Date: 5SEP06	
Flow Controller Serial No.: 2006	
Associated Duplicate Location ID (if applicable): NA	

Sampling Log

Parameter	Start	Stop
Local Time	810	1610
Label Dummy Time for Label	810	1610
Canister Pressure (in Hg)	-29	-3
Ambient Temperature	75	92
Flow Rate (mL/min)	12.5	12.5

Observations and Comments:

[redacted] DH

Laboratory Analytical Method(s):

TO-15 SIM for VOCs [redacted] DH *

Sampler Signature: David J Hodson

* Add leak detection gas

CH2MHILL

SUMMA Canister Sampling Log

Location ID: WI-03	Date: 12SEP06
Project No.: 339175.EN.01	Project or Client: CH2M HILL / IWP
Field Crew: DAVID HODSON	Location Address/Description:

Sampling System

Canister Serial No.: 1375	Other Info:
Canister Certification Date: 5SEP06	
Canister Leak Check Date: 5SEP06	
Flow Controller Serial No.: 2035	
Associated Duplicate Location ID (if applicable): NA	

Sampling Log

Parameter	Start	Stop
Local Time	807	1607
Label Dummy Time for Label	807	1607
Canister Pressure (in Hg)	-30	-8
Ambient Temperature	75	92
Flow Rate (mL/min)	12.5	12.5

Observations and Comments:

[redacted] DH

Laboratory Analytical Method(s):

TO-15 SIM for VOCs + [redacted] DH

Sampler Signature: David J Hodson

* Add leak detection gas

CH2MHILL

SUMMA Canister Sampling Log

Location ID: WI-04	Date: 12 SEP 06
Project No.: 339175.EN.01	Project or Client: 1404 IWP Superfund
Field Crew: DAVID HODSON	Location Address/Description:

Sampling System

Canister Serial No.: 1404	Other Info:
Canister Certification Date: 5 SEP 06	
Canister Leak Check Date: 5 SEP 06	
Flow Controller Serial No.: 2017	
Associated Duplicate Location ID (if applicable): NA	

Sampling Log

Parameter	Start	Stop
Local Time	0810	1610
Label Dummy Time for Label	0810	1610
Canister Pressure (in Hg)	-30	-10
Ambient Temperature °F	75	92
Flow Rate (mL/min)	12.5	12.5

Observations and Comments:

~~Spray side with "Duster off" (1,1,1,2-tetrafluoroethane)~~ DH

Laboratory Analytical Method(s):

TO-15 SIM for VOCs + ~~1,1,1,2-tetrafluoroethane~~ DH

Sampler Signature: David J Hodson

* Add leak detection gas

CH2MHILL

SUMMA Canister Sampling Log

Location ID: DW - 01	Date: 13SEP06
Project No.: 339175.EN.01	Project or Client: IWP Superfund
Field Crew: DAVID HODSON	Location Address/Description:

Sampling System

Canister Serial No.: 1353	Other Info:
Canister Certification Date: 5SEP06	
Canister Leak Check Date: 5SEP06	
Flow Controller Serial No.: NA	
Associated Duplicate Location ID (if applicable): DW-02	

Sampling Log

Parameter	Start	Stop
Local Time	0800	0802
Label Dummy Time for Label	—	—
Canister Pressure (in Hg)	-30	0
Ambient Temperature	76	76
Flow Rate (mL/min)	3000	3000

Observations and Comments:

"Dust-off" (1,1 difluoroethane) sprayed for leak detection

Laboratory Analytical Method(s):

TO-15 SIM for VOCs + 1,1 difluoroethane *

Sampler Signature: David Hodson

* Add leak detection gas

CH2MHILL

SUMMA Canister Sampling Log

Location ID: DW-02	Date: 13 SEP 06
Project No.: 339175.EN.01	Project or Client: IWP Superfund
Field Crew: DAVID HODSON	Location Address/Description:

Sampling System

Canister Serial No.: 1373	Other Info:
Canister Certification Date: 5 SEP 06	
Canister Leak Check Date: 5 SEP 06	
Flow Controller Serial No.: NA	
Associated Duplicate Location ID (if applicable): DW-01	

Sampling Log

Parameter	Start	Stop
Local Time	0800	0802
Label Dummy Time for Label	—	—
Canister Pressure (in Hg)	-30	0
Ambient Temperature	76	76
Flow Rate (mL/min)	3000	3000

Observations and Comments:

"Dust-off" (1,1 difluoro ethane) sprayed for leak detection

Laboratory Analytical Method(s):

TO-15 SIM for VOCs + 1,1 difluoro ethane *

Sampler Signature: David J Hodson

* Add leak detection gas

Location FRESNO, CA Date 12SEP06

Project / Client IWP Superfund
339175.EN.01

CH2M HILL: DAVID HODSON

645: ARRINE AT IWP SITE (7140 N. HARRISON)
REVIEW HSP FOR INDOOR AIR SAMPLING
700: PREP SUMMA CANISTERS
800: PLACE SUMMA CANISTERS ACCORDING
TO WORK PLAN - NO DEVIATIONS
845: DEPART SITE
1500 - RETURN TO SITE; CONDUCT SECOND SOURCE
SURVEY OF SITE. LISTED BELOW ARE
NOTEWORTHY CHEMICALS INVENTORIED:
5 gallon drums - Acetone (3)
- Black Enamal (1)
- Oily waste (1)
1 gallon cans - Water based paint (20) - Aquater
- Marsh K - Solvent (1)
Spray paint (Krylon) (20)
Lacquer
Motor Oil - 1L (5)
Spray cans - Solvent (Weld - Aid Product)
- No Methylene Chloride
- Nozzle Kleen
- LPS - Gold Galvanize
Weed Killer

Location FRESNO, CA Date 12SEP06

Project / Client IWP SUPERFUND
339175.EN.01

1600 - COMPLETE 8 HR AIR SAMPLES
DATA RECORDED ON FIELD SHEETS
1630 - SET UP WELL HEAD SAMPLE
ASSEMBLY. NOT PERFECT FIT.
HAD TO USE ALOT OF PACKAGING
TAPE. WELL WAS ≈ 4-IN STEEL
ID. SET UP ACCORIDING TO
PLAN
1700 - OFFSITE

13SEP06

CH2M HILL: DAVID HODSON

730 - ARRIVE AT SITE
800 - COLLECT SAMPLES DW-01 AND
DW-02 FROM WELLHEAD. SPRAY
"DUST-OFF" (1,1 difluoroethane) FOR
LEAK DETECTION. VALVE OPENED
FOR LESS THAN 2 MIN. PRESSURE
CHECKED WITH GAUGE.
830 - OFFSITE

Attachment B
Chain of Custody Form

CHAIN OF CUSTODY RECORD

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130
City of Industry, CA 91748
626-964-4032 • Fax: 626-964-5832

Project Name: IWP SUPERFUND

Project #: 339175.EN.01

P.O. #:

FOR LABORATORY USE ONLY

Method of Transport: Walk-in ☐ Courier ☐ UPS ☐ FedEx ☒ ATL ☐

Sample Condition Upon Receipt
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Company: CH2M HILL
Address: 155 GRAND AVE SUITE 1000
TEL: (510) 251-2426
Contact: CAROLINE ZIEGLER
City OAKLAND State CA Zip Code 94612
FAX: ( )

Sampled/Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
David J Hodson DAVID HODSON	12SEP06	0815			
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:

DAVID HODSON 13SEP06
Project Mgr./Submitter (Print Name) Date
David J Hodson
Signature

Send Report To:
Attn: CAROLINE ZIEGLER
Co:
Address
City State Zip

Bill To:
Attn:
Co:
Address
City State Zip

Special Instructions/Comments:

Unless otherwise requested, all samples will be disposed 14 days after reporting or at Lab's discretion.

Sample Archive/Disposal:
☐ Laboratory Standard
☐ Other
☐ Return To:
* $10.00 FEE PER HAZARDOUS SAMPLE DISPOSAL.

Circle or Add Analysis(es) Requested

CIRCLE APPROPRIATE MATRIX

DELIVERABLES: EDD ☐ LEVEL III ☐ LEVEL IV ☐

LAB USE ONLY	Sample Description			T03 Gas / BTEX / MTBE	T03 Hexane	T03 Carbon Chain	TO14A VOCs	TO15 VOCs Std or Low Level	15/16 Sulfur Comp Std/Low Level	15/16 H_2S Std or Low Level	Fixed Gas D1946 or 3C	25C/3C TNMOC	25.1 TGNMHC	D1945 Natural Gas	RSK 175 Dissolved Gas	1,1 Difluoroethane	AIR • VAPOR	INDOOR AIR	LANDFILL GAS	WATER	SOLID • SOIL	OIL • SOLVENT • LIQUID	OTHER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
Lab No.	Sample I.D.	Date	Time																								
	AA-01	9.12.06	0750																					E	1	C	N	
	AA-02	9.12.06	0815																					E	1	C	N	
	WI-01	9.12.06	0810																					E	1	C	N	
	WI-02	9.12.06	0810																					E	1	C	N	
	WI-03	9.12.06	0807																					E	1	C	N	
	WI-04	9.12.06	0810																					E	1	C	N	
	DW-01	9.13.06	0800																					E	1	C	N	
	DW-02	9.13.06	0800																					E	1	C	N	
	TB-01	9.12.06	0000																					E	1	C	N	

• TAT starts 8 a.m. following day if samples received after 5 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: B=Tedlar Bag C=Canister V=VOA O= Other

Preservatives: H=Hcl N=None

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

Attachment C
Laboratory Report

AirTECHNOLOGY
Laboratories, Inc.

October 2, 2006

Cert. #E87847

CH2M Hill
ATTN: Vikki Taylor
155 Grand Ave., Suite 1000
Oakland, CA 94612

LABORATORY TEST RESULTS

Project Reference: IWP Superfund, 339175.EN.01
Lab Number: A6091505-01/09

Enclosed are results for sample(s) received 9/15/06 by Air Technology Laboratories. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Sample analyses were performed within method performance criteria and meet all requirements of the NELAC Standards.
- All results are reported without qualifications.

Results were e-mailed to Caroline Ziegler, Vikki Taylor and Travis Cain (EPA) on 9/29/06.

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Enclosures

Note: The cover letter is an integral part of this analytical report.

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

- ORIGINAL - **CHAIN OF CUSTODY RECORD** - ORIGINAL - Pg 1 of 1

AIR TECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130
City of Industry, CA 91748
626-964-4032 • Fax: 626-964-5832

Project Name: IWP SUPERFUND
Project #: 339175.EN.01
P.O. #:

FOR LABORATORY USE ONLY

Method of Transport: Walk-in ☐ Courier ☐ UPS ☐ FedEx ☒ ATL ☐

Sample Condition Upon Receipt:
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Company: CH2M HILL
Address: 155 GRAND AVE SUITE 1000
TEL: (510) 251-2426
Contact: CAROLINE ZIEGLER
City OAKLAND State CA Zip Code 94612
FAX: ( )

	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Sampled/Relinquished by: (Signature and Printed Name) DAVID HODSON	12SEP06	0815		9/14/06	10:55
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
DAVID HODSON (Project Mgr./Submitter (Print Name)) 13SEP06 (Date)
(Signature)

Send Report To:
Attn: CAROLINE ZIEGLER
Co:
Address
City State Zip

Bill To:
Attn:
Co:
Address
City State Zip

Special Instructions/Comments:

Unless otherwise requested, all samples will be disposed 14 days after reporting or at Lab's discretion.

Sample Archive/Disposal:
☐ Laboratory Standard
☐ Other
☐ Return To:
* $10.00 FEE PER HAZARDOUS SAMPLE DISPOSAL.

Circle or Add Analysis(es) Requested

CIRCLE APPROPRIATE MATRIX: AIR • VAPOR | INDOOR AIR | LANDFILL GAS | WATER | SOLID • SOIL | OIL • SOLVENT • LIQUID | OTHER

DELIVERABLES: EDD ☐ LEVEL III ☐ LEVEL IV ☐

LAB USE ONLY	Sample Description			T03 Gas / BTEX / MTBE	T03 Hexane	T03 Carbon Chain	TO14A VOCs	TO15 VOCs Std or Low Level	15/16 Sulfur Comp Std/Low Level	15/16 HaS Std or Low Level	Fixed Gas D1946 or 3C	25C/3C TNMOC	25.1 TGNMHC	D1945 Natural Gas	RSK 175 Dissolved Gas	1,1 dichloroethane	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
Lab No.	Sample I.D.	Date	Time																		
A6091505-01	AA-01	9.12.06	0750														E	1	C	N	
-02	AA-02	9.12.06	0815														E	1	C	N	
-03	WI-01	9.12.06	0810														E	1	C	N	
-04	WI-02	9.12.06	0810														E	1	C	N	
-05	WI-03	9.12.06	0807														E	1	C	N	
-06	WI-04	9.12.06	0810														E	1	C	N	
-07	DUP-01	9.12.06	0800														E	1	C	N	
-08	DW-02	9.12.06	0800														E	1	C	N	
-09	TB-01	9.12.06	0000														E	1	C	N	

• TAT starts 8 a.m. following day if samples received after 5 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: B=Tedlar Bag C=Canister V=VOA O= Other

Preservatives: H=Hcl N=None

DISTRIBUTION: White with report, Yellow to folder, Pink to submitter.

EPA TO15
SIM Mode

Client:	CH2M Hill		
Lab Sample:	A6091505-01	**Date Collected:**	09/12/06
Client Sample:	AA-01	**Date Received:**	09/14/06
Project Name:	IWP Superfund	**QC Batch:**	060925MS2A1
Project #:	#339175.EN.01	**Sample Type:**	SA

Analyte	Result (ug/m3)	RL (ug/m3)	Date Analyzed	Dilution Factor
Vinyl Chloride	ND	0.026	09/25/06	1.0
1,1-Dichloroethene	ND	0.040	09/25/06	1.0
1,1-Dichloroethane	ND	0.040	09/25/06	1.0
cis-1,2-Dichloroethene	ND	0.040	09/25/06	1.0
1,1,1-Trichloroethane	0.13	0.054	09/25/06	1.0
Trichloroethene	0.053	0.016	09/25/06	1.0
Tetrachloroethene	0.29	0.068	09/25/06	1.0

RL = Reporting Limit
ND = Not detected above RL

The cover letter is an intergral part of this report

AirTECHNOLOGY *Laboratories, Inc.*
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

EPA TO15
SIM Mode

Client:	CH2M Hill		
Lab Sample:	A6091505-02	**Date Collected:**	09/12/06
Client Sample:	AA-02	**Date Received:**	09/14/06
Project Name:	IWP Superfund	**QC Batch:**	060925MS2A1
Project #:	#339175.EN.01	**Sample Type:**	SA

Analyte	Result (ug/m3)	RL (ug/m3)	Date Analyzed	Dilution Factor
Vinyl Chloride	ND	0.026	09/25/06	1.0
1,1-Dichloroethene	ND	0.040	09/25/06	1.0
1,1-Dichloroethane	ND	0.040	09/25/06	1.0
cis-1,2-Dichloroethene	ND	0.040	09/25/06	1.0
1,1,1-Trichloroethane	0.14	0.054	09/25/06	1.0
Trichloroethene	0.065	0.016	09/25/06	1.0
Tetrachloroethene	2.0	0.068	09/25/06	1.0

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EPA TO15
SIM Mode

Client:	CH2M Hill		
Lab Sample:	A6091505-03	**Date Collected:**	09/12/06
Client Sample:	WI-01	**Date Received:**	09/14/06
Project Name:	IWP Superfund	**QC Batch:**	060925MS2A1
Project #:	#339175.EN.01	**Sample Type:**	SA

Analyte	Result (ug/m3)	RL (ug/m3)	Date Analyzed	Dilution Factor
Vinyl Chloride	ND	0.026	09/25/06	1.0
1,1-Dichloroethene	ND	0.040	09/25/06	1.0
1,1-Dichloroethane	ND	0.040	09/25/06	1.0
cis-1,2-Dichloroethene	ND	0.040	09/25/06	1.0
1,1,1-Trichloroethane	0.12	0.054	09/25/06	1.0
Trichloroethene	0.055	0.016	09/25/06	1.0
Tetrachloroethene	7.1	0.068	09/25/06	1.0

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18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

EPA TO15
SIM Mode

Client:	CH2M Hill		
Lab Sample:	A6091505-03Dup	**Date Collected:**	09/12/06
Client Sample:	WI-01	**Date Received:**	09/14/06
Project Name:	IWP Superfund	**QC Batch:**	060925MS2A1
Project #:	#339175.EN.01	**Sample Type:**	SA

Analyte	Result (ug/m3)	RL (ug/m3)	Date Analyzed	Dilution Factor
Vinyl Chloride	ND	0.026	09/25/06	1.0
1,1-Dichloroethene	ND	0.040	09/25/06	1.0
1,1-Dichloroethane	ND	0.040	09/25/06	1.0
cis-1,2-Dichloroethene	ND	0.040	09/25/06	1.0
1,1,1-Trichloroethane	0.12	0.054	09/25/06	1.0
Trichloroethene	0.056	0.016	09/25/06	1.0
Tetrachloroethene	7.0	0.068	09/25/06	1.0

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EPA TO15
SIM Mode

Client:	CH2M Hill		
Lab Sample:	A6091505-04	**Date Collected:**	09/12/06
Client Sample:	WI-02	**Date Received:**	09/14/06
Project Name:	IWP Superfund	**QC Batch:**	060925MS2A1
Project #:	#339175.EN.01	**Sample Type:**	SA

Analyte	Result (ug/m3)	RL (ug/m3)	Date Analyzed	Dilution Factor
Vinyl Chloride	ND	0.026	09/25/06	1.0
1,1-Dichloroethene	ND	0.040	09/25/06	1.0
1,1-Dichloroethane	ND	0.040	09/25/06	1.0
cis-1,2-Dichloroethene	ND	0.040	09/25/06	1.0
1,1,1-Trichloroethane	0.12	0.054	09/25/06	1.0
Trichloroethene	0.065	0.016	09/25/06	1.0
Tetrachloroethene	6.9	0.068	09/25/06	1.0

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EPA TO15
SIM Mode

Client:	CH2M Hill		
Lab Sample:	A6091505-05	**Date Collected:**	09/12/06
Client Sample:	WI-03	**Date Received:**	09/14/06
Project Name:	IWP Superfund	**QC Batch:**	060925MS2A1
Project #:	#339175.EN.01	**Sample Type:**	SA

Analyte	Result (ug/m3)	RL (ug/m3)	Date Analyzed	Dilution Factor
Vinyl Chloride	ND	0.026	09/25/06	1.0
1,1-Dichloroethene	ND	0.040	09/25/06	1.0
1,1-Dichloroethane	ND	0.040	09/25/06	1.0
cis-1,2-Dichloroethene	ND	0.040	09/25/06	1.0
1,1,1-Trichloroethane	0.094	0.054	09/25/06	1.0
Trichloroethene	0.18	0.016	09/25/06	1.0
Tetrachloroethene	7.3	0.068	09/25/06	1.0

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EPA TO15
SIM Mode

Client:	CH2M Hill		
Lab Sample:	A6091505-06	**Date Collected:**	09/12/06
Client Sample:	WI-04	**Date Received:**	09/14/06
Project Name:	IWP Superfund	**QC Batch:**	060925MS2A1
Project #:	#339175.EN.01	**Sample Type:**	SA

Analyte	Result (ug/m3)	RL (ug/m3)	Date Analyzed	Dilution Factor
Vinyl Chloride	ND	0.026	09/25/06	1.0
1,1-Dichloroethene	ND	0.040	09/25/06	1.0
1,1-Dichloroethane	ND	0.040	09/25/06	1.0
cis-1,2-Dichloroethene	ND	0.040	09/25/06	1.0
1,1,1-Trichloroethane	0.10	0.054	09/25/06	1.0
Trichloroethene	0.032	0.016	09/25/06	1.0
Tetrachloroethene	0.29	0.068	09/25/06	1.0

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ND = Not detected above RL

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EPA TO15
SIM Mode

Client:	CH2M Hill		
Lab Sample:	A6091505-07	**Date Collected:**	09/13/06
Client Sample:	DW-01	**Date Received:**	09/14/06
Project Name:	IWP Superfund	**QC Batch:**	060925MS2A1
Project #:	#339175.EN.01	**Sample Type:**	SA

Analyte	Result (ug/m3)	RL (ug/m3)	Date Analyzed	Dilution Factor
Vinyl Chloride	ND	0.026	09/25/06	1.0
1,1-Dichloroethene	ND	0.040	09/25/06	1.0
1,1-Dichloroethane	0.62	0.040	09/25/06	1.0
cis-1,2-Dichloroethene	0.77	0.040	09/25/06	1.0
1,1,1-Trichloroethane	0.58	0.054	09/25/06	1.0
Trichloroethene	1.0	0.016	09/25/06	1.0
Tetrachloroethene	37	0.068	09/25/06	1.0

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ND = Not detected above RL

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EPA TO15
SIM Mode

Client:	CH2M Hill		
Lab Sample:	A6091505-08	**Date Collected:**	09/13/06
Client Sample:	DW-02	**Date Received:**	09/14/06
Project Name:	IWP Superfund	**QC Batch:**	060925MS2A1
Project #:	#339175.EN.01	**Sample Type:**	SA

Analyte	Result (ug/m3)	RL (ug/m3)	Date Analyzed	Dilution Factor
Vinyl Chloride	ND	0.026	09/25/06	1.0
1,1-Dichloroethene	ND	0.040	09/25/06	1.0
1,1-Dichloroethane	0.46	0.040	09/25/06	1.0
cis-1,2-Dichloroethene	0.57	0.040	09/25/06	1.0
1,1,1-Trichloroethane	0.54	0.054	09/25/06	1.0
Trichloroethene	0.93	0.016	09/25/06	1.0
Tetrachloroethene	32	0.068	09/25/06	1.0

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ND = Not detected above RL

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EPA TO15
SIM Mode

Client:	CH2M Hill		
Lab Sample:	A6091505-09	**Date Collected:**	09/12/06
Client Sample:	TB-01	**Date Received:**	09/14/06
Project Name:	IWP Superfund	**QC Batch:**	060925MS2A1
Project #:	#339175.EN.01	**Sample Type:**	SA

Analyte	Result (ug/m3)	RL (ug/m3)	Date Analyzed	Dilution Factor
Vinyl Chloride	ND	0.026	09/25/06	1.0
1,1-Dichloroethene	ND	0.040	09/25/06	1.0
1,1-Dichloroethane	ND	0.040	09/25/06	1.0
cis-1,2-Dichloroethene	ND	0.040	09/25/06	1.0
1,1,1-Trichloroethane	ND	0.054	09/25/06	1.0
Trichloroethene	ND	0.016	09/25/06	1.0
Tetrachloroethene	ND	0.068	09/25/06	1.0

RL = Reporting Limit
ND = Not detected above RL

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EPA TO15
SIM Mode

Client:	CH2M Hill		
Lab Sample:	Method Blank	**Date Collected:**	NA
Client Sample:		**Date Received:**	NA
Project Name:	IWP Superfund	**QC Batch:**	060925MS2A1
Project #:	#339175.EN.01	**Sample Type:**	Method Blank

Analyte	Result (ug/m3)	RL (ug/m3)	Date Analyzed	Dilution Factor
Vinyl Chloride	ND	0.026	09/25/06	1.0
1,1-Dichloroethene	ND	0.040	09/25/06	1.0
1,1-Dichloroethane	ND	0.040	09/25/06	1.0
cis-1,2-Dichloroethene	ND	0.040	09/25/06	1.0
1,1,1-Trichloroethane	ND	0.054	09/25/06	1.0
Trichloroethene	ND	0.016	09/25/06	1.0
Tetrachloroethene	ND	0.068	09/25/06	1.0

RL = Reporting Limit
ND = Not detected above RL

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Client: CH2M Hill
Attn: Caroline Ziegler

Client's Project: IWP Superfund, #339175.EN.01
Date Received: 09/14/06
Matrix: Air
Units: ppbv

EPA Method TO15

Lab No:		A6091505-07		A6091505-08							
Client Sample I.D.:		DW-01		DW-02							
Date Sampled:		09/13/06		09/13/06							
Date Analyzed:		09/27/06		09/27/06							
QC Batch No:		060927MS2A1		060927MS2A1							
Analyst Initials:		JM		JM							
Dilution Factor:		0.20		0.20							
ANALYTE	PQL	Result	RL	Result	RL						
1,1-Difluoroethane	5.0	20	1.0	3.2	1.0						

PQL = Practical Quantitation Limit
ND= Not Detected (below RL)
RL = PQL X Dilution Factor

Reviewed/Approved By: _____ Date 9/29/06
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 060925MS2A1

Matrix: Air

EPA Method TO-15 SIM

Lab No:	Method Blank		LCS		LCSD						
Date Analyzed:	09/25/06		09/25/06		09/25/06						
Data File ID:	25SEP005.D		25SEP003.D		25SEP004.D						
Analyst Initials:	JM		JM		JM						
Dilution Factor:	1.0		1.0		1.0			Limits			
ANALYTE	Result pptv	Spike Amount	Result pptv	% Rec	Result pptv	% Rec	RPD	Low %Rec	High %Rec	Max. RPD	Pass/ Fail
Vinyl Chloride	0.0	500	620.1	124	621.4	124	0.2	75	125	30	Pass
1,1-Dichloroethene	0.0	500	536.6	107	537.8	108	0.2	75	125	30	Pass
1,1-Dichloroethane	0.0	500	578.9	116	578.2	116	0.1	75	125	30	Pass
c-1,2-Dichloroethene	0.0	500	571.8	114	567.6	114	0.7	75	125	30	Pass
1,1,1-Trichloroethane	0.0	500	547.4	109	547.6	110	0.0	75	125	30	Pass
Trichloroethene	1.1	500	546.8	109	544.6	109	0.4	75	125	30	Pass
Tetrachloroethene	0.0	500	528.7	106	529.0	106	0.1	75	125	30	Pass

RPD = Relative Percent Difference

Reviewed/Approved By: _____ Date: 9/29/06

Mark Johnson
Air Toxics Operations Manager

The cover letter is an integral part of this analytical report

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18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 060927MS2A1

Matrix: Air

EPA Method TO-14/TO-15

Lab No:	Method Blank		LCS		LCSD						
Date Analyzed:	09/27/06		09/27/06		09/27/06						
Data File ID:	27SEP008.D		27SEP003.D		27SEP004.D						
Analyst Initials:	JM		JM		JM						
Dilution Factor:	0.2		1.0		1.0			Limits			
ANALYTE	Result ppbv	Spike Amount	Result ppbv	% Rec	Result ppbv	% Rec	RPD	Low %Rec	High %Rec	Max. RPD	Pass/ Fail
1,1-Dichloroethene	0.0	10.0	10.7	107	10.8	108	0.7	70	130	30	Pass
Methylene Chloride	0.0	10.0	10.6	106	11.3	113	6.6	70	130	30	Pass
Trichloroethene	0.0	10.0	10.0	100	9.5	95	5.0	70	130	30	Pass
Toluene	0.0	10.0	9.6	96	9.6	96	0.5	70	130	30	Pass
1,1,2,2-Tetrachloroethane	0.0	10.0	10.2	102	10.0	100	2.2	70	130	30	Pass

RPD = Relative Percent Difference

Reviewed/Approved By: _____ Date: 9/27/06

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

GC/MS Raw Data Index
General Information

Conventions and Conversions

1 ppbv = 0.001 ppmv = 0.0000001% v/v
1% v/v = 10,000 ppmv = 10,000,000 ppbv

1 ug/m^3 = 1 ng/L = ppbv x MW/24.45
1 ug/L = 1 mg/m^3 = ppmv x MW/24.45

Where **MW** is the molecular weight of the compound and 24.45 is the molar volume of ideal gas at 1 atmosphere and 25° C.

1 atmosphere = 14.6 psia = 0 psig
30" Hg = 0 psia = -14.6 psig

Standard pressure is taken as 14.6 psia at Air Technology Labs' facility.

1. Supporting Documents

a. Pressurization log (if applicable)

b. ICAL run log

c. CCAL/QC/Samples run log

d. Miscellaneous documents

PRESSURIZATION LOGBOOK

	Date	Sample ID	Can #	Initial Pressure	Final Pressure	Dilution Gas	Dilution Gas Lot #	Initials	ERR #	Comments
1	9/15/06	A6091503-03	3574	7"	10 psig	N_2	100I605	AM	2509	
2		-04	3592	11"		N_2				
3		-05	3681	5.5"						
4		-06	1405	9"						
5		-07	1460	8.5"						
6		-08	5971	6.5"						
7		-09	1399	8"						
8		-10	5979	8.5"						
9		-11	4441	15"						
10		-12	3735	23"						
11		-13	3127	2.5"						
12		-14	3131	8.5"	33 psig					
13		-15	3163	6.5"	10 psig					
14	9/15/06	A6091505-01	1375	7.5"	10 psig	N_2	100I605	AM	2511	
15		-02	1378	10"						
16		-03	1353	1"	5 psig					
17		-04	1373	.5"						
18		-05	1442	4"						
19		-06	3579	5"						
20		-07	1354	5.5"						
21		-08	1407	4"						
22		-09	3744	29.5"						
23										
24										
25										
26										

GCMS Injection Logbook

Instrument ID: GCMS2
Analytical Method: TO150907
Datafile Directory: 050905

Chemist: JM
Blank Lot #: 104E506
IS/Surr Standard Code: AW65707

	Date	Time	Data File	Lab Number/ Standard Type	Client/ Std Code	Sample Volume	Press. Dilution	Sample dilution	DF	Line #	Status	Comments	QC Batch
1	9/8/05	14:21	08SEP009	A5090702-01	K2M	50ml	—	—	1.0	9	OKY		050908MS2A1
2	"	14:54	010	A5090703-01	K2M	50ml	"	"	1.0	10	OKY		"
3	"	15:27	011	A5090701-01	Arcadis	50ml	"	"	1.0	11	OKY		"
4	"	16:01	012	" -02	↓	35ml	"	"	1.429	12	U/R	Y.Y. 50ml	"
5	"	16:41	013	↓ -02	↓	50ml	"	"	1.0	12	OKY		"
6	"	17:15	014	250ppbv LCS Std	—	125ml	(100ppbv)	"	1.0	9	OKY		"
7	"	17:50	015	Screen Blank	#1346	250ml	"	"	1.0	2	NOY		"
8	"	18:28	016	Screen Blank	#1346	250ml	"	"	1.0	2	OKY		"
9	"	19:06	017	Method Blank	#024180	250ml	"	"	1.0	7	OKY		"
10	"	19:44	018	5ppbv SIM Std	AW66712	50ml	"	"	1.0	1	NOY	C/O	"
11	"	20:22	019	20ppbv SIM Std	AW66712	200ml	"	"	1.0	1	NOY		"
12	"	21:00	020	200ppbv SIM Std	AW65019	50ml	"	"	1.0	3	OKY		"
13	"	21:39	021	500ppbv SIM Std	AW65019	125ml	"	"	1.0	3	OKY		"
14	"	22:17	022	2000ppbv SIM Std	AW67111	50ml	"	"	1.0	B	OKY		"
15	"	22:55	023	10ppbv SIM Std	AW67111	250ml	"	"	1.0	B	OKY		"
16	↓	23:33	024	Blank	#024180	250ml	↓	↓	1.0	7	OKY		↓
17	9/9/05	09:09	09SEP001	BFB	AW66711	50ml	—	—	1.0	16	OKY		050909MS2A1
18	"	09:42	002	TO15 Shift Check	AW67111	50ml	"	"	1.0	B	OKY		"
19	"	10:16	003	LCS	AW66713	50ml	"	"	1.0	C	OKY		"
20	↓	10:49	004	LCSD	AW66713	50ml	↓	↓	1.0	C	OKY		↓

Approved by/Date:_____
Logbook #12

Instrument ID: GCMS2

Analytical Method: T0150907

Datafile Directory: 050907

GCMS Injection Logbook

Chemist: JM

Blank Lot #: 104E506

IS/Surr Standard Code: AW65707

	Date	Time	Data File	Lab Number/ Standard Type	Client/ Std Code	Sample Volume	Press. Dilution	Sample dilution	DF	Line #	Status	Comments	QC Batch
1	9/9/05	11:24	09SEP005	Method Blank	#7143	250ml	—	—	0.2	8	OKY		050909MS2A1
2	↓	11:58	006	Screen Blank	#1290	250ml	↓	↓	0.2	6	OKY		↓
3		12:32	007	5ppbv SIM Std	AW66712	50ml			1.0	7	NOY	} Std 6 TCE.	
4		13:10	008	20ppbv SIM Std	AW66712	200ml		↓	1.0	7	NOY	} reprepare std.	
5		13:48	009	A5090901-01	Del Mar	50ml		800/1	800	11	OKY		
6		14:21	010	↓ -02	↓	50ml		—	1.0	12	OKY		
7		15:03	011	A5090902-01	CRA	50ml		↓	1.0	10	OKY		
8		15:36	012	A5082601-02	ASA	50ml		1000/1	1000	11	OKY	MTBE Confirmation only	
9		16:08	013	↓ -05	↓	50ml		1000/0.5	2000	12	OKY	↓	
10		16:41	014	5ppbv SIM Std	AW67618	25ml		—	1.0	7	OKY		
11		17:19	015	20ppbv SIM Std	AW67618	100ml		↓	1.0	7	OKY		
12		17:57	016	50ppbv SIM Std	AW67618	250ml			1.0	7	NOY	valve closed	
13		18:34	017	50ppbv SIM Std	AW67618	250ml		↓	1.0	7	OKY		
14		19:11	018	A5090903-01	Del Mar	50ml		1000/20	50	1	NOY	U/R r.r. ux	
15		19:44	019	↓ -02	↓	50ml		—	1.0	2	OKY		
16		20:17	020	A5090904-01	Del Mar	50ml		1000/50	20	3	NOY	U/R r.r. 2.5x	
17			021	↓ -02	↓	50ml		—	1.0	4			
18			022	A5090905-01	Del Mar			↓	1.0	5			
19			023	↓ -02	↓				1.25	6			
20	↓		024	↓ -03	↓		↓	↓	1.0	7			↓

Approved by/Date:_____

Logbook #12

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GCMS Injection Logbook

Instrument ID: GCMS2
Analytical Method: T0060919
Datafile Directory: 060925 4pm. 9/25/06, SIM0909.AD

Chemist: JM
Blank Lot #: 100I605
IS/Surr Standard Code: AW73817

	Date	Time	Data File	Lab Number/ Standard Type	Client/ Std Code	Sample Volume	Press. Dilution	Sample dilution	DF	Line #	Status	Comments	QC Batch
1	9/25/06	09:33	25sep001	BFB	AW73605	50ml	—	—	1.0	16	OKY		060925MS241
2		10:07	002	SIM Shift Check	AW73713	125ml			1.0	1	OKY		
3		10:46	003	LCS	AW73714	125ml			1.0	2	OKY		
4		11:24	004	LCSD	AW73714	125ml			1.0	2	OKY		
5		12:02	005	Method Blank	*5961	250ml			0.2	3	OKY		
6		13:00	006	A6091505-01	CHEMHILL	~~500~~ 632ml	19.6/10.95		1.0	1	OKY		
7		13:47	007	-02	4pm 9/25/06	~~500~~ 632ml	19.6/9.73		1.0	2	OKY		
8		14:24	008	-03		347ml	19.6/14.11		1.0	3	OKY		
9		15:02	009	-~~03~~ dup		342ml	19.6/14.11		1.0	3	OKY		
10		15:39	010	-04		344ml	19.6/14.36		1.0	4	OKY		
11		16:18	011	-05		387ml	19.6/12.65		1.0	5	OKY		
12		17:34	013	-06		443ml	19.6/12.17		1.0	6	OKY		
13		18:13	014	-07		411ml	19.6/11.92		1.0	7	OKY		
14		18:57	015	-08		387ml	19.6/12.65		1.0	8	OKY		
15		19:38 9/25/06	016	-09		250ml	—		1.0	9	OKY		
16	~~16:54~~ 4pm	16:54	012	Screen Blank	*1403	250ml			0.2	1	OKY		
17		20:05	017	BFB	AW73605	50ml			1.0	16	OKY		
18		20:38	018	TO15 Shift Check	AW73811 4pm 9/25/06	50ml			1.0	B	OKY		
19		21:11	019	LCS	AW73465	50ml			1.0	C	OKY		
20		21:43	020	LCSD	AW73465	50ml			1.0	C	OKY		

Approved by/Date:_____
Logbook #13

Air Technology Laboratories

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GCMS Injection Logbook

Instrument ID: GCMS2
Analytical Method: T0060919, SIM
Datafile Directory: 060925

Chemist: JM
Blank Lot #: 100I605
IS/Surr Standard Code: AW73817

	Date	Time	Data File	Lab Number/ Standard Type	Client/ Std Code	Sample Volume	Press. Dilution	Sample dilution	DF	Line #	Status	Comments	QC Batch
1	9/27/06	01:40	26Sep028	Screen Blank	*3725	250ml	—	—	0.2	5	OK		060926MS2A1
2	↓	02:16	↓ 029	Screen Blank	*3126	250ml	↓	↓	0.2	6	OK?		↓
3	9/27/06	09:20	27Sep001	BFB	AW73605	50ml	—	—	1.0	16	OK		060927MS2A1
4		09:53	002	TO15 Shift Check	AW74205	50ml			1.0	B	OK		
5		10:26	003	LCS	AW74615	50ml			1.0	C	OK		
6		10:58	004	LCSD	AW74615	50ml			1.0	C	OK		
7		11:31	005	10ppbv 1,1-DFA	AW74819	50ml			1.0	1	OK		
8		12:04	006	1PPbv 1,1-DFA	AW74820	50ml			1.0	2	OK		
9		12:37	007	917PPbv TPH	AW74901	50ml			1.0	1	OK		
10		13:12	008	Method Blank	*5961	250ml		↓	0.2	5	OK		
11		13:45	009	A6092701-01	TestAmerica	50ml	↓	1000/5	200	1	OK		
12		14:18	010	A6092105-02	E.T.	50ml	246/473	-	2.527	2	OK		
13		14:51	011	A6092702-01	ATL	50ml	-	500/100	5.0	1	OK		
14		15:24	012	-02		50ml	↓	500/100	5.0	2	NO	bag C/O	
15		15:56	013	-03		25 50ml	40.1 9/27/06	-	2.0	3	OK		
16		16:29	014	-04		50ml	-	500/100	5.0	4	OK		
17		17:02	015	-05		50ml		-	1.0	5	OK		
18		17:35	016	↓ -02	↓	20ml		↓	2.5	3	OK		
19		18:09	017	A6092705-01	TestAmerica	50ml		1000/20	50	1	OK		
20	↓	18:43	↓ 018	A6092712-01	C. Jones	50ml	↓	1000/1	1000	2	OK		↓

Approved by/Date:_____
Logbook #13

Air Technology Laboratories

Instrument ID: GCMS2

Analytical Method: TO060919

Datafile Directory: 060925

GCMS Injection Logbook

Chemist: JM

Blank Lot #: 100I605

IS/Surr Standard Code: AW73817

	Date	Time	Data File	Lab Number/ Standard Type	Client/ Std Code	Sample Volume	Press. Dilution	Sample dilution	DF	Line #	Status	Comments	QC Batch
1	9/27/06	19:22	27Sep019	A609105-07	CH_2MHill	411ml	19.6/11.92	—	0.2	9	OKY		060927MS2A1
2		20:01	020	-08		387ml	19.6/0.65		0.2	10	OKY		
3		20:34	021	A6092204-01	KCWMD	50ml	246/6.893		3.611	7	OKY	F12 C/R r.r. 2.5x	
4		21:08	022	-02		50ml	246/6.57		3.744	8	OKY	F12 C/R r.r. 5x	
5		21:41	023	-03		50ml	246/7.057	900/60	52.29	6	Y/R	r.r. 5x	
6		22:17	024	Screen Blank	#03479	250ml	—	—	0.2	11	OKY		
7		22:53	025	Screen Blank	#3126	250ml			0.2	12	OKY		
8	9/28/06	09:28	28Sep001	BFB	AW7605	50ml	—	—	1.0	16	OKY		060928MS2A1
9		10:01	002	TO15 Shift Check	AW74205	50ml			1.0	B	OKY		
10		10:33	003	LCS	AW74615	50ml			1.0	C	OKY		
11		11:06	004	LCSD	AW74615	50ml			1.0	C	OKY		
12		11:42	005	Method Blank	#5961	250ml			0.2	6	Voy	leak	
13		12:18	006	Method Blank	#5961	250ml			0.2	7	OKY		
14		12:50	007	A6092702-04	ATL	25ml			2.0	1	OKY	PCE C/R	
15			008										
16			009										
17			010										
18													
19													
20													

Approved by/Date:_____

Logbook #13

Air Technology Laboratories

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2. Sample Raw Data

a. Results/Chromatograms/Spectra

GC/MS QA-QC Check Report

Tune File : D:\GCMSB\060925\25SEP002.D
Tune Time : 25 Sep 2006 10:07

Daily Calibration File : D:\GCMSB\060925\25SEP002.D

Daily cali. I.S. response
82802

File	Sample	Surrogate Recovery %	Internal Standard Responses
25SEP003	LCS	110	81865
25SEP004	LCSD	111	81037
25SEP005	Method Blank	109	80084
25SEP006	A6091505-01	118	77613
25SEP007	A6091505-02	118	79290
25SEP008	A6091505-03	127	76811
25SEP009	A6091505-03D	128	76990
25SEP010	A6091505-04	128	75544
25SEP011	A6091505-05	124	76315
25SEP013	A6091505-06	119	76656
25SEP014	A6091505-07	126	70151
25SEP015	A6091505-08	127	69442
25SEP016	A6091505-09	113	74095

surrogate recovery limits 70-130%
Internal standard response limits 50-150%

t - fails 12hr time check * - fails criteria
Created:Thu Sep 28 11:49:07 2006

Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP006.D Vial: 1
Acq On : 25 Sep 2006 13:00 Operator: JM
Sample : A6091505-01 CH2MHILL Inst : GC/MS 597
Misc : 561ml, 24.6/10.95 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 25 16:03 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

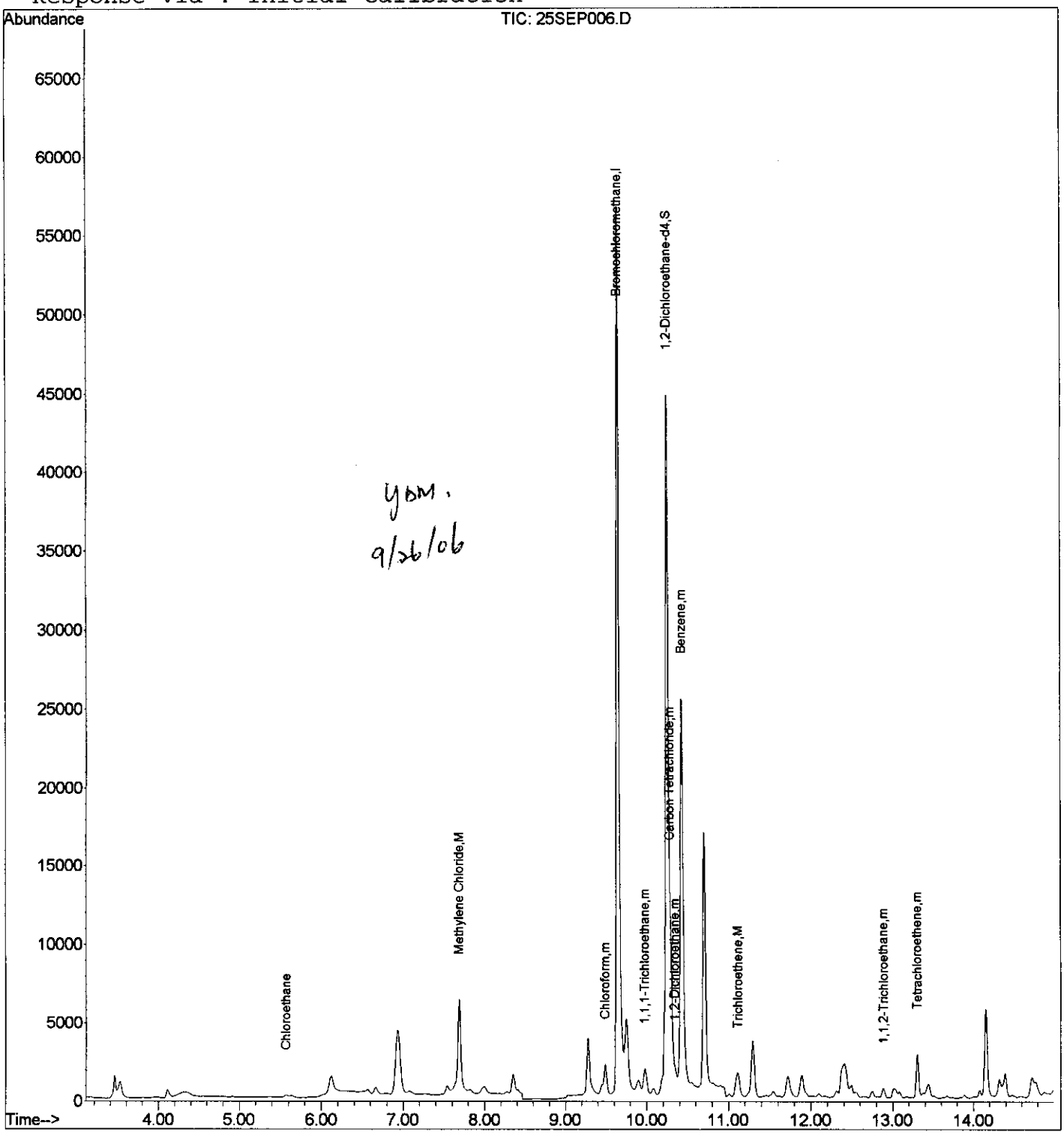
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	77613	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	110416	2362.31	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 118.12%				
Target Compounds							Qvalue
3) Chloroethane	5.57	64	266	21.07	ppbv	#	100
5) Methylene Chloride	7.69	49	5340	230.15	pptv		82
9) Chloroform	9.49	83	4176	58.81	pptv		97
10) 1,1,1-Trichloroethane	9.98	97	1749	23.39	pptv		98
12) 1,2-Dichloroethane	10.35	62	531	13.24	pptv	#	74
13) Carbon Tetrachloride	10.29	117	10702	127.51	pptv		98
14) Benzene	10.43	78	54067	415.73	pptv		91
15) Trichloroethene	11.12	130	527	9.80	pptv	#	44
16) 1,1,2-Trichloroethane	12.89	97	1380	29.10	pptv	#	17
17) Tetrachloroethene	13.31	166	3403	42.22	pptv		96

(#) = qualifier out of range (m) = manual integration

Quantitation Report

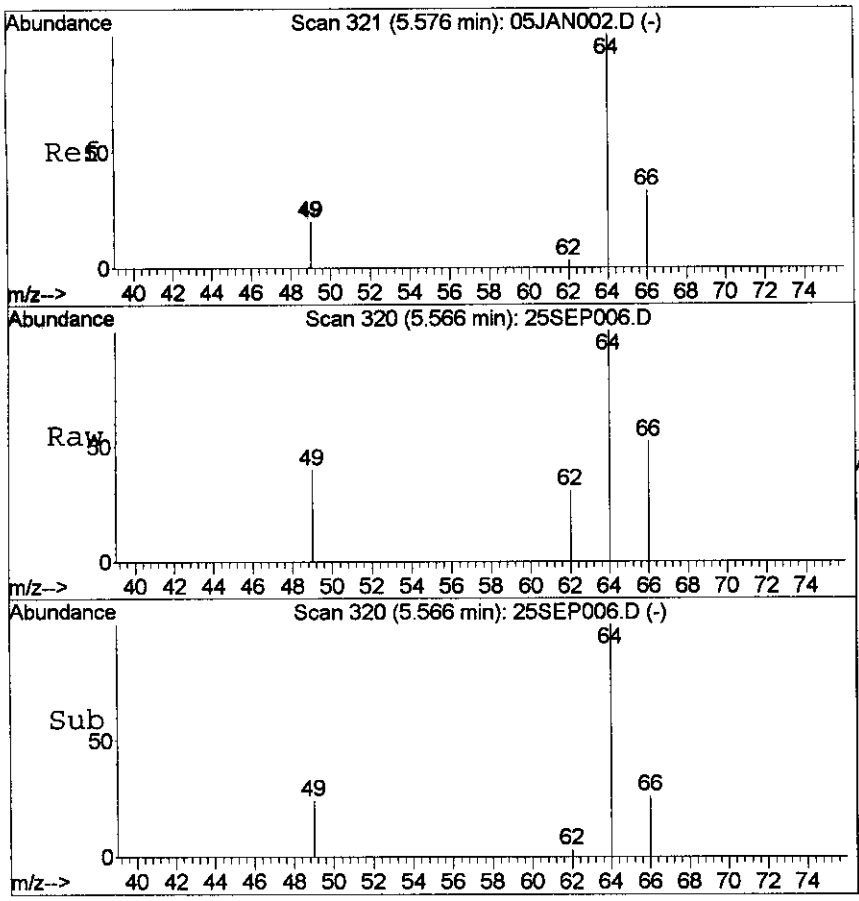
Data File : D:\GCMSB\060925\25SEP006.D Vial: 1
Acq On : 25 Sep 2006 13:00 Operator: JM
Sample : A6091505-01 CH2MHILL Inst : GC/MS 597
Misc : 561ml, 24.6/10.95 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 25 16:03 2006 Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



YBM.
9/26/06

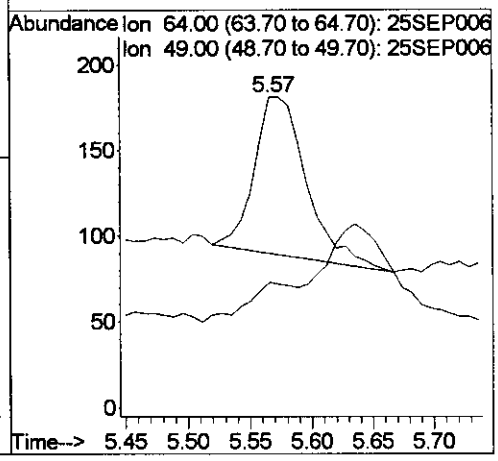
28

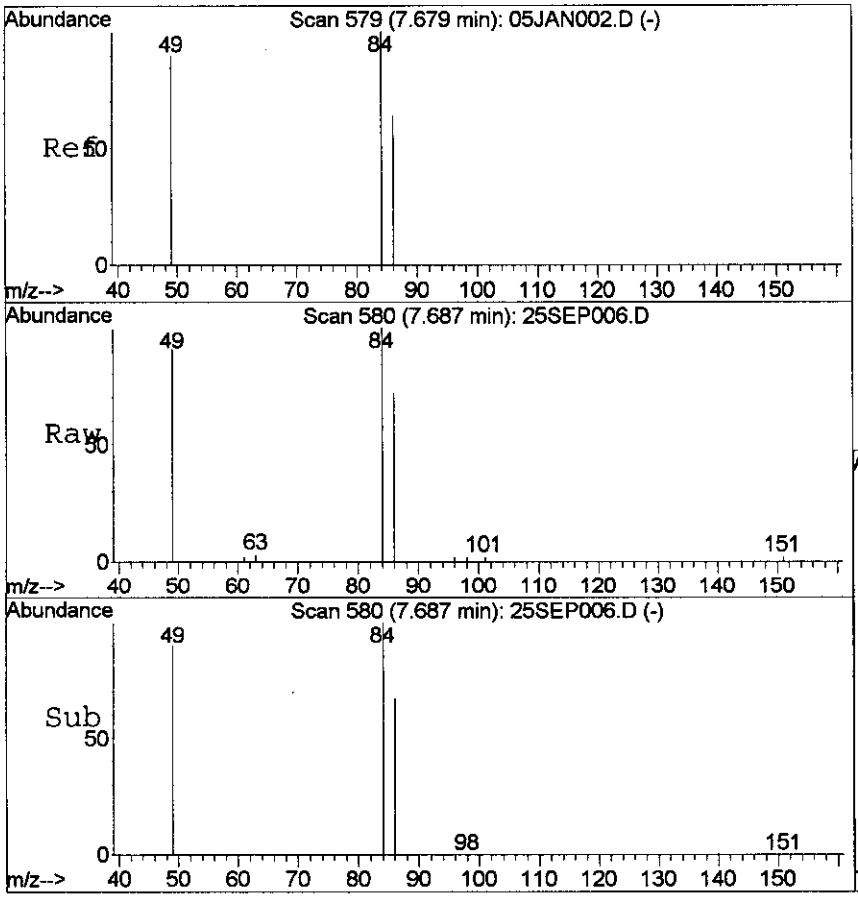


#3
Chloroethane
Concen: 21.07 ppbv
RT: 5.57 min Scan# 320
Delta R.T. -0.01 min
Lab File: 25SEP006.D
Acq: 25 Sep 2006 13:00

Tgt Ion: 64 Resp: 266

Ion	Ratio	Lower	Upper
64	100		
49	0.0	0.0	0.0

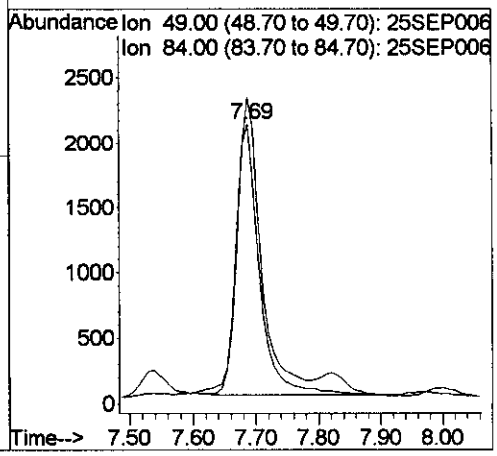


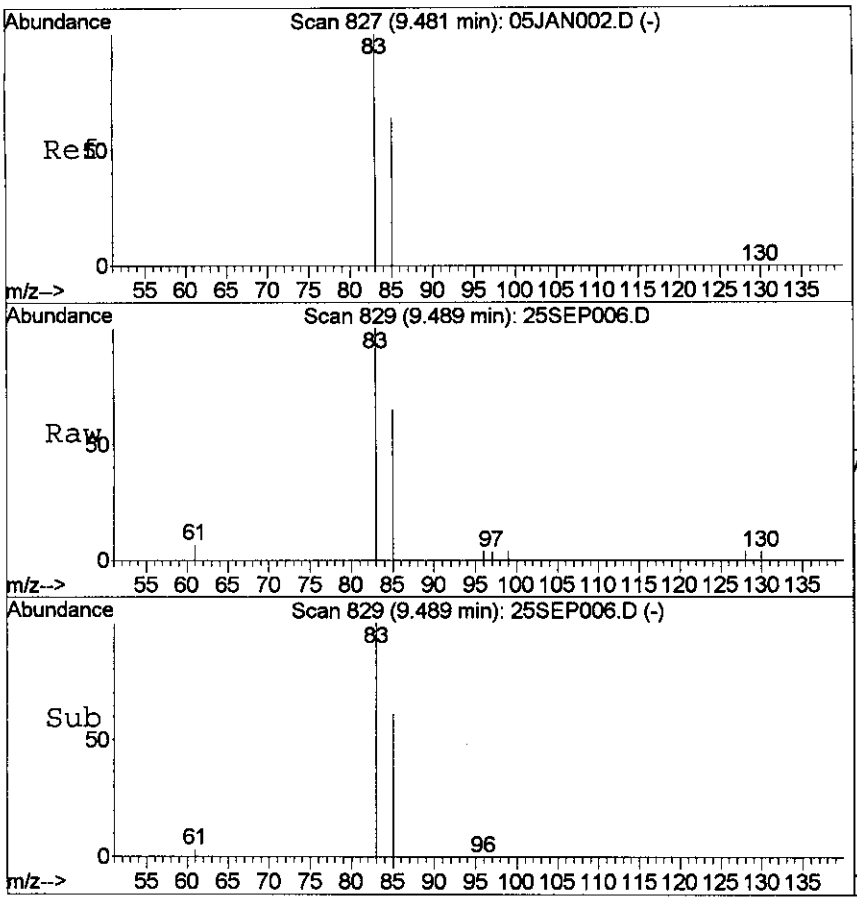


#5
Methylene Chloride
Concen: 230.15 pptv
RT: 7.69 min Scan# 580
Delta R.T. 0.01 min
Lab File: 25SEP006.D
Acq: 25 Sep 2006 13:00

Tgt Ion: 49 Resp: 5340

Ion	Ratio	Lower	Upper
49	100		
84	108.8	80.0	180.0

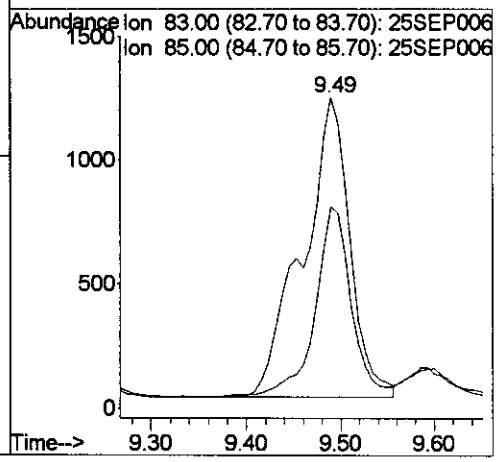


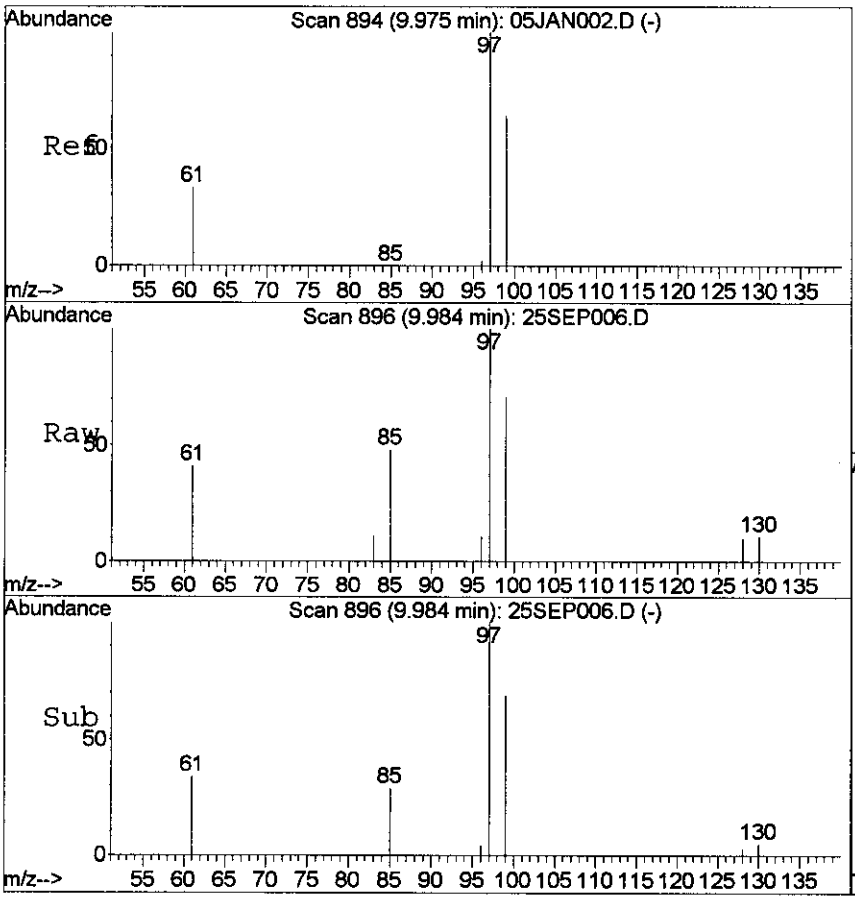


#9
Chloroform
Concen: 58.81 pptv
RT: 9.49 min Scan# 829
Delta R.T. 0.01 min
Lab File: 25SEP006.D
Acq: 25 Sep 2006 13:00

Tgt Ion: 83 Resp: 4176

Ion	Ratio	Lower	Upper
83	100		
85	62.7	15.0	115.0

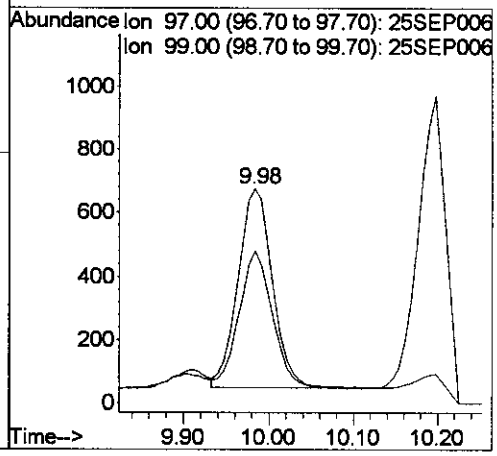


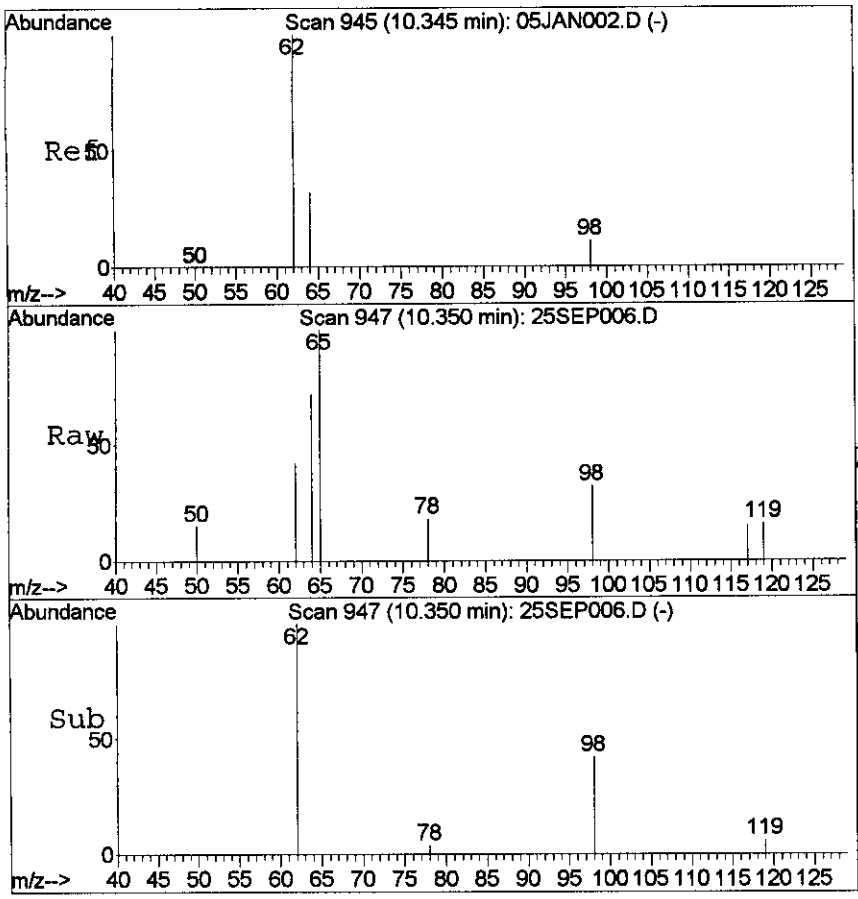


#10
1,1,1-Trichloroethane
Concen: 23.39 pptv
RT: 9.98 min Scan# 896
Delta R.T. 0.01 min
Lab File: 25SEP006.D
Acq: 25 Sep 2006 13:00

Tgt Ion: 97 Resp: 1749

Ion	Ratio	Lower	Upper
97	100		
99	66.3	15.0	115.0

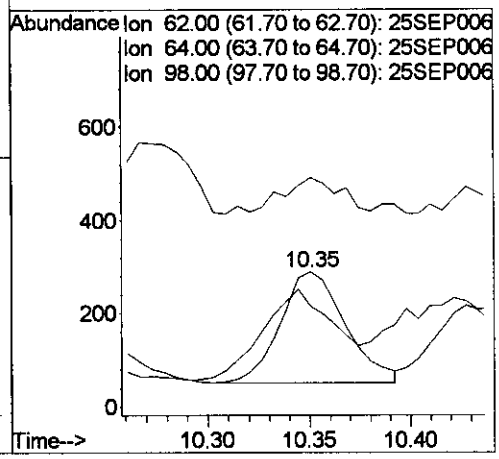


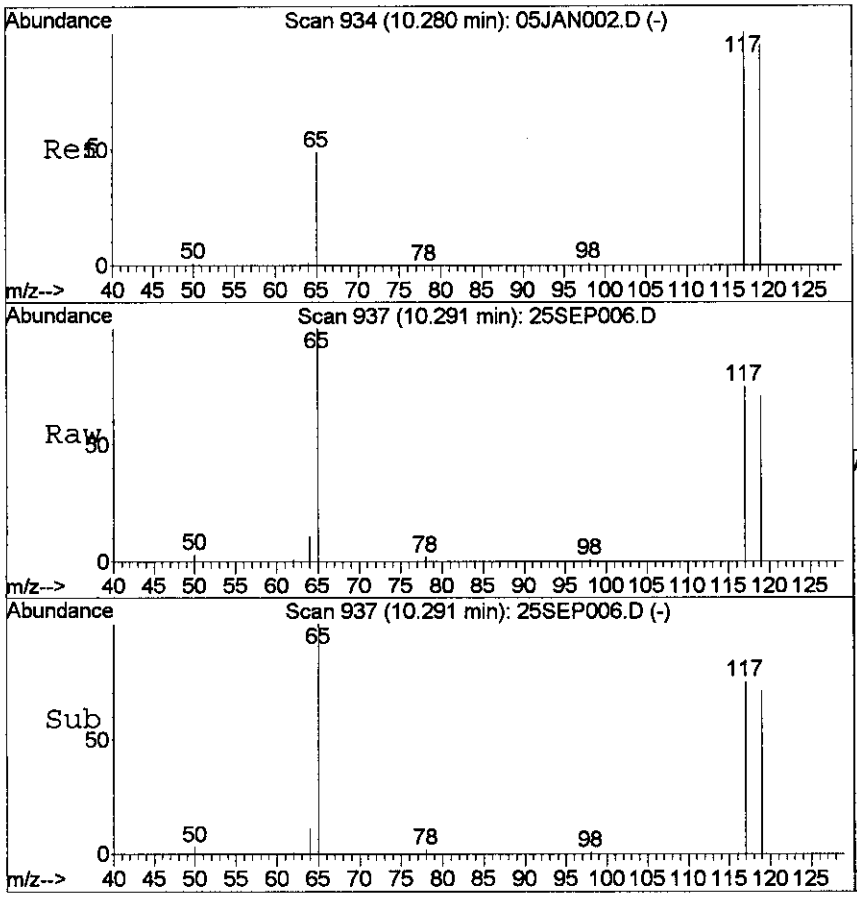


#12
1,2-Dichloroethane
Concen: 13.24 pptv
RT: 10.35 min Scan# 947
Delta R.T. 0.01 min
Lab File: 25SEP006.D
Acq: 25 Sep 2006 13:00

Tgt Ion: 62 Resp: 531

Ion	Ratio	Lower	Upper
62	100		
64	28.9	0.0	82.0
98	43.1	0.0	32.0#

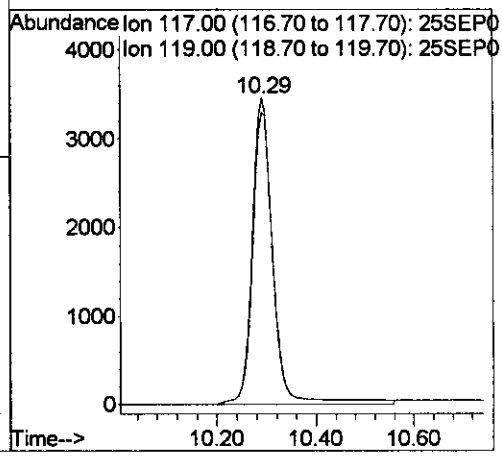


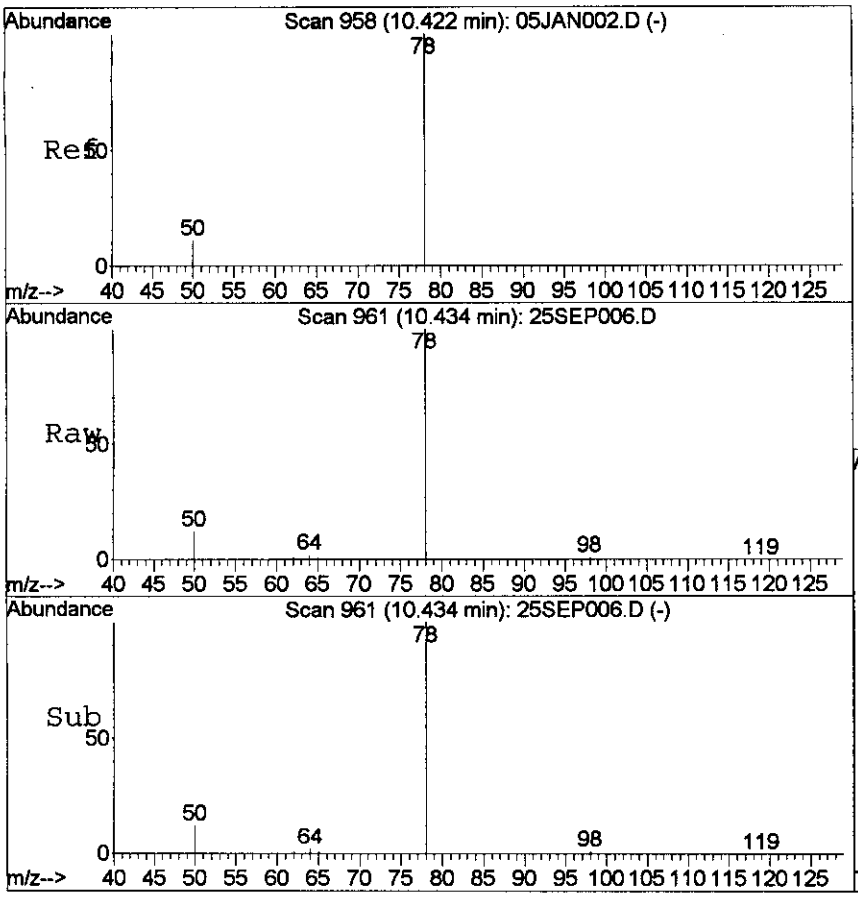


#13
Carbon Tetrachloride
Concen: 127.51 pptv
RT: 10.29 min Scan# 937
Delta R.T. 0.01 min
Lab File: 25SEP006.D
Acq: 25 Sep 2006 13:00

Tgt Ion:117 Resp: 10702

Ion	Ratio	Lower	Upper
117	100		
119	95.3	47.0	147.0

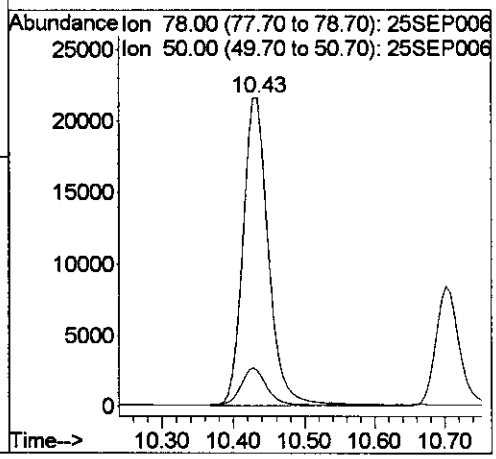


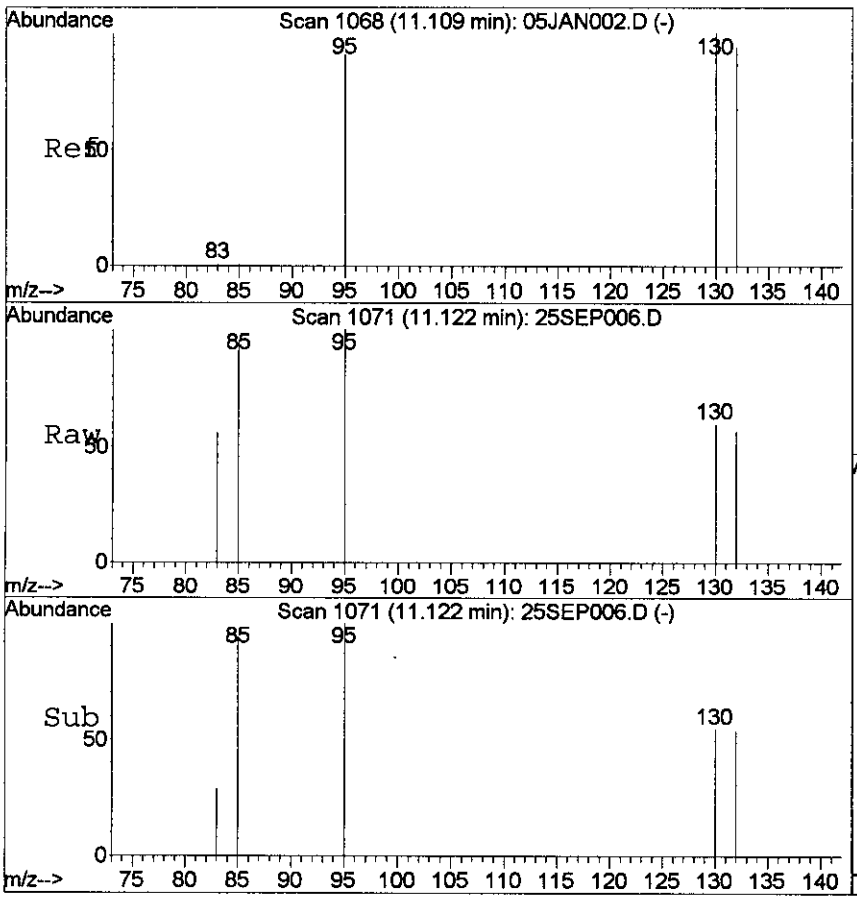


#14
Benzene
Concen: 415.73 pptv
RT: 10.43 min Scan# 961
Delta R.T. 0.01 min
Lab File: 25SEP006.D
Acq: 25 Sep 2006 13:00

Tgt Ion: 78 Resp: 54067

Ion	Ratio	Lower	Upper
78	100		
50	13.4	5.0	15.0

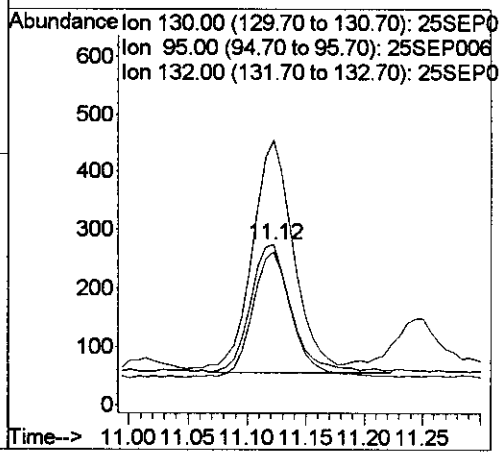


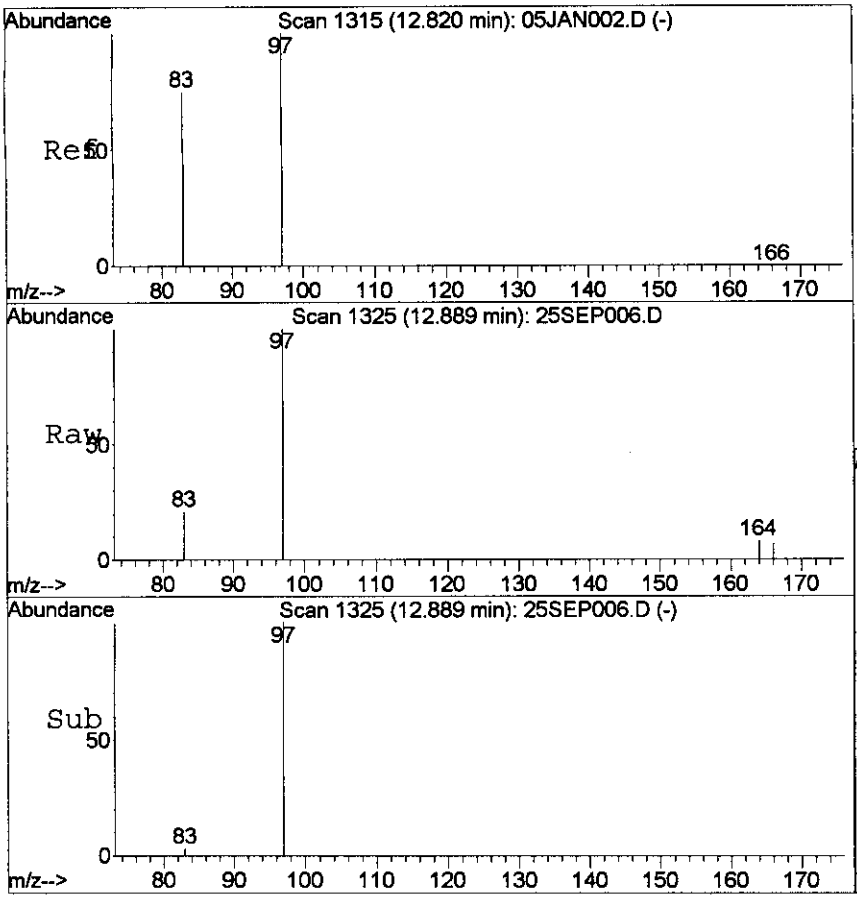


#15
Trichloroethene
Concen: 9.80 pptv
RT: 11.12 min Scan# 1071
Delta R.T. 0.01 min
Lab File: 25SEP006.D
Acq: 25 Sep 2006 13:00

Tgt Ion:130 Resp: 527

Ion	Ratio	Lower	Upper
130	100		
95	170.9	16.0	116.0#
132	97.7	75.0	115.0

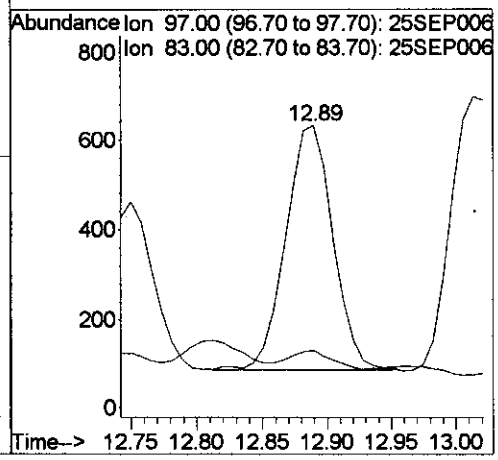


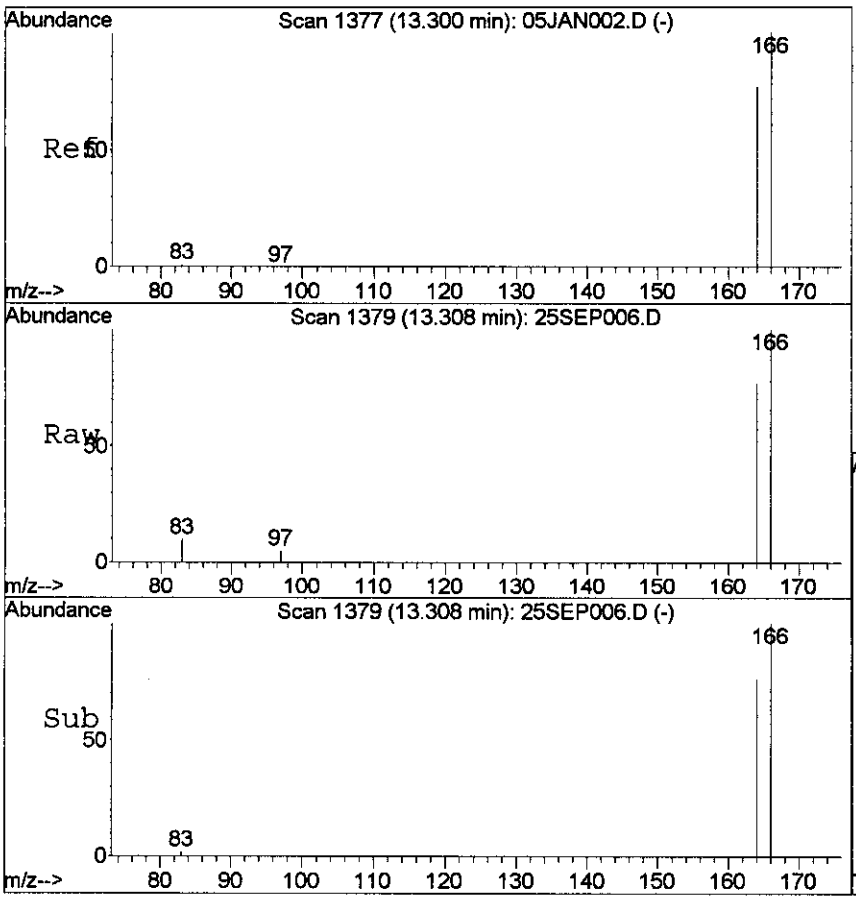


#16
1,1,2-Trichloroethane
Concen: 29.10 pptv
RT: 12.89 min Scan# 1325
Delta R.T. 0.07 min
Lab File: 25SEP006.D
Acq: 25 Sep 2006 13:00

Tgt Ion: 97 Resp: 1380

Ion	Ratio	Lower	Upper
97	100		
83	1.7	19.0	119.0#

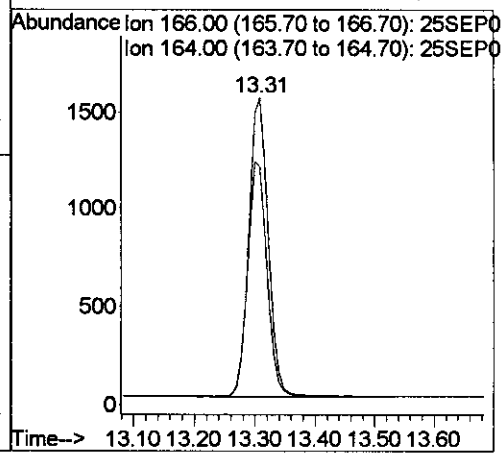




#17
Tetrachloroethene
Concen: 42.22 pptv
RT: 13.31 min Scan# 1379
Delta R.T. 0.01 min
Lab File: 25SEP006.D
Acq: 25 Sep 2006 13:00

Tgt Ion:166 Resp: 3403

Ion	Ratio	Lower	Upper
166	100		
164	76.3	30.0	130.0



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP007.D Vial: 2
Acq On : 25 Sep 2006 13:47 Operator: JM
Sample : A6091505-02 CH2MHILL Inst : GC/MS 597
Misc : 632ml, 24.6/9.73 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 25 16:04 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.65	130	79290	2000.00	pptv		0.02
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	112691	2359.99	pptv		0.01
Spiked Amount 2000.000	Range 70 - 130		Recovery = 118.00%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.46	62	75	3.16	pptv		74
3) Chloroethane	5.58	64	447	34.66	ppbv	#	100
4) 1,1-Dichloroethene	7.07	96	89	2.75	pptv	#	1
5) Methylene Chloride	7.69	49	12770	538.73	pptv		82
7) 1,1-Dichloroethane	8.61	63	296	5.71	pptv	#	64
9) Chloroform	9.49	83	2701	37.23	pptv		92
10) 1,1,1-Trichloroethane	9.98	97	1998	26.16	pptv		99
12) 1,2-Dichloroethane	10.35	62	694	16.93	pptv		80
13) Carbon Tetrachloride	10.29	117	11170	130.27	pptv		100
14) Benzene	10.43	78	58671	441.59	pptv		90
15) Trichloroethene	11.12	130	665	12.11	pptv	#	40
16) 1,1,2-Trichloroethane	12.67	97	58	1.20	pptv		86
17) Tetrachloroethene	13.31	166	23778	288.77	pptv		94

(#) = qualifier out of range (m) = manual integration

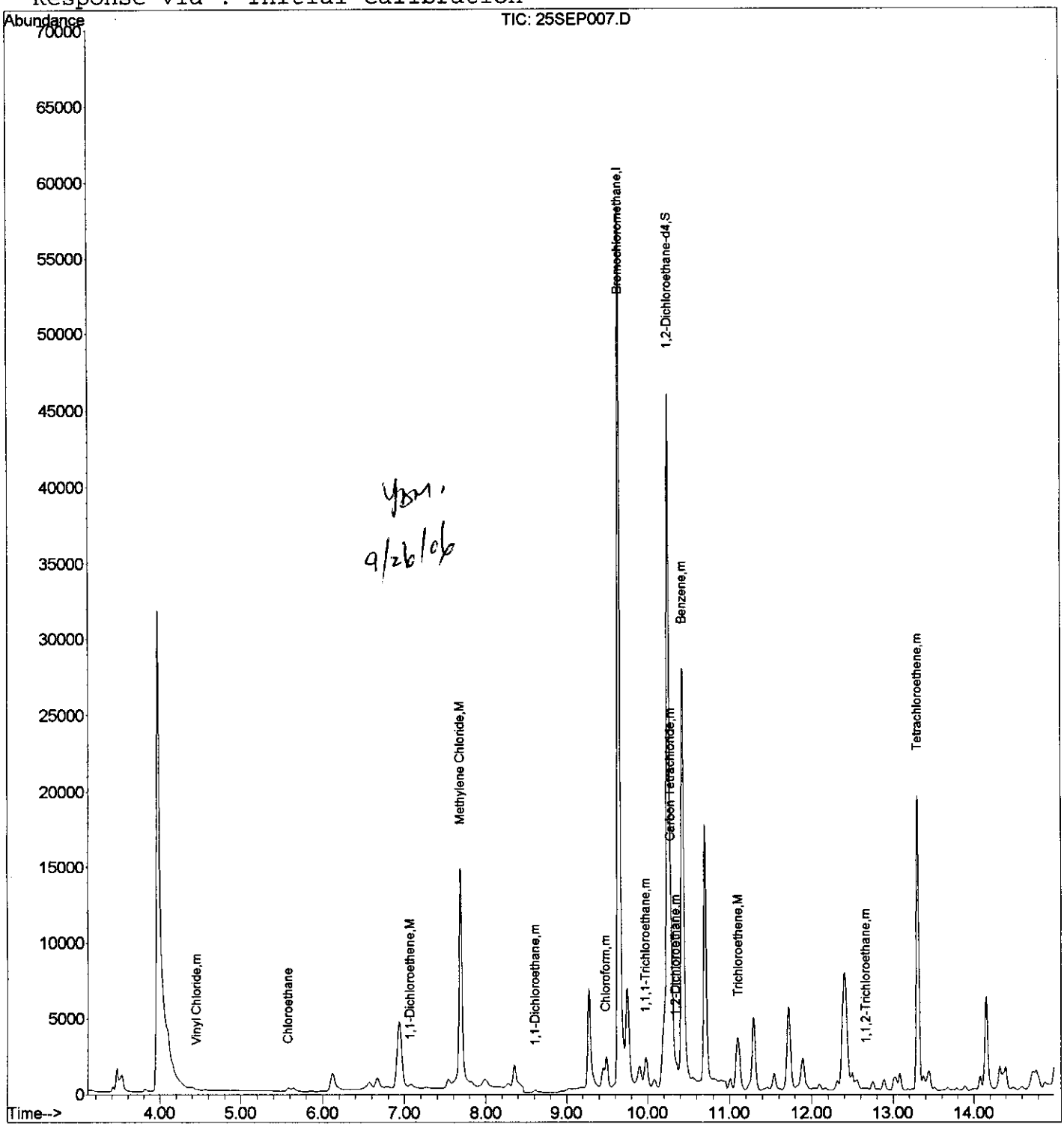
Quantitation Report

Data File : D:\GCMSB\060925\25SEP007.D
Acq On : 25 Sep 2006 13:47
Sample : A6091505-02 CH2MHILL
Misc : 632ml, 24.6/9.73
MS Integration Params: rteint.p
Quant Time: Sep 25 16:04 2006

Vial: 2
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

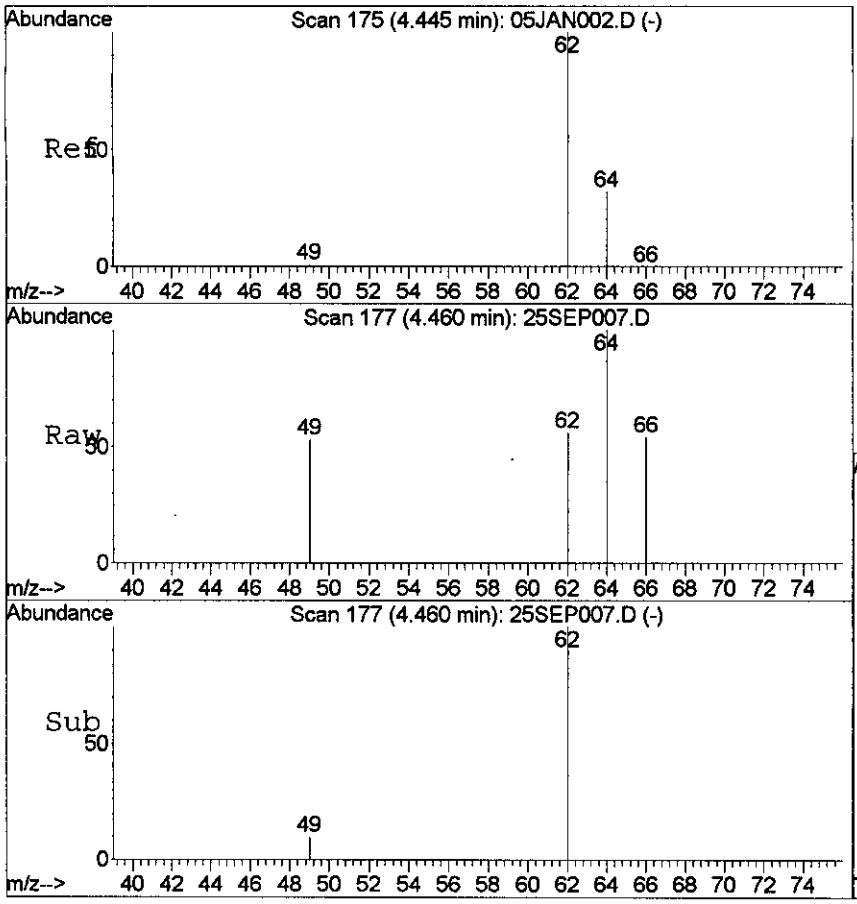
Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



YDM
9/26/06

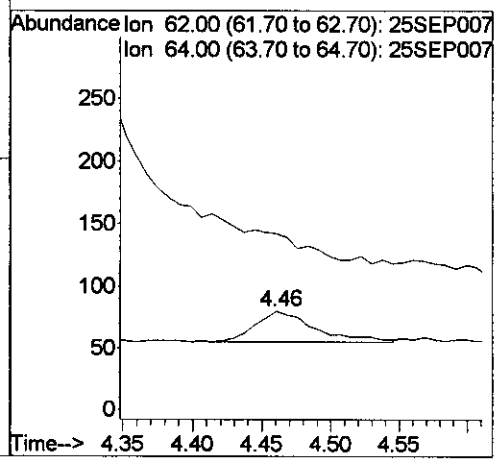
35

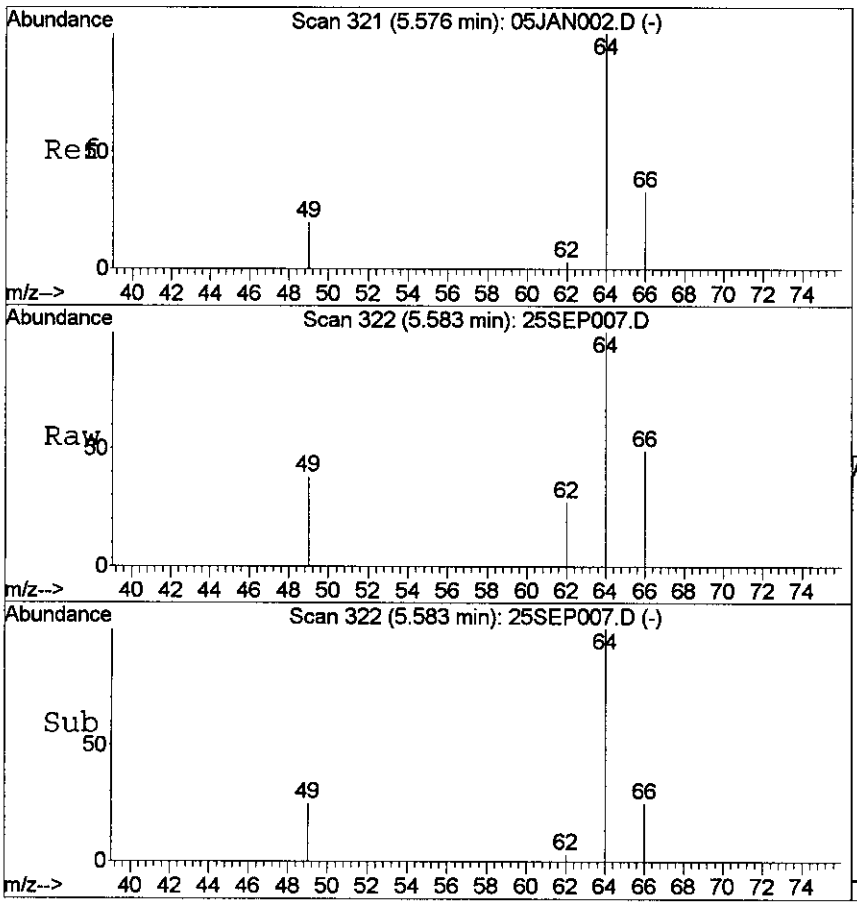


#2
Vinyl Chloride
Concen: 3.16 pptv
RT: 4.46 min Scan# 177
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion: 62 Resp: 75

Ion	Ratio	Lower	Upper
62	100		
64	16.7	0.0	81.2

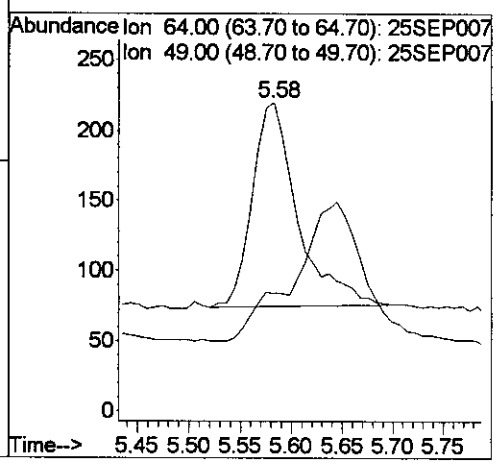


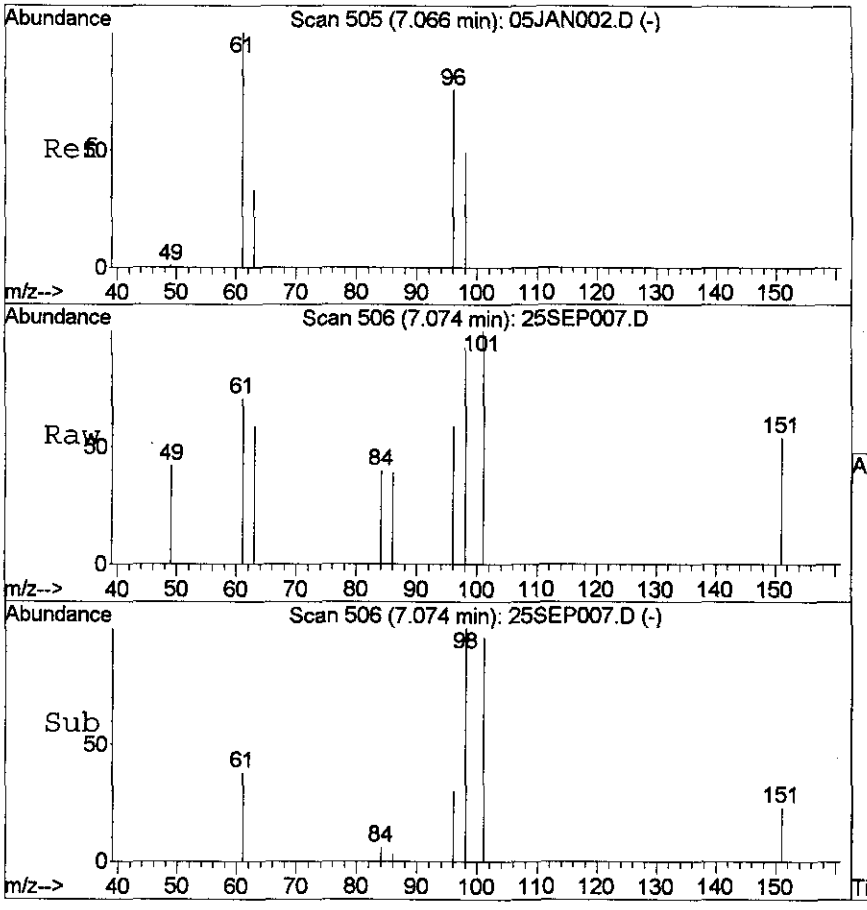


#3
Chloroethane
Concen: 34.66 ppbv
RT: 5.58 min Scan# 322
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion: 64 Resp: 447

Ion	Ratio	Lower	Upper
64	100		
49	7.4	0.0	0.0#

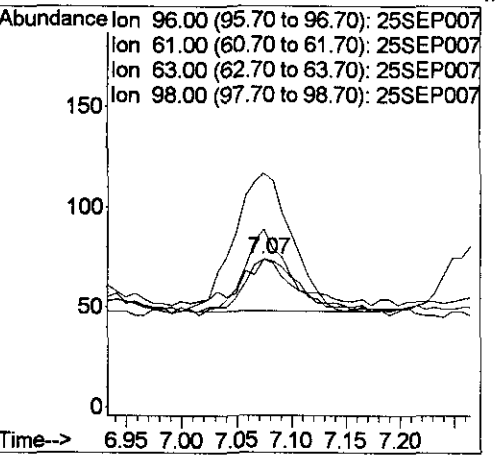


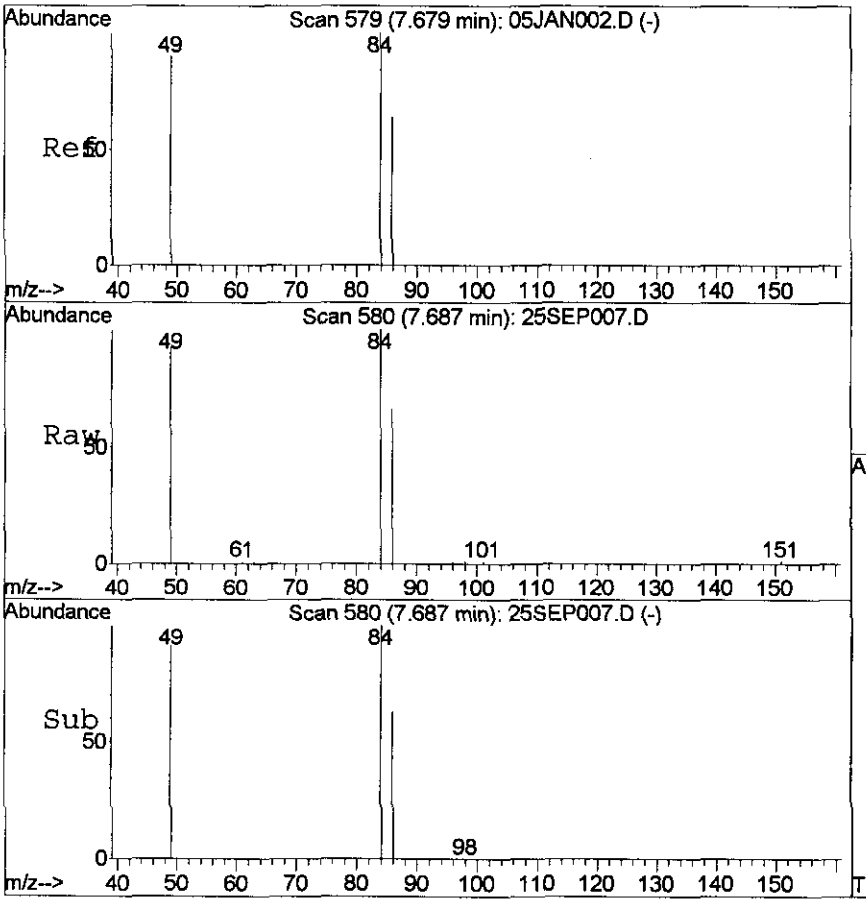


#4
1,1-Dichloroethene
Concen: 2.75 pptv
RT: 7.07 min Scan# 506
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion: 96 Resp: 89

Ion	Ratio	Lower	Upper
96	100		
61	162.7	49.0	149.0#
63	80.4	0.0	84.0
98	260.8	14.0	114.0#

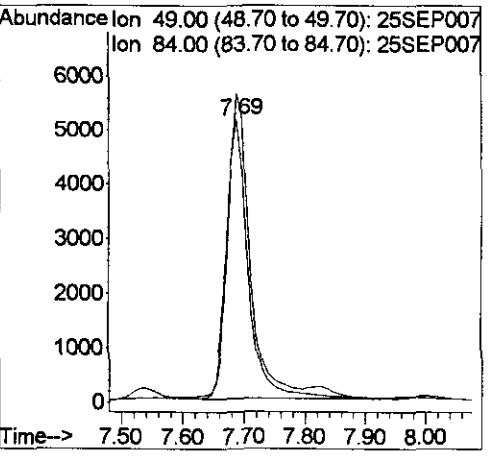


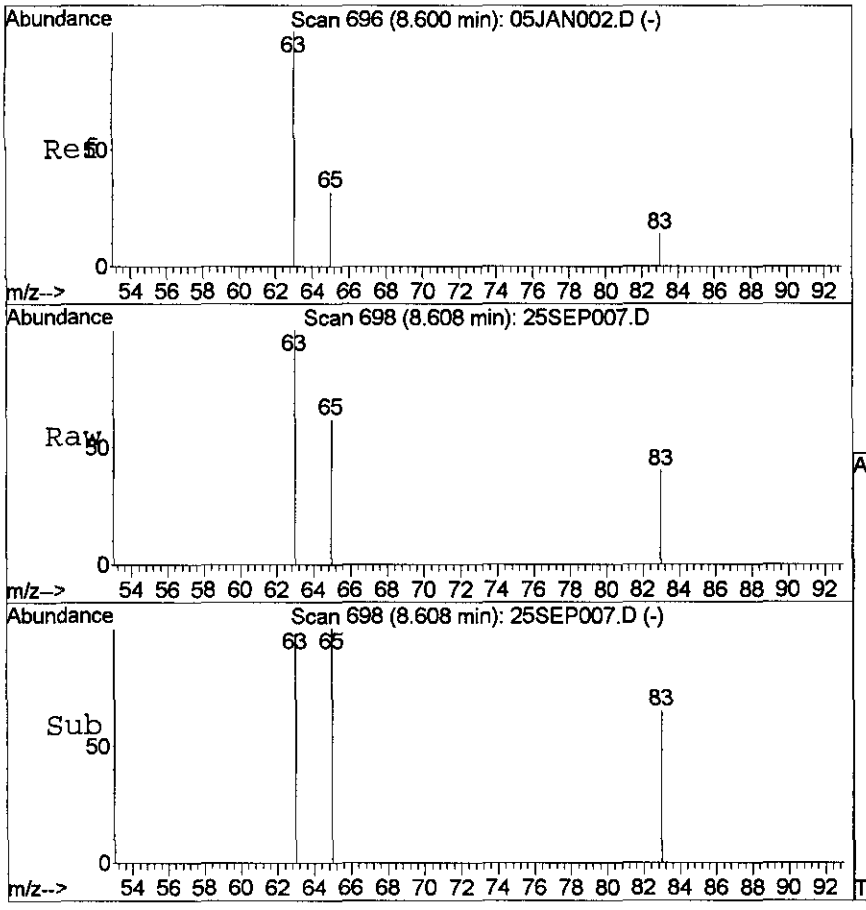


#5
Methylene Chloride
Concen: 538.73 pptv
RT: 7.69 min Scan# 580
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion: 49 Resp: 12770

Ion	Ratio	Lower	Upper
49	100		
84	108.9	80.0	180.0

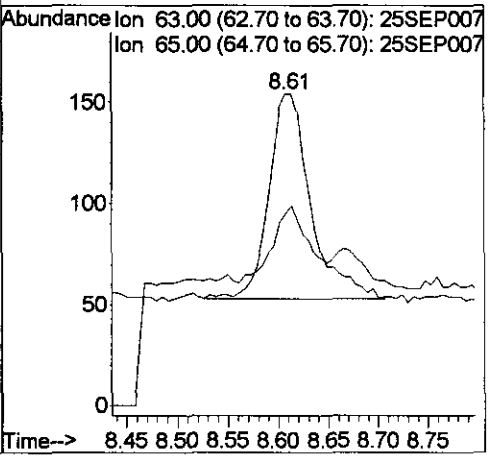


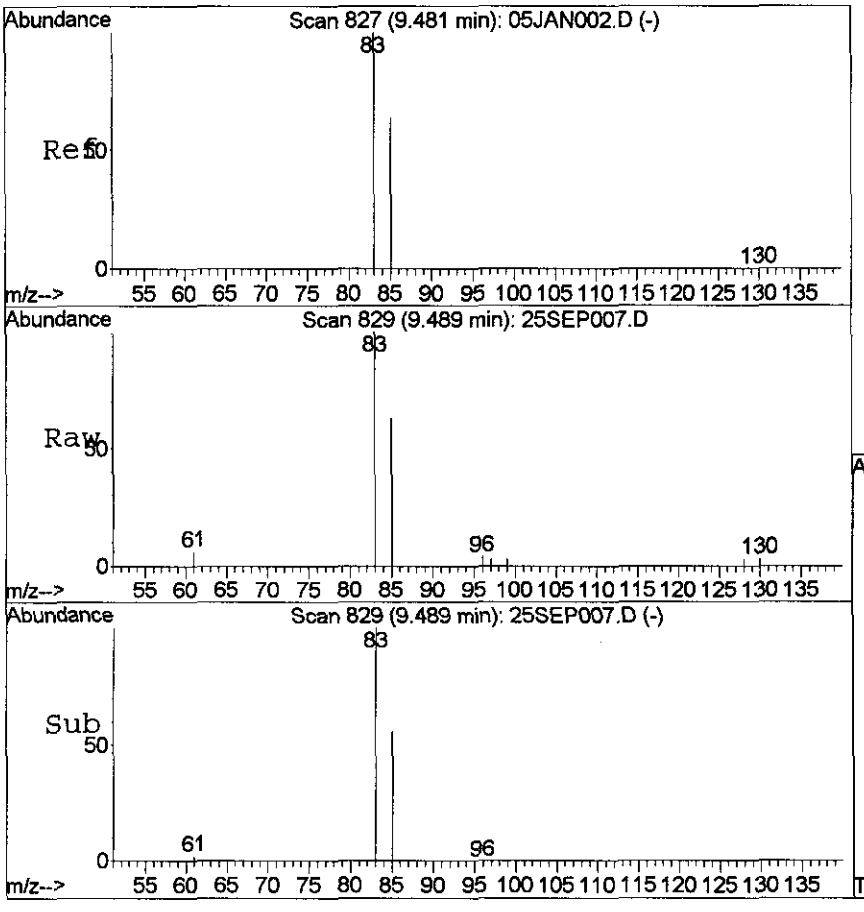


#7
1,1-Dichloroethane
Concen: 5.71 pptv
RT: 8.61 min Scan# 698
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion: 63 Resp: 296

Ion	Ratio	Lower	Upper
63	100		
65	53.4	16.5	49.5#

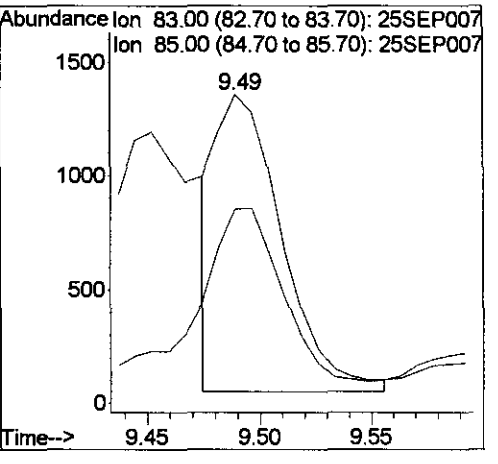


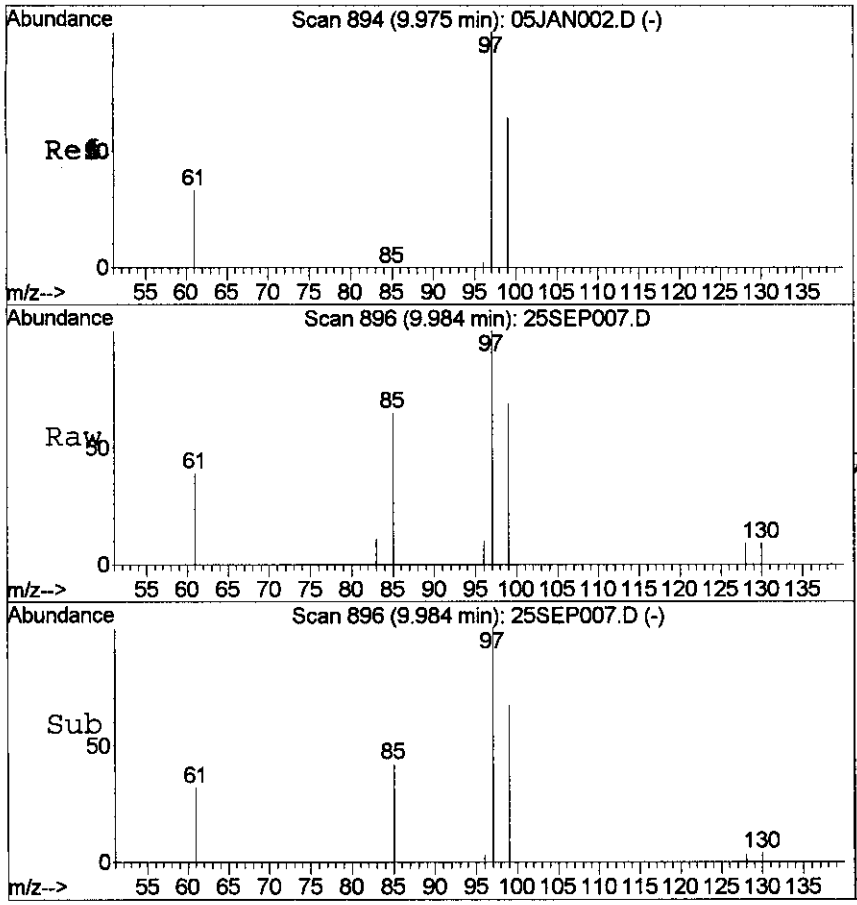


#9
Chloroform
Concen: 37.23 pptv
RT: 9.49 min Scan# 829
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion: 83 Resp: 2701

Ion	Ratio	Lower	Upper
83	100		
85	71.5	15.0	115.0

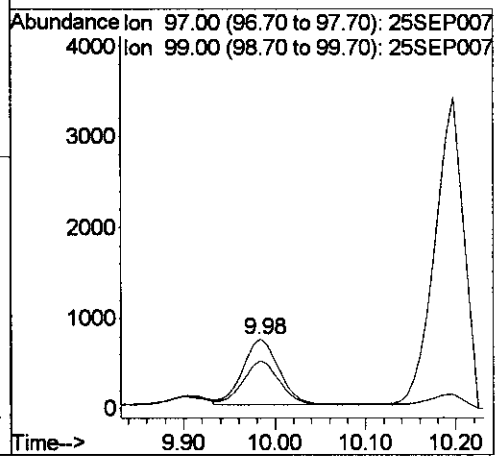


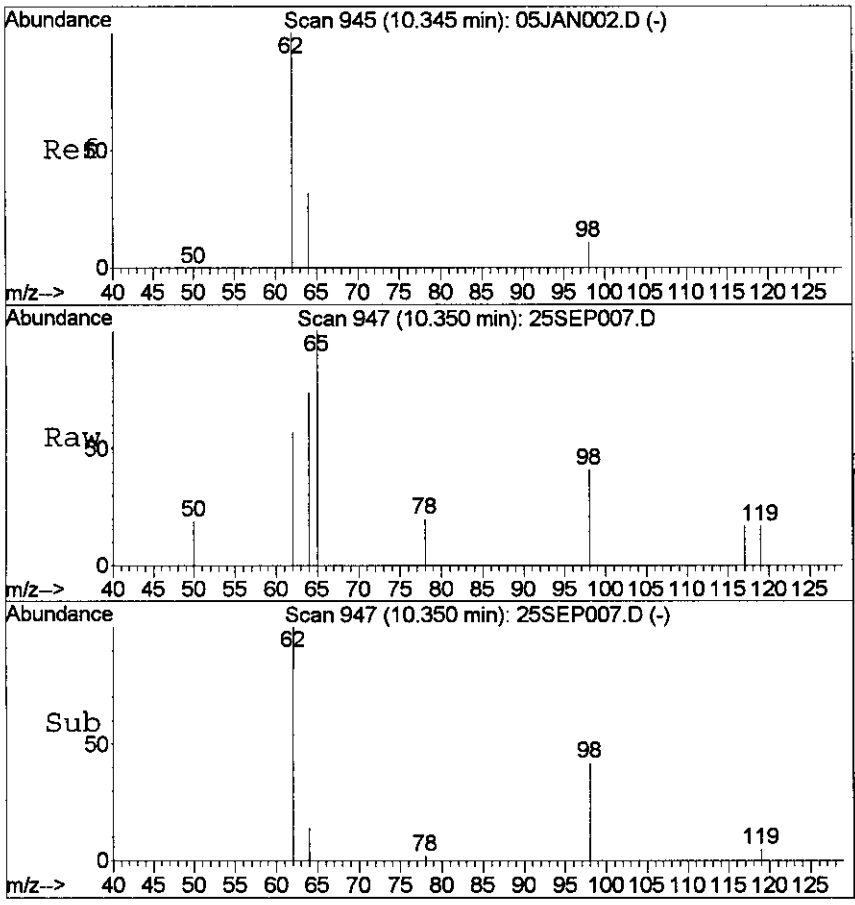


#10
1,1,1-Trichloroethane
Concen: 26.16 pptv
RT: 9.98 min Scan# 896
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion: 97 Resp: 1998

Ion	Ratio	Lower	Upper
97	100		
99	65.5	15.0	115.0

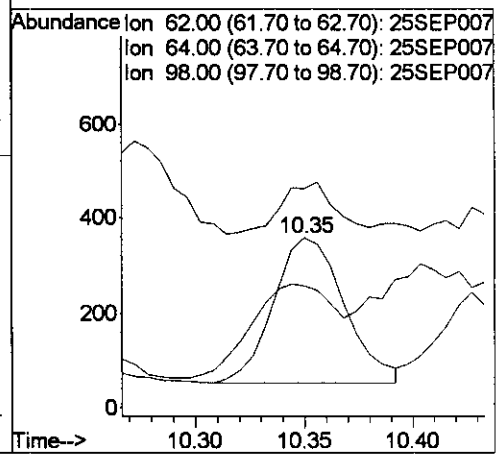


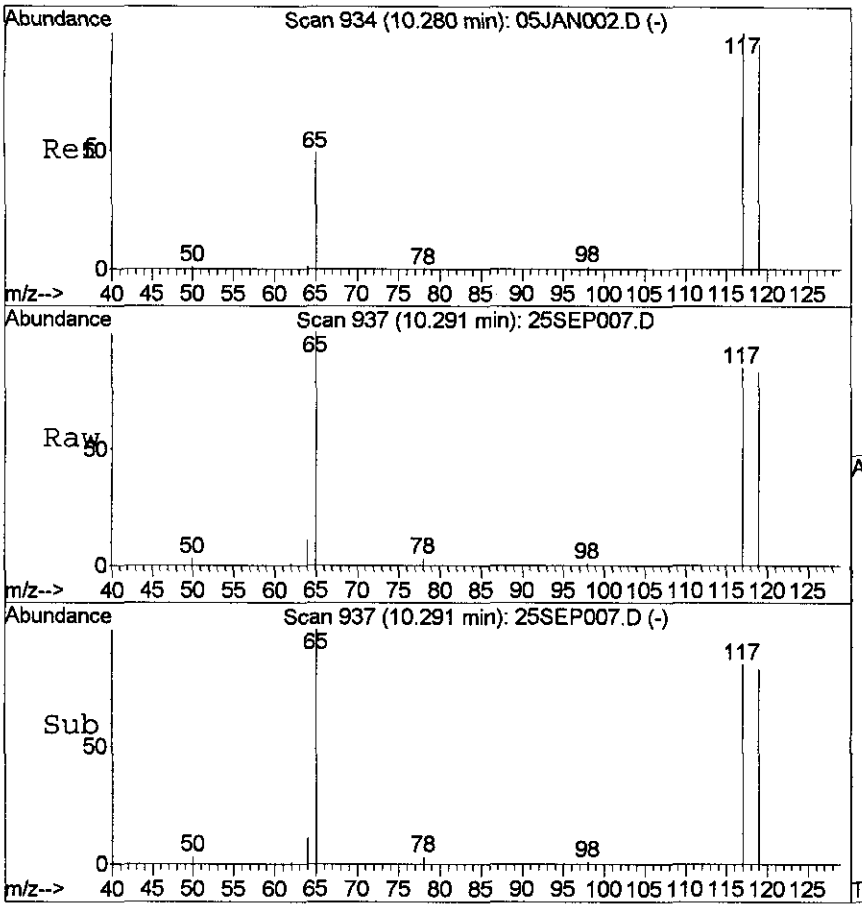


#12
1,2-Dichloroethane
Concen: 16.93 pptv
RT: 10.35 min Scan# 947
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion: 62 Resp: 694

Ion	Ratio	Lower	Upper
62	100		
64	25.6	0.0	82.0
98	28.4	0.0	32.0

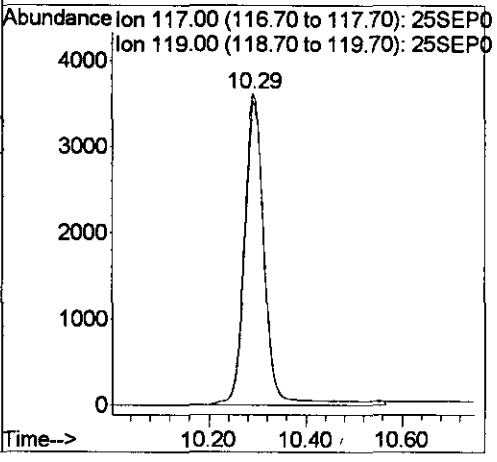


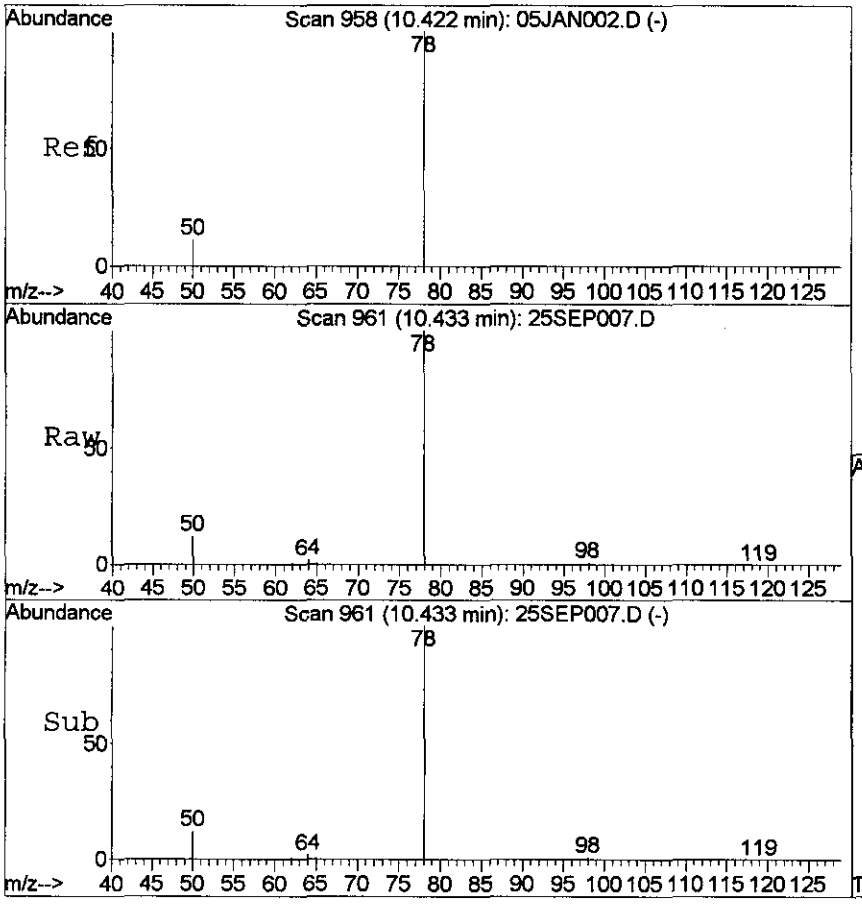


#13
Carbon Tetrachloride
Concen: 130.27 pptv
RT: 10.29 min Scan# 937
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion:117 Resp: 11170

Ion	Ratio	Lower	Upper
117	100		
119	97.5	47.0	147.0

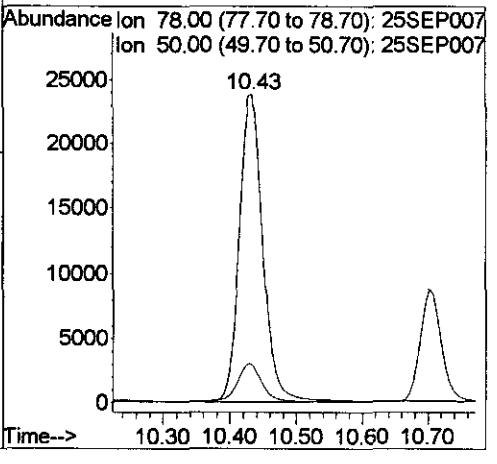


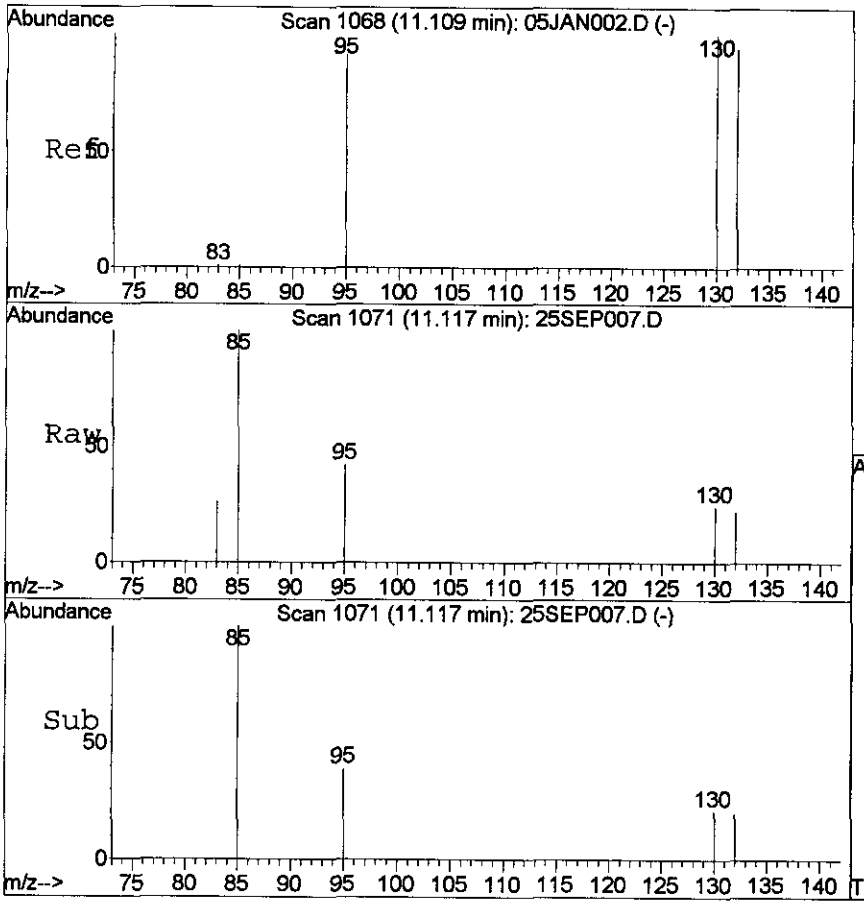


#14
Benzene
Concen: 441.59 pptv
RT: 10.43 min Scan# 961
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion: 78 Resp: 58671

Ion	Ratio	Lower	Upper
78	100		
50	13.6	5.0	15.0

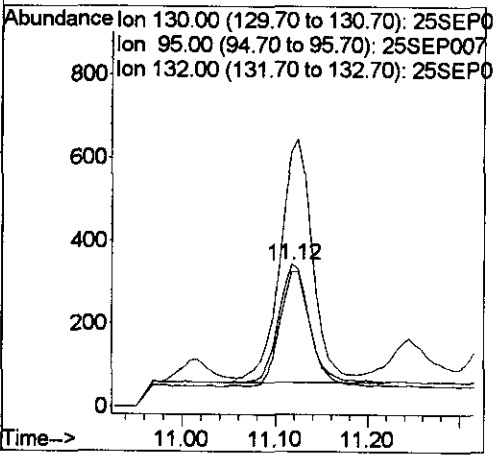


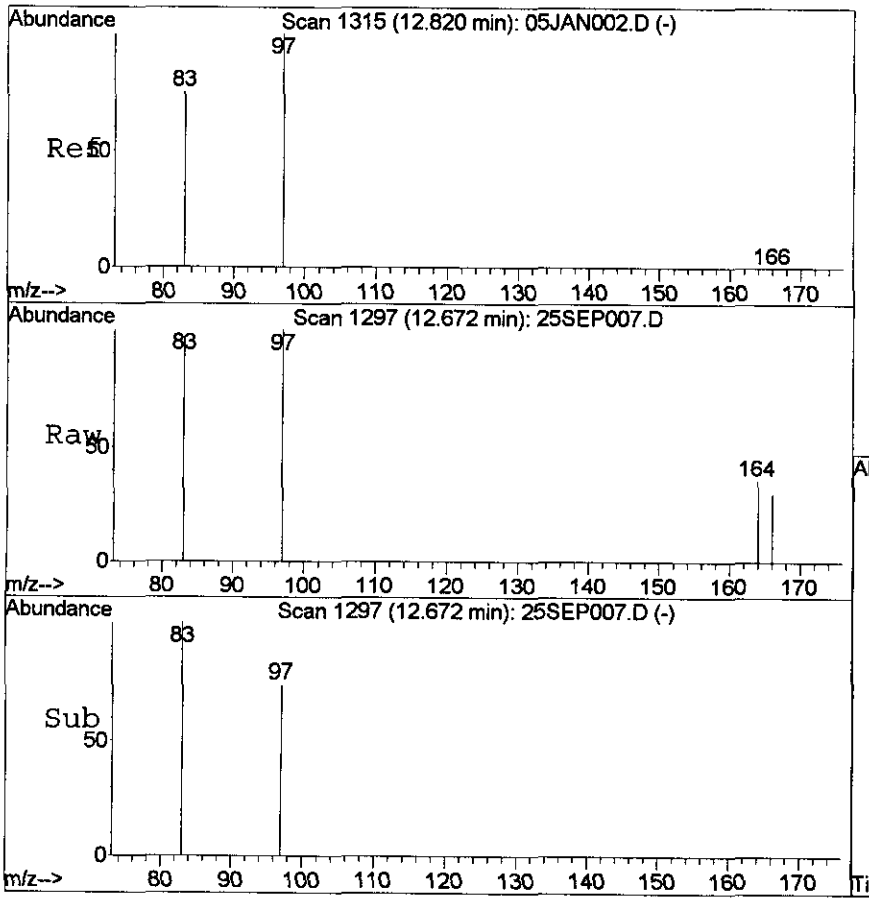


#15
Trichloroethene
Concen: 12.11 pptv
RT: 11.12 min Scan# 1071
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion:130 Resp: 665

Ion	Ratio	Lower	Upper
130	100		
95	180.0	16.0	116.0#
132	96.8	75.0	115.0

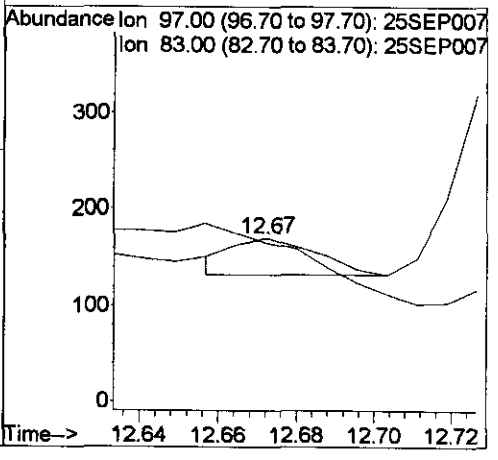


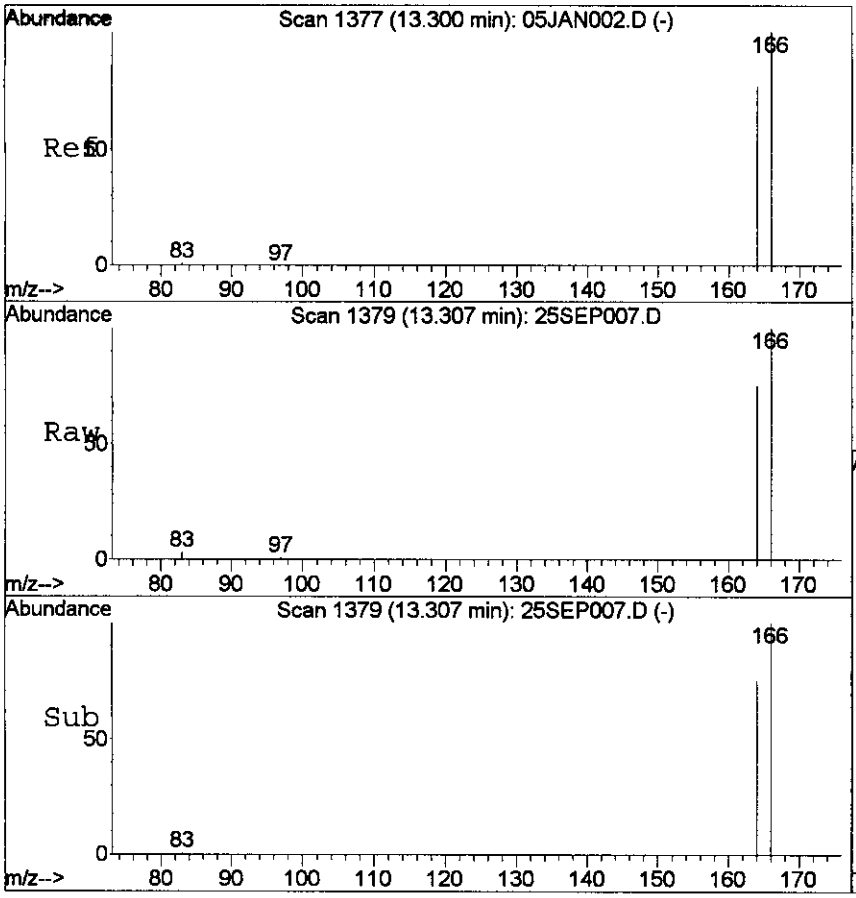


#16
1,1,2-Trichloroethane
Concen: 1.20 pptv
RT: 12.67 min Scan# 1297
Delta R.T. -0.15 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion: 97 Resp: 58

Ion	Ratio	Lower	Upper
97	100		
83	57.9	19.0	119.0

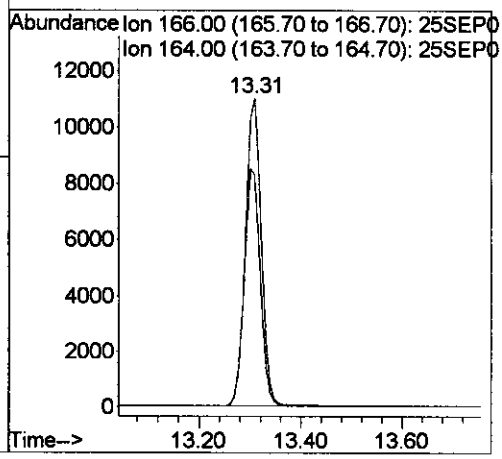




#17
Tetrachloroethene
Concen: 288.77 pptv
RT: 13.31 min Scan# 1379
Delta R.T. 0.01 min
Lab File: 25SEP007.D
Acq: 25 Sep 2006 13:47

Tgt Ion:166 Resp: 23778

Ion	Ratio	Lower	Upper
166	100		
164	74.9	30.0	130.0



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP008.D Vial: 3
Acq On : 25 Sep 2006 14:24 Operator: JM
Sample : A6091505-03 CH2MHILL Inst : GC/MS 597
Misc : 347ml, 19.6/14.11 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 25 14:53 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	76811	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	117328	2536.40	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 126.82%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.45	62	56	2.43	pptv		43
3) Chloroethane	5.57	64	353	28.26	ppbv	#	100
4) 1,1-Dichloroethene	7.07	96	152	4.84	pptv	#	8
5) Methylene Chloride	7.69	49	17718	771.60	pptv		85
7) 1,1-Dichloroethane	8.60	63	77	1.53	pptv	#	42
9) Chloroform	9.49	83	2484	35.35	pptv		78
10) 1,1,1-Trichloroethane	9.98	97	1617	21.85	pptv		47
12) 1,2-Dichloroethane	10.34	62	719	18.11	pptv	#	1
13) Carbon Tetrachloride	10.29	117	7839	94.37	pptv		96
14) Benzene	10.43	78	45633	354.55	pptv	#	43
15) Trichloroethene	11.12	130	549	10.32	pptv	#	24
16) 1,1,2-Trichloroethane	12.88	97	1739	37.05	pptv	#	15
17) Tetrachloroethene	13.30	166	83195	1042.95	pptv		100

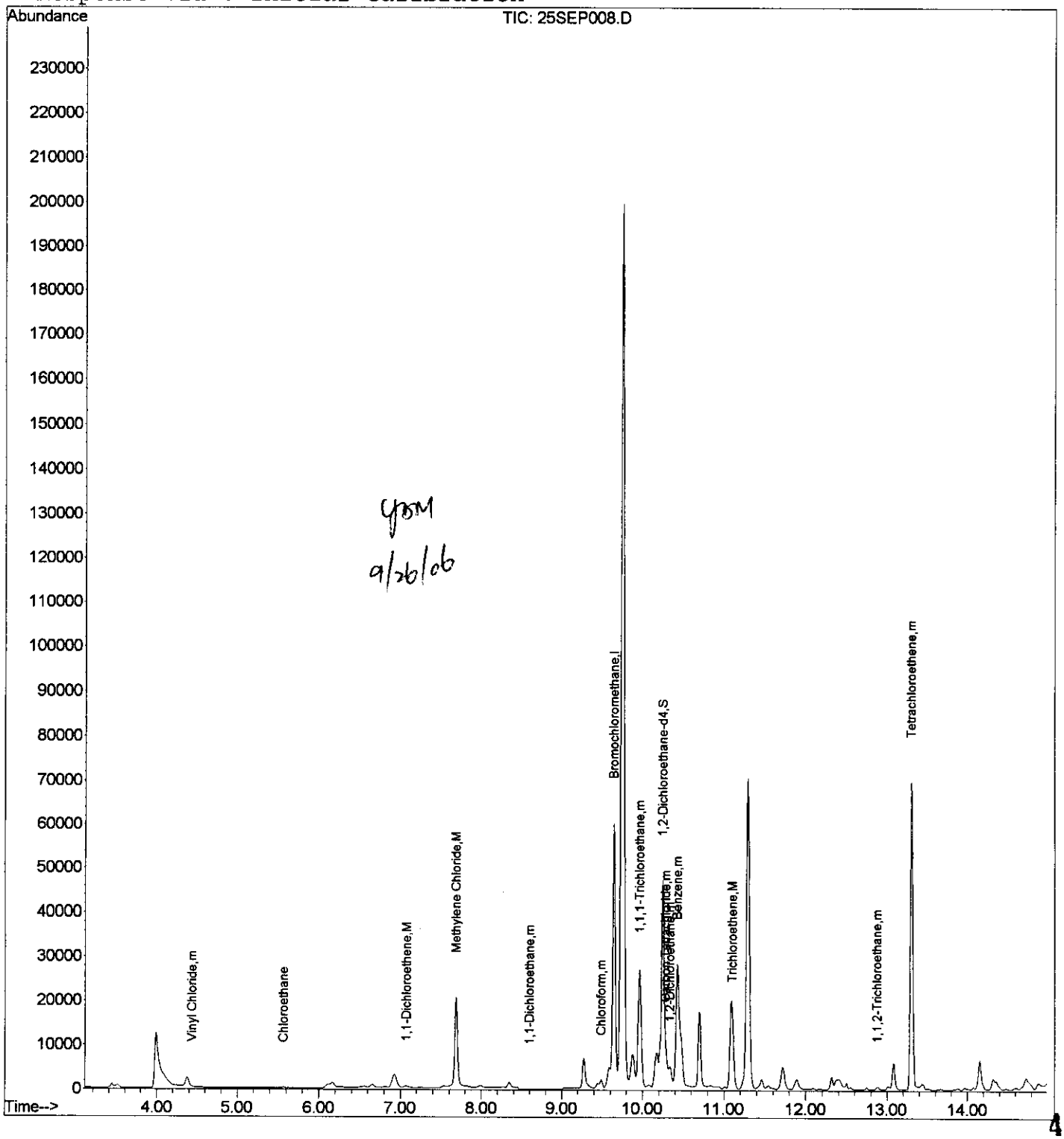
(#) = qualifier out of range (m) = manual integration

Quantitation Report

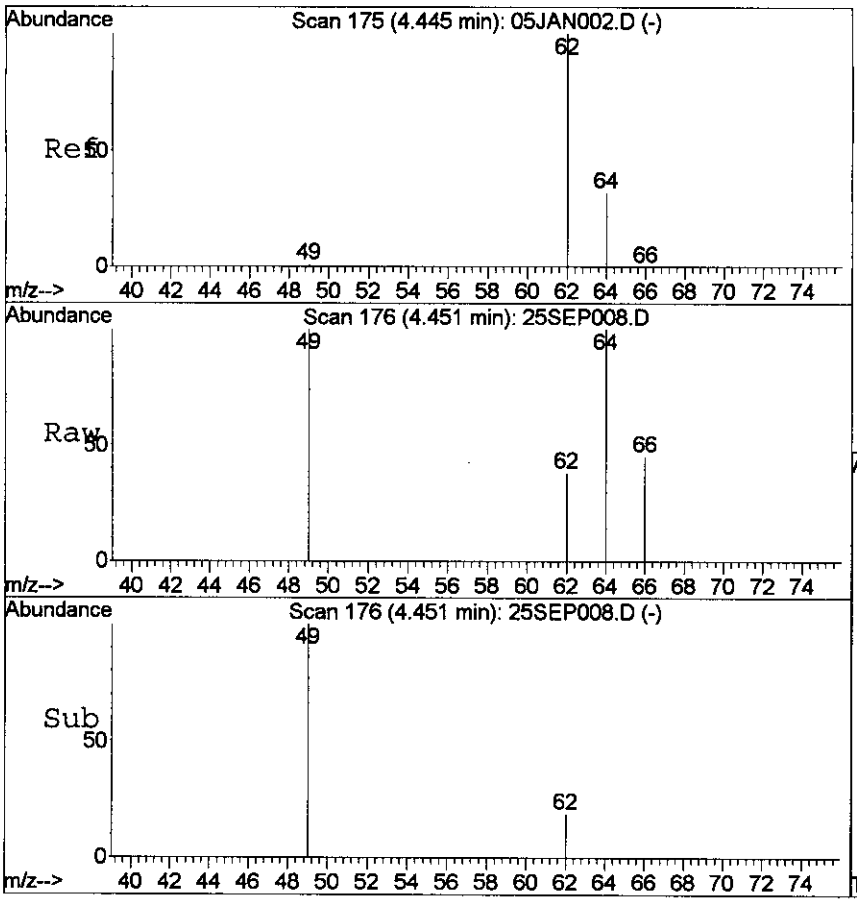
Data File : D:\GCMSB\060925\25SEP008.D
Acq On : 25 Sep 2006 14:24
Sample : A6091505-03 CH2MHILL
Misc : 347ml, 19.6/14.11
MS Integration Params: rteint.p
Quant Time: Sep 25 14:53 2006

Vial: 3
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00
Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



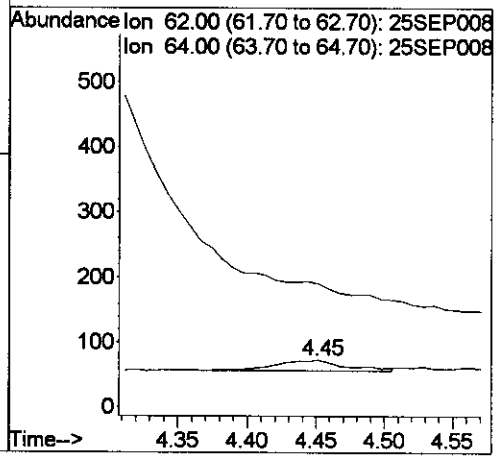
YBM
9/26/06

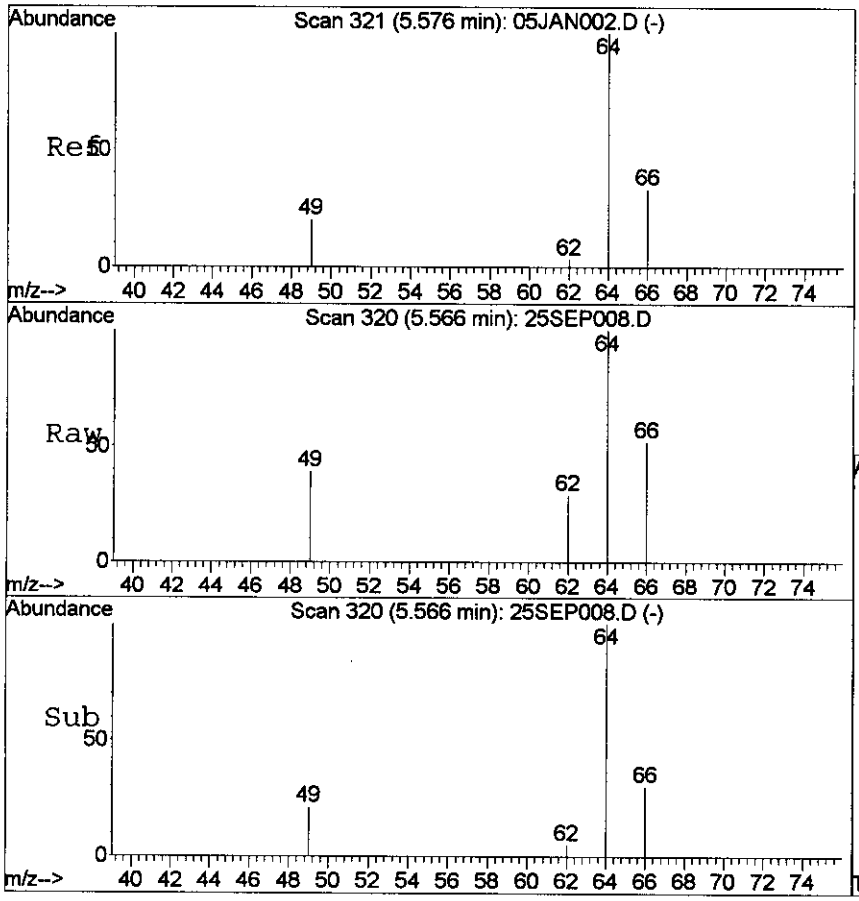


#2
Vinyl Chloride
Concen: 2.43 pptv
RT: 4.45 min Scan# 176
Delta R.T. 0.01 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion: 62 Resp: 56

Ion	Ratio	Lower	Upper
62	100		
64	0.0	0.0	81.2

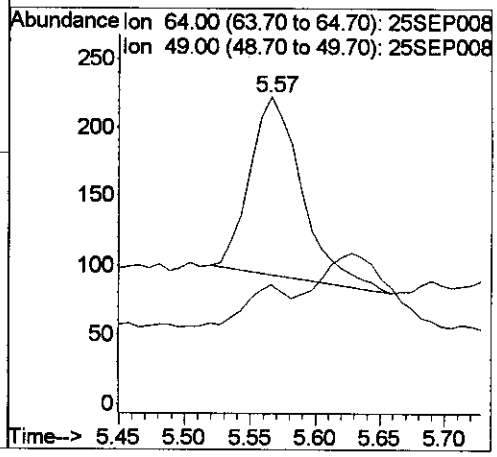


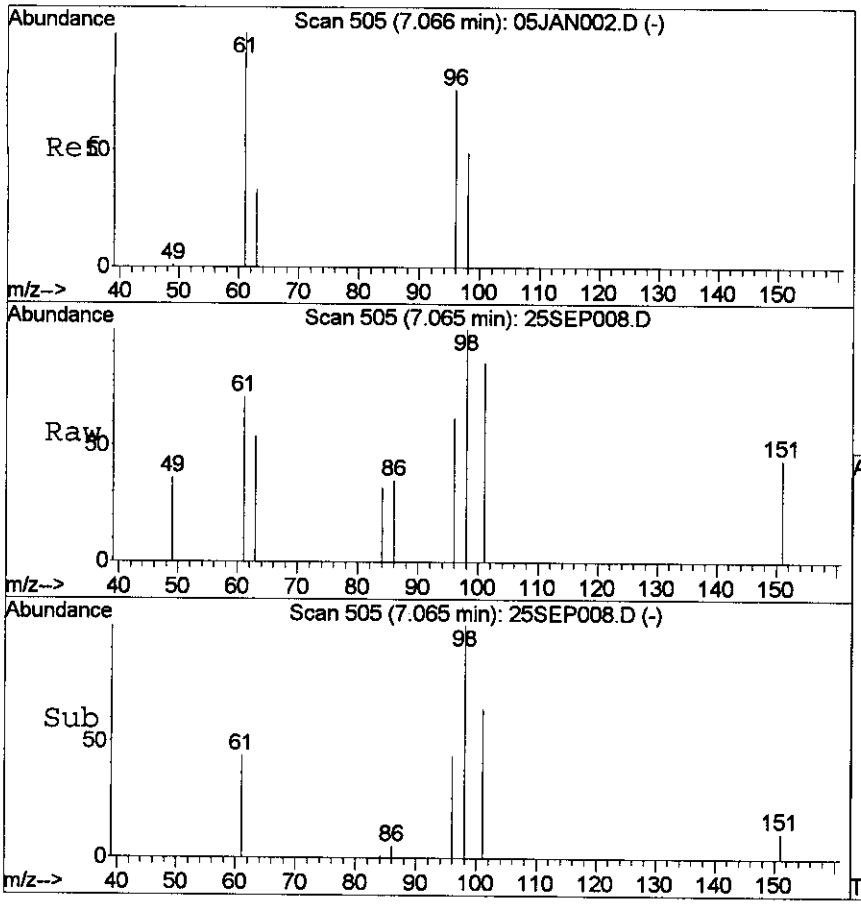


#3
Chloroethane
Concen: 28.26 ppbv
RT: 5.57 min Scan# 320
Delta R.T. -0.01 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion: 64 Resp: 353

Ion	Ratio	Lower	Upper
64	100		
49	0.0	0.0	0.0

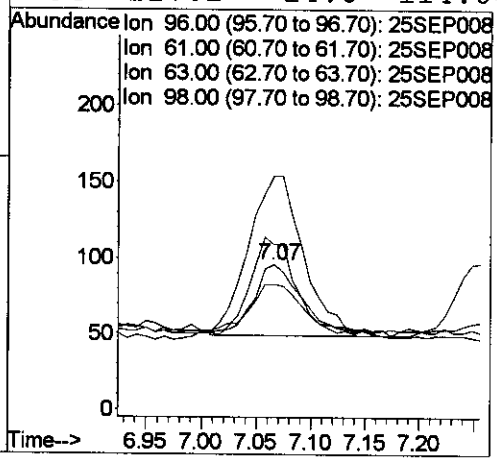


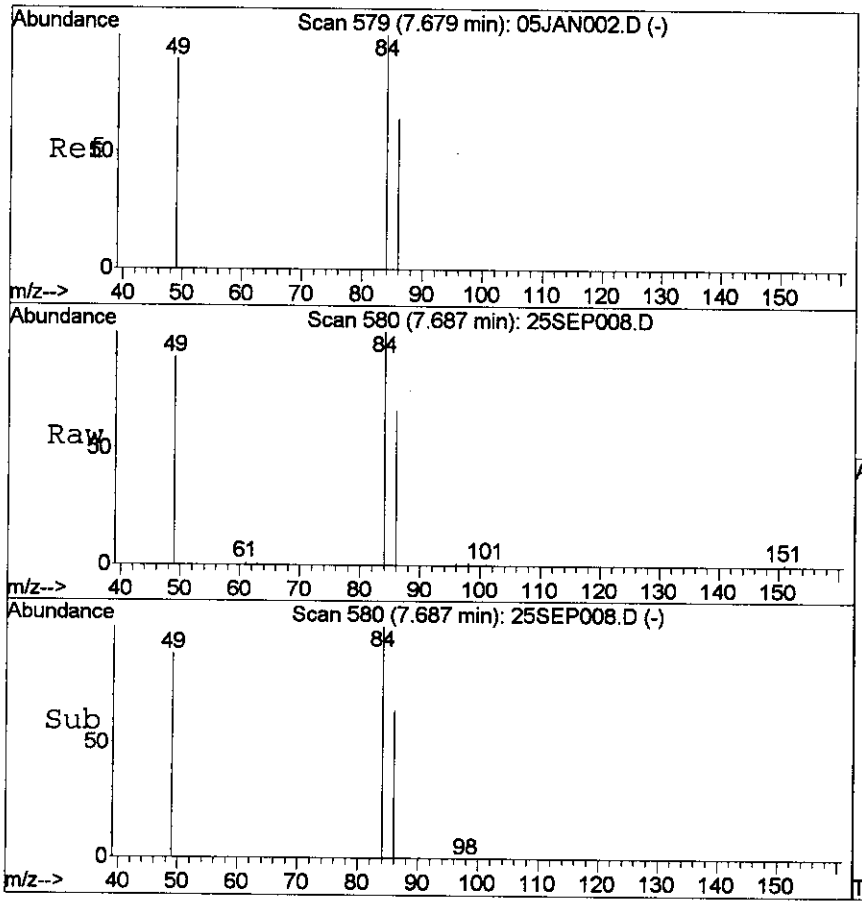


#4
1,1-Dichloroethene
Concen: 4.84 pptv
RT: 7.07 min Scan# 505
Delta R.T. 0.00 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion: 96 Resp: 152

Ion	Ratio	Lower	Upper
96	100		
61	128.3	49.0	149.0
63	66.3	0.0	84.0
98	227.2	14.0	114.0#

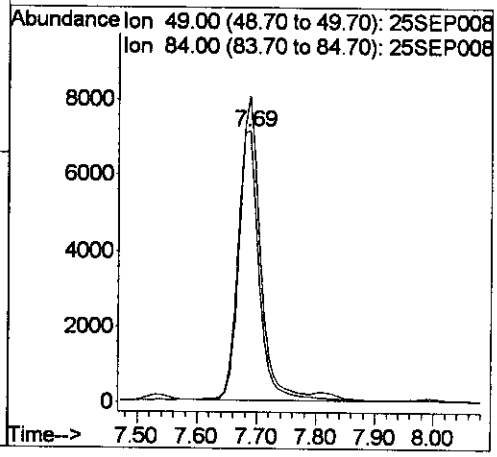


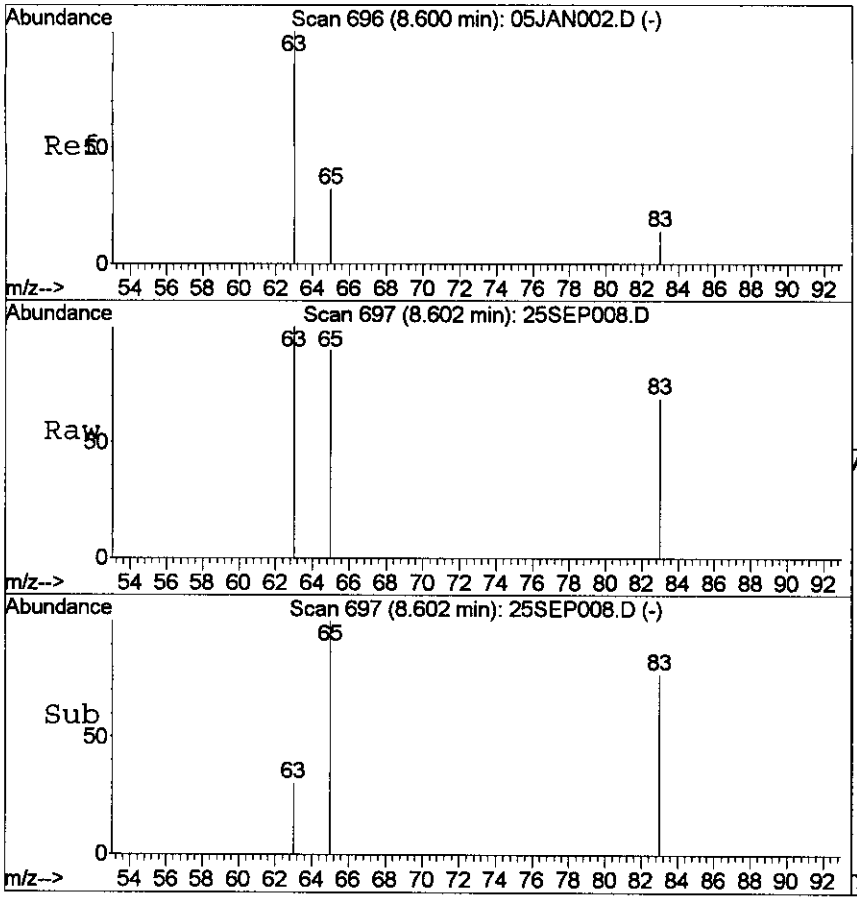


#5
Methylene Chloride
Concen: 771.60 pptv
RT: 7.69 min Scan# 580
Delta R.T. 0.01 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion: 49 Resp: 17718

Ion	Ratio	Lower	Upper
49	100		
84	112.7	80.0	180.0

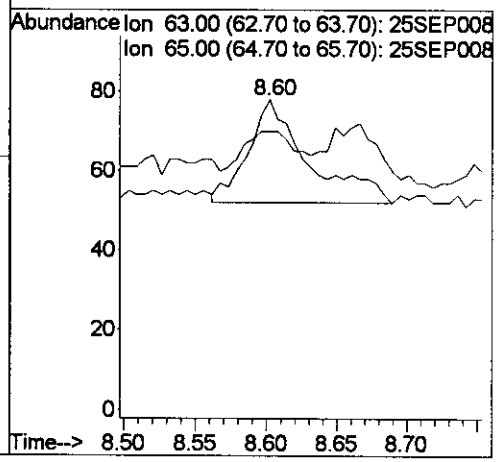


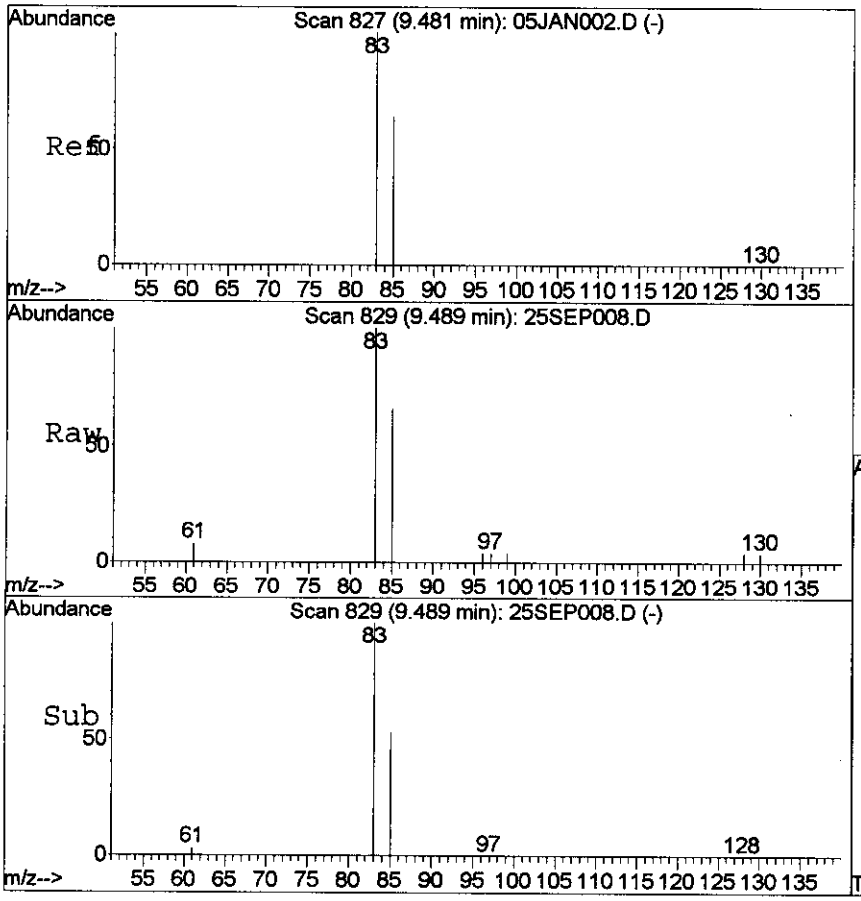


#7
1,1-Dichloroethane
Concen: 1.53 pptv
RT: 8.60 min Scan# 697
Delta R.T. 0.00 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion: 63 Resp: 77

Ion	Ratio	Lower	Upper
63	100		
65	0.0	16.5	49.5#

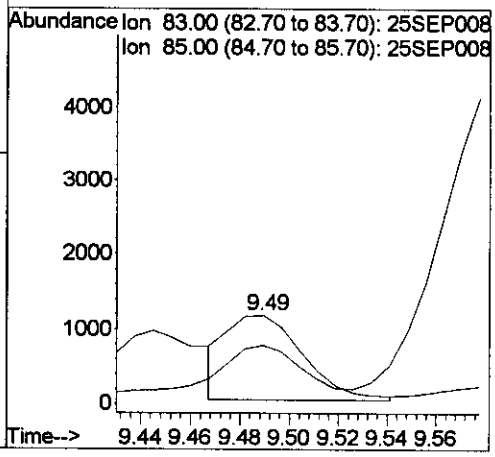


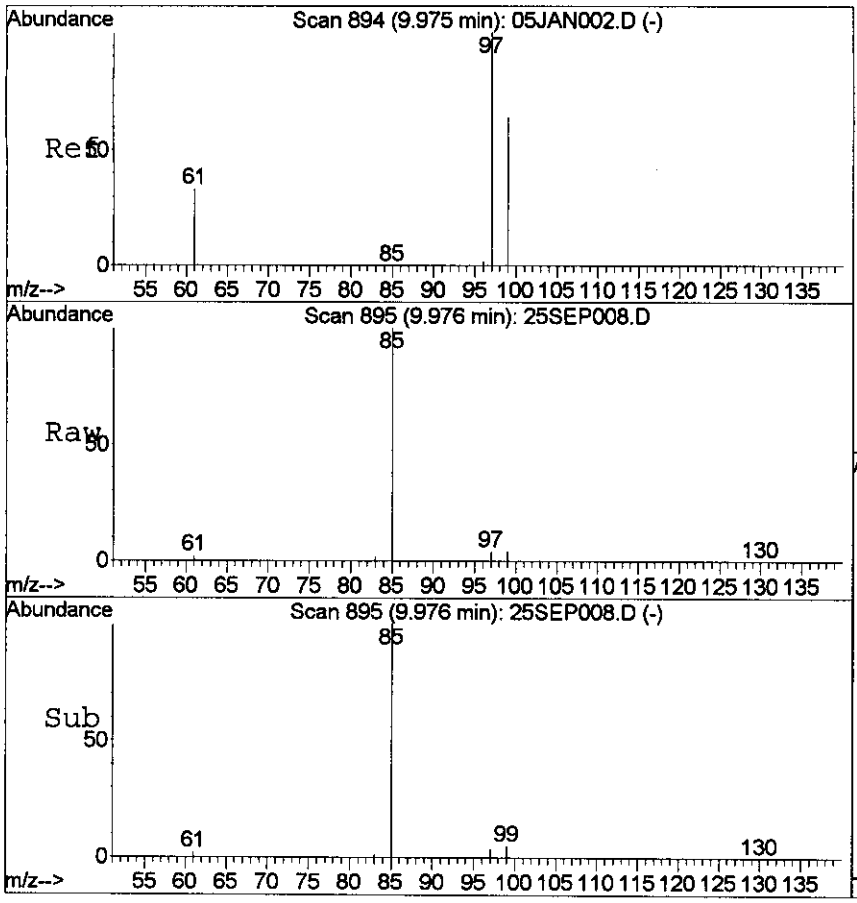


#9
Chloroform
Concen: 35.35 pptv
RT: 9.49 min Scan# 829
Delta R.T. 0.01 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion: 83 Resp: 2484

Ion	Ratio	Lower	Upper
83	100		
85	47.3	15.0	115.0

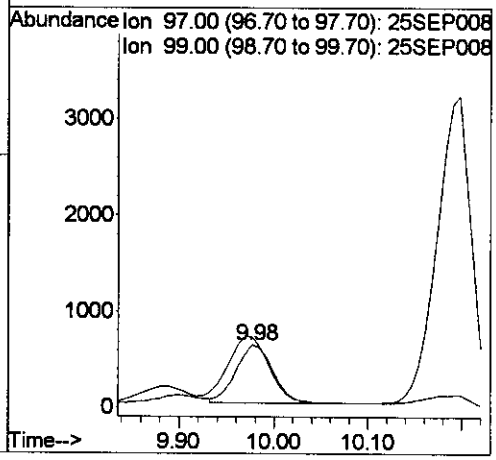


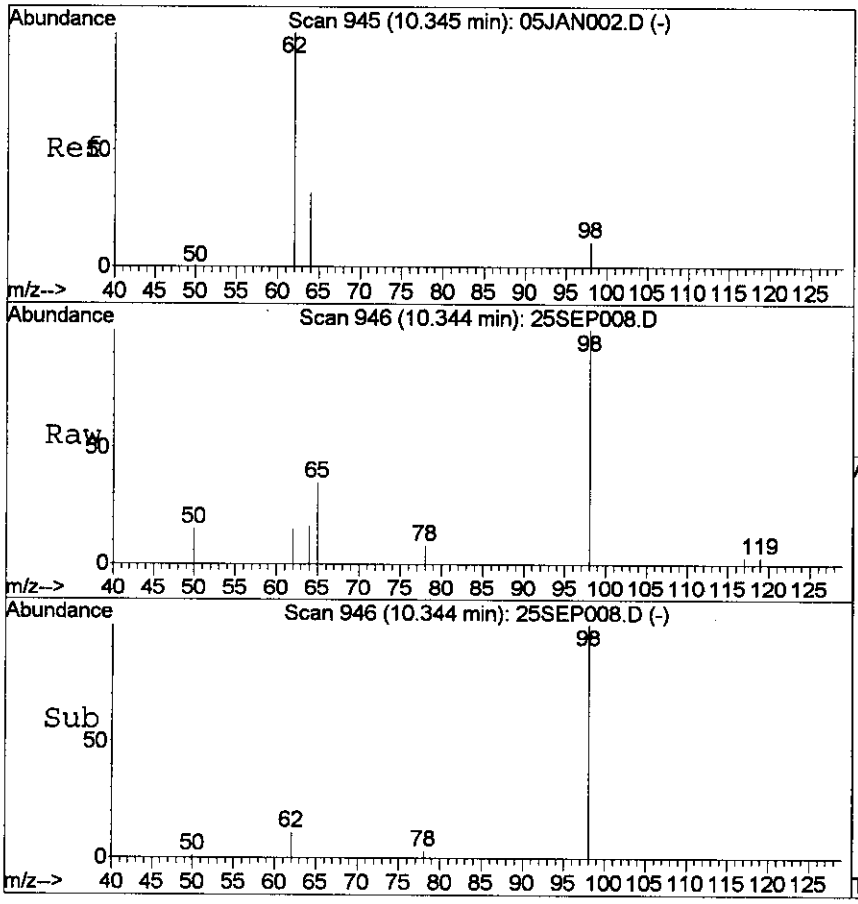


#10
1,1,1-Trichloroethane
Concen: 21.85 pptv
RT: 9.98 min Scan# 895
Delta R.T. 0.00 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion: 97 Resp: 1617

Ion	Ratio	Lower	Upper
97	100		
99	106.8	15.0	115.0

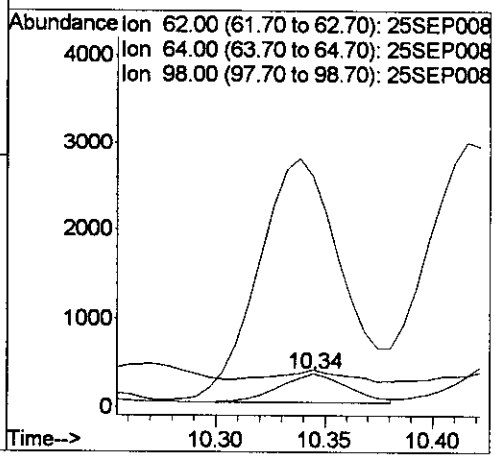


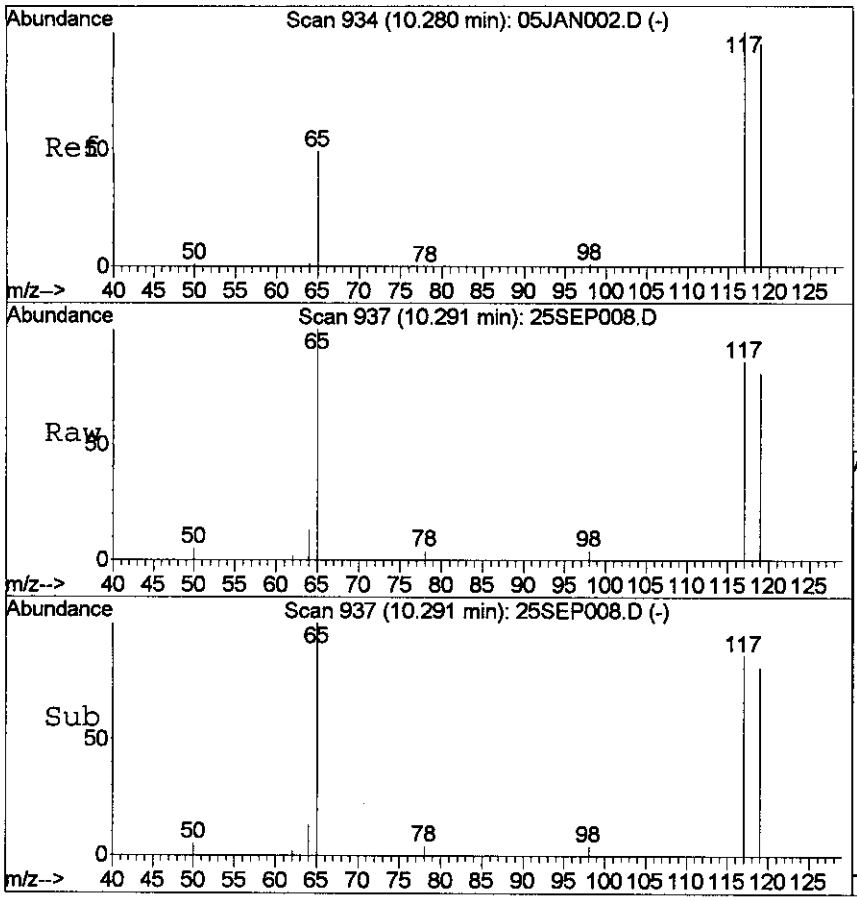


#12
1,2-Dichloroethane
Concen: 18.11 pptv
RT: 10.34 min Scan# 946
Delta R.T. -0.00 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion: 62 Resp: 719

Ion	Ratio	Lower	Upper
62	100		
64	34.5	0.0	82.0
98	715.4	0.0	32.0#

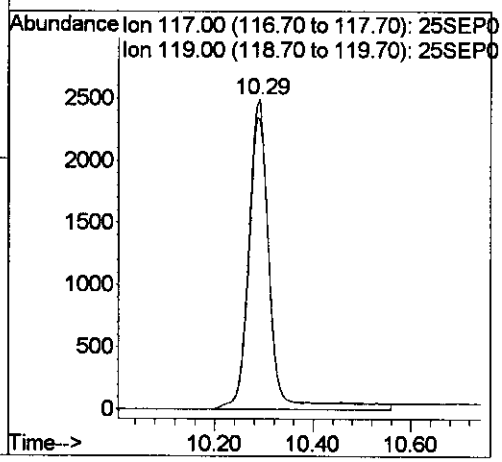


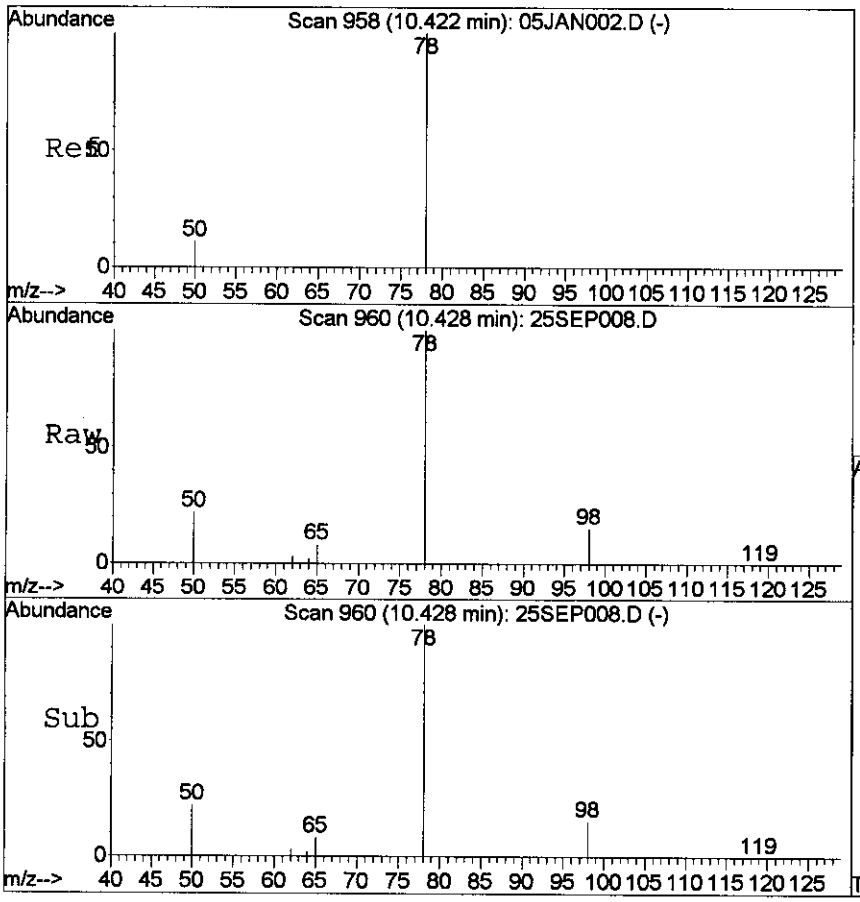


#13
Carbon Tetrachloride
Concen: 94.37 pptv
RT: 10.29 min Scan# 937
Delta R.T. 0.01 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion:117 Resp: 7839

Ion	Ratio	Lower	Upper
117	100		
119	93.4	47.0	147.0

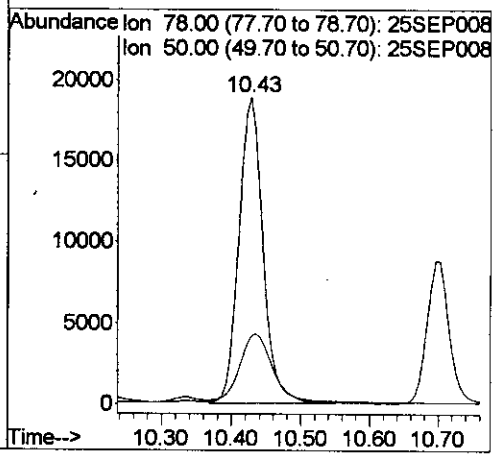


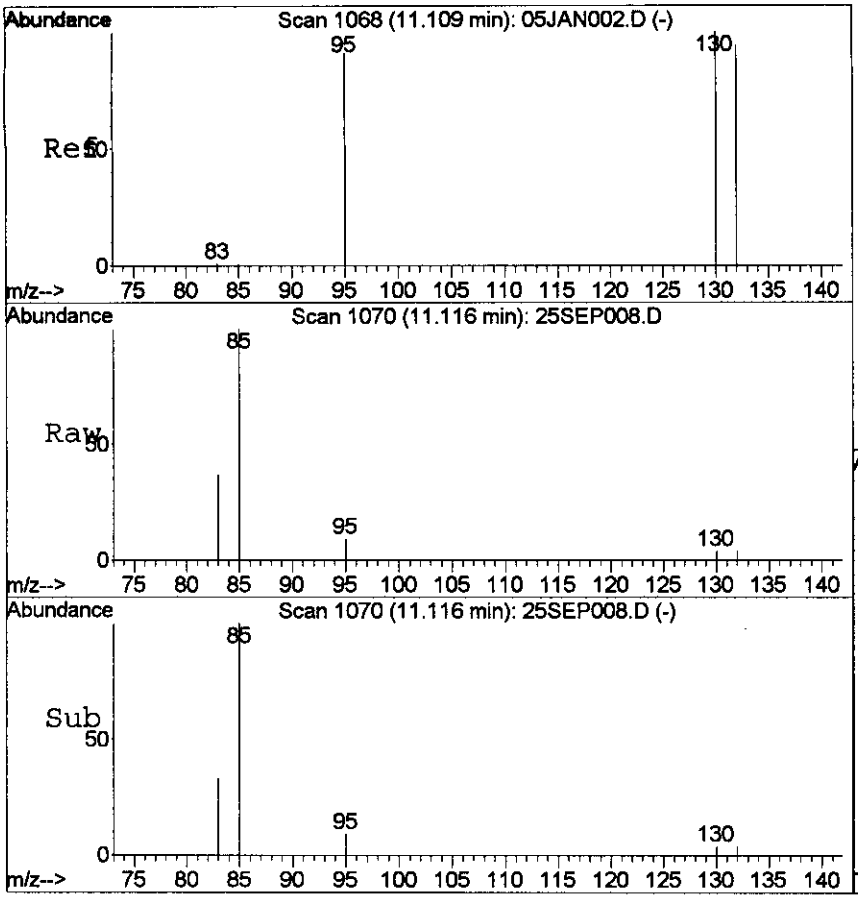


#14
Benzene
Concen: 354.55 pptv
RT: 10.43 min Scan# 960
Delta R.T. 0.01 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion: 78 Resp: 45633

Ion	Ratio	Lower	Upper
78	100		
50	31.3	5.0	15.0#

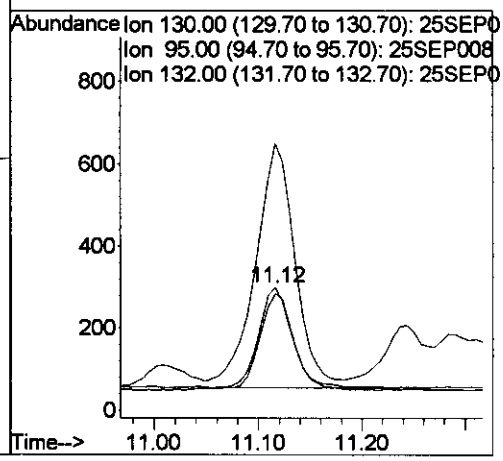


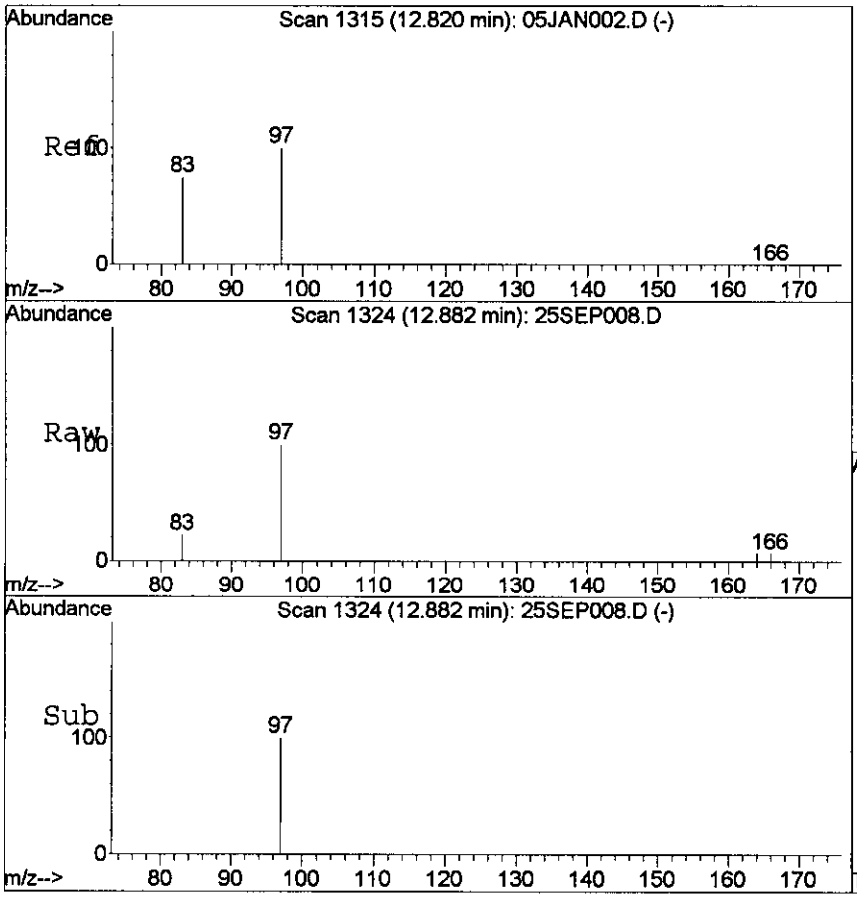


#15
Trichloroethene
Concen: 10.32 pptv
RT: 11.12 min Scan# 1070
Delta R.T. 0.01 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion:130 Resp: 549

Ion	Ratio	Lower	Upper
130	100		
95	212.7	16.0	116.0#
132	95.1	75.0	115.0

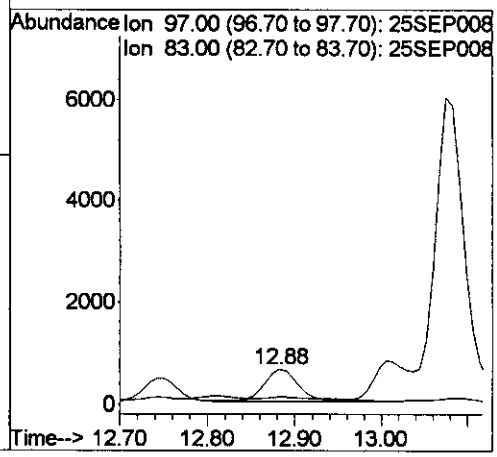


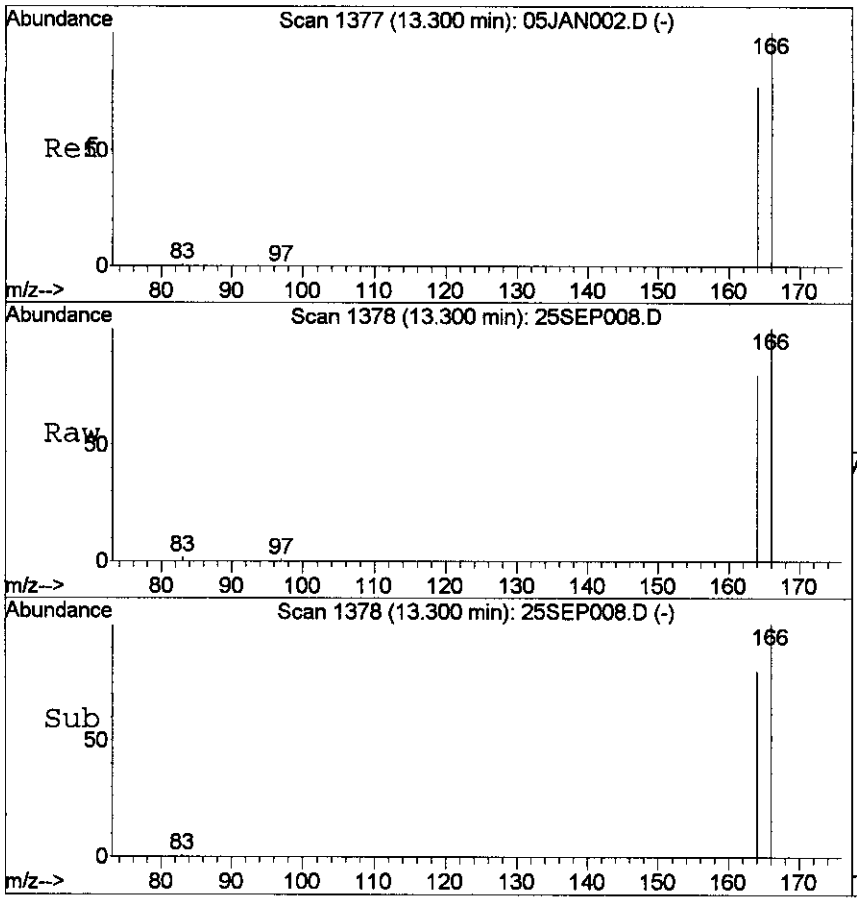


#16
1,1,2-Trichloroethane
Concen: 37.05 pptv
RT: 12.88 min Scan# 1324
Delta R.T. 0.06 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion: 97 Resp: 1739

Ion	Ratio	Lower	Upper
97	100		
83	0.0	19.0	119.0#

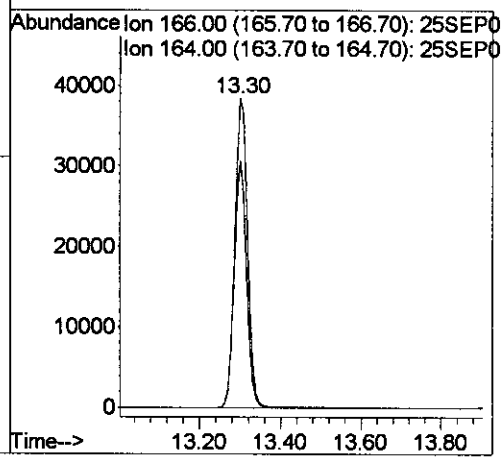




#17
Tetrachloroethene
Concen: 1042.95 pptv
RT: 13.30 min Scan# 1378
Delta R.T. 0.00 min
Lab File: 25SEP008.D
Acq: 25 Sep 2006 14:24

Tgt Ion:166 Resp: 83195

Ion	Ratio	Lower	Upper
166	100		
164	79.7	30.0	130.0



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP009.D Vial: 3
Acq On : 25 Sep 2006 15:02 Operator: JM
Sample : A6091505-03Dup CH2MHILL Inst : GC/MS 597
Misc : 347ml, 19.6/14.11 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 25 15:30 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

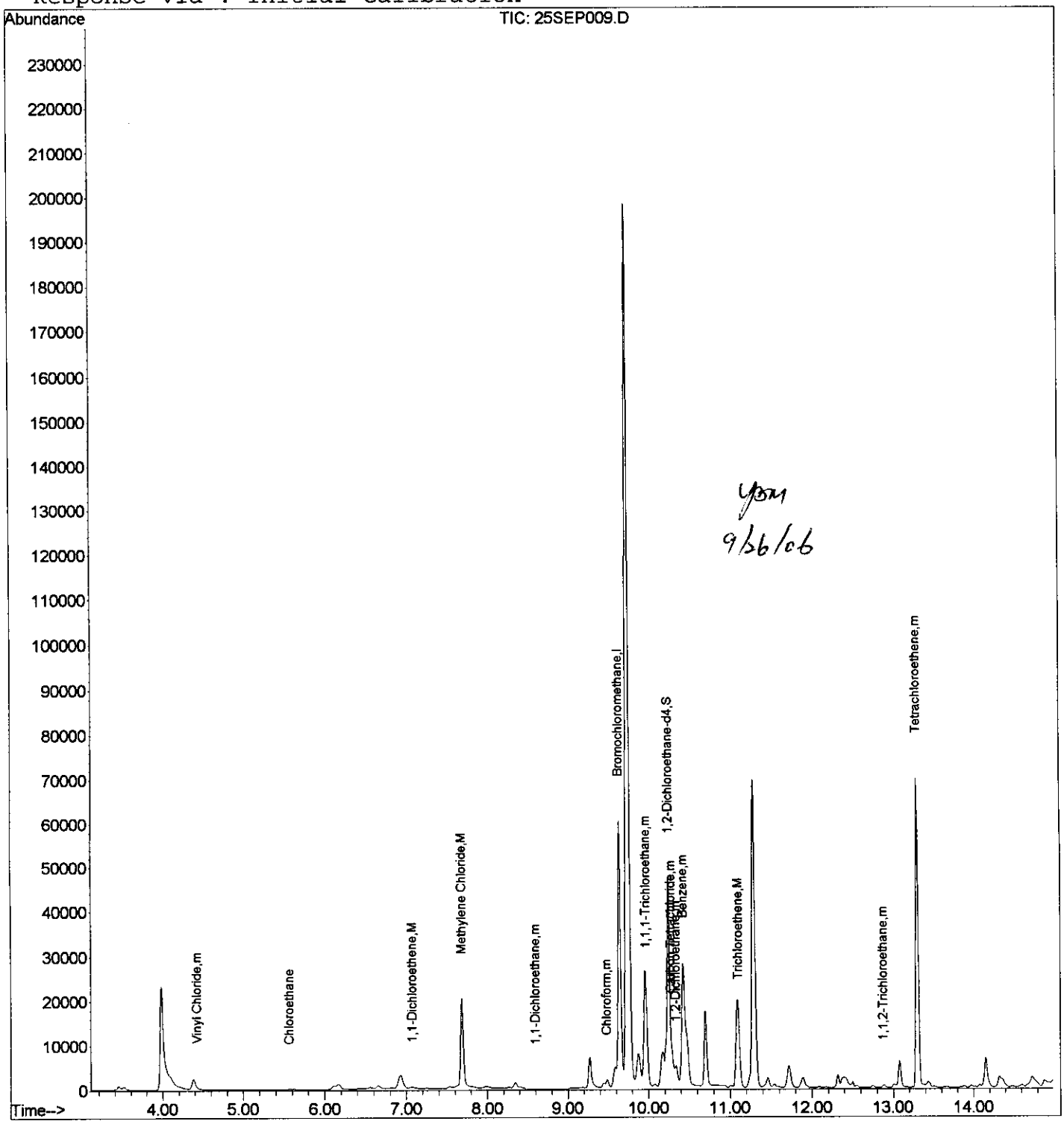
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	76990	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	118340	2552.33	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 127.62%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.44	62	83	3.60	pptv		43
3) Chloroethane	5.57	64	386	30.83	ppbv	#	100
4) 1,1-Dichloroethene	7.07	96	126	4.01	pptv	#	16
5) Methylene Chloride	7.69	49	17372	754.77	pptv		87
7) 1,1-Dichloroethane	8.60	63	62	1.23	pptv	#	42
9) Chloroform	9.49	83	2504	35.55	pptv		79
10) 1,1,1-Trichloroethane	9.98	97	1605	21.64	pptv		56
12) 1,2-Dichloroethane	10.34	62	727	18.27	pptv	#	1
13) Carbon Tetrachloride	10.29	117	7850	94.28	pptv		98
14) Benzene	10.43	78	45204	350.40	pptv	#	42
15) Trichloroethene	11.12	130	555	10.40	pptv	#	20
16) 1,1,2-Trichloroethane	12.88	97	1723	36.62	pptv	#	15
17) Tetrachloroethene	13.30	166	82970	1037.71	pptv		99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

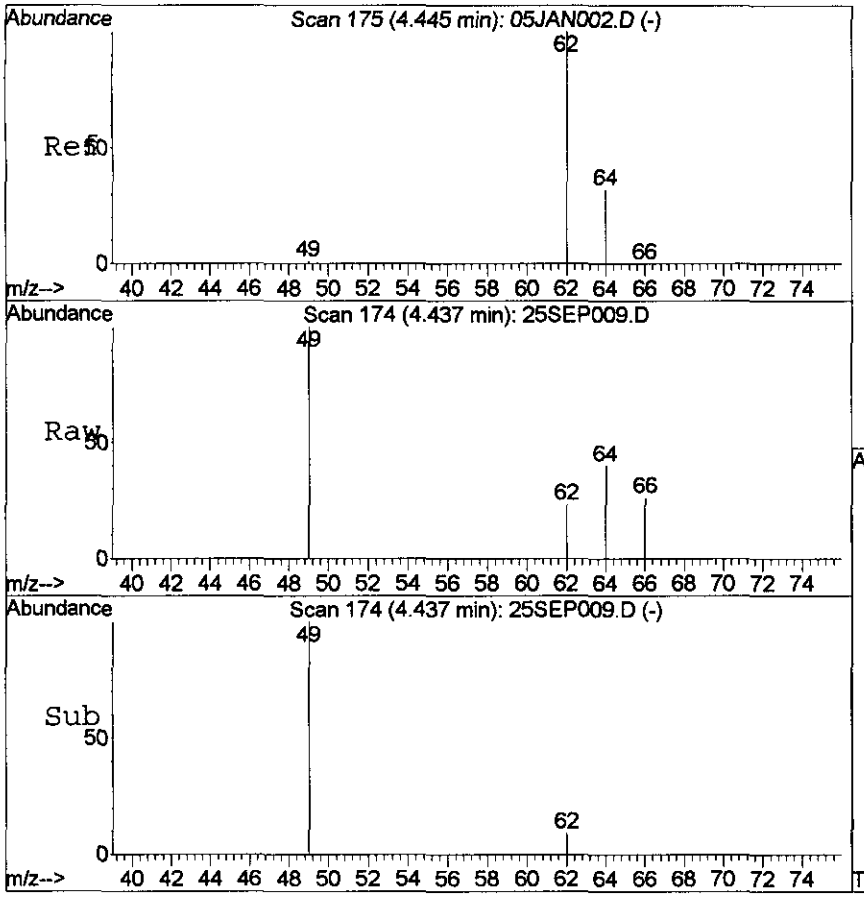
Data File : D:\GCMSB\060925\25SEP009.D Vial: 3
Acq On : 25 Sep 2006 15:02 Operator: JM
Sample : A6091505-03Dup CH2MHILL Inst : GC/MS 597
Misc : 347ml, 19.6/14.11 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 25 15:30 2006 Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



ypm
9/26/06

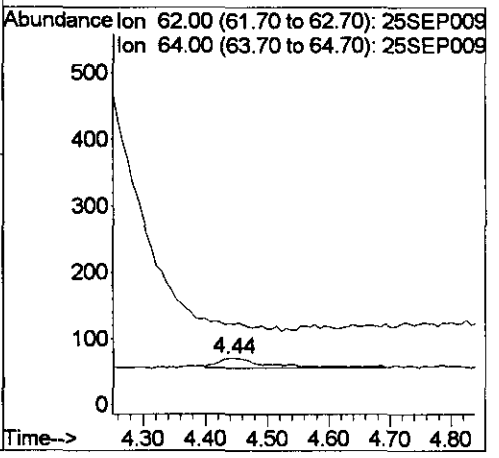
53

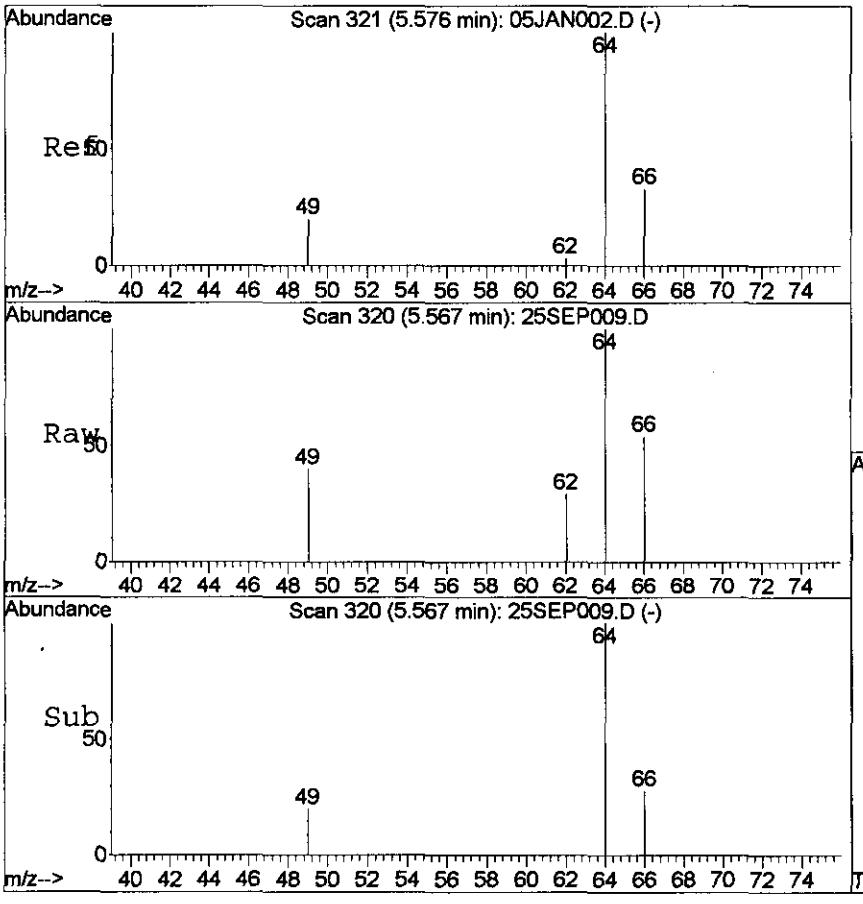


#2
Vinyl Chloride
Concen: 3.60 pptv
RT: 4.44 min Scan# 174
Delta R.T. -0.01 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion: 62 Resp: 83

Ion	Ratio	Lower	Upper
62	100		
64	0.0	0.0	81.2

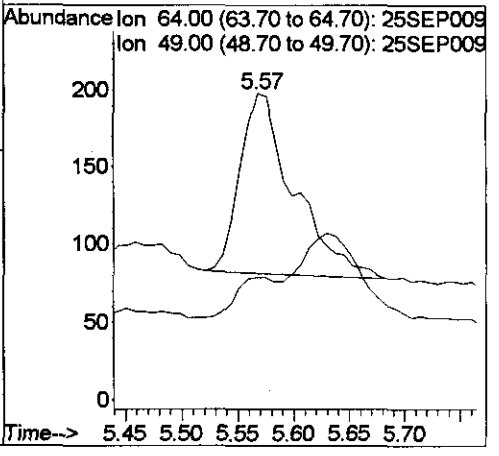


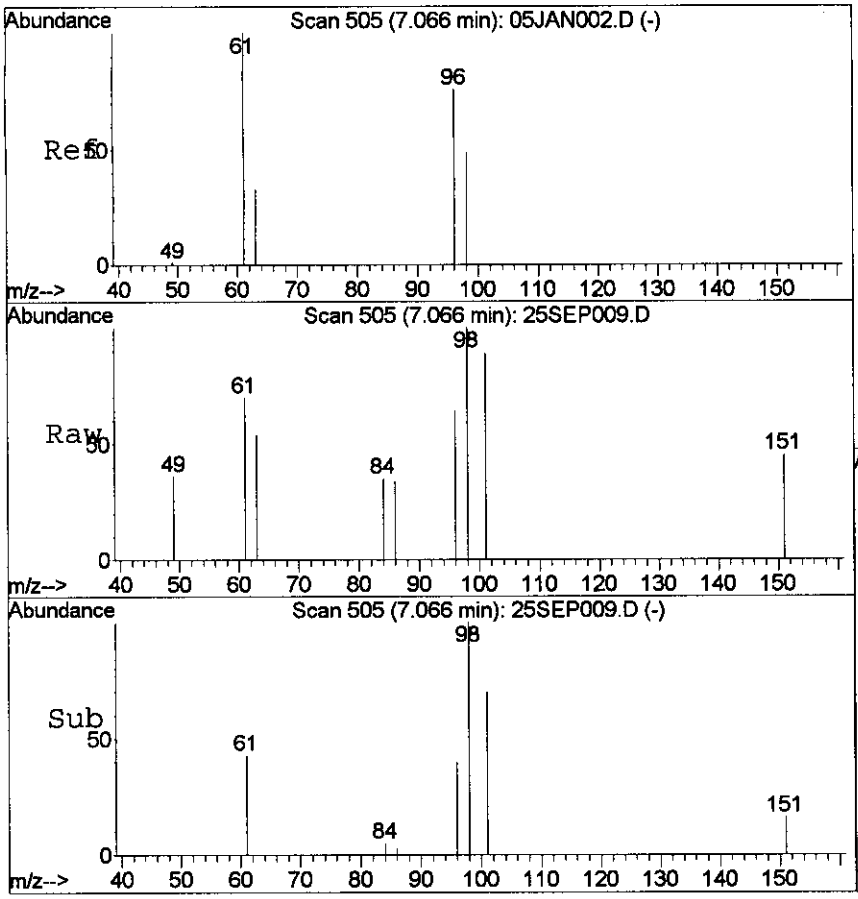


#3
Chloroethane
Concen: 30.83 ppbv
RT: 5.57 min Scan# 320
Delta R.T. -0.01 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion: 64 Resp: 386

Ion	Ratio	Lower	Upper
64	100		
49	0.0	0.0	0.0

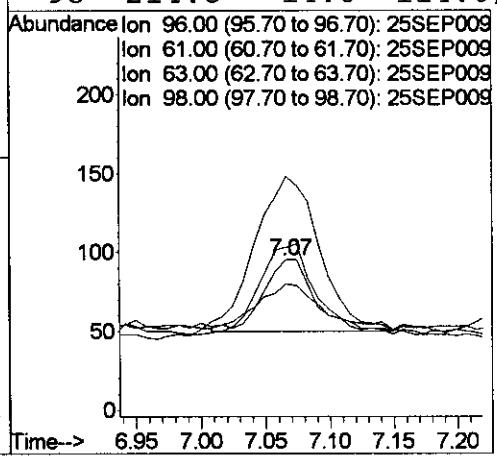


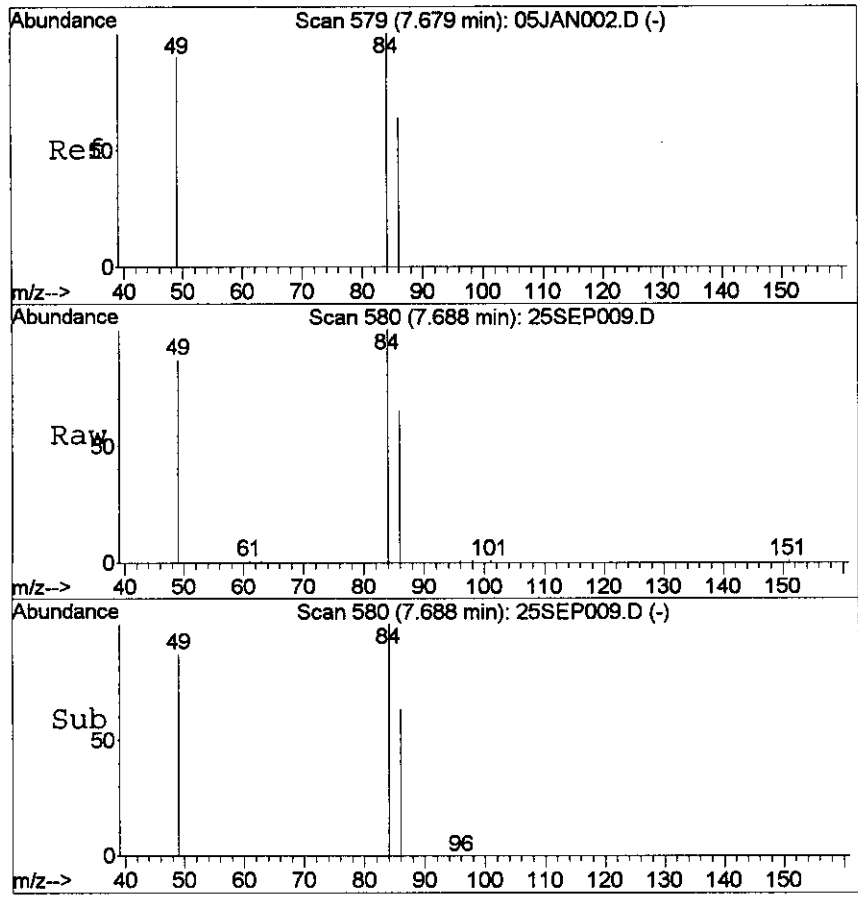


#4
1,1-Dichloroethene
Concen: 4.01 pptv
RT: 7.07 min Scan# 505
Delta R.T. 0.00 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion: 96 Resp: 126

Ion	Ratio	Lower	Upper
96	100		
61	123.9	49.0	149.0
63	63.6	0.0	84.0
98	214.8	14.0	114.0#

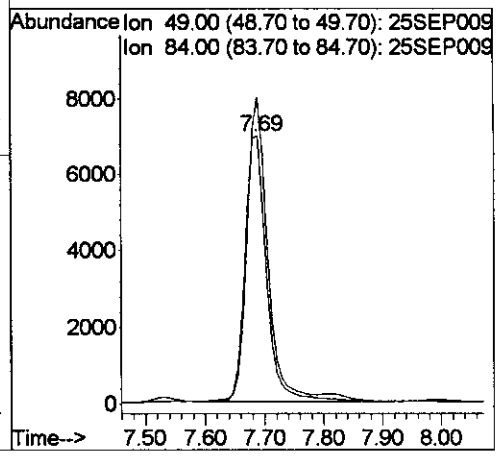


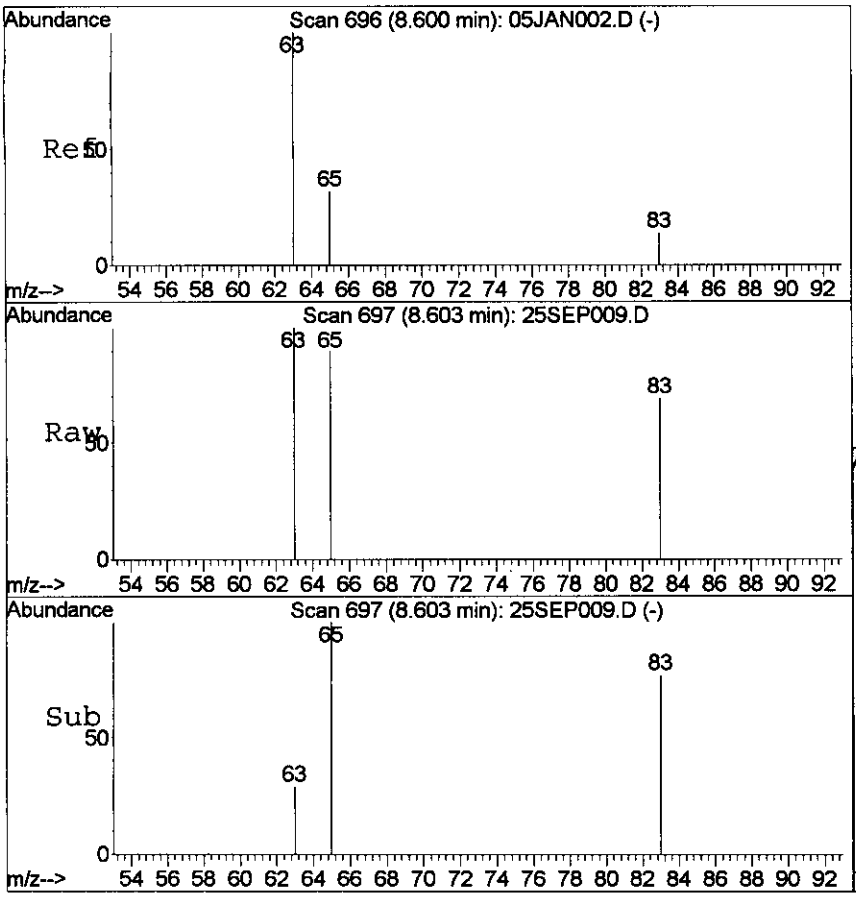


#5
Methylene Chloride
Concen: 754.77 pptv
RT: 7.69 min Scan# 580
Delta R.T. 0.01 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion: 49 Resp: 17372

Ion	Ratio	Lower	Upper
49	100		
84	114.5	80.0	180.0

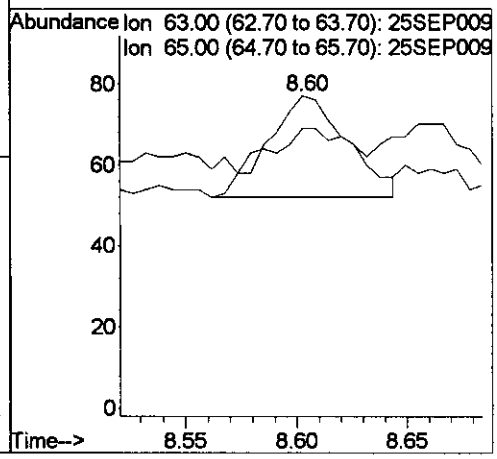


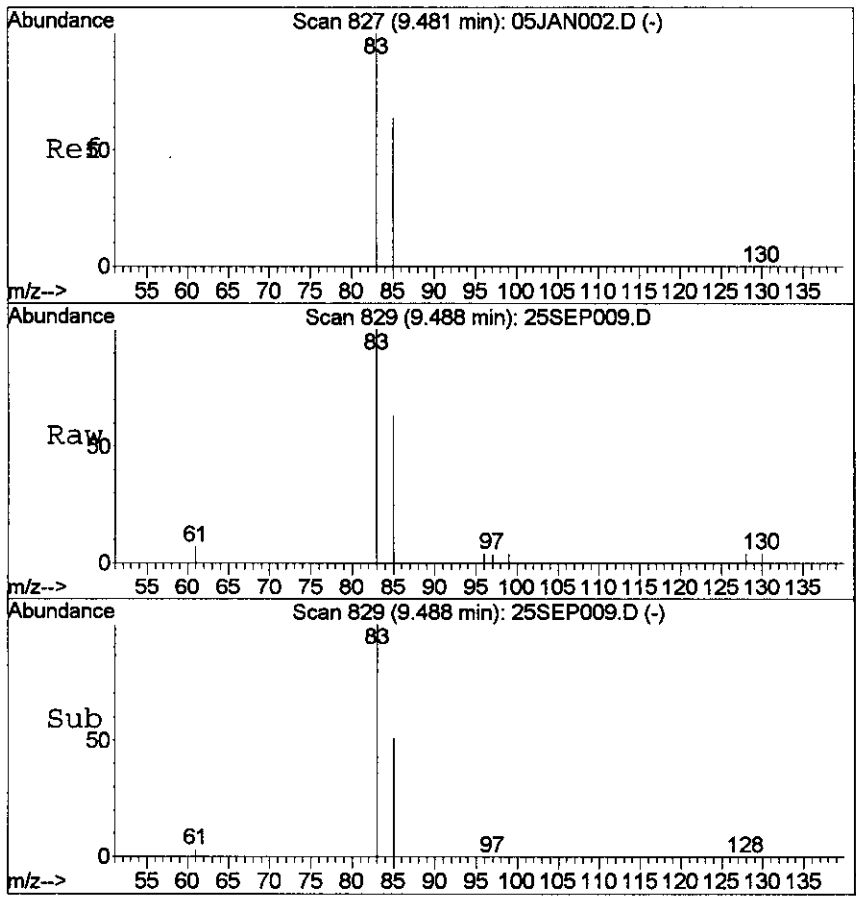


#7
1,1-Dichloroethane
Concen: 1.23 pptv
RT: 8.60 min Scan# 697
Delta R.T. 0.00 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion: 63 Resp: 62

Ion	Ratio	Lower	Upper
63	100		
65	0.0	16.5	49.5#

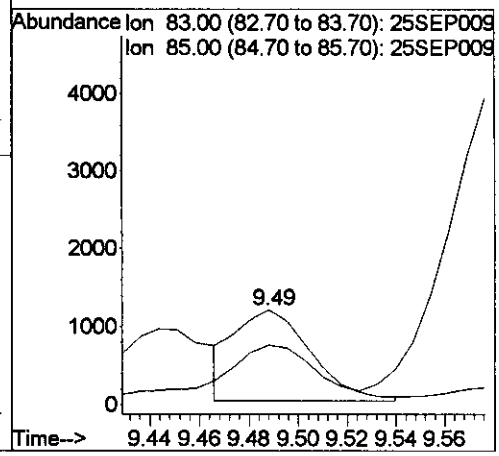


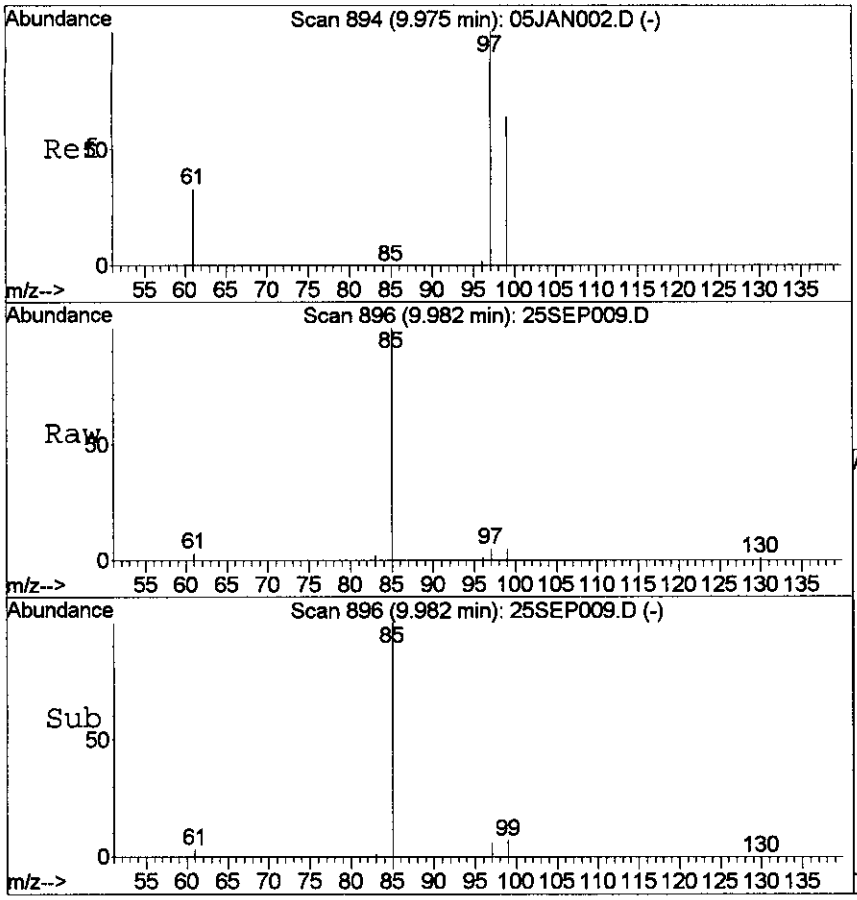


#9
Chloroform
Concen: 35.55 pptv
RT: 9.49 min Scan# 829
Delta R.T. 0.01 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion: 83 Resp: 2504

Ion	Ratio	Lower	Upper
83	100		
85	48.7	15.0	115.0

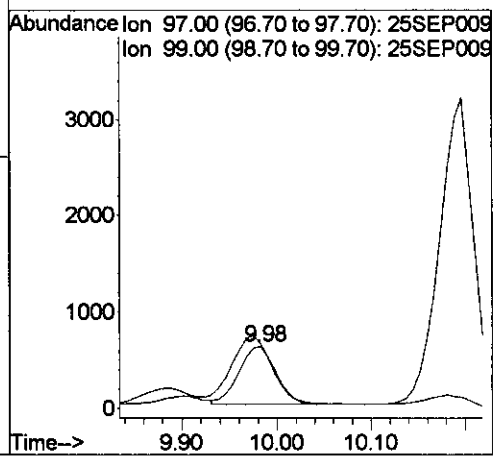


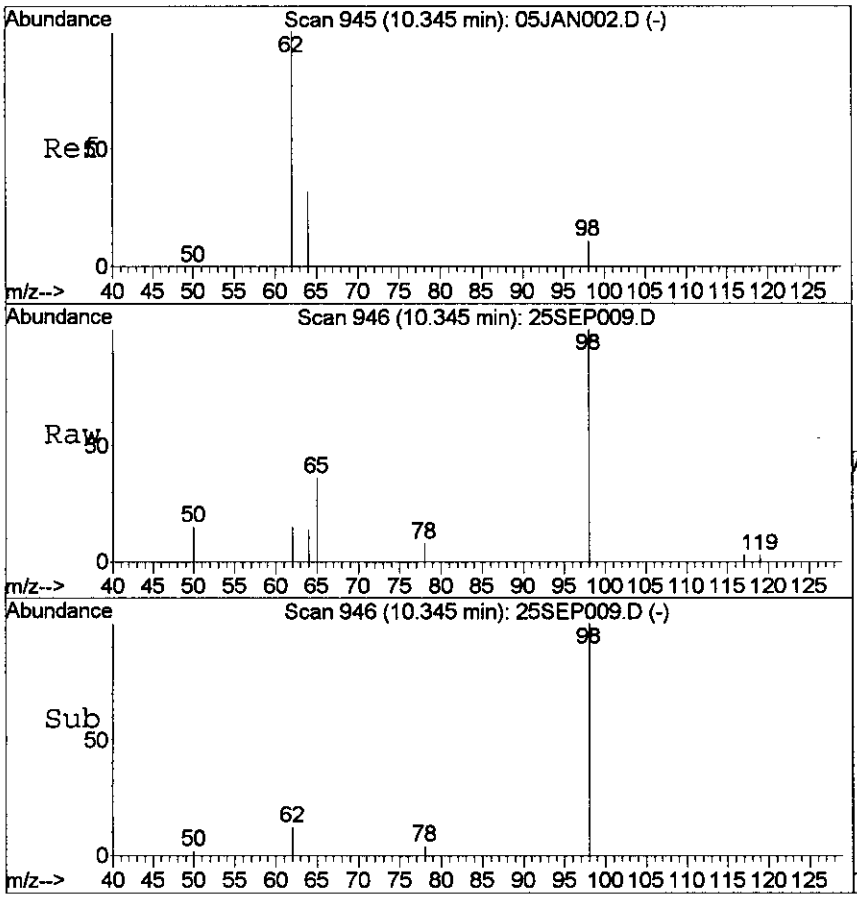


#10
1,1,1-Trichloroethane
Concen: 21.64 pptv
RT: 9.98 min Scan# 896
Delta R.T. 0.01 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion: 97 Resp: 1605

Ion	Ratio	Lower	Upper
97	100		
99	100.0	15.0	115.0

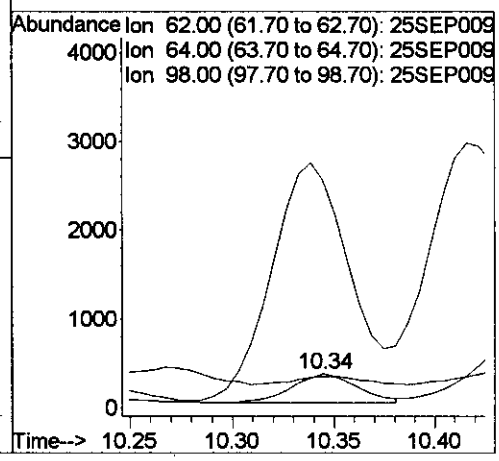


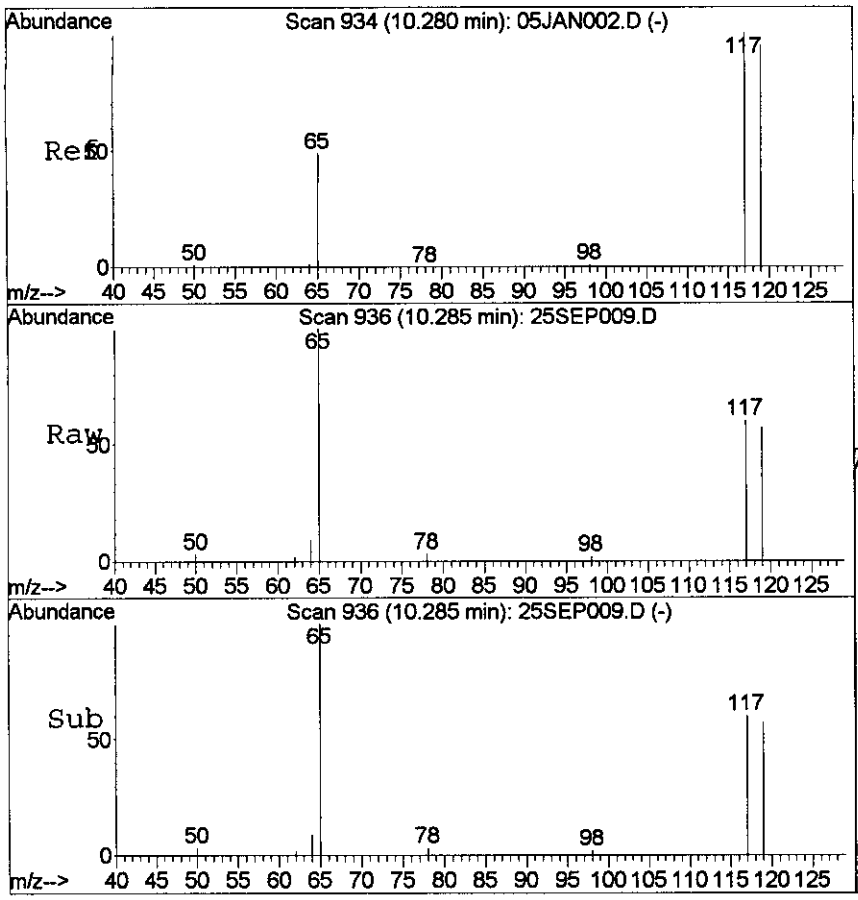


#12
1,2-Dichloroethane
Concen: 18.27 pptv
RT: 10.34 min Scan# 946
Delta R.T. -0.00 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion: 62 Resp: 727

Ion	Ratio	Lower	Upper
62	100		
64	17.4	0.0	82.0
98	718.1	0.0	32.0#

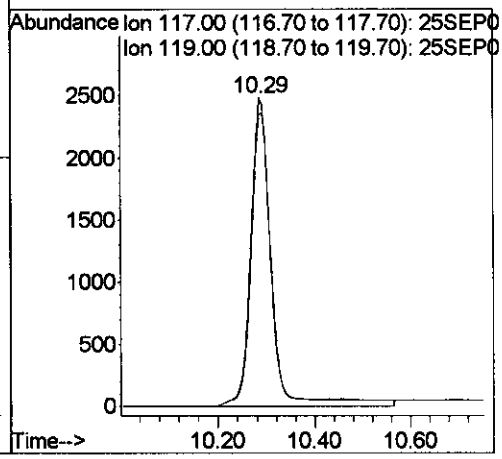


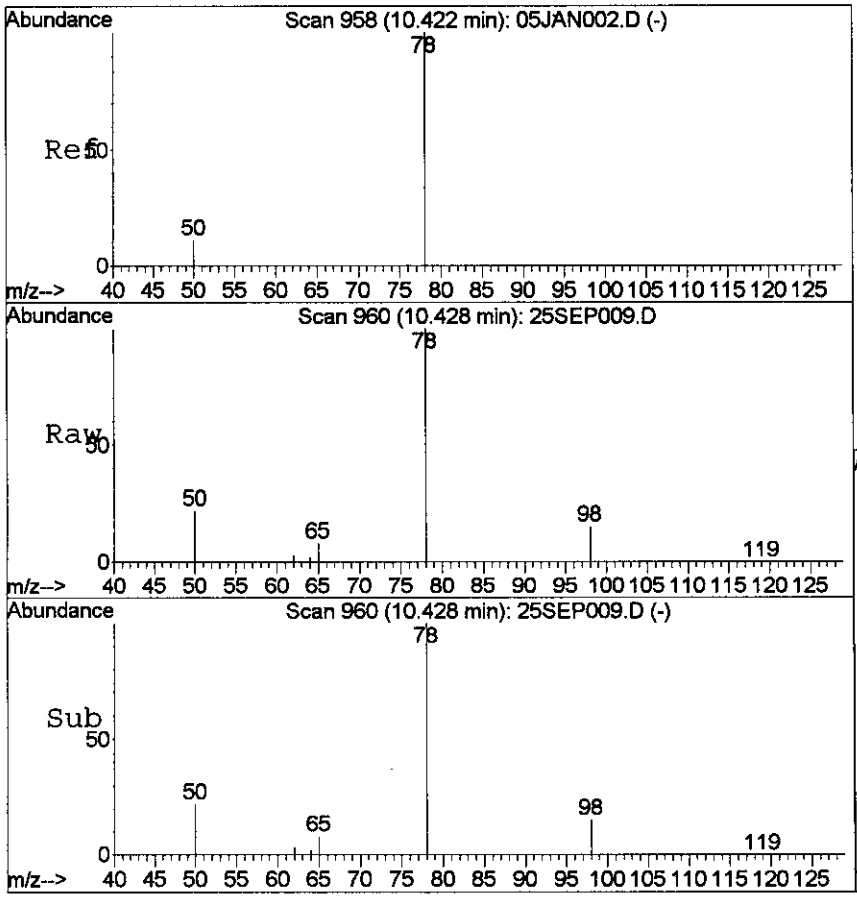


#13
Carbon Tetrachloride
Concen: 94.28 pptv
RT: 10.29 min Scan# 936
Delta R.T. 0.01 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion:117 Resp: 7850

Ion	Ratio	Lower	Upper
117	100		
119	94.7	47.0	147.0

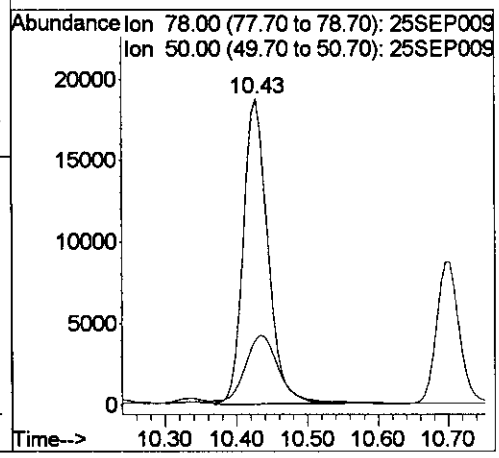


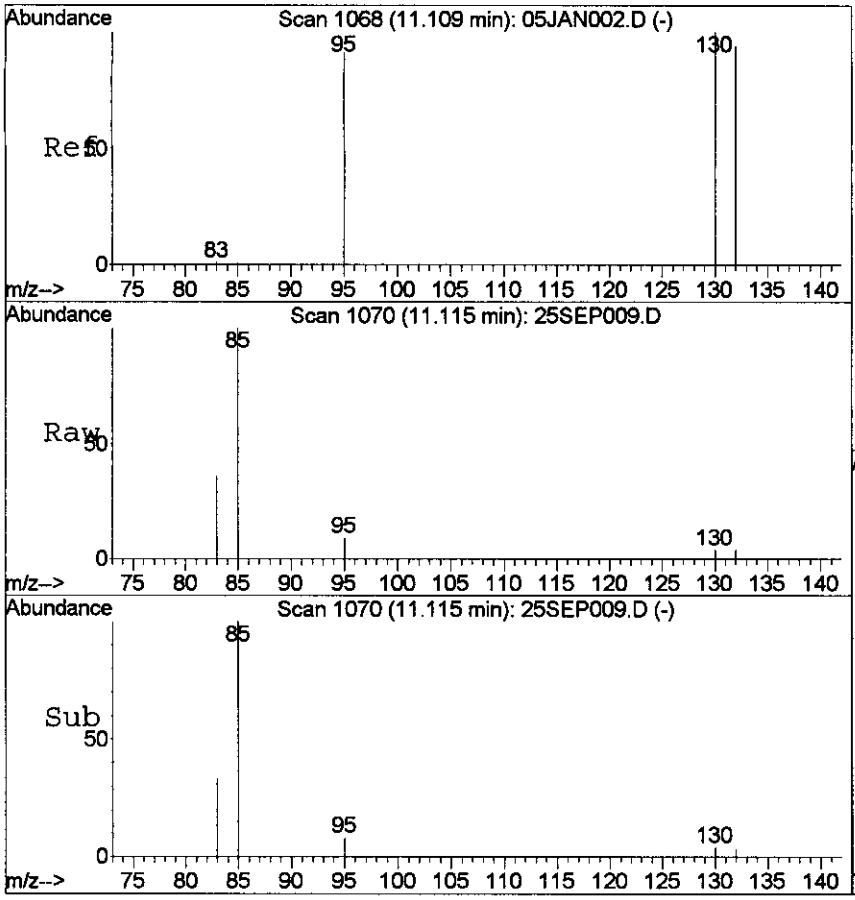


#14
Benzene
Concen: 350.40 pptv
RT: 10.43 min Scan# 960
Delta R.T. 0.01 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion: 78 Resp: 45204

Ion	Ratio	Lower	Upper
78	100		
50	31.4	5.0	15.0#

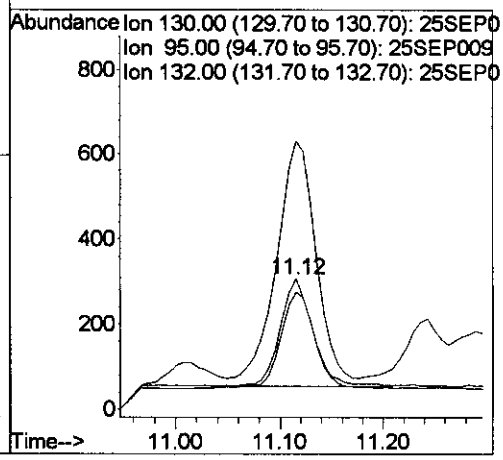


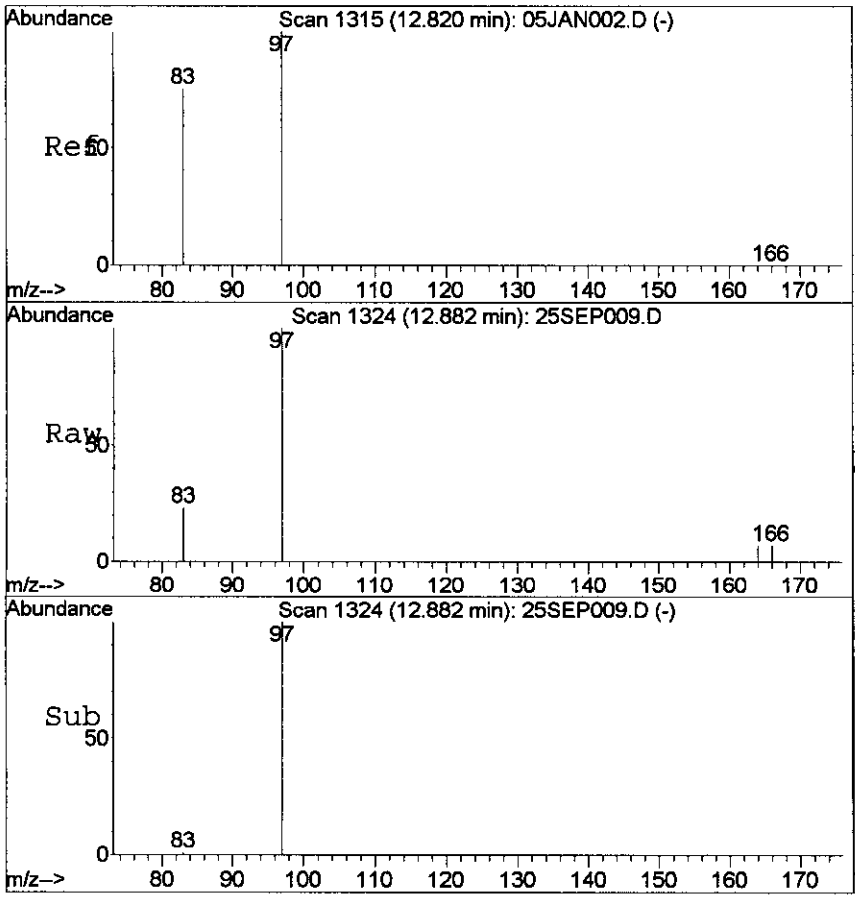


#15
Trichloroethene
Concen: 10.40 pptv
RT: 11.12 min Scan# 1070
Delta R.T. 0.01 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion:130 Resp: 555

Ion	Ratio	Lower	Upper
130	100		
95	215.1	16.0	116.0#
132	89.6	75.0	115.0

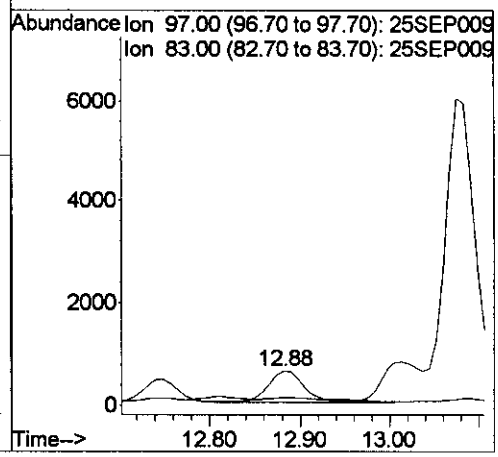


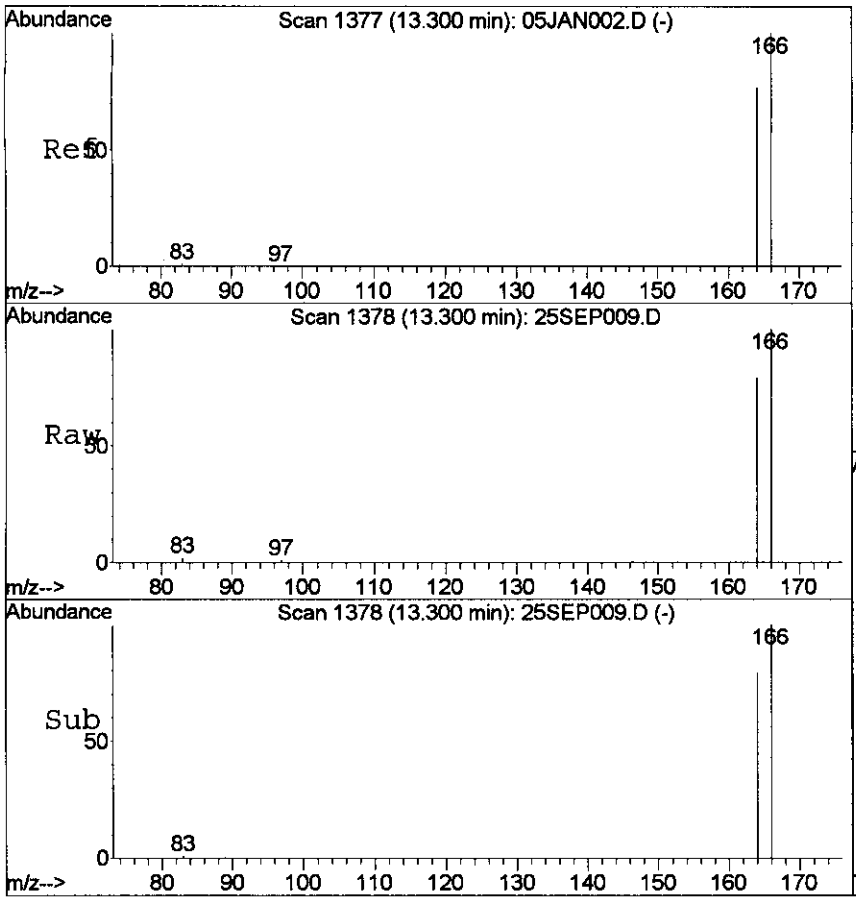


#16
1,1,2-Trichloroethane
Concen: 36.62 pptv
RT: 12.88 min Scan# 1324
Delta R.T. 0.06 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion: 97 Resp: 1723

Ion	Ratio	Lower	Upper
97	100		
83	0.0	19.0	119.0#

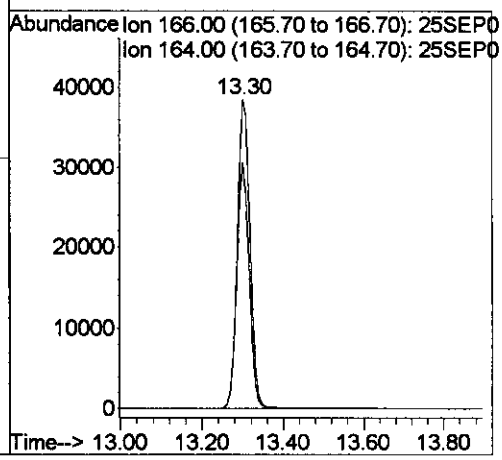




#17
Tetrachloroethene
Concen: 1037.71 pptv
RT: 13.30 min Scan# 1378
Delta R.T. -0.00 min
Lab File: 25SEP009.D
Acq: 25 Sep 2006 15:02

Tgt Ion:166 Resp: 82970

Ion	Ratio	Lower	Upper
166	100		
164	79.3	30.0	130.0



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP010.D
Acq On : 25 Sep 2006 15:39
Sample : A6091505-04 CH2MHILL
Misc : 341ml, 19.6/14.36
MS Integration Params: rteint.p
Quant Time: Sep 25 15:57 2006

Vial: 4
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00
Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	75544	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	116743	2566.08	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 128.30%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.44	62	80	3.53	pptv		67
3) Chloroethane	5.57	64	494	40.21	ppbv	#	100
5) Methylene Chloride	7.69	49	16345	723.74	pptv		85
9) Chloroform	9.49	83	3594	52.00	pptv		74
10) 1,1,1-Trichloroethane	9.98	97	1651	22.69	pptv	#	33
12) 1,2-Dichloroethane	10.54	62	95	2.43	pptv		50
13) Carbon Tetrachloride	10.29	117	8064	98.71	pptv		97
14) Benzene	10.43	78	44598	352.32	pptv	#	41
15) Trichloroethene	11.12	130	631	12.06	pptv	#	46
16) 1,1,2-Trichloroethane	12.94	97	1023	22.16	pptv		87
17) Tetrachloroethene	13.30	166	79717	1016.11	pptv		98

(#) = qualifier out of range (m) = manual integration

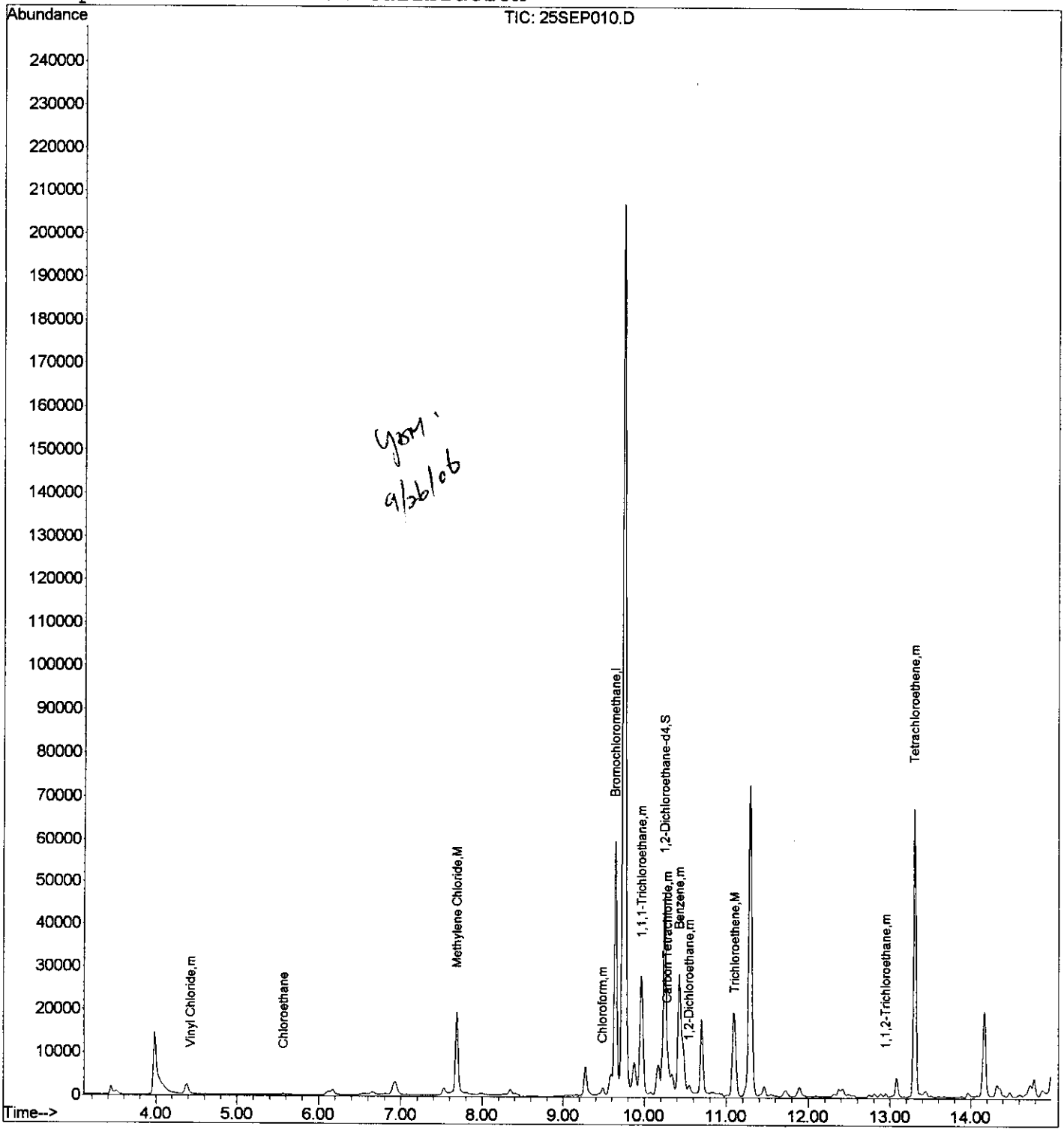
Quantitation Report

Data File : D:\GCMSB\060925\25SEP010.D
Acq On : 25 Sep 2006 15:39
Sample : A6091505-04 CH2MHILL
Misc : 341ml, 19.6/14.36
MS Integration Params: rteint.p
Quant Time: Sep 25 15:57 2006

Vial: 4
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

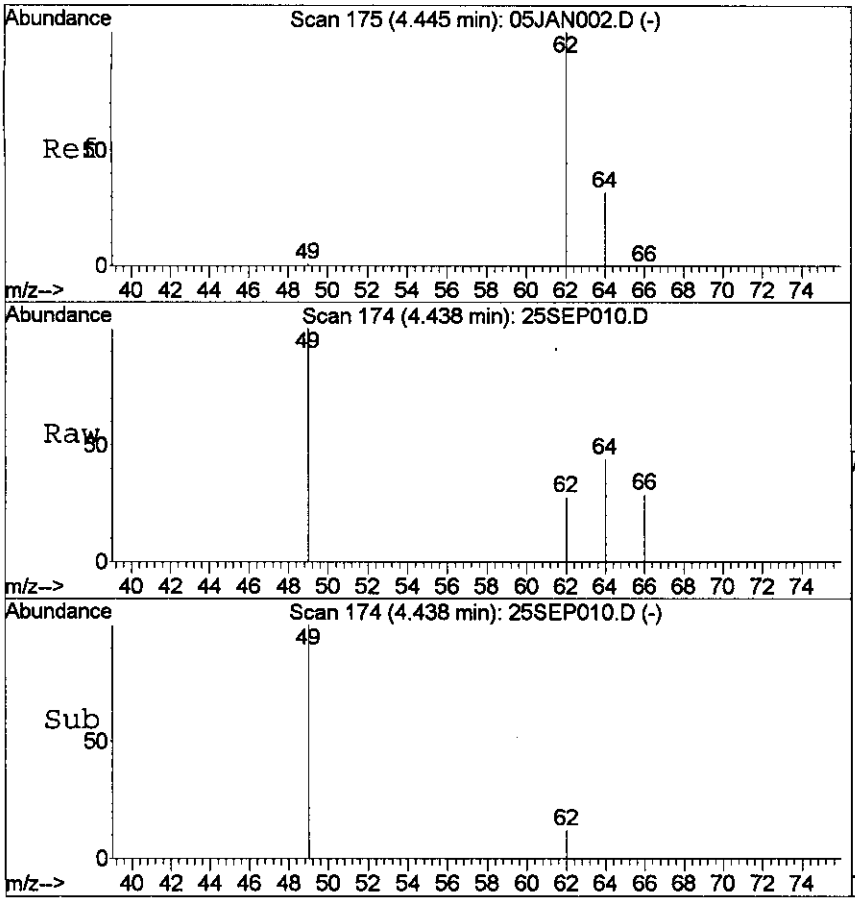
Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



ysm
9/26/06

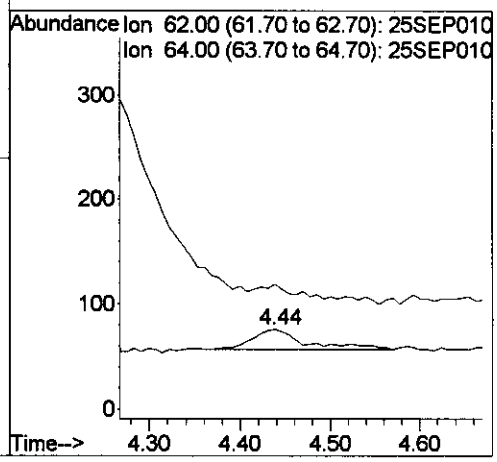
62

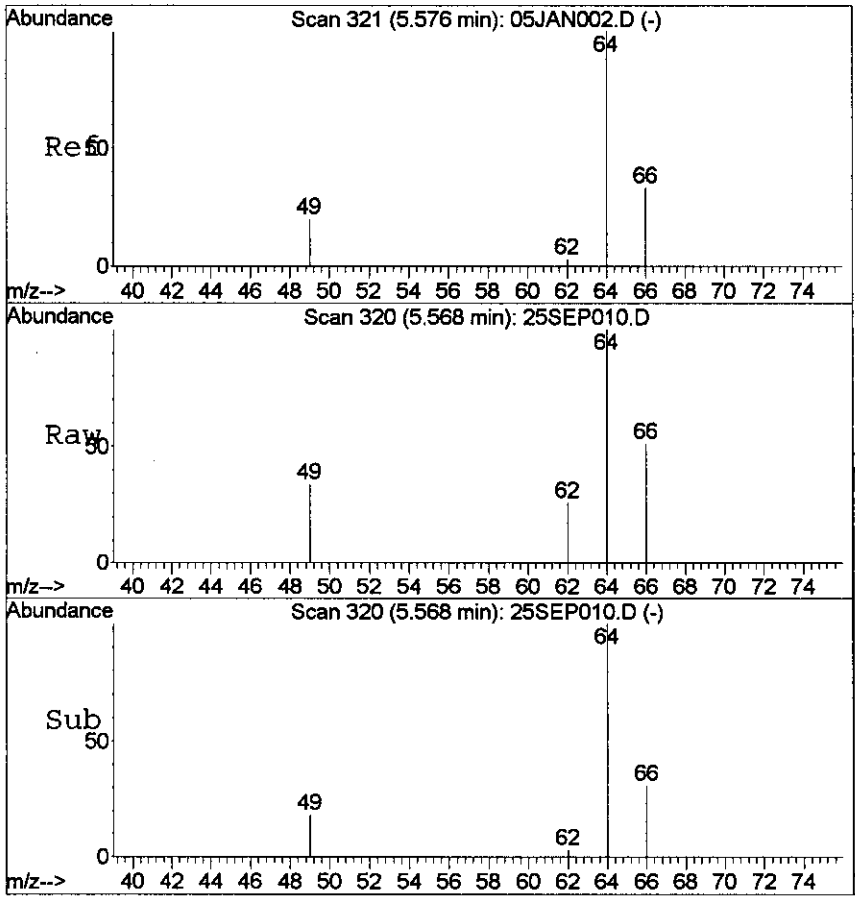


#2
Vinyl Chloride
Concen: 3.53 pptv
RT: 4.44 min Scan# 174
Delta R.T. -0.01 min
Lab File: 25SEP010.D
Acq: 25 Sep 2006 15:39

Tgt Ion: 62 Resp: 80

Ion	Ratio	Lower	Upper
62	100		
64	13.2	0.0	81.2

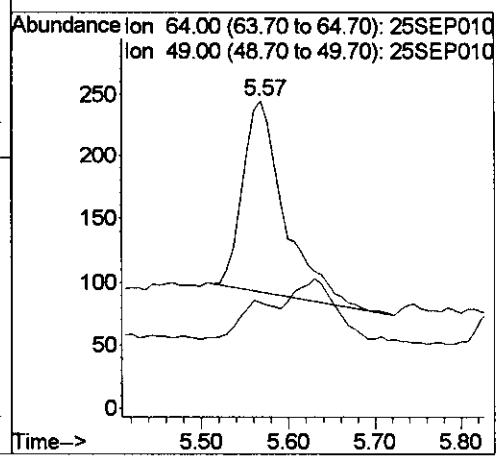


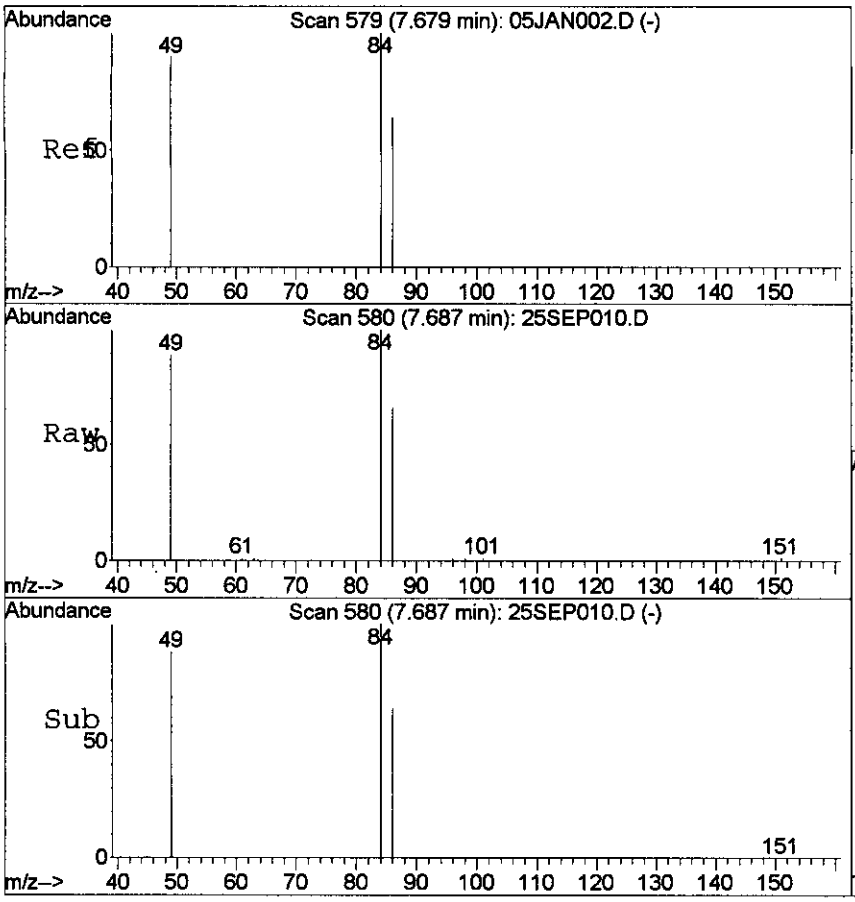


#3
Chloroethane
Concen: 40.21 ppbv
RT: 5.57 min Scan# 320
Delta R.T. -0.01 min
Lab File: 25SEP010.D
Acq: 25 Sep 2006 15:39

Tgt Ion: 64 Resp: 494

Ion	Ratio	Lower	Upper
64	100		
49	7.5	0.0	0.0#

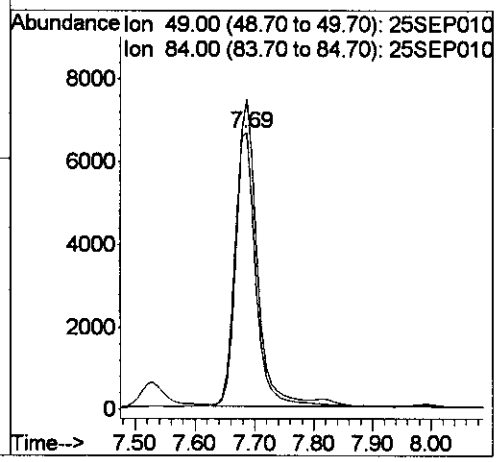


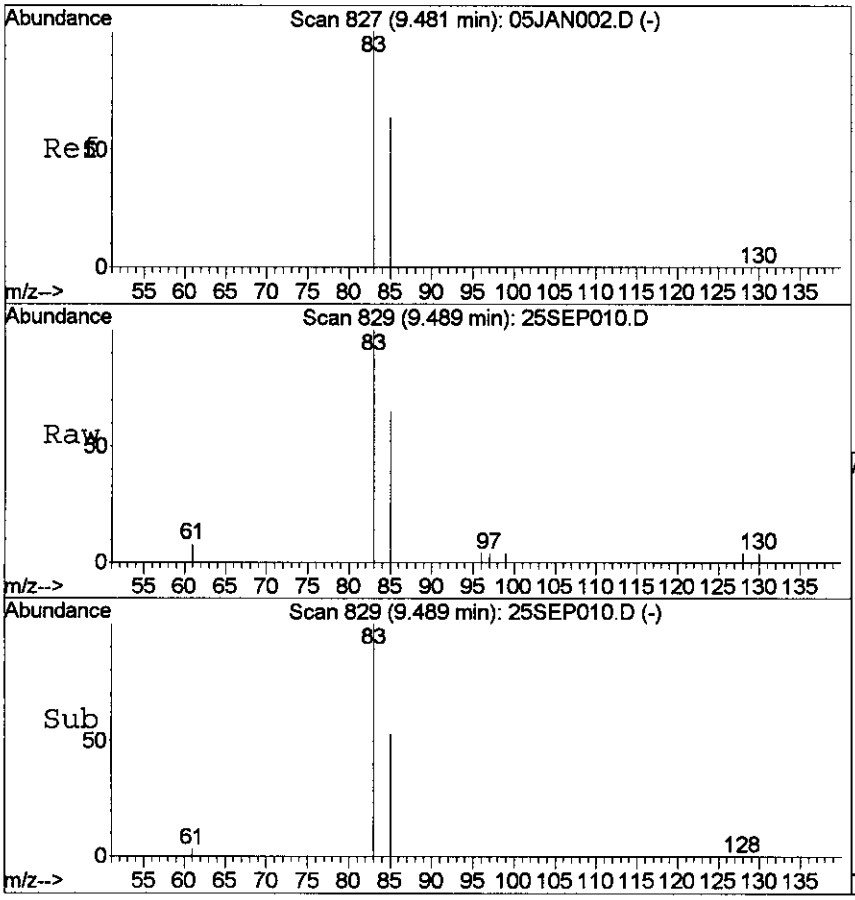


#5
Methylene Chloride
Concen: 723.74 pptv
RT: 7.69 min Scan# 580
Delta R.T. 0.01 min
Lab File: 25SEP010.D
Acq: 25 Sep 2006 15:39

Tgt Ion: 49 Resp: 16345

Ion	Ratio	Lower	Upper
49	100		
84	112.6	80.0	180.0

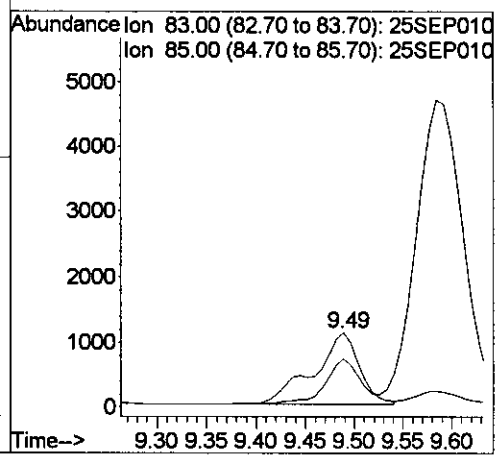


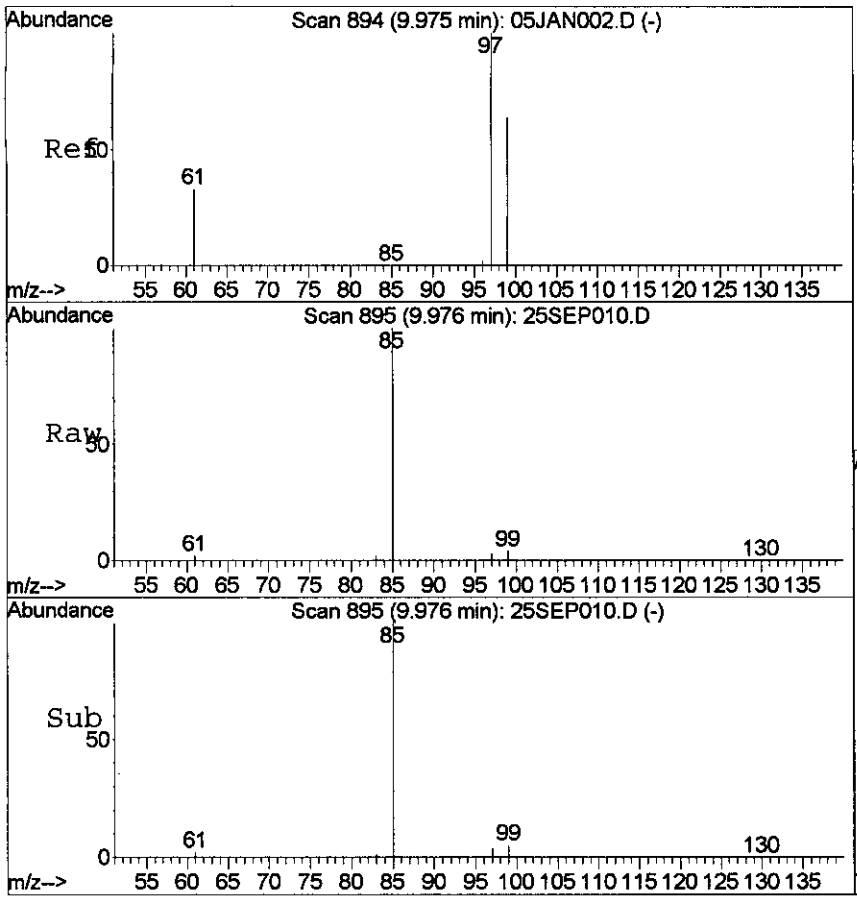


#9
Chloroform
Concen: 52.00 pptv
RT: 9.49 min Scan# 829
Delta R.T. 0.01 min
Lab File: 25SEP010.D
Acq: 25 Sep 2006 15:39

Tgt Ion: 83 Resp: 3594

Ion	Ratio	Lower	Upper
83	100		
85	44.1	15.0	115.0

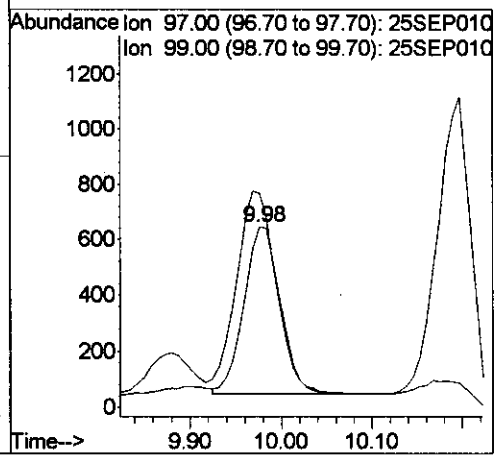


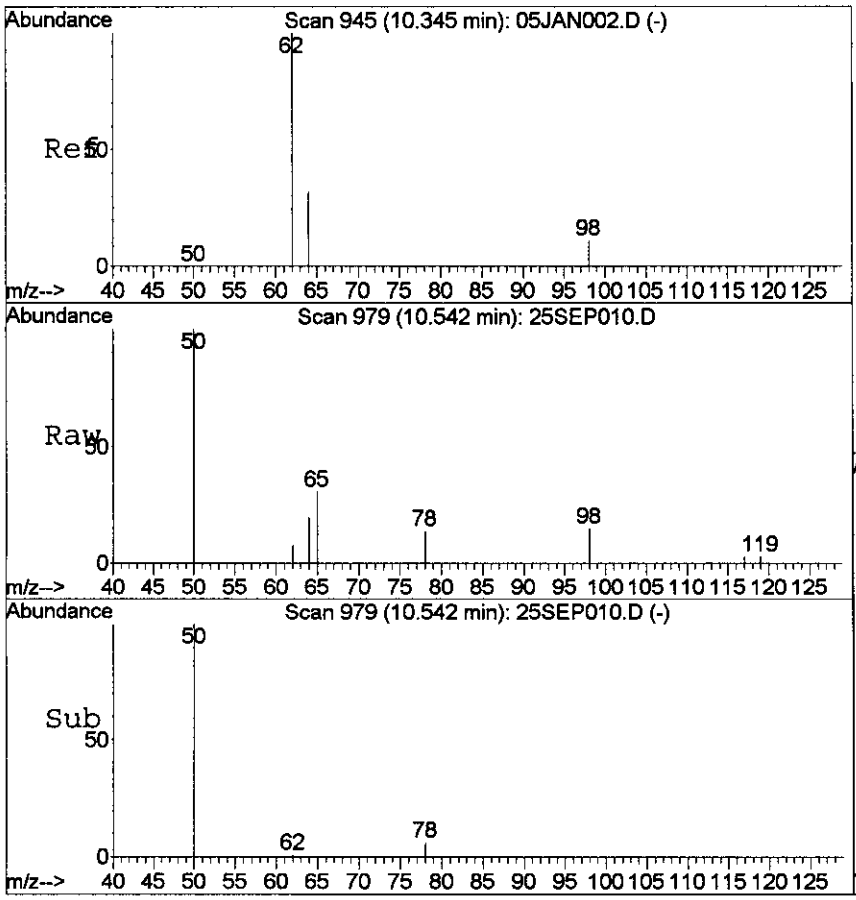


#10
1,1,1-Trichloroethane
Concen: 22.69 pptv
RT: 9.98 min Scan# 895
Delta R.T. 0.00 min
Lab File: 25SEP010.D
Acq: 25 Sep 2006 15:39

Tgt Ion: 97 Resp: 1651

Ion	Ratio	Lower	Upper
97	100		
99	117.5	15.0	115.0#

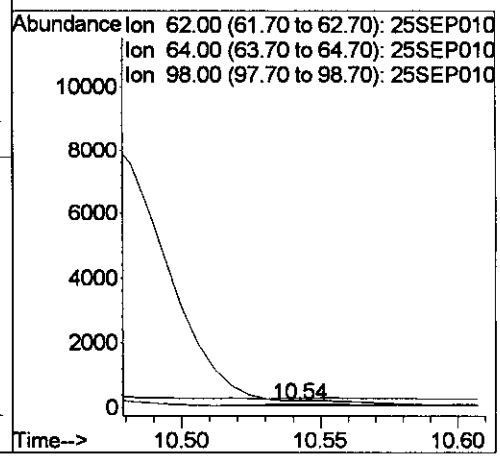


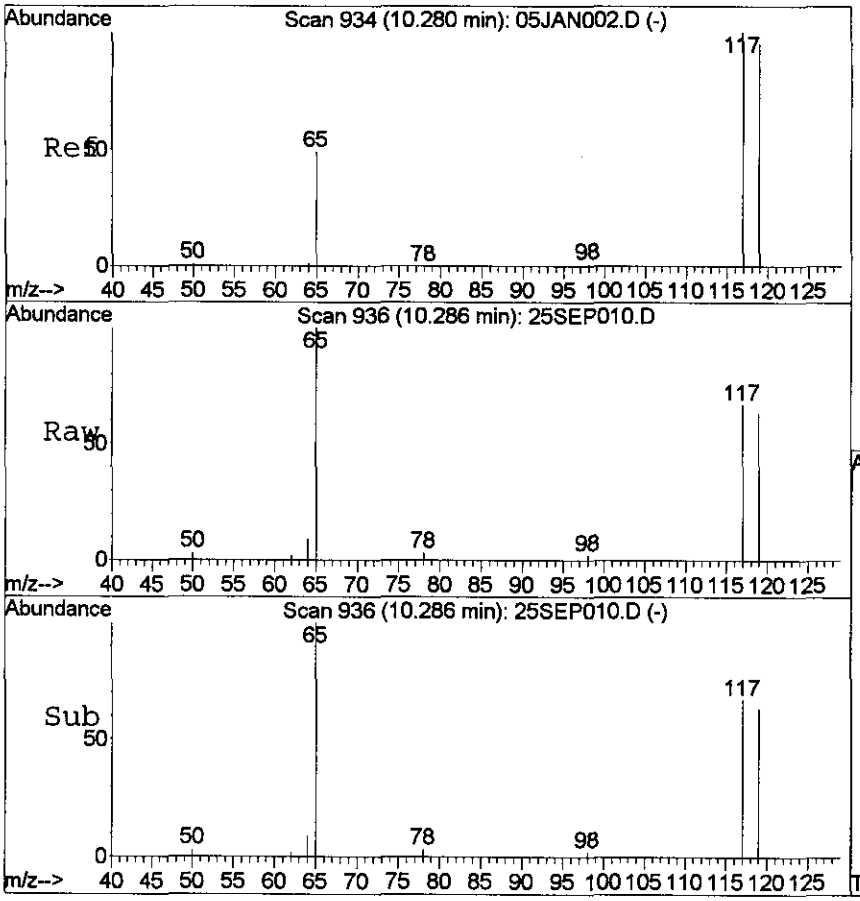


#12
1,2-Dichloroethane
Concen: 2.43 pptv
RT: 10.54 min Scan# 979
Delta R.T. 0.20 min
Lab File: 25SEP010.D
Acq: 25 Sep 2006 15:39

Tgt Ion: 62 Resp: 95

Ion	Ratio	Lower	Upper
62	100		
64	0.0	0.0	82.0
98	0.0	0.0	32.0

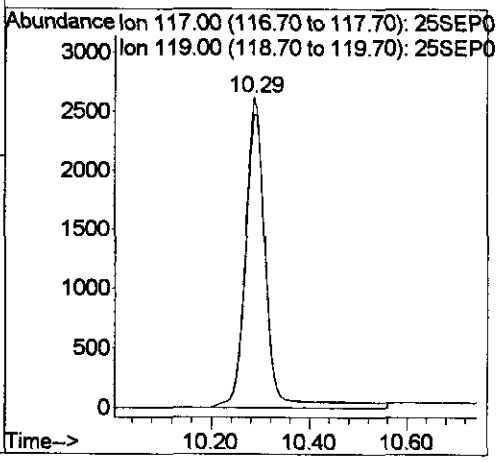


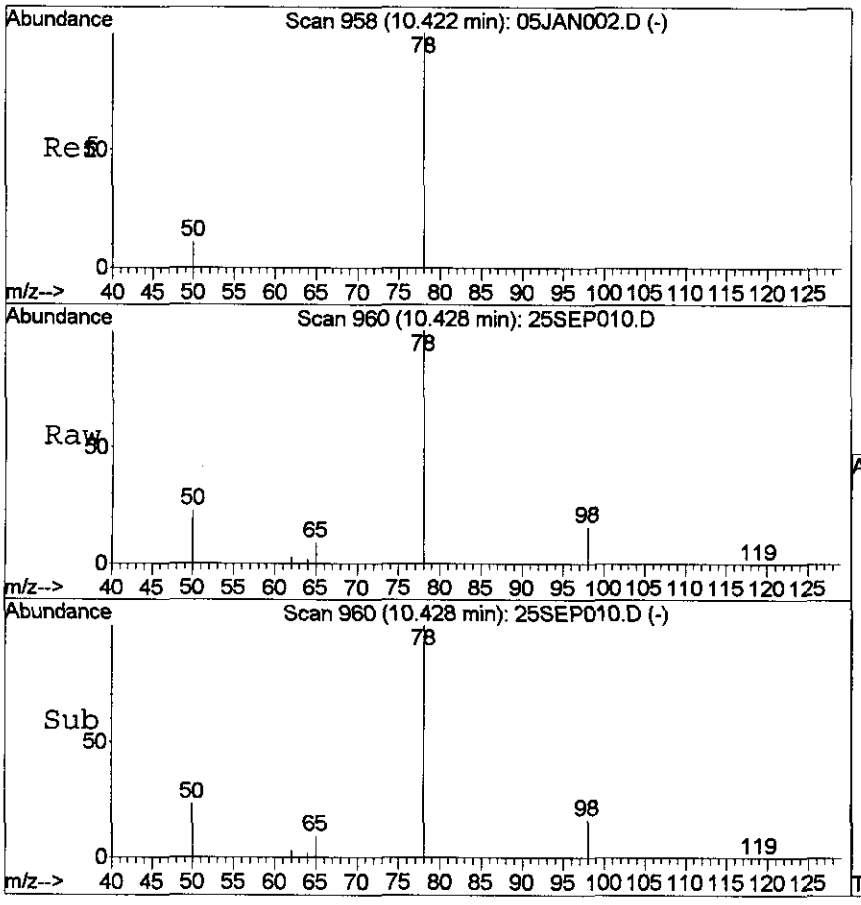


#13
Carbon Tetrachloride
Concen: 98.71 pptv
RT: 10.29 min Scan# 936
Delta R.T. 0.01 min
Lab File: 25SEP010.D
Acq: 25 Sep 2006 15:39

Tgt Ion:117 Resp: 8064

Ion	Ratio	Lower	Upper
117	100		
119	94.5	47.0	147.0

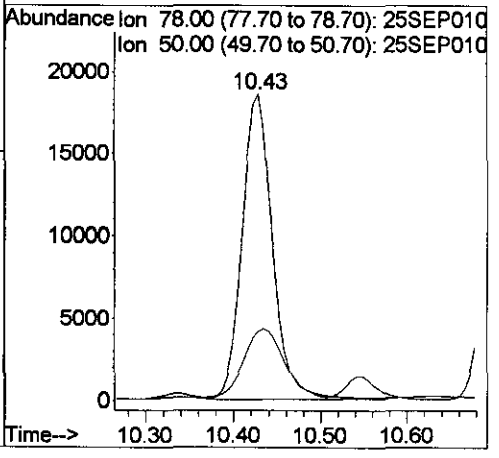


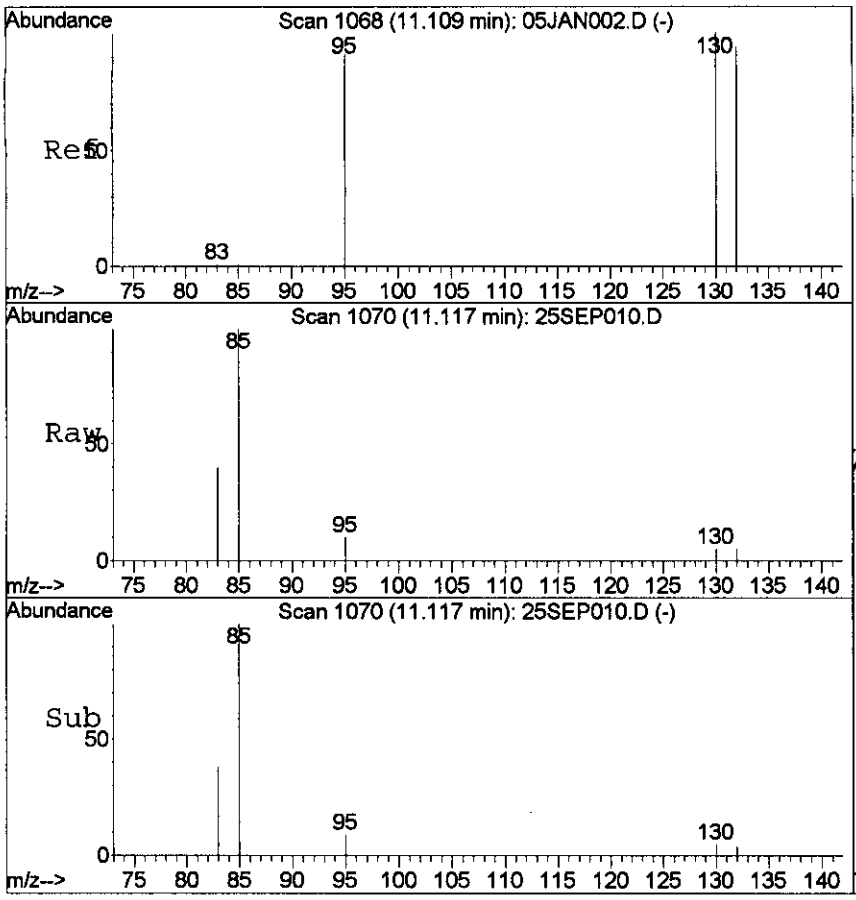


#14
Benzene
Concen: 352.32 pptv
RT: 10.43 min Scan# 960
Delta R.T. 0.01 min
Lab File: 25SEP010.D
Acq: 25 Sep 2006 15:39

Tgt Ion: 78 Resp: 44598

Ion	Ratio	Lower	Upper
78	100		
50	32.0	5.0	15.0#

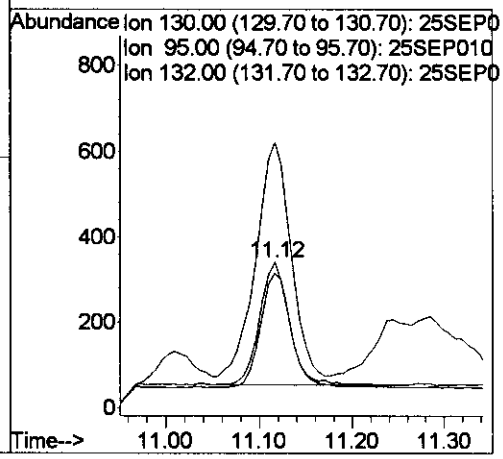


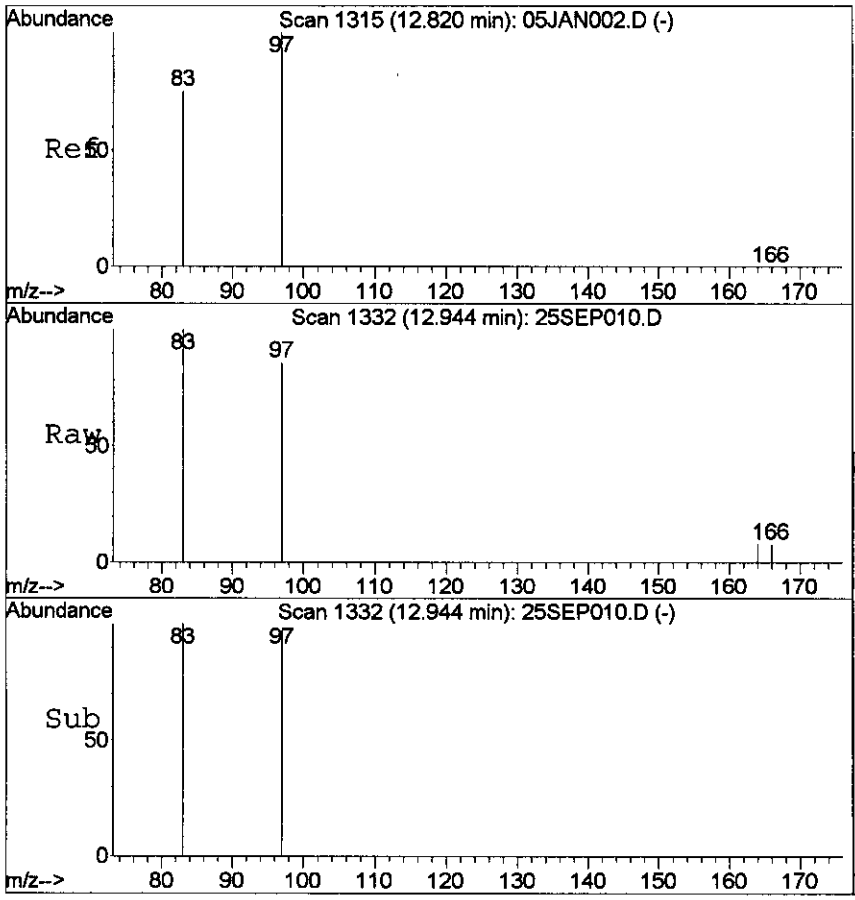


#15
Trichloroethene
Concen: 12.06 pptv
RT: 11.12 min Scan# 1070
Delta R.T. 0.01 min
Lab File: 25SEP010.D
Acq: 25 Sep 2006 15:39

Tgt Ion:130 Resp: 631

Ion	Ratio	Lower	Upper
130	100		
95	168.2	16.0	116.0#
132	93.0	75.0	115.0

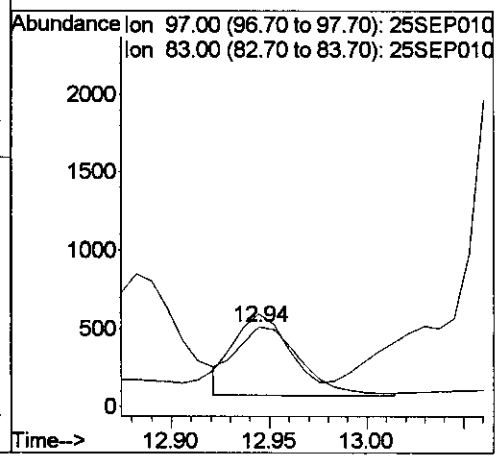


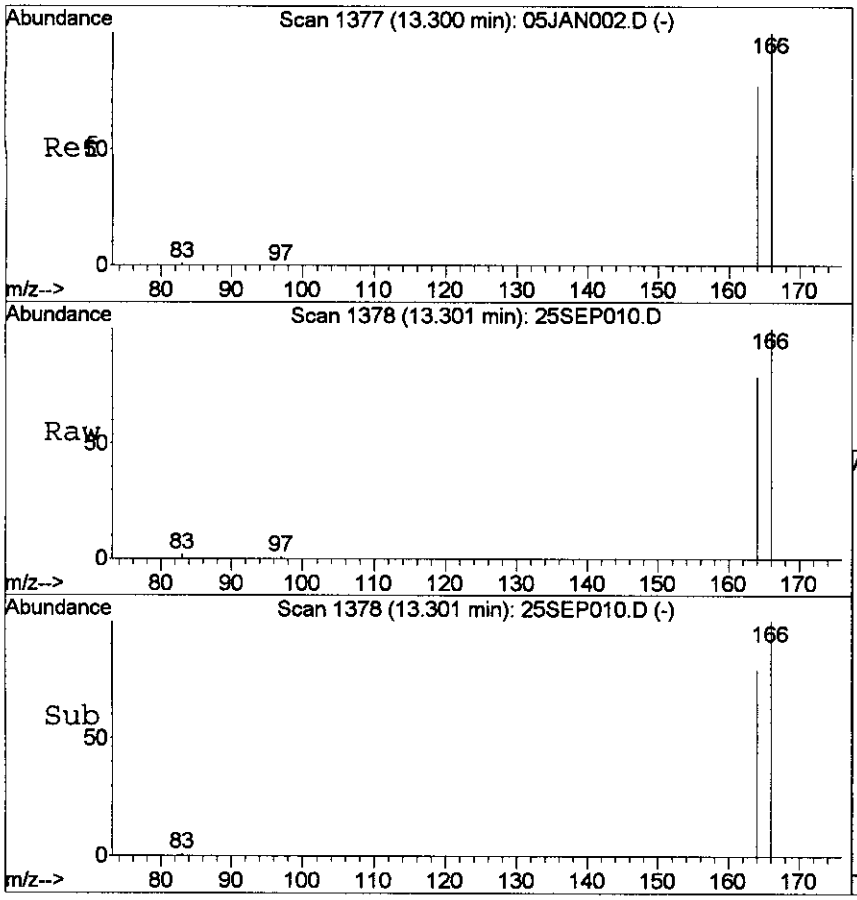


#16
1,1,2-Trichloroethane
Concen: 22.16 pptv
RT: 12.94 min Scan# 1332
Delta R.T. 0.12 min
Lab File: 25SEP010.D
Acq: 25 Sep 2006 15:39

Tgt Ion: 97 Resp: 1023

Ion	Ratio	Lower	Upper
97	100		
83	79.9	19.0	119.0

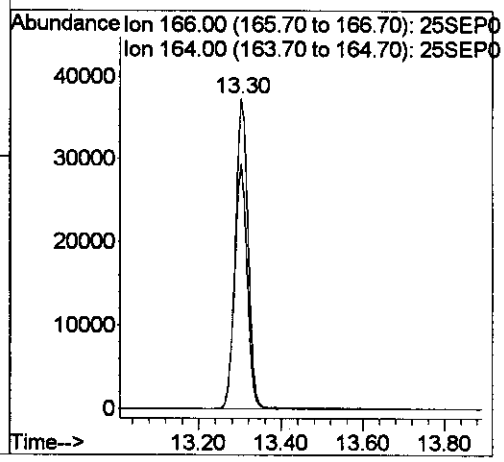




#17
Tetrachloroethene
Concen: 1016.11 pptv
RT: 13.30 min Scan# 1378
Delta R.T. 0.00 min
Lab File: 25SEP010.D
Acq: 25 Sep 2006 15:39

Tgt Ion:166 Resp: 79717

Ion	Ratio	Lower	Upper
166	100		
164	78.7	30.0	130.0



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP011.D Vial: 5
Acq On : 25 Sep 2006 16:18 Operator: JM
Sample : A6091505-05 CH2MHILL Inst : GC/MS 597
Misc : 387ml, 19.6/12.65 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 26 16:13 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

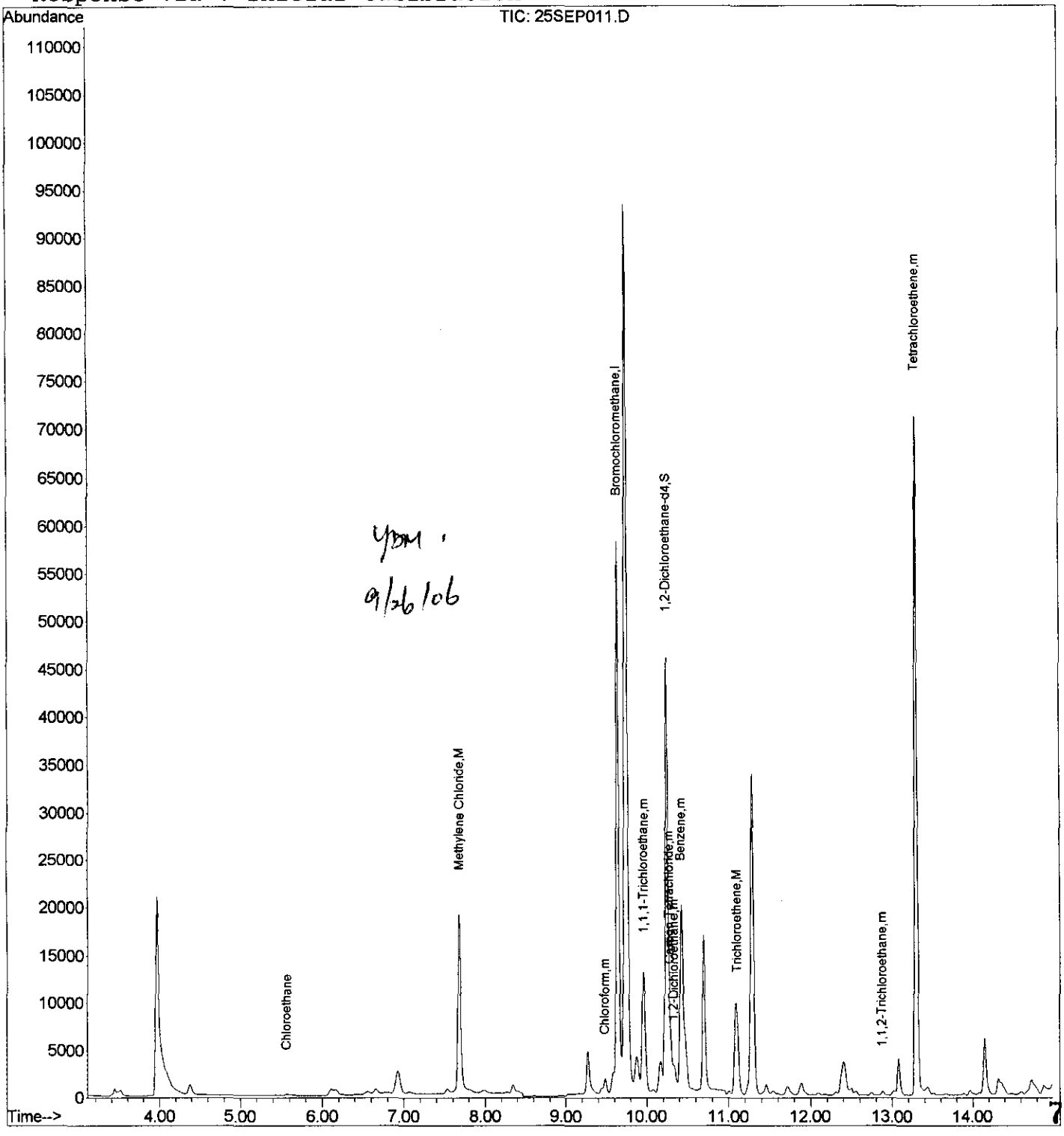
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	76315	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	114369	2488.51	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 124.43%				
Target Compounds							Qvalue
3) Chloroethane	5.57	64	247	19.90	ppbv	#	100
5) Methylene Chloride	7.68	49	16958	743.30	pptv		79
9) Chloroform	9.49	83	3563	51.03	pptv		89
10) 1,1,1-Trichloroethane	9.98	97	1267	17.23	pptv		67
12) 1,2-Dichloroethane	10.34	62	474	12.02	pptv	#	1
13) Carbon Tetrachloride	10.29	117	6427	77.87	pptv		100
14) Benzene	10.43	78	35085	274.37	pptv	#	63
15) Trichloroethene	11.12	130	1764	33.36	pptv		76
16) 1,1,2-Trichloroethane	12.88	97	963	20.65	pptv	#	15
17) Tetrachloroethene	13.30	166	85215	1075.22	pptv		99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

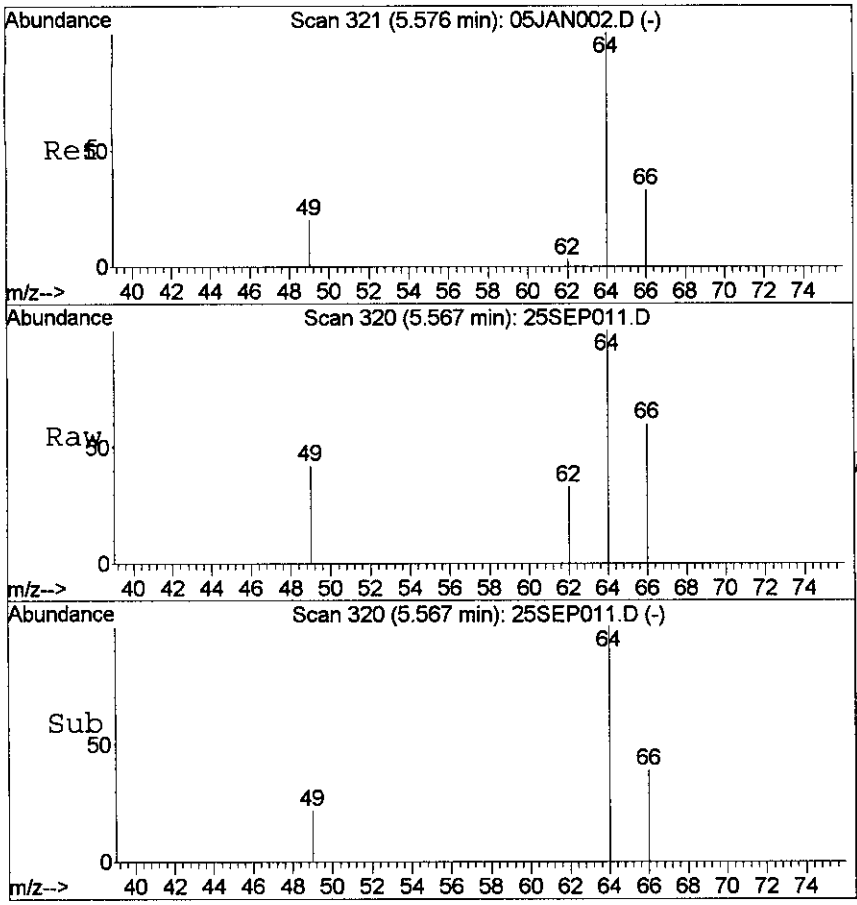
Data File : D:\GCMSB\060925\25SEP011.D Vial: 5
Acq On : 25 Sep 2006 16:18 Operator: JM
Sample : A6091505-05 CH2MHILL Inst : GC/MS 597
Misc : 387ml, 19.6/12.65 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 26 16:13 2006 Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



YBM
9/26/06

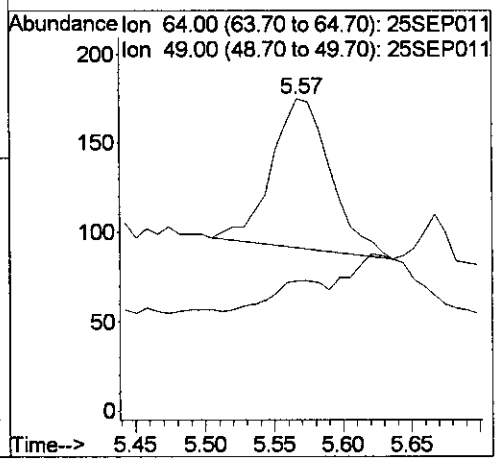
70

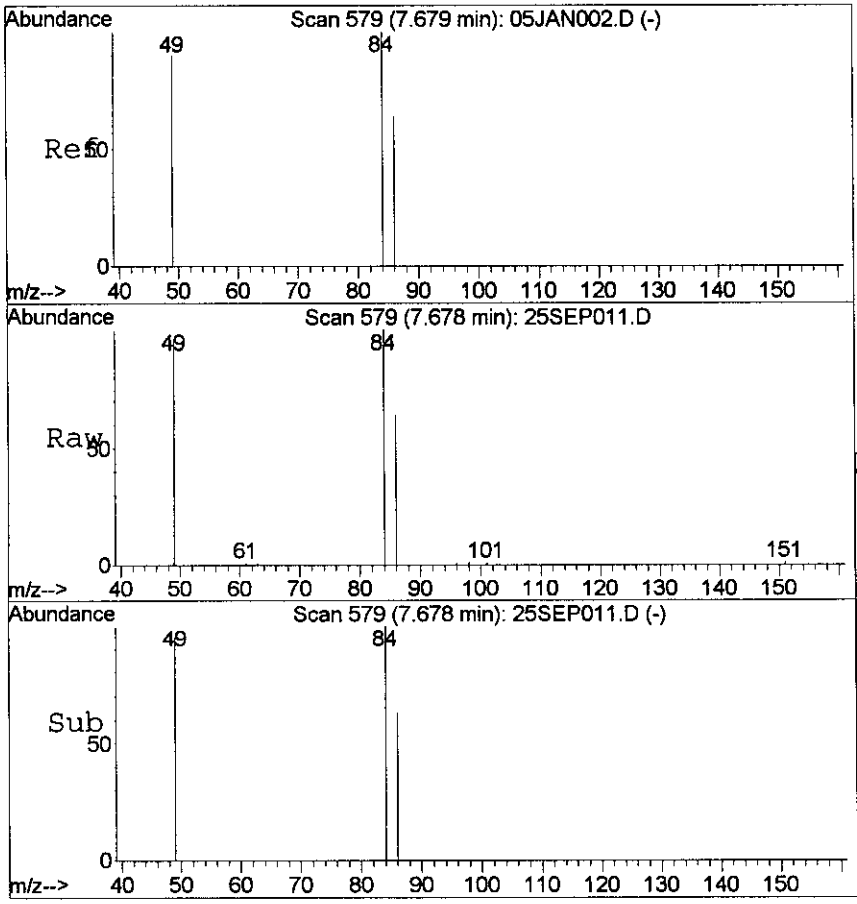


#3
Chloroethane
Concen: 19.90 ppbv
RT: 5.57 min Scan# 320
Delta R.T. -0.01 min
Lab File: 25SEP011.D
Acq: 25 Sep 2006 16:18

Tgt Ion: 64 Resp: 247

Ion	Ratio	Lower	Upper
64	100		
49	0.0	0.0	0.0

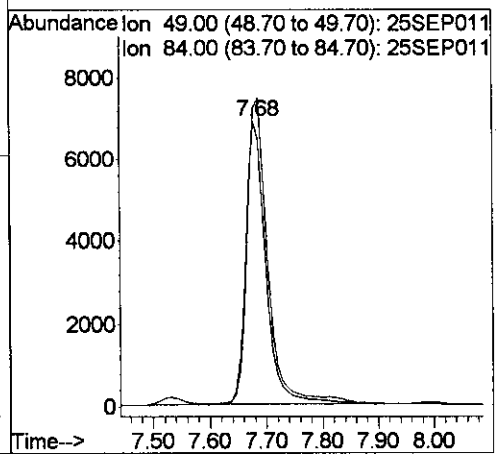


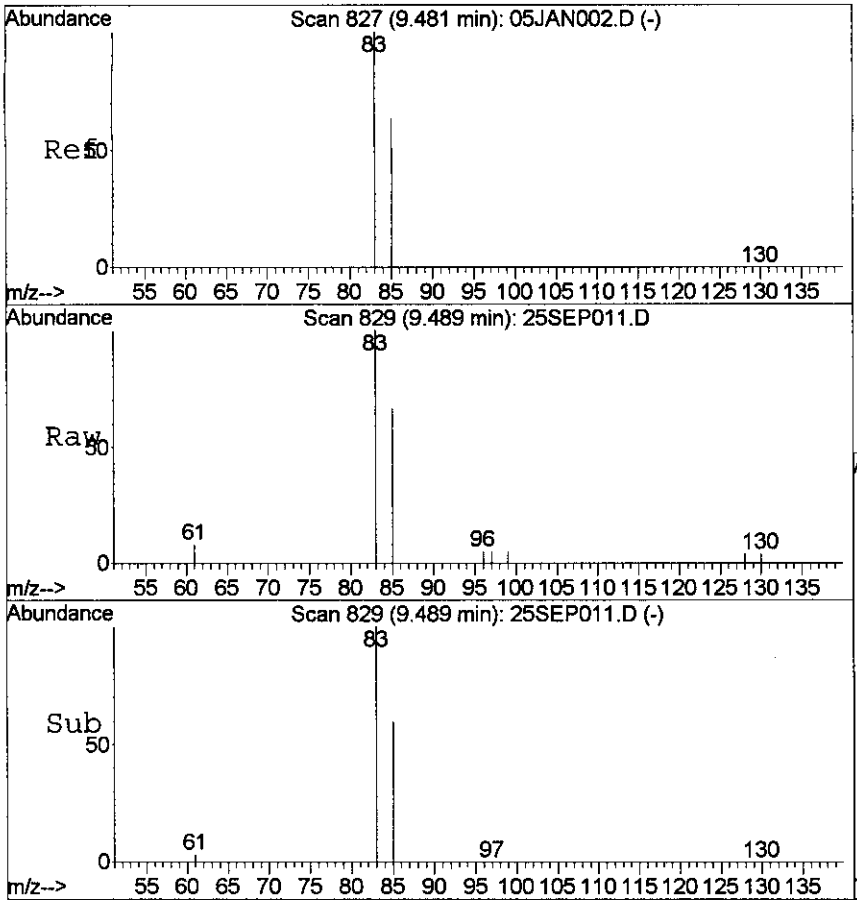


#5
Methylene Chloride
Concen: 743.30 pptv
RT: 7.68 min Scan# 579
Delta R.T. -0.00 min
Lab File: 25SEP011.D
Acq: 25 Sep 2006 16:18

Tgt Ion: 49 Resp: 16958

Ion	Ratio	Lower	Upper
49	100		
84	105.0	80.0	180.0

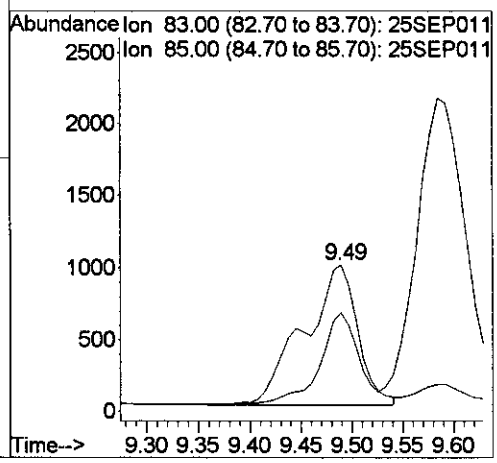


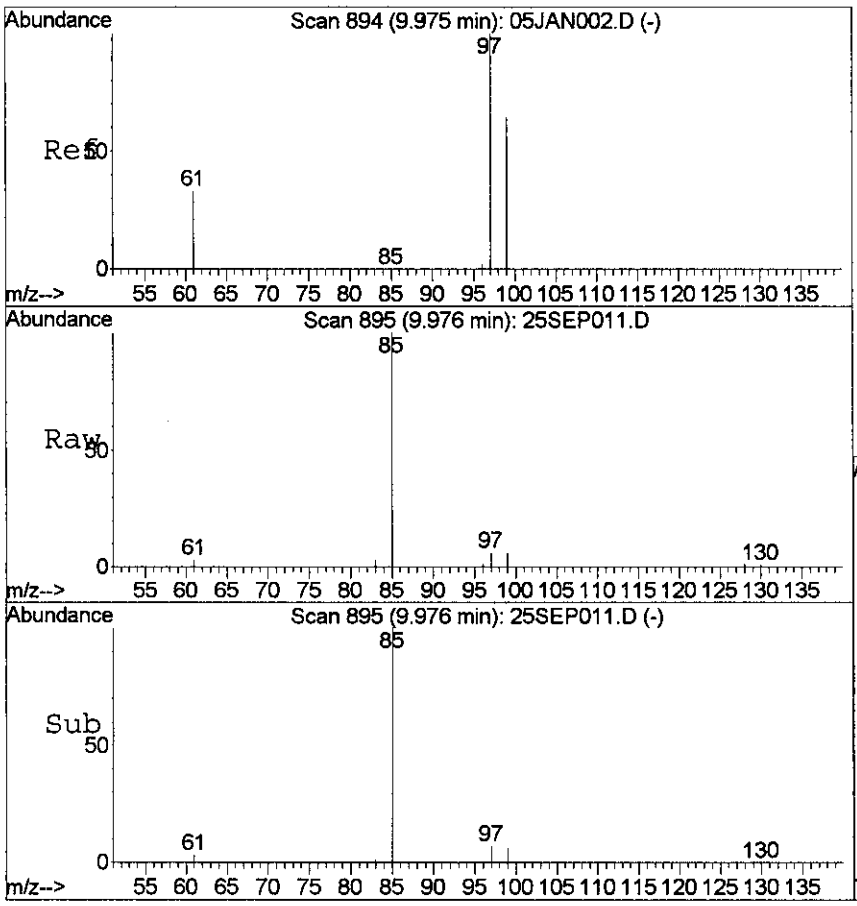


#9
Chloroform
Concen: 51.03 pptv
RT: 9.49 min Scan# 829
Delta R.T. 0.01 min
Lab File: 25SEP011.D
Acq: 25 Sep 2006 16:18

Tgt Ion: 83 Resp: 3563

Ion	Ratio	Lower	Upper
83	100		
85	56.5	15.0	115.0

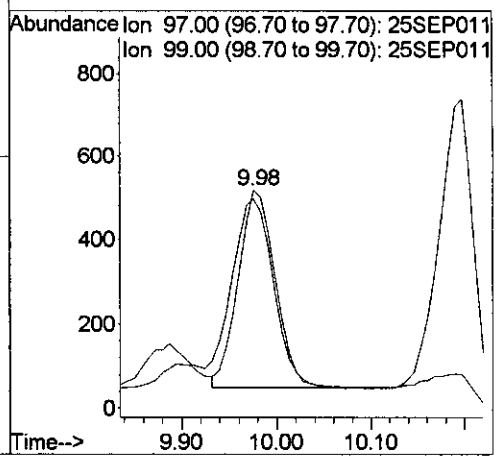


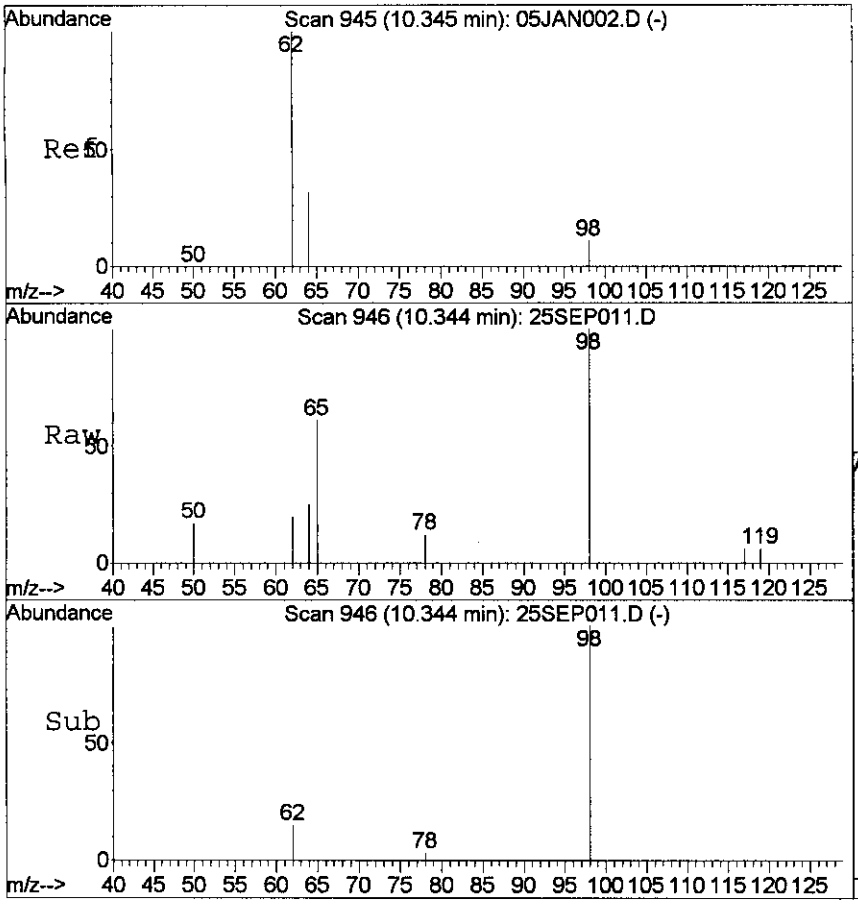


#10
1,1,1-Trichloroethane
Concen: 17.23 pptv
RT: 9.98 min Scan# 895
Delta R.T. 0.00 min
Lab File: 25SEP011.D
Acq: 25 Sep 2006 16:18

Tgt Ion: 97 Resp: 1267

Ion	Ratio	Lower	Upper
97	100		
99	91.2	15.0	115.0

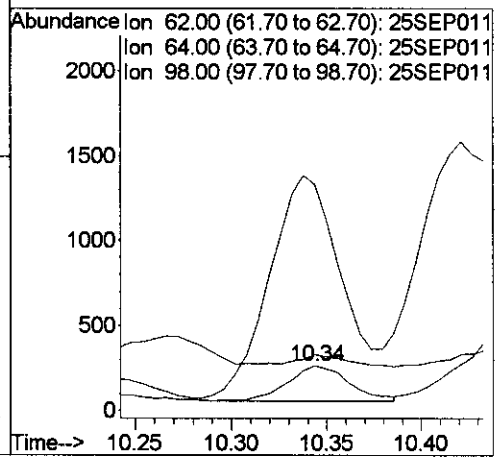


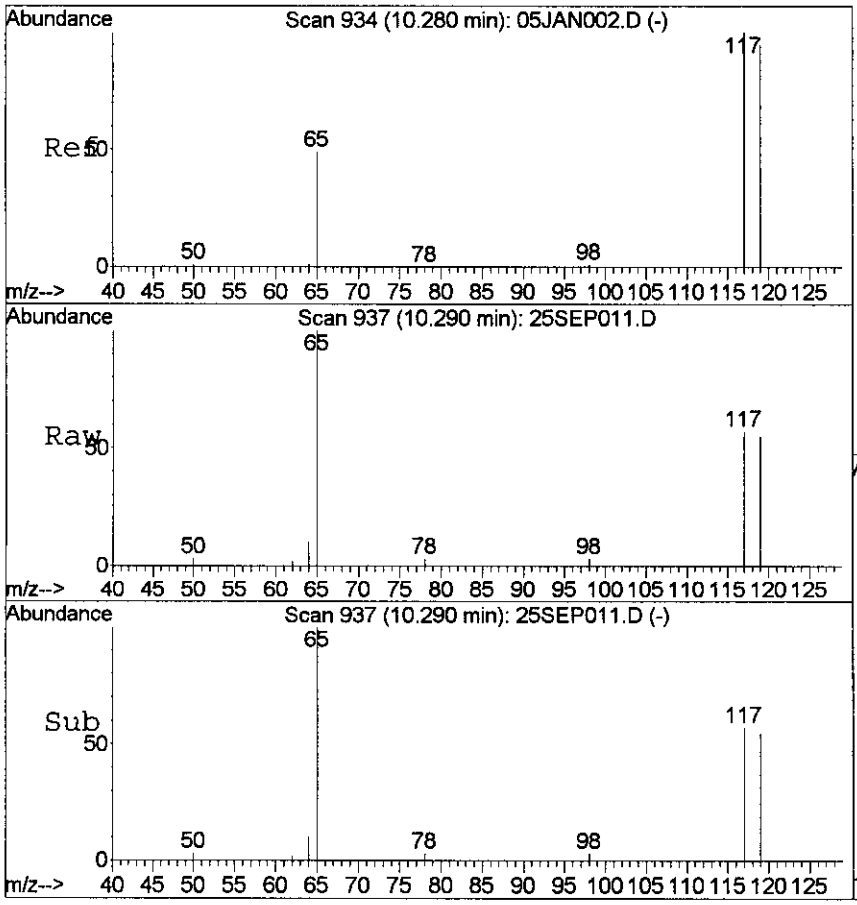


#12
1,2-Dichloroethane
Concen: 12.02 pptv
RT: 10.34 min Scan# 946
Delta R.T. -0.00 min
Lab File: 25SEP011.D
Acq: 25 Sep 2006 16:18

Tgt Ion: 62 Resp: 474

Ion	Ratio	Lower	Upper
62	100		
64	14.3	0.0	82.0
98	541.9	0.0	32.0#

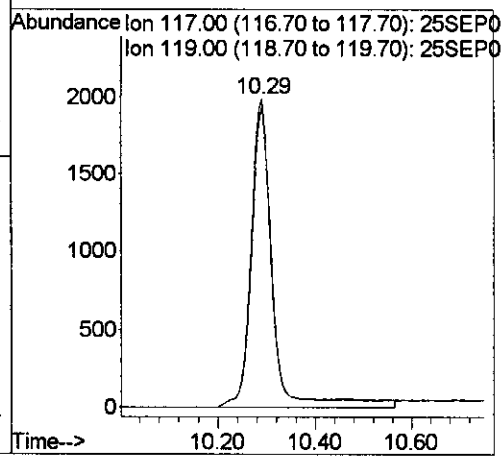


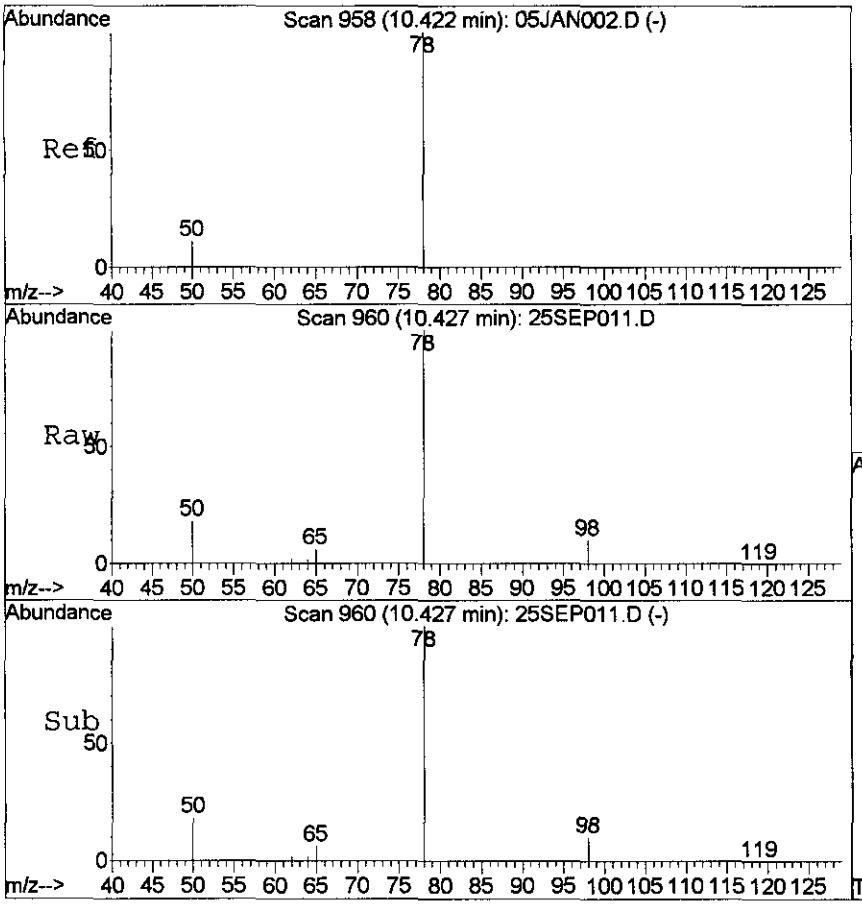


#13
Carbon Tetrachloride
Concen: 77.87 pptv
RT: 10.29 min Scan# 937
Delta R.T. 0.01 min
Lab File: 25SEP011.D
Acq: 25 Sep 2006 16:18

Tgt Ion:117 Resp: 6427

Ion	Ratio	Lower	Upper
117	100		
119	97.3	47.0	147.0

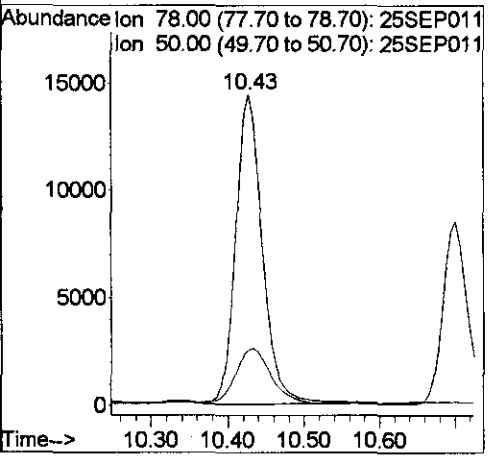


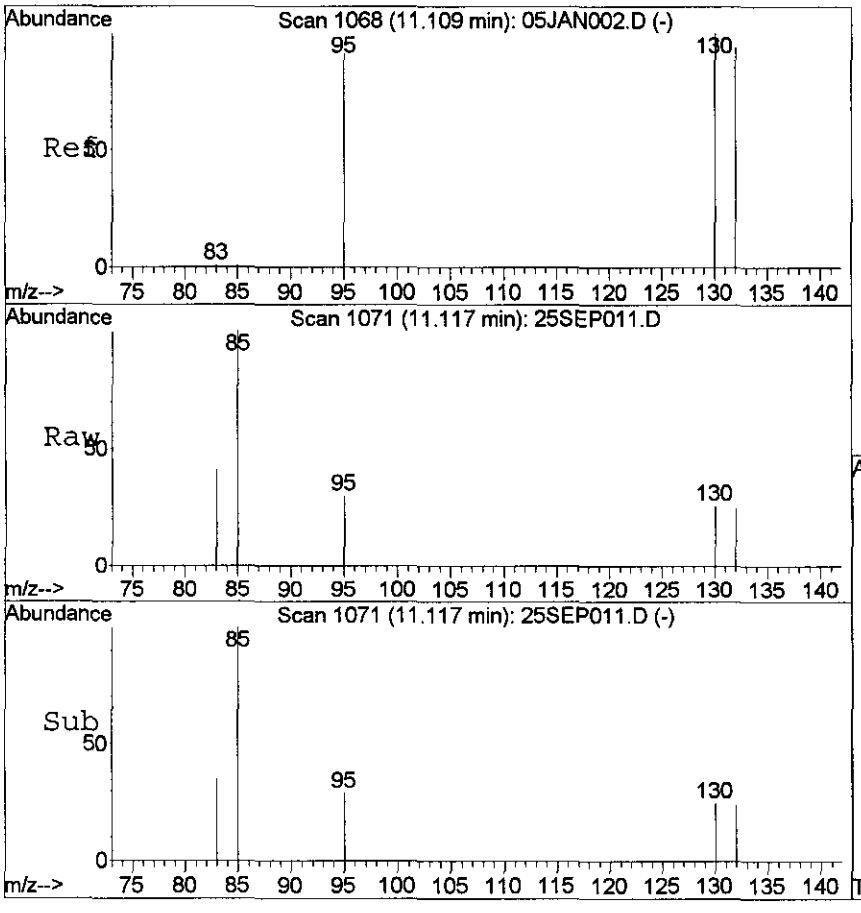


#14
Benzene
Concen: 274.37 pptv
RT: 10.43 min Scan# 960
Delta R.T. 0.00 min
Lab File: 25SEP011.D
Acq: 25 Sep 2006 16:18

Tgt Ion: 78 Resp: 35085

Ion	Ratio	Lower	Upper
78	100		
50	23.8	5.0	15.0#

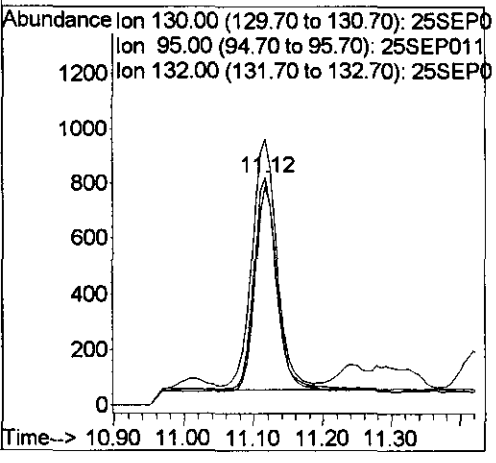


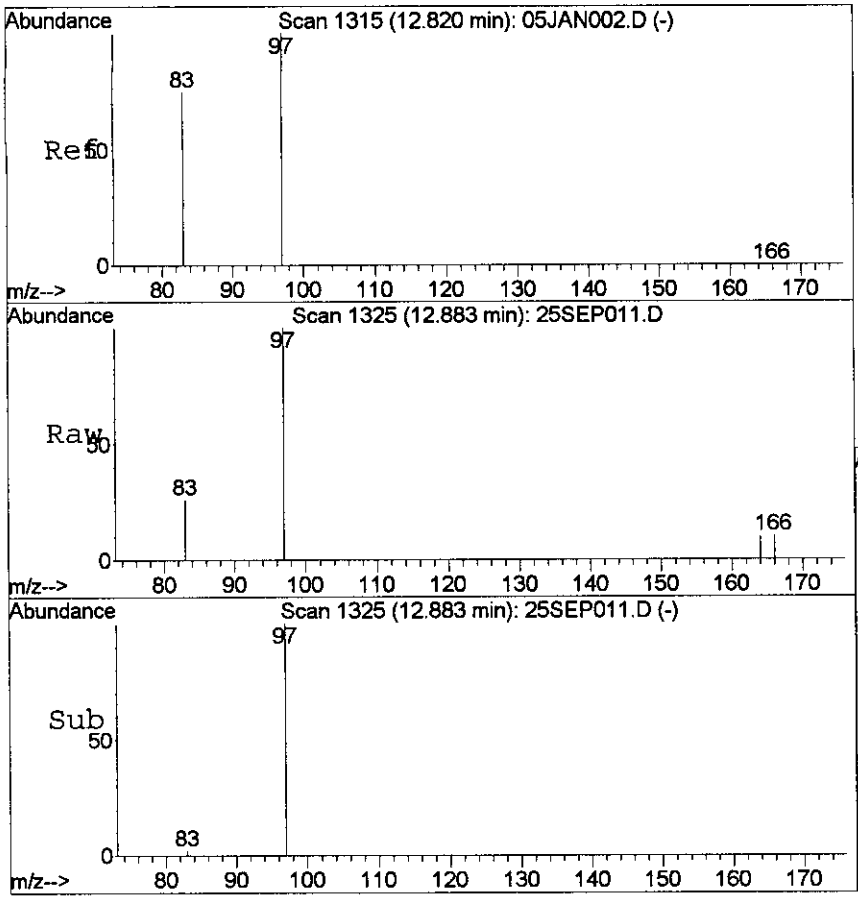


#15
Trichloroethene
Concen: 33.36 pptv
RT: 11.12 min Scan# 1071
Delta R.T. 0.01 min
Lab File: 25SEP011.D
Acq: 25 Sep 2006 16:18

Tgt Ion:130 Resp: 1764

Ion	Ratio	Lower	Upper
130	100		
95	111.0	16.0	116.0
132	96.7	75.0	115.0

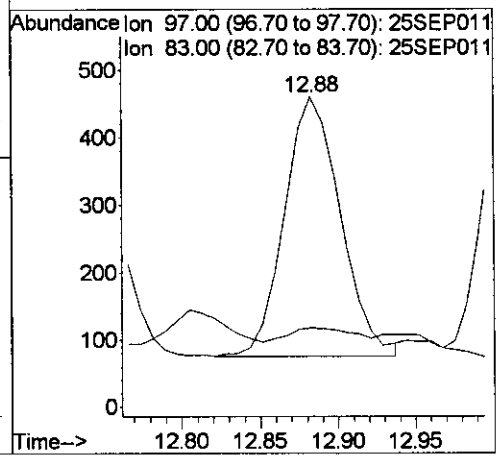


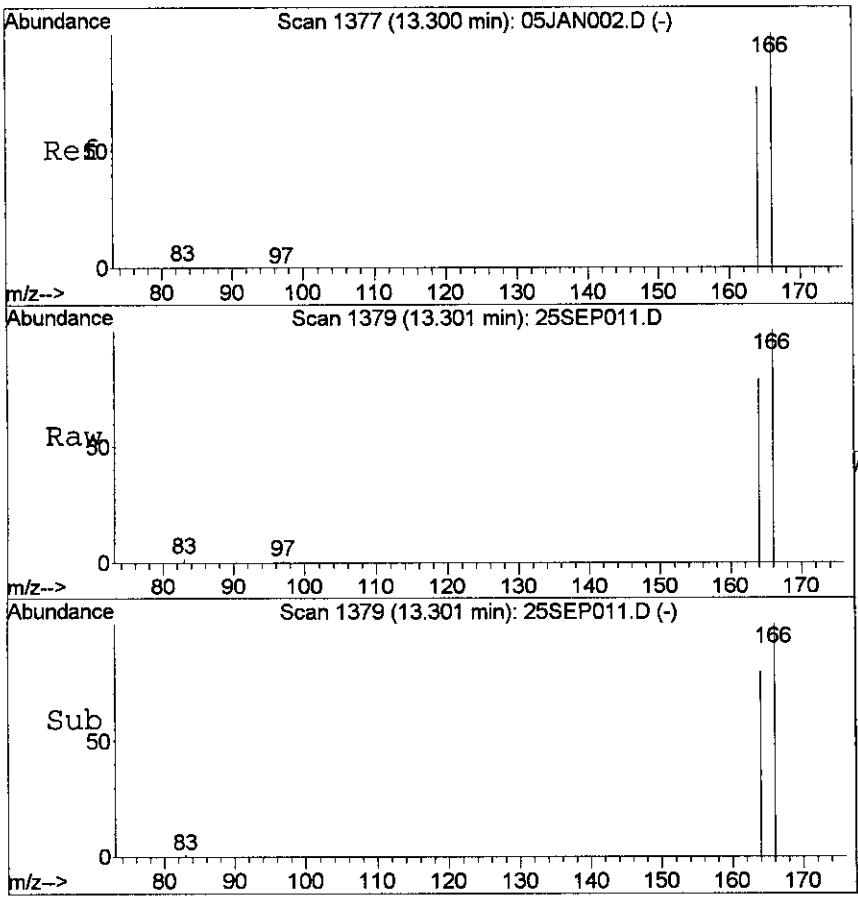


#16
1,1,2-Trichloroethane
Concen: 20.65 pptv
RT: 12.88 min Scan# 1325
Delta R.T. 0.06 min
Lab File: 25SEP011.D
Acq: 25 Sep 2006 16:18

Tgt Ion: 97 Resp: 963

Ion	Ratio	Lower	Upper
97	100		
83	0.0	19.0	119.0#

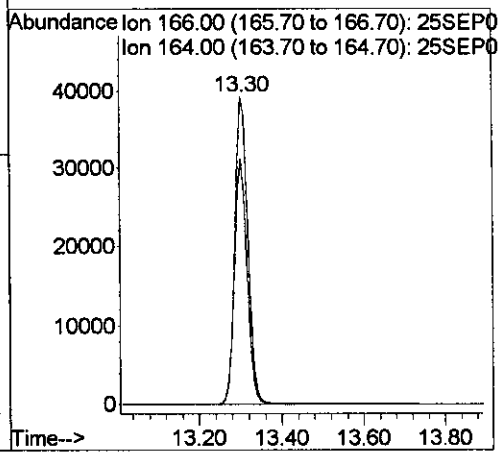




#17
Tetrachloroethene
Concen: 1075.22 pptv
RT: 13.30 min Scan# 1379
Delta R.T. 0.00 min
Lab File: 25SEP011.D
Acq: 25 Sep 2006 16:18

Tgt Ion:166 Resp: 85215

Ion	Ratio	Lower	Upper
166	100		
164	79.2	30.0	130.0



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP013.D Vial: 6
Acq On : 25 Sep 2006 17:34 Operator: JM
Sample : A6091505-06 CH2MHILL Inst : GC/MS 597
Misc : 403ml, 19.6/12.17 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 26 9:04 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

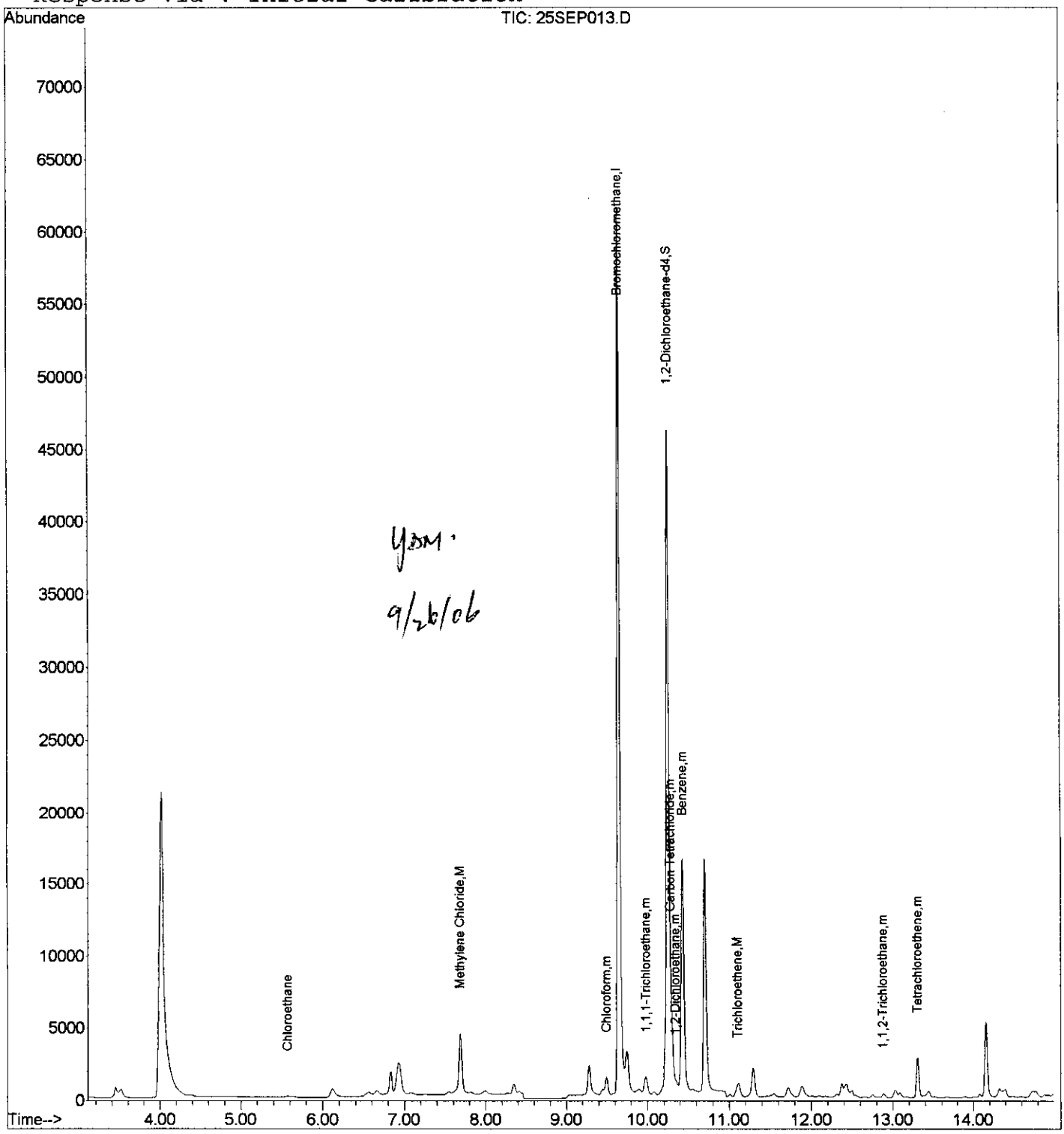
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.65	130	76656	2000.00	pptv		0.01
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.26	65	109632	2374.82	pptv		0.01
Spiked Amount 2000.000	Range 70 - 130		Recovery = 118.74%				
Target Compounds							Qvalue
3) Chloroethane	5.57	64	110	8.82	ppbv	#	100
5) Methylene Chloride	7.69	49	3767	164.38	pptv		85
9) Chloroform	9.50	83	1712	24.41	pptv		93
10) 1,1,1-Trichloroethane	9.98	97	1328	17.98	pptv		89
12) 1,2-Dichloroethane	10.35	62	357	9.01	pptv		69
13) Carbon Tetrachloride	10.29	117	6047	72.94	pptv		100
14) Benzene	10.43	78	34785	270.81	pptv		90
15) Trichloroethene	11.12	130	315	5.93	pptv	#	60
16) 1,1,2-Trichloroethane	12.88	97	628	13.41	pptv	#	19
17) Tetrachloroethene	13.31	166	3365	42.27	pptv		95

(#) = qualifier out of range (m) = manual integration

Quantitation Report

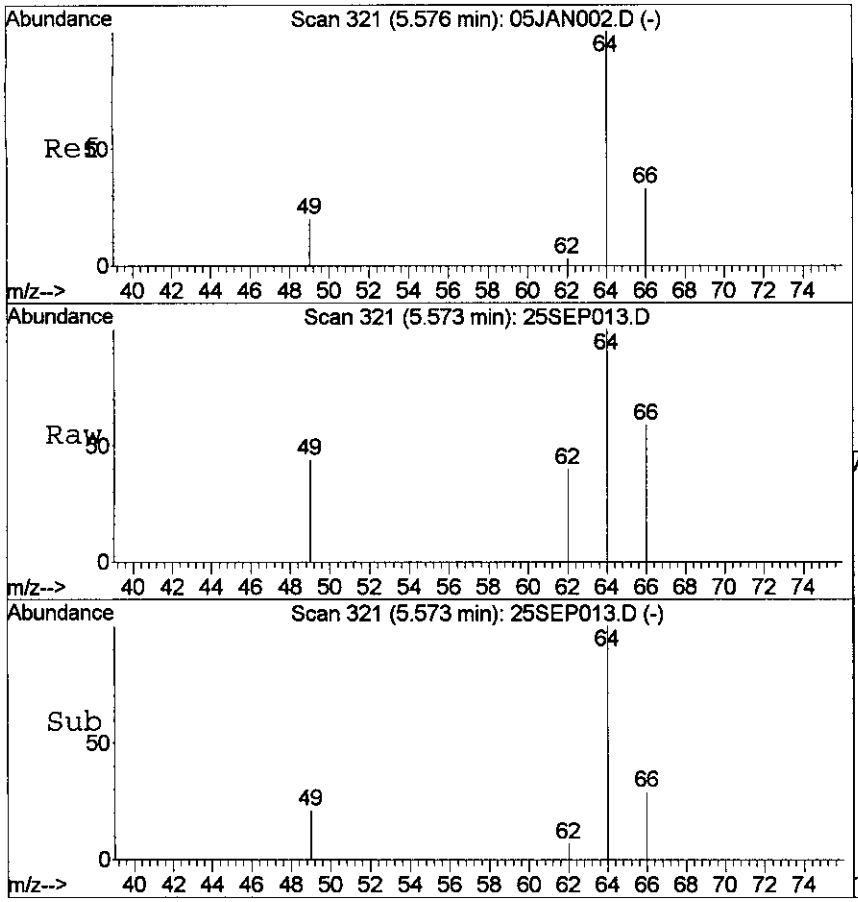
Data File : D:\GCMSB\060925\25SEP013.D Vial: 6
Acq On : 25 Sep 2006 17:34 Operator: JM
Sample : A6091505-06 CH2MHILL Inst : GC/MS 597
Misc : 403ml, 19.6/12.17 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 26 9:04 2006 Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



YSM
9/26/06

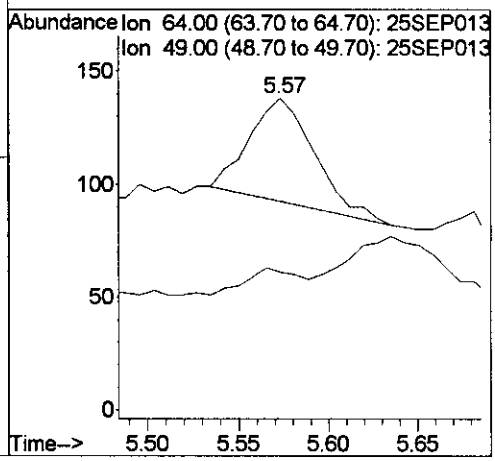
77

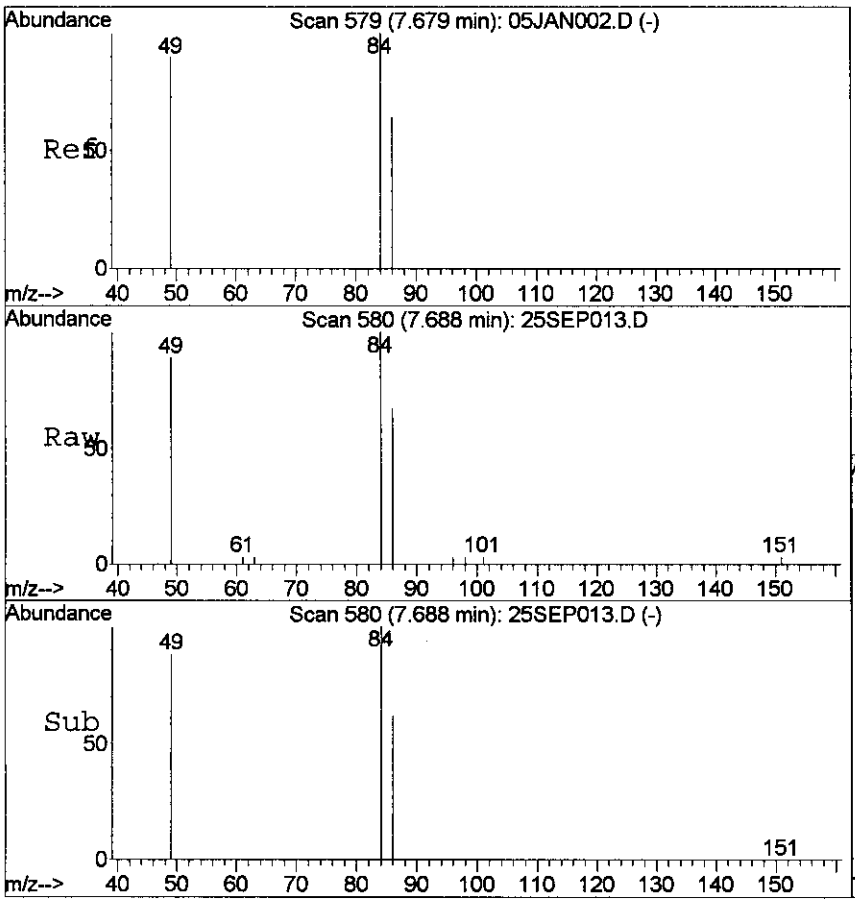


#3
Chloroethane
Concen: 8.82 ppbv
RT: 5.57 min Scan# 321
Delta R.T. -0.00 min
Lab File: 25SEP013.D
Acq: 25 Sep 2006 17:34

Tgt Ion: 64 Resp: 110

Ion	Ratio	Lower	Upper
64	100		
49	0.0	0.0	0.0

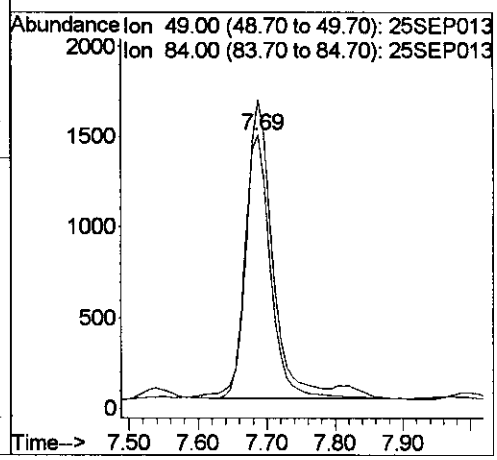


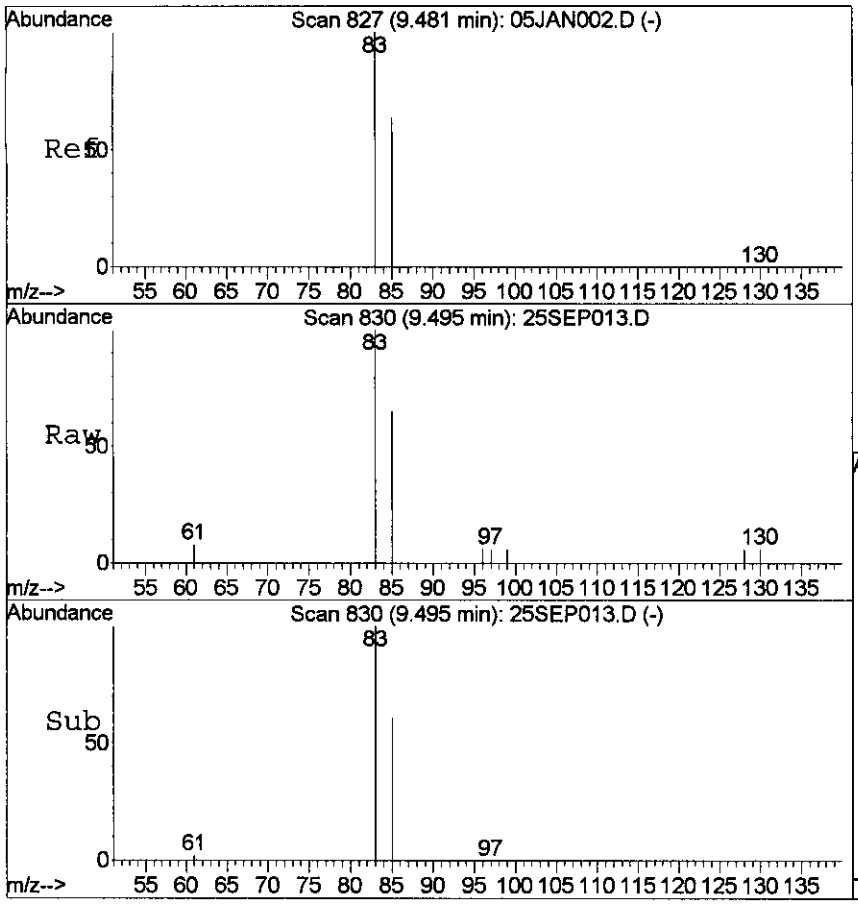


#5
Methylene Chloride
Concen: 164.38 pptv
RT: 7.69 min Scan# 580
Delta R.T. 0.01 min
Lab File: 25SEP013.D
Acq: 25 Sep 2006 17:34

Tgt Ion: 49 Resp: 3767

Ion	Ratio	Lower	Upper
49	100		
84	112.5	80.0	180.0

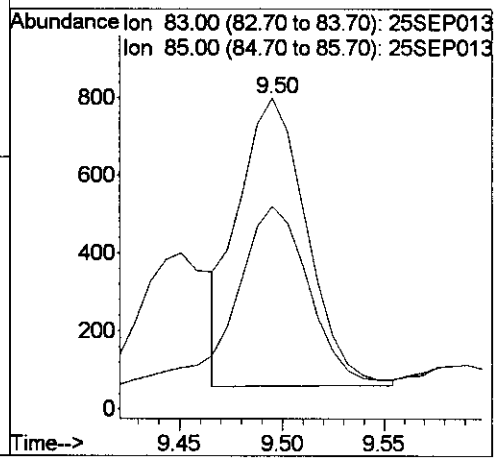


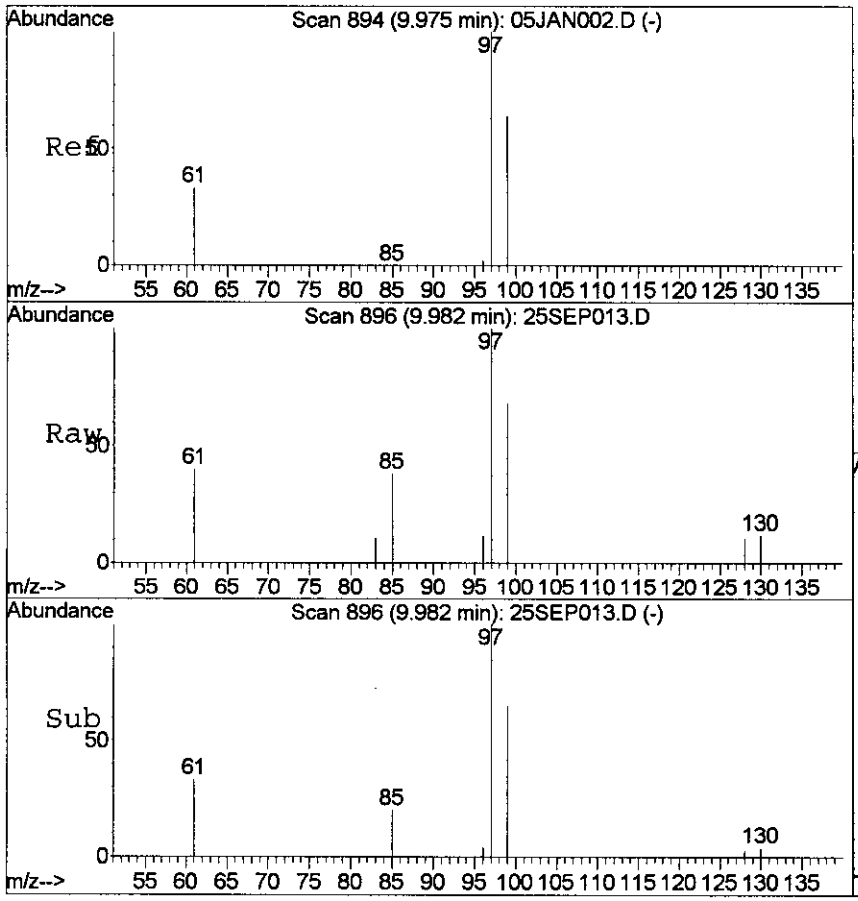


#9
Chloroform
Concen: 24.41 pptv
RT: 9.50 min Scan# 830
Delta R.T. 0.01 min
Lab File: 25SEP013.D
Acq: 25 Sep 2006 17:34

Tgt Ion: 83 Resp: 1712

Ion	Ratio	Lower	Upper
83	100		
85	70.8	15.0	115.0

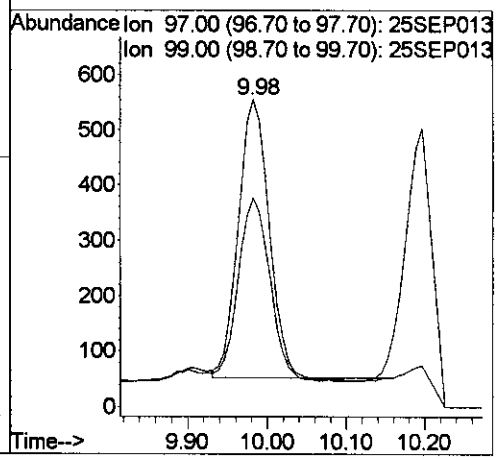


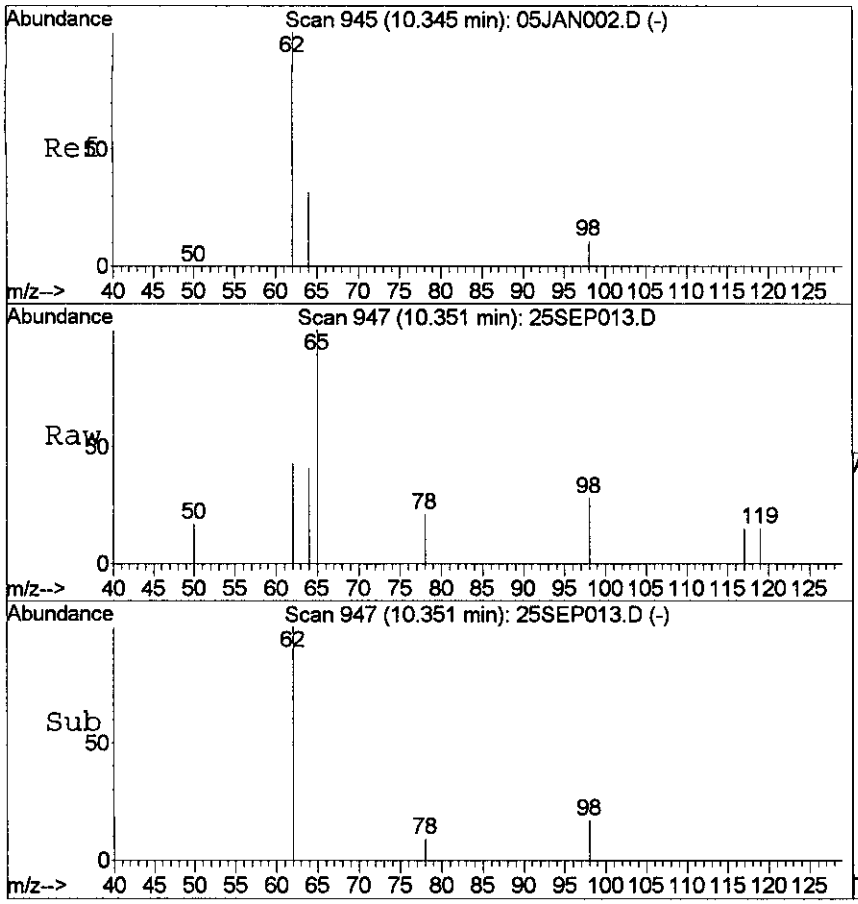


#10
1,1,1-Trichloroethane
Concen: 17.98 pptv
RT: 9.98 min Scan# 896
Delta R.T. 0.01 min
Lab File: 25SEP013.D
Acq: 25 Sep 2006 17:34

Tgt Ion: 97 Resp: 1328

Ion	Ratio	Lower	Upper
97	100		
99	56.6	15.0	115.0

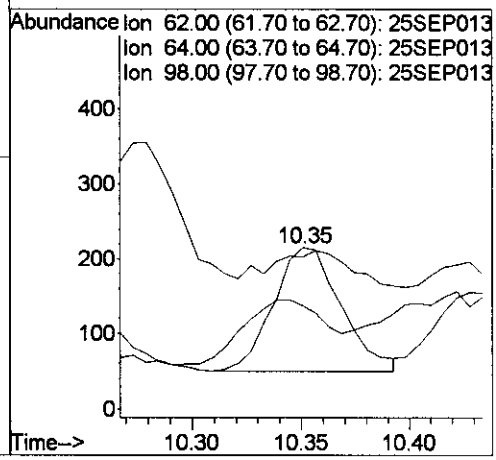


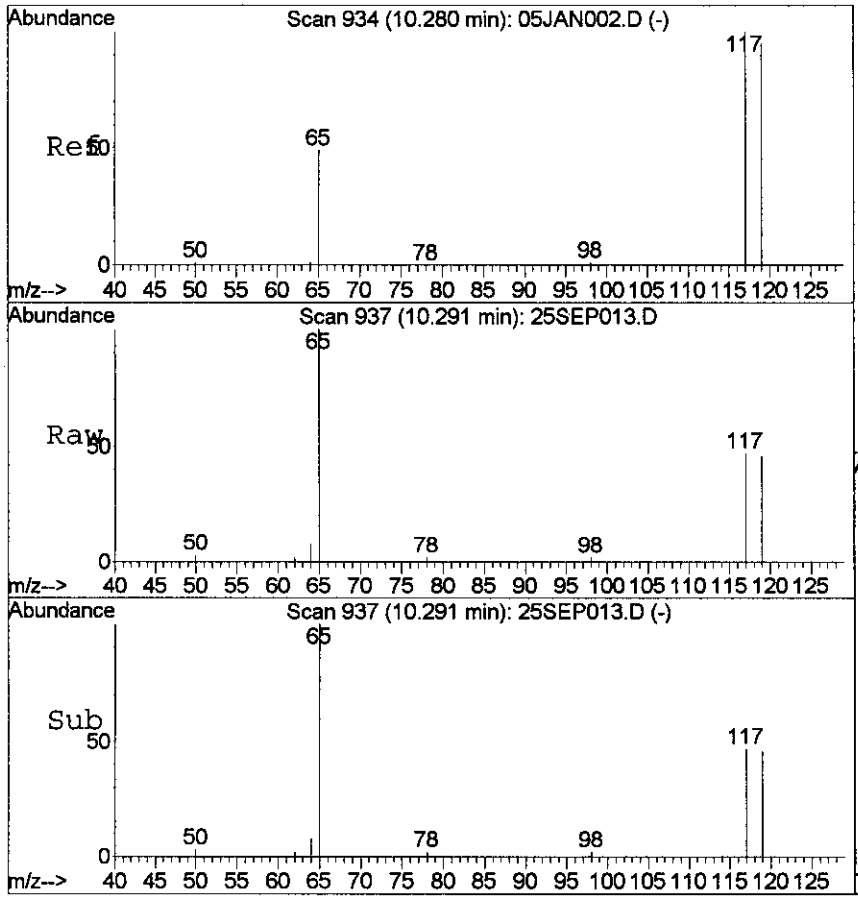


#12
1,2-Dichloroethane
Concen: 9.01 pptv
RT: 10.35 min Scan# 947
Delta R.T. 0.01 min
Lab File: 25SEP013.D
Acq: 25 Sep 2006 17:34

Tgt Ion: 62 Resp: 357

Ion	Ratio	Lower	Upper
62	100		
64	15.7	0.0	82.0
98	25.9	0.0	32.0

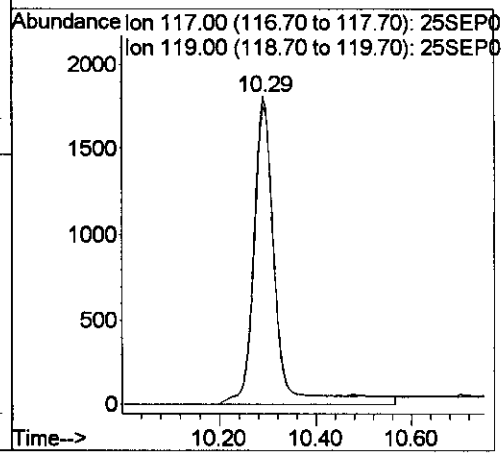


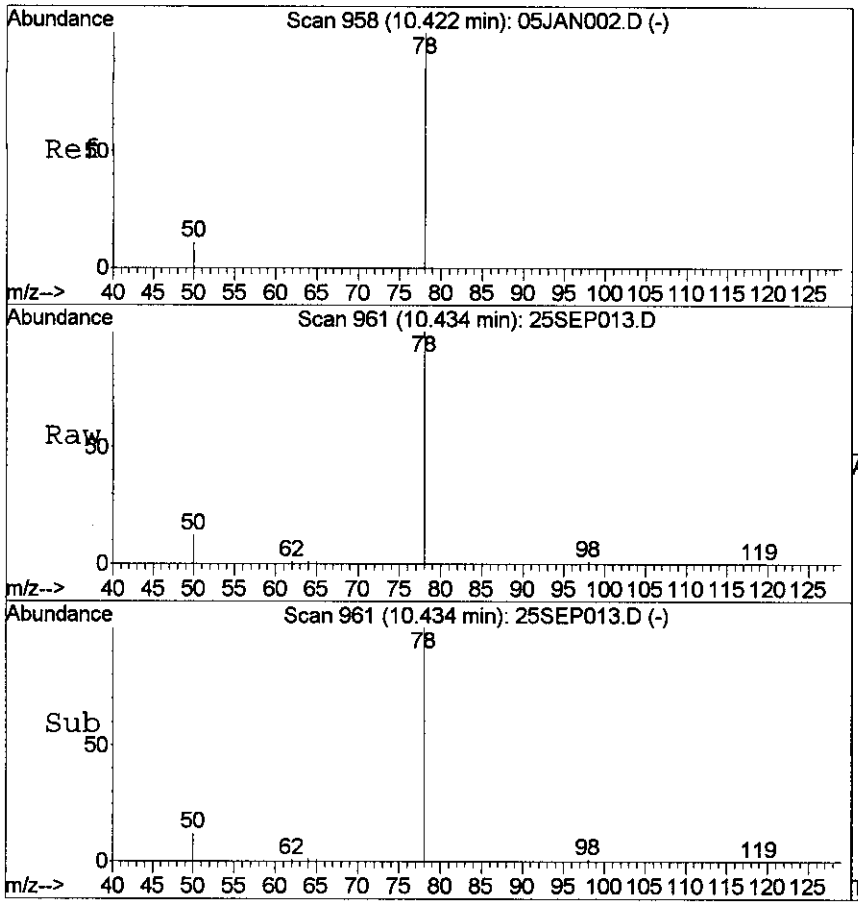


#13
Carbon Tetrachloride
Concen: 72.94 pptv
RT: 10.29 min Scan# 937
Delta R.T. 0.01 min
Lab File: 25SEP013.D
Acq: 25 Sep 2006 17:34

Tgt Ion:117 Resp: 6047

Ion	Ratio	Lower	Upper
117	100		
119	96.8	47.0	147.0

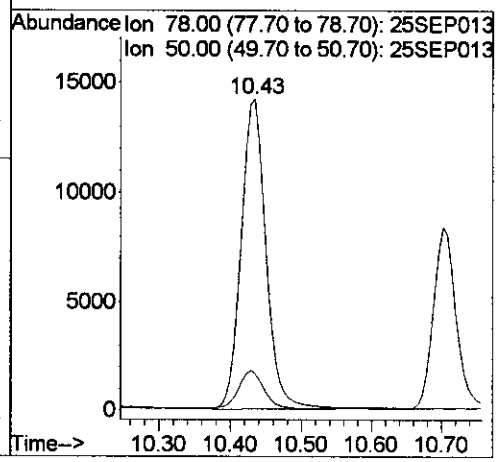


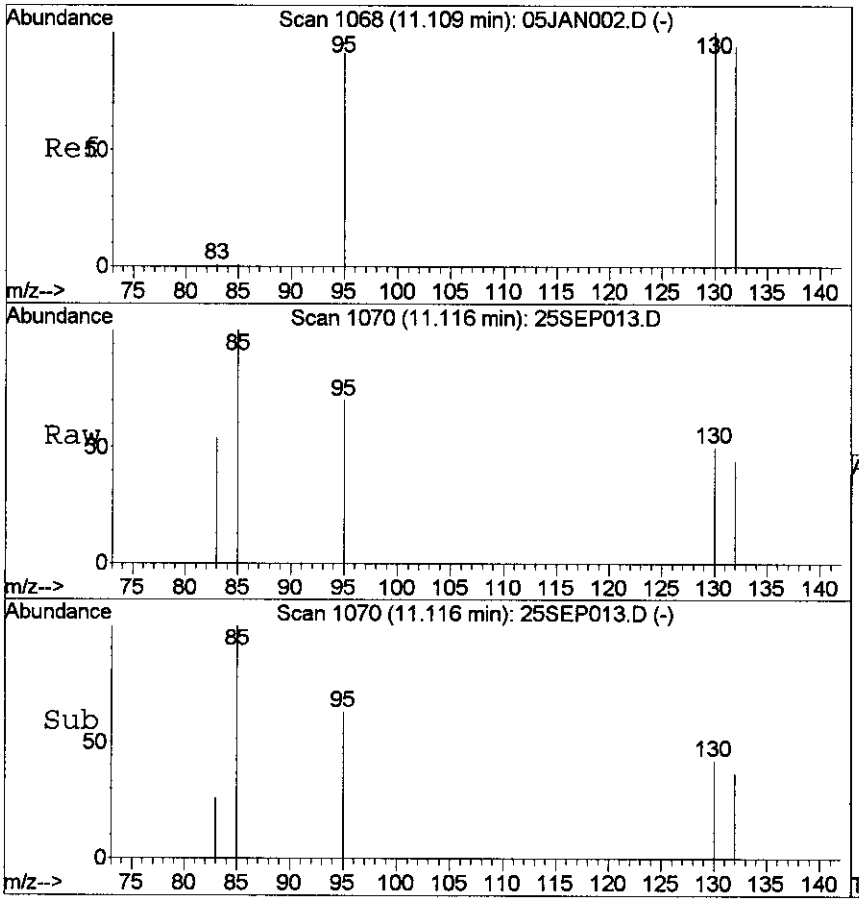


#14
Benzene
Concen: 270.81 pptv
RT: 10.43 min Scan# 961
Delta R.T. 0.01 min
Lab File: 25SEP013.D
Acq: 25 Sep 2006 17:34

Tgt Ion: 78 Resp: 34785

Ion	Ratio	Lower	Upper
78	100		
50	13.5	5.0	15.0

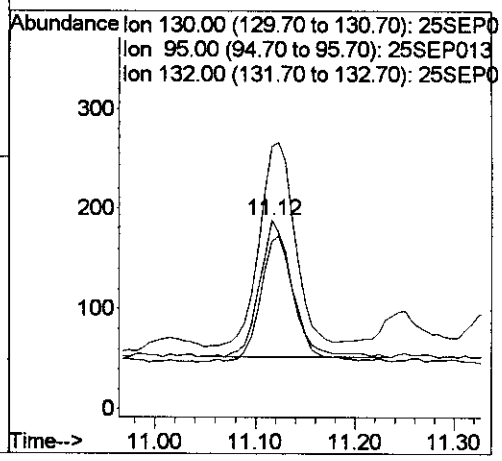


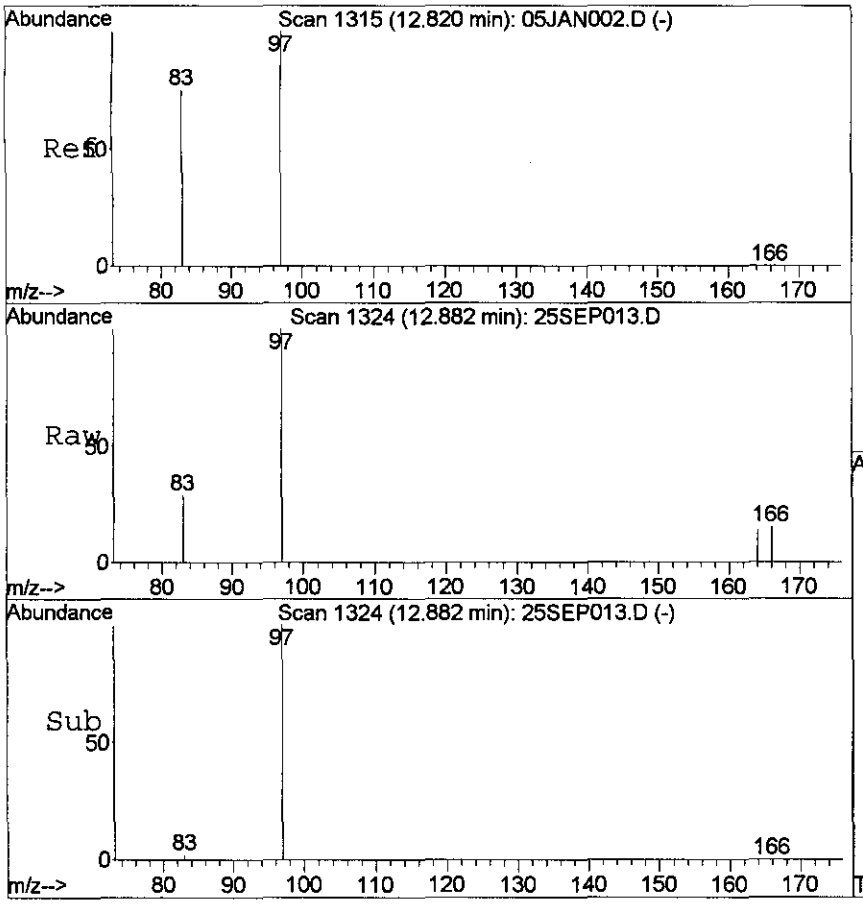


#15
Trichloroethene
Concen: 5.93 pptv
RT: 11.12 min Scan# 1070
Delta R.T. 0.01 min
Lab File: 25SEP013.D
Acq: 25 Sep 2006 17:34

Tgt Ion:130 Resp: 315

Ion	Ratio	Lower	Upper
130	100		
95	135.8	16.0	116.0#
132	87.8	75.0	115.0

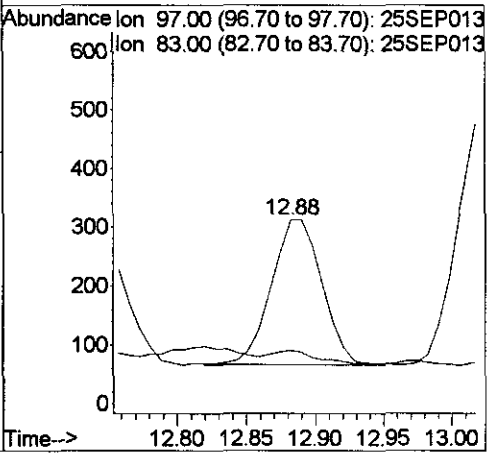


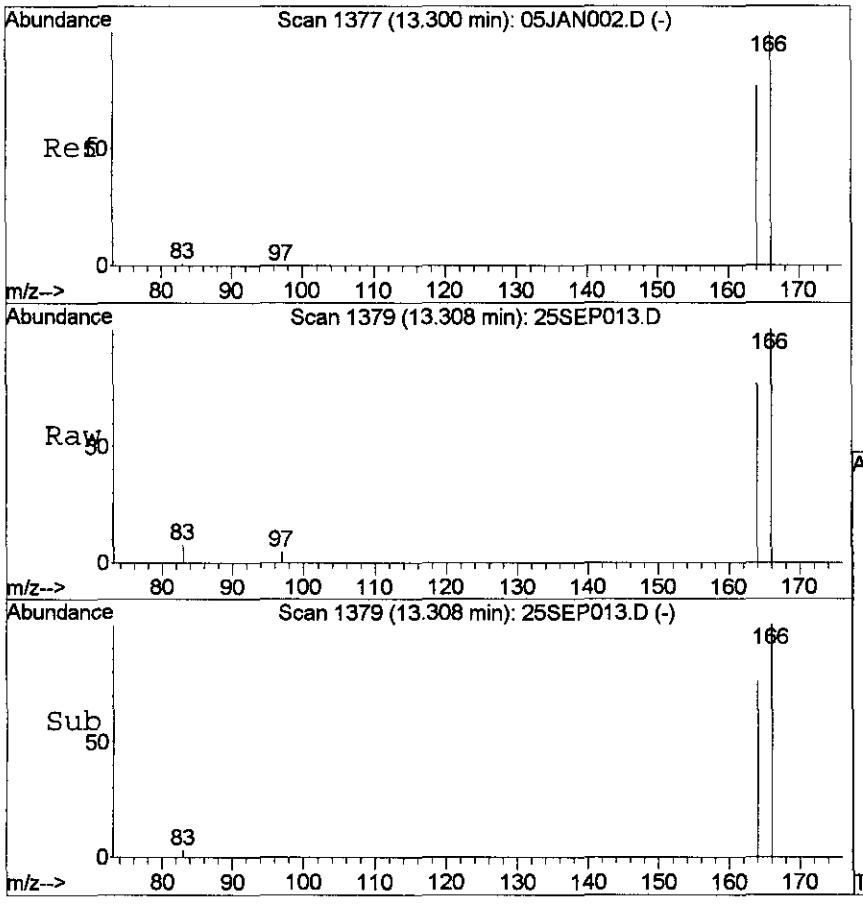


#16
1,1,2-Trichloroethane
Concen: 13.41 pptv
RT: 12.88 min Scan# 1324
Delta R.T. 0.06 min
Lab File: 25SEP013.D
Acq: 25 Sep 2006 17:34

Tgt Ion: 97 Resp: 628

Ion	Ratio	Lower	Upper
97	100		
83	3.1	19.0	119.0#

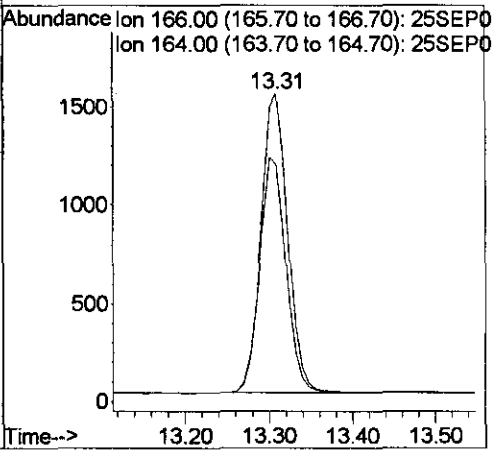




#17
Tetrachloroethene
Concen: 42.27 pptv
RT: 13.31 min Scan# 1379
Delta R.T. 0.01 min
Lab File: 25SEP013.D
Acq: 25 Sep 2006 17:34

Tgt Ion:166 Resp: 3365

Ion	Ratio	Lower	Upper
166	100		
164	76.0	30.0	130.0



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP014.D Vial: 7
Acq On : 25 Sep 2006 18:13 Operator: JM
Sample : A6091505-07 CH2MHILL Inst : GC/MS 597
Misc : 411ml, 19.6/11.92 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 26 9:05 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	70151	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	106290	2515.93	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 125.80%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.45	62	104	4.95	pptv		80
3) Chloroethane	5.57	64	322	28.22	ppbv	#	100
4) 1,1-Dichloroethene	7.07	96	195	6.80	pptv		55
5) Methylene Chloride	7.68	49	5815	277.28	pptv		82
6) t-1,2-Dichloroethene	8.13	96	135	4.62	pptv		86
7) 1,1-Dichloroethane	8.60	63	7075	154.17	pptv		92
8) cis-1,2-Dichloroethene	9.30	96	6094	194.73	pptv	#	65
9) Chloroform	9.49	83	10304	160.54	pptv		100
10) 1,1,1-Trichloroethane	9.98	97	7236	107.07	pptv		98
12) 1,2-Dichloroethane	10.34	62	312	8.60	pptv		88
13) Carbon Tetrachloride	10.29	117	10280	135.51	pptv		98
14) Benzene	10.43	78	9872	83.98	pptv	#	82
15) Trichloroethene	11.12	130	9299	191.33	pptv		85
16) 1,1,2-Trichloroethane	12.82	97	12142	283.26	pptv		92
17) Tetrachloroethene	13.30	166	399435	5482.81	pptv		100

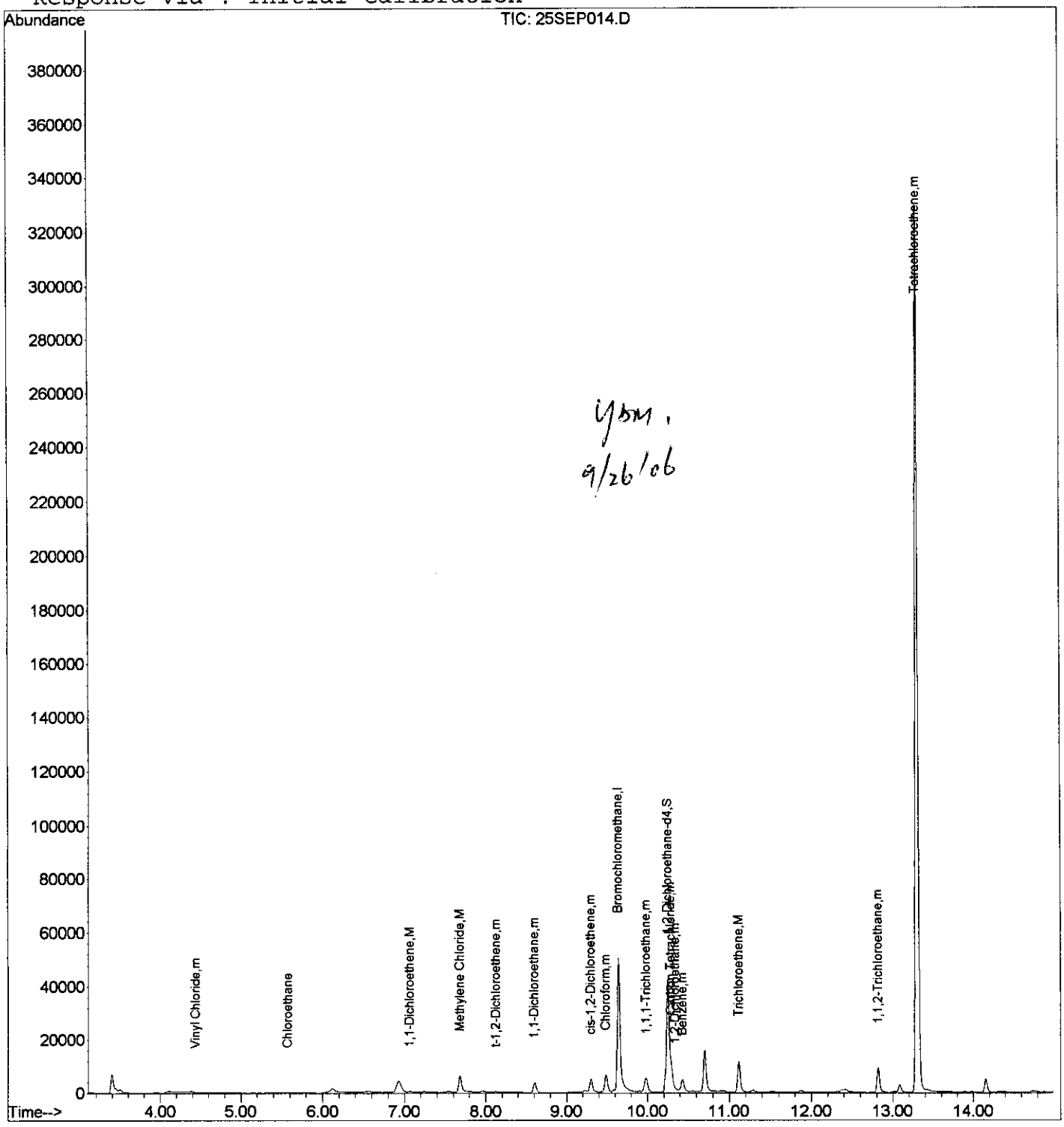
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : D:\GCMSB\060925\25SEP014.D
Acq On : 25 Sep 2006 18:13
Sample : A6091505-07 CH2MHILL
Misc : 411ml, 19.6/11.92
MS Integration Params: rteint.p
Quant Time: Sep 26 9:05 2006

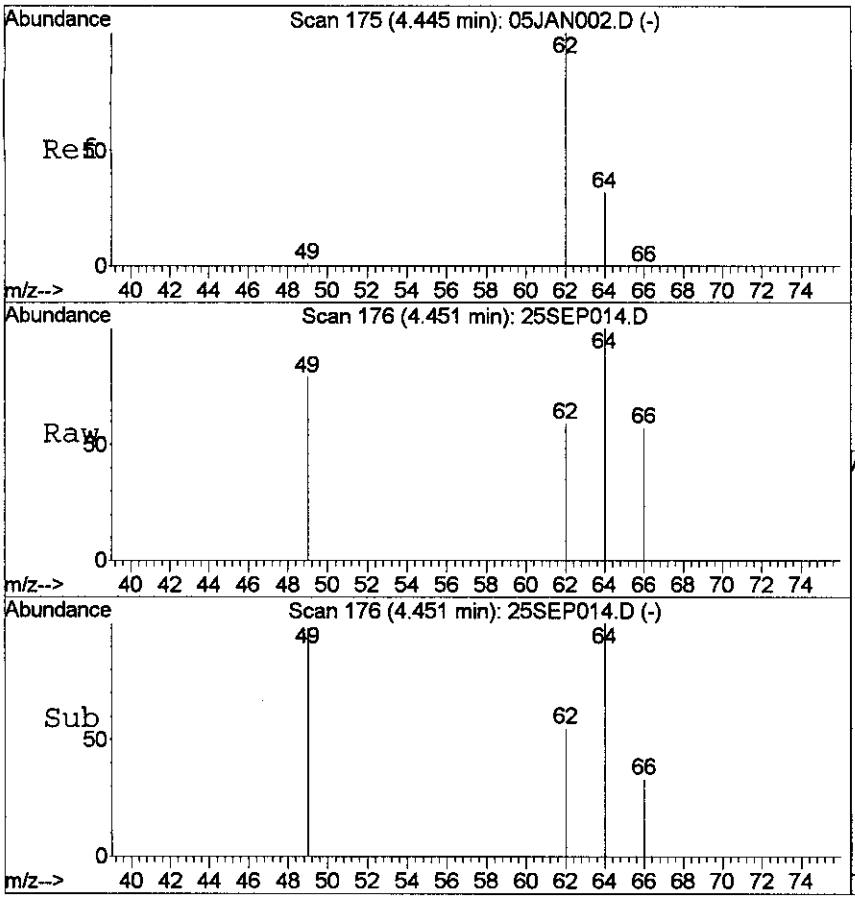
Vial: 7
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00
Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



ijbm, 9/26/06

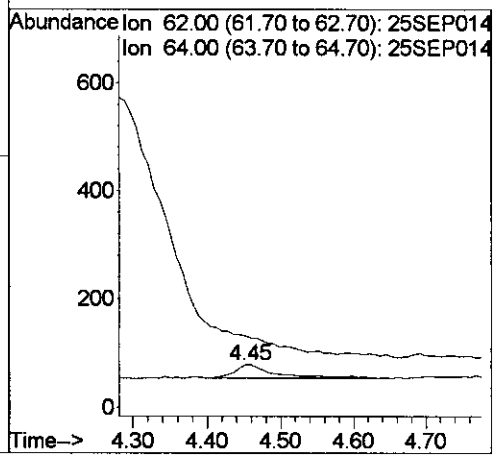
84

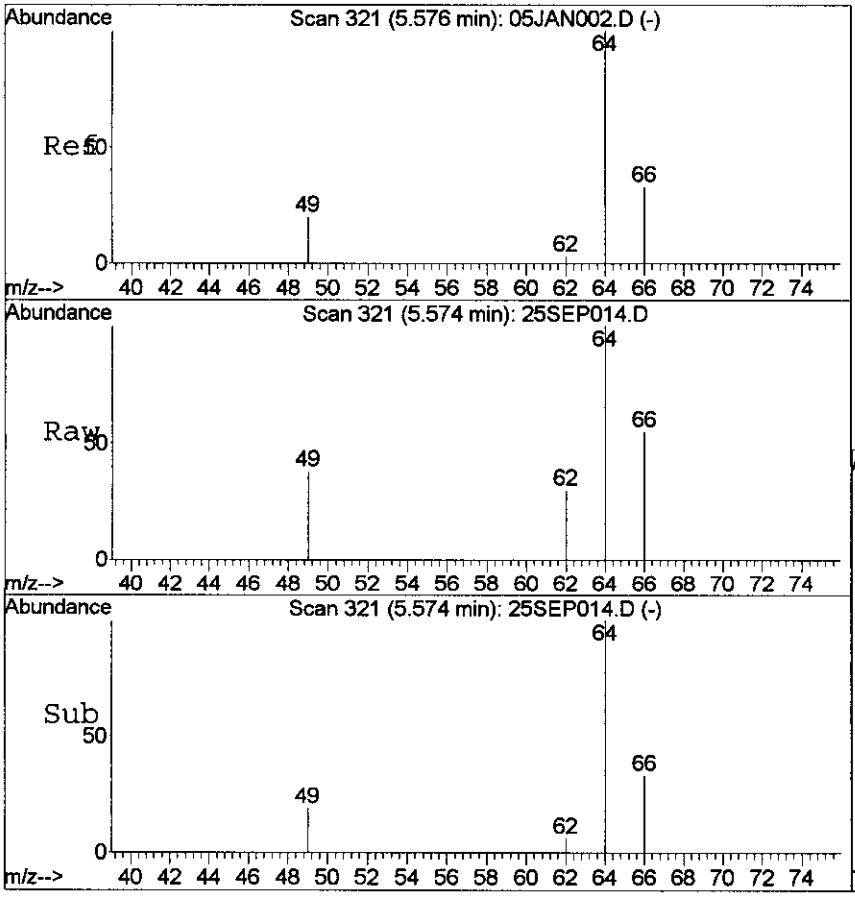


#2
Vinyl Chloride
Concen: 4.95 pptv
RT: 4.45 min Scan# 176
Delta R.T. 0.01 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 62 Resp: 104

Ion	Ratio	Lower	Upper
62	100		
64	42.0	0.0	81.2

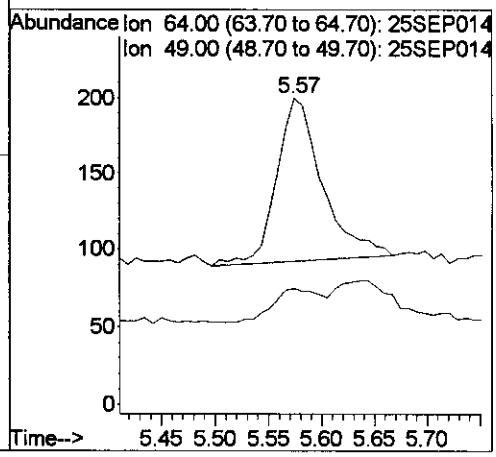


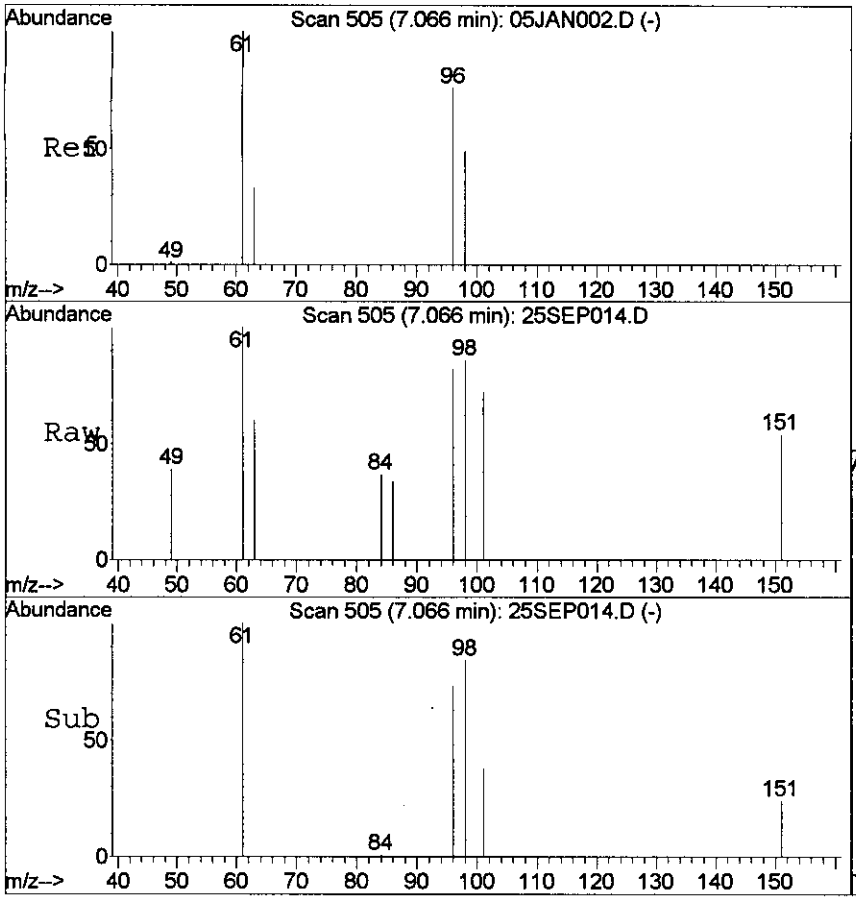


#3
Chloroethane
Concen: 28.22 ppbv
RT: 5.57 min Scan# 321
Delta R.T. -0.00 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 64 Resp: 322

Ion	Ratio	Lower	Upper
64	100		
49	9.9	0.0	0.0#

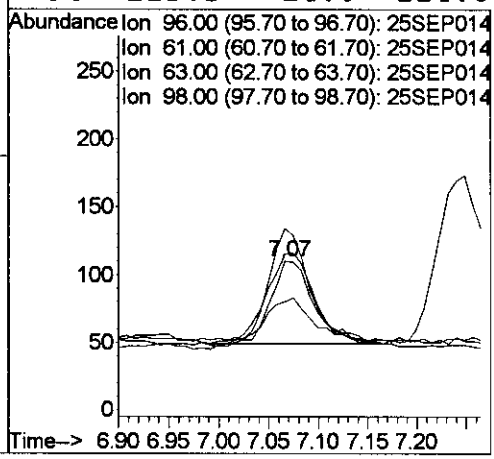


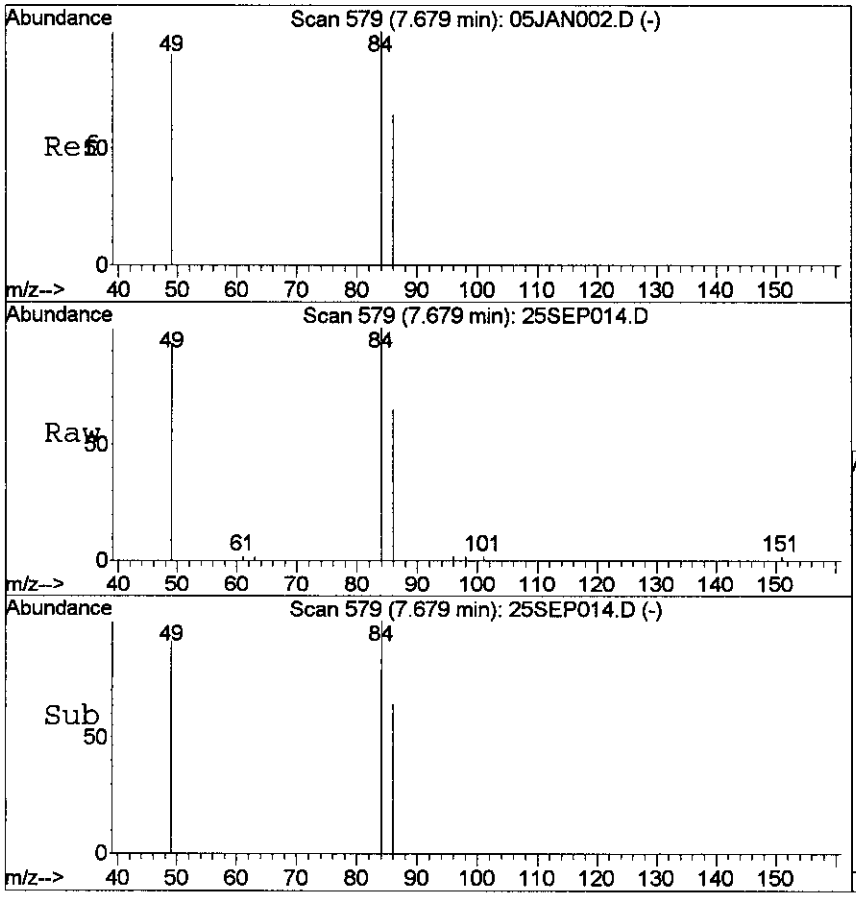


#4
1,1-Dichloroethene
Concen: 6.80 pptv
RT: 7.07 min Scan# 505
Delta R.T. 0.00 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 96 Resp: 195

Ion	Ratio	Lower	Upper
96	100		
61	140.0	49.0	149.0
63	47.5	0.0	84.0
98	113.3	14.0	114.0

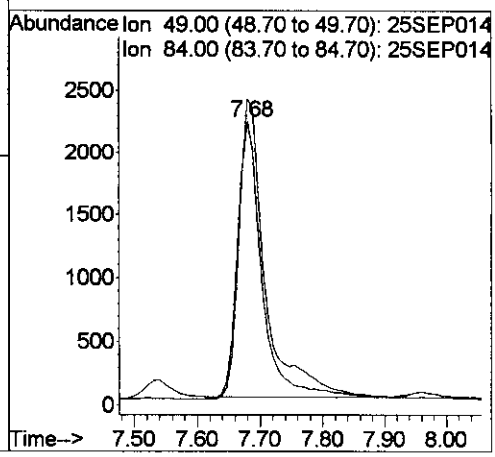


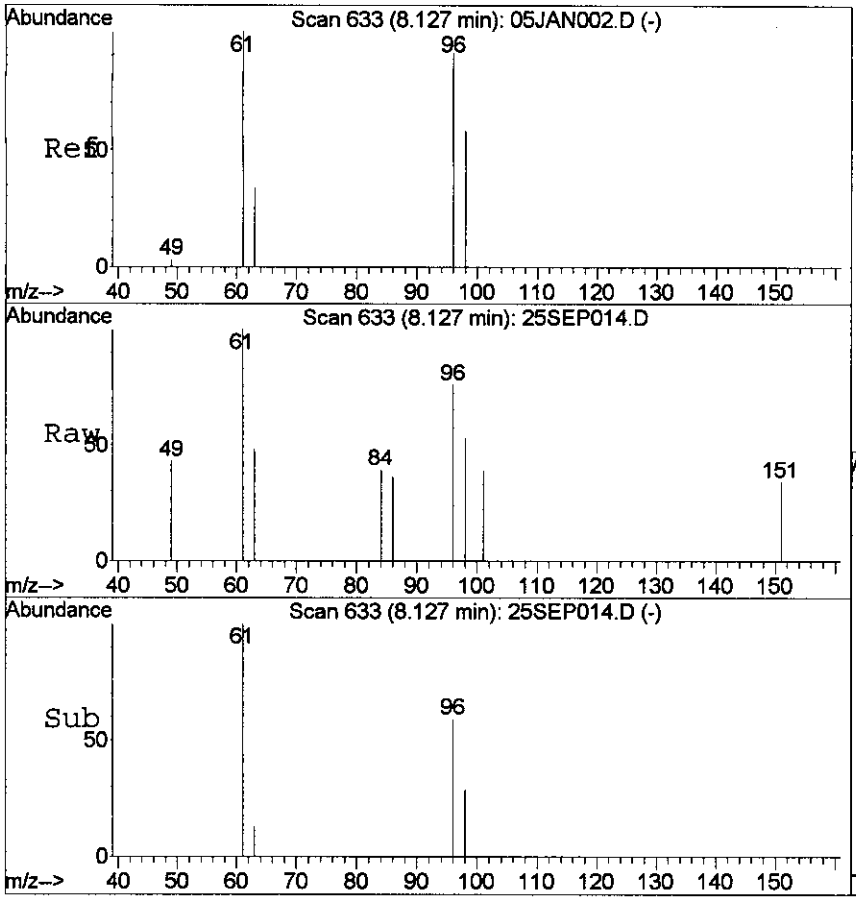


#5
Methylene Chloride
Concen: 277.28 pptv
RT: 7.68 min Scan# 579
Delta R.T. 0.00 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 49 Resp: 5815

Ion	Ratio	Lower	Upper
49	100		
84	108.6	80.0	180.0

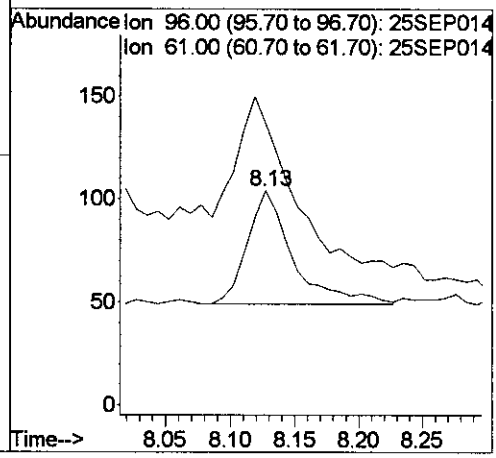


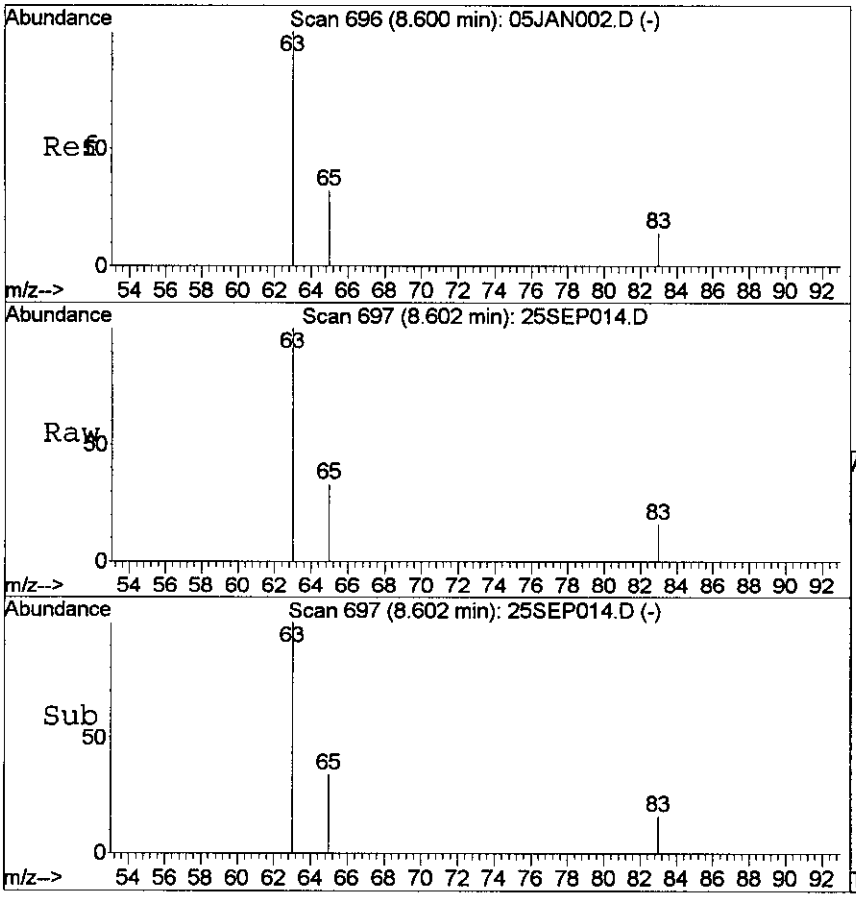


#6
t-1,2-Dichloroethene
Concen: 4.62 pptv
RT: 8.13 min Scan# 633
Delta R.T. 0.00 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 96 Resp: 135

Ion	Ratio	Lower	Upper
96	100		
61	106.4	42.6	142.6

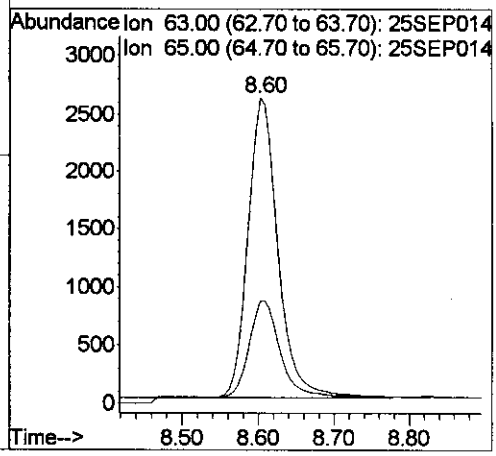


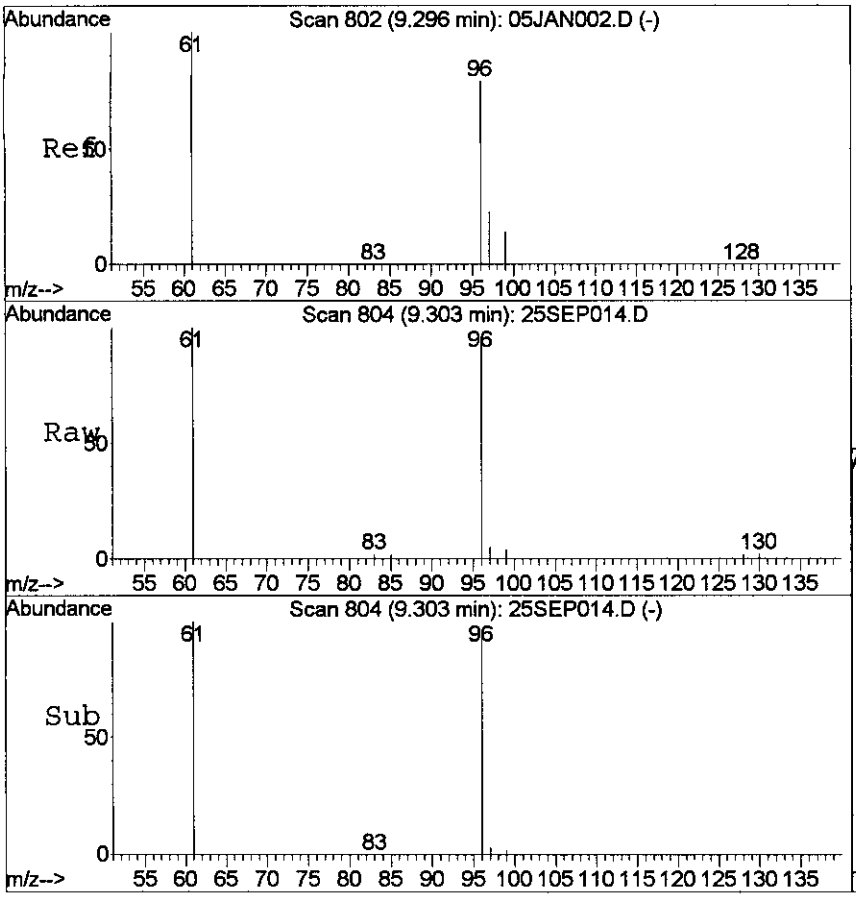


#7
1,1-Dichloroethane
Concen: 154.17 pptv
RT: 8.60 min Scan# 697
Delta R.T. 0.00 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 63 Resp: 7075

Ion	Ratio	Lower	Upper
63	100		
65	37.5	16.5	49.5

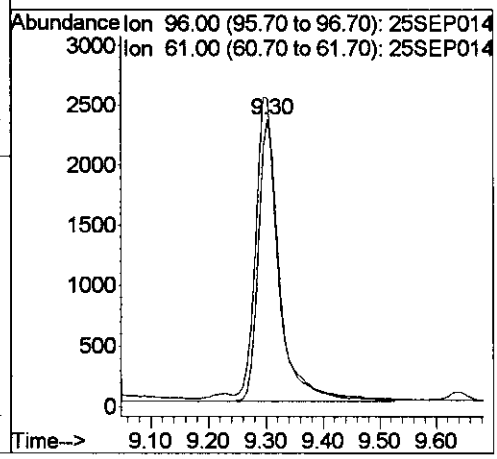


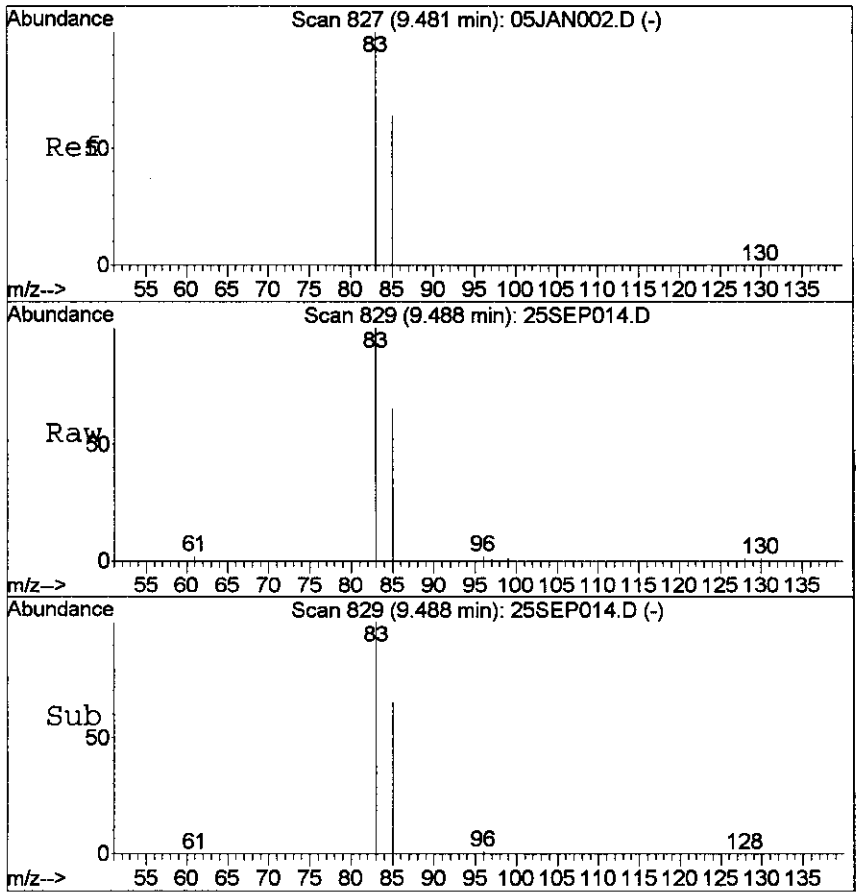


#8
cis-1,2-Dichloroethene
Concen: 194.73 pptv
RT: 9.30 min Scan# 804
Delta R.T. 0.01 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 96 Resp: 6094

Ion	Ratio	Lower	Upper
96	100		
61	111.7	64.5	96.7#

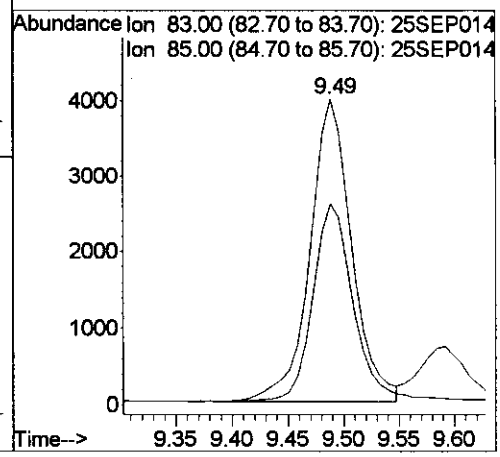


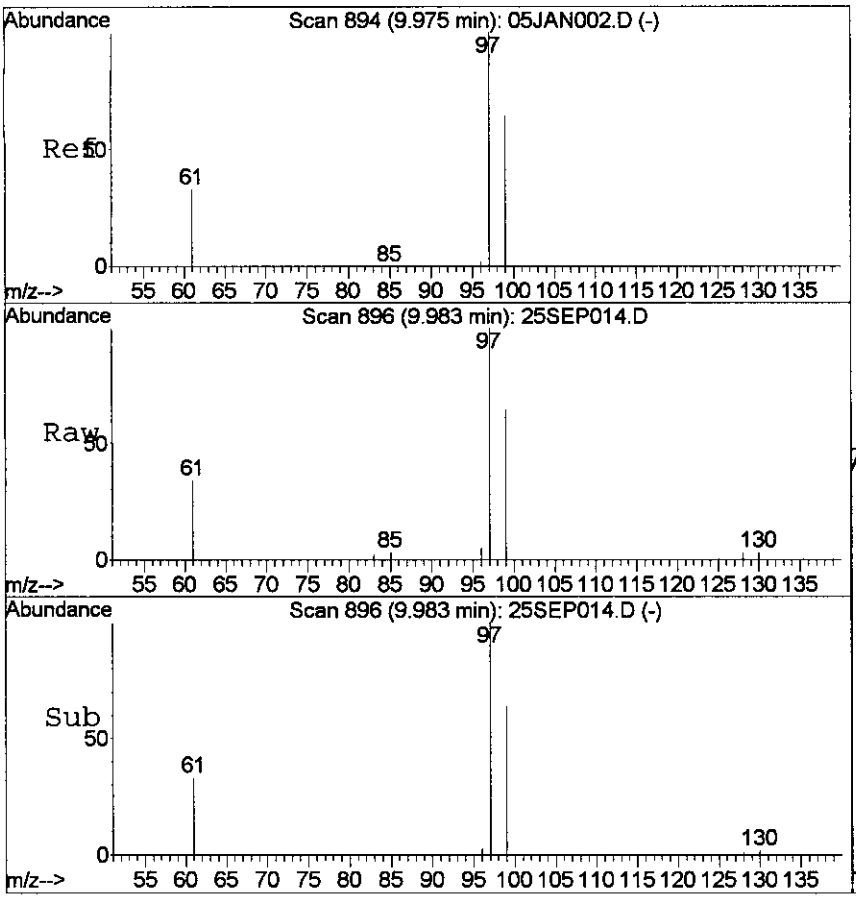


#9
Chloroform
Concen: 160.54 pptv
RT: 9.49 min Scan# 829
Delta R.T. 0.01 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 83 Resp: 10304

Ion	Ratio	Lower	Upper
83	100		
85	65.2	15.0	115.0

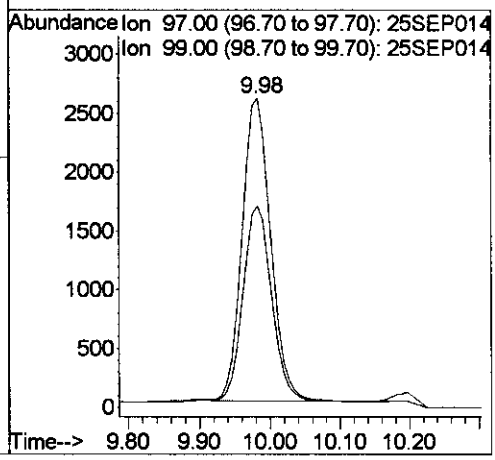


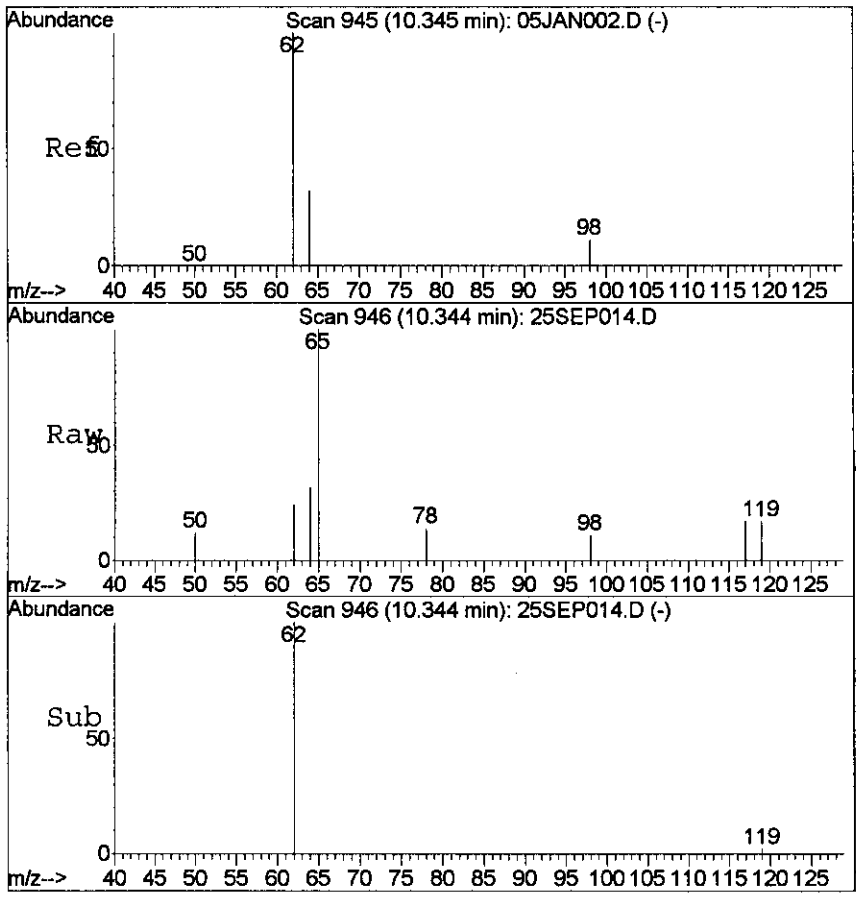


#10
1,1,1-Trichloroethane
Concen: 107.07 pptv
RT: 9.98 min Scan# 896
Delta R.T. 0.01 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 97 Resp: 7236

Ion	Ratio	Lower	Upper
97	100		
99	63.7	15.0	115.0

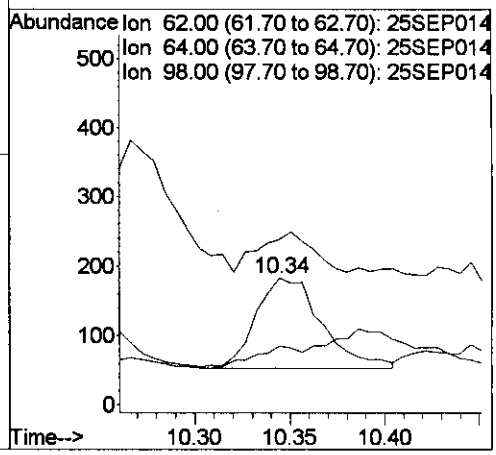


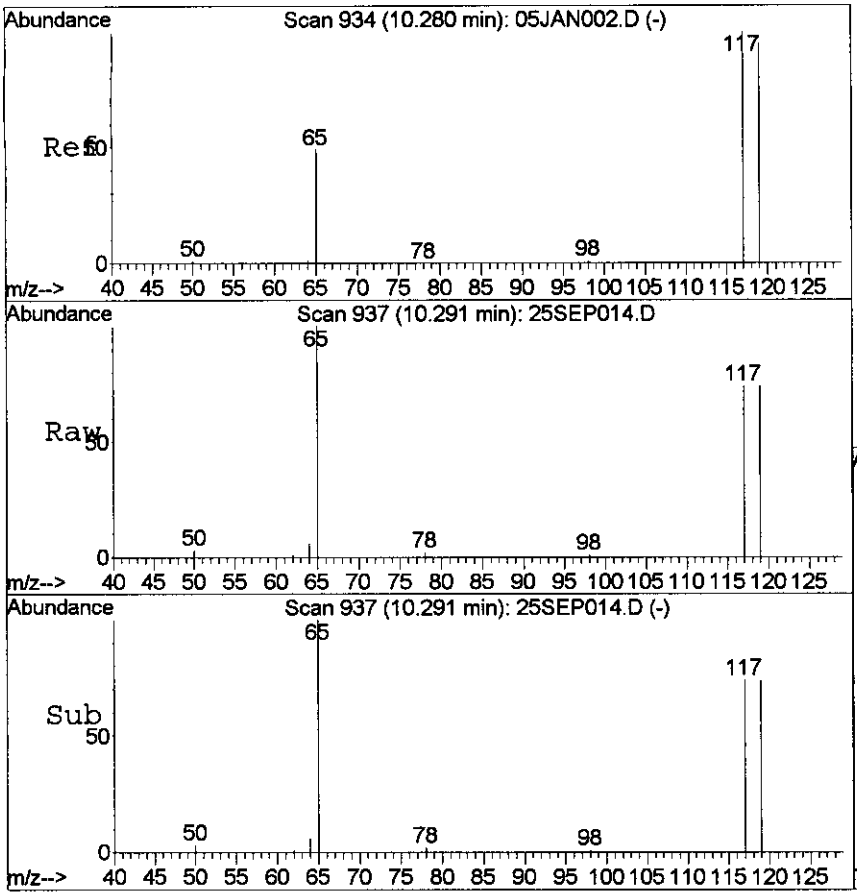


#12
1,2-Dichloroethane
Concen: 8.60 pptv
RT: 10.34 min Scan# 946
Delta R.T. -0.00 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 62 Resp: 312

Ion	Ratio	Lower	Upper
62	100		
64	25.4	0.0	82.0
98	7.1	0.0	32.0

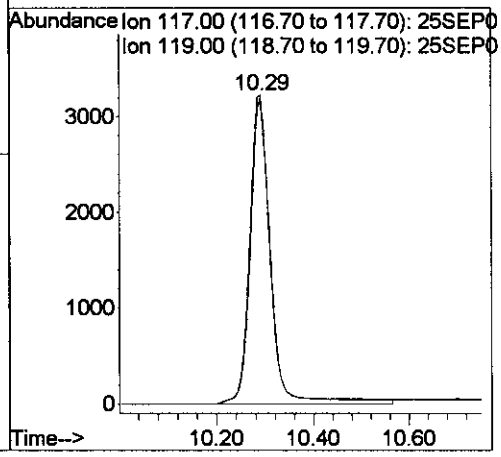


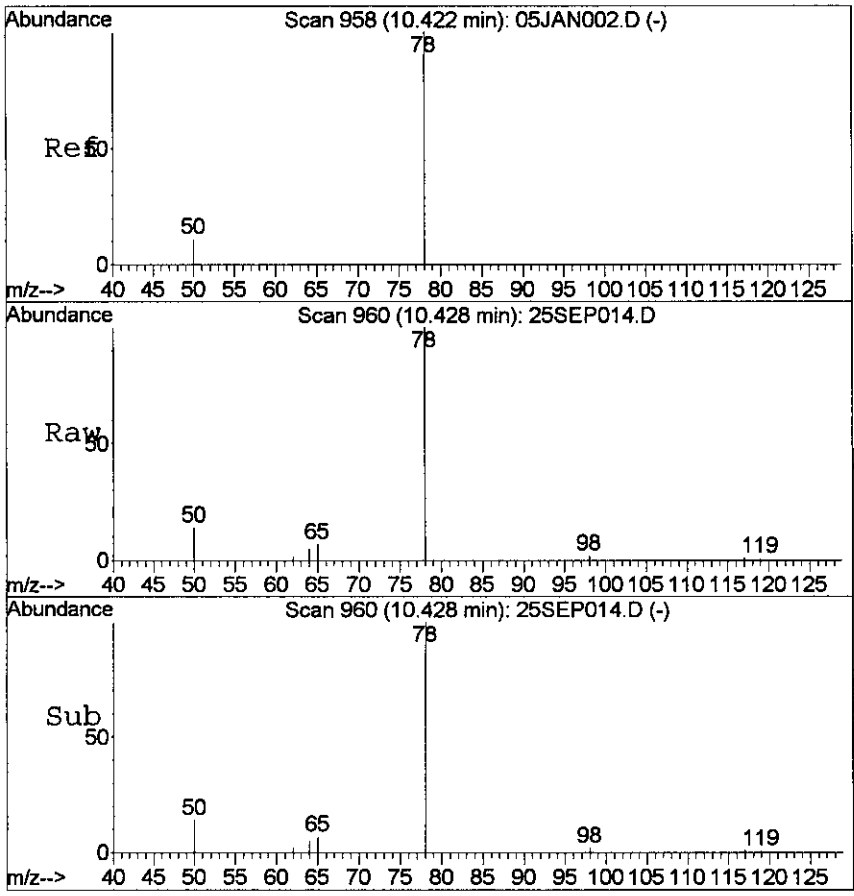


#13
Carbon Tetrachloride
Concen: 135.51 pptv
RT: 10.29 min Scan# 937
Delta R.T. 0.01 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion:117 Resp: 10280

Ion	Ratio	Lower	Upper
117	100		
119	98.9	47.0	147.0

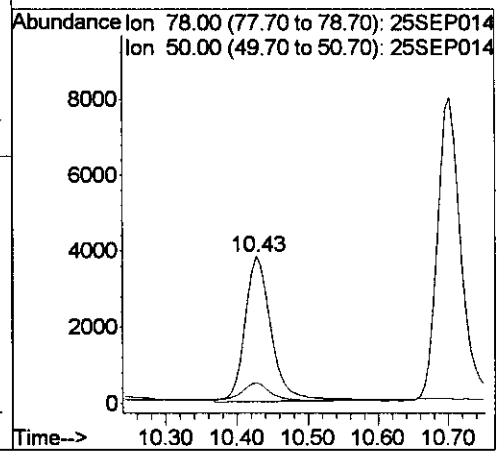


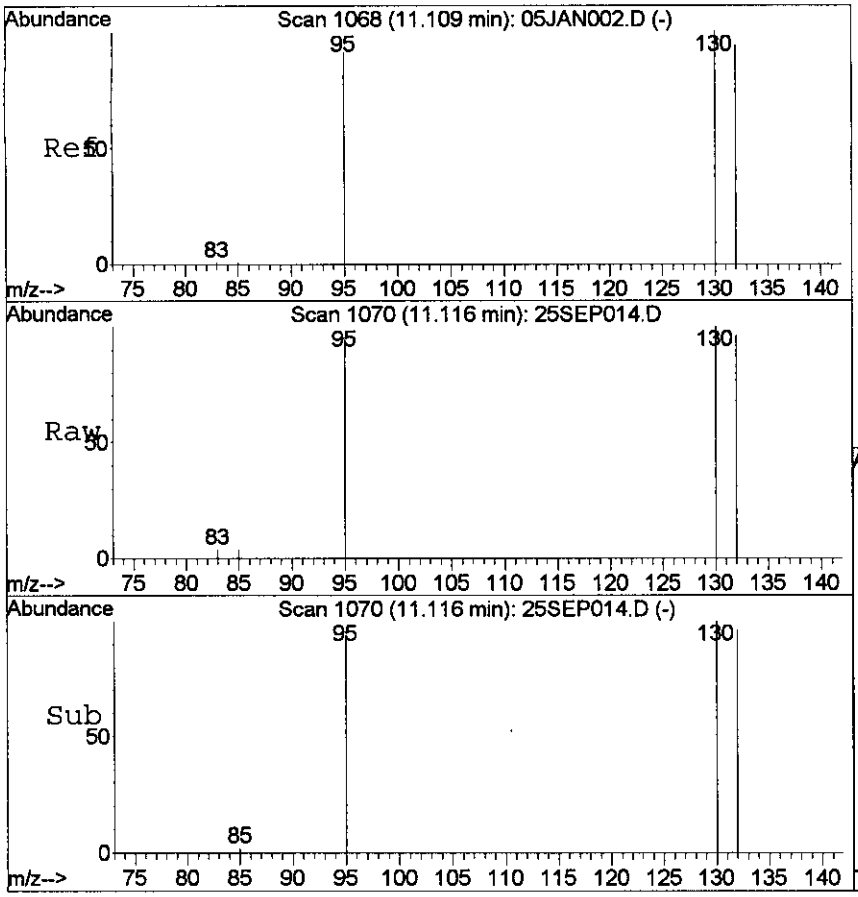


#14
Benzene
Concen: 83.98 pptv
RT: 10.43 min Scan# 960
Delta R.T. 0.01 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 78 Resp: 9872

Ion	Ratio	Lower	Upper
78	100		
50	16.7	5.0	15.0#

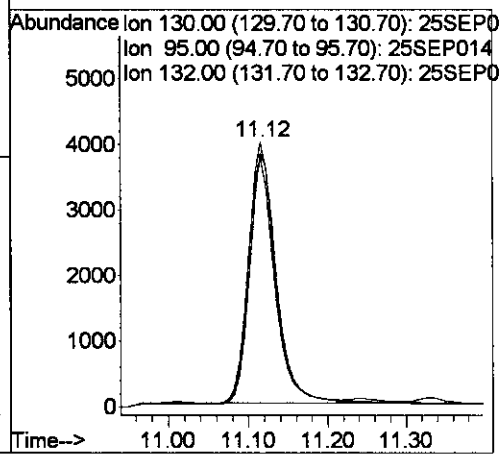


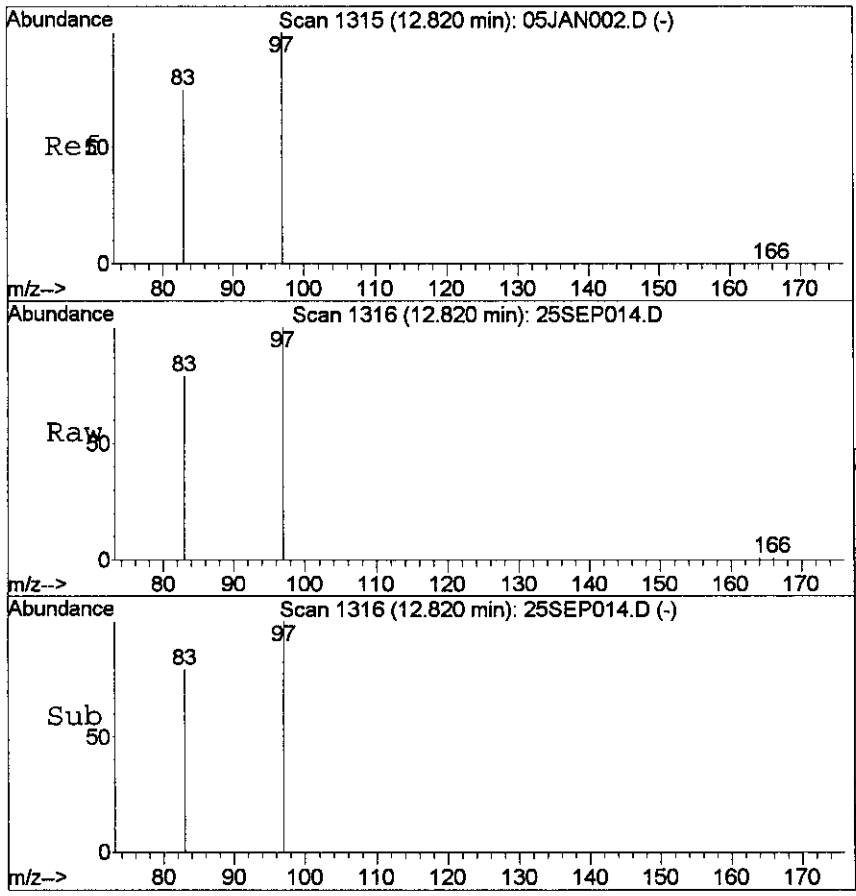


#15
Trichloroethene
Concen: 191.33 pptv
RT: 11.12 min Scan# 1070
Delta R.T. 0.01 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion:130 Resp: 9299

Ion	Ratio	Lower	Upper
130	100		
95	93.9	16.0	116.0
132	95.7	75.0	115.0

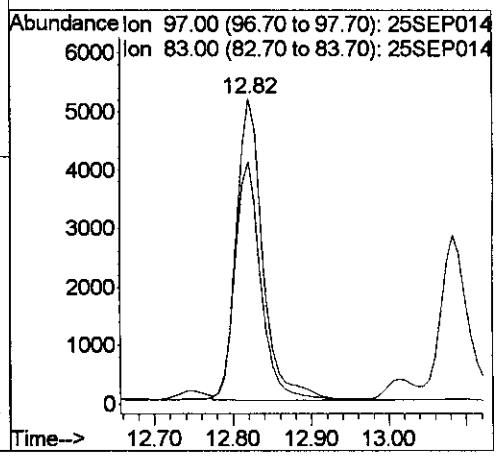


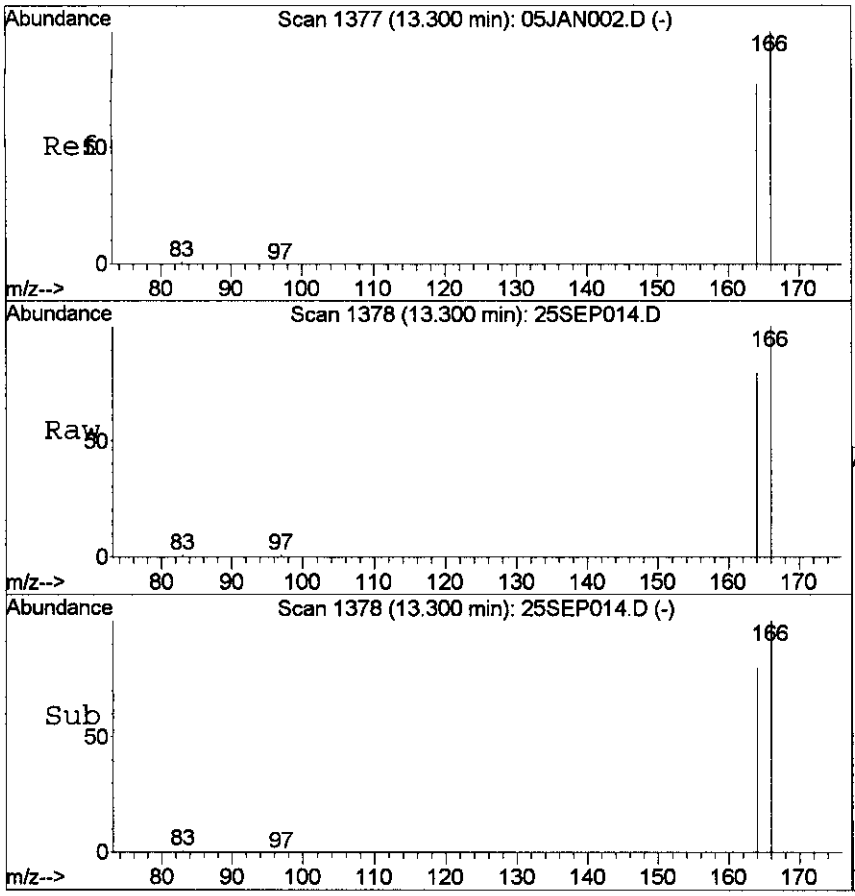


#16
1,1,2-Trichloroethane
Concen: 283.26 pptv
RT: 12.82 min Scan# 1316
Delta R.T. 0.00 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion: 97 Resp: 12142

Ion	Ratio	Lower	Upper
97	100		
83	75.9	19.0	119.0

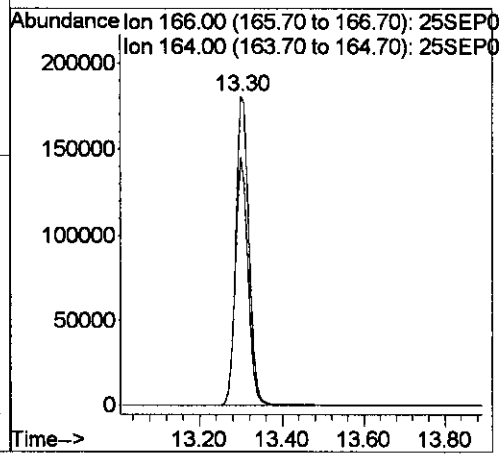




#17
Tetrachloroethene
Concen: 5482.81 pptv
RT: 13.30 min Scan# 1378
Delta R.T. 0.00 min
Lab File: 25SEP014.D
Acq: 25 Sep 2006 18:13

Tgt Ion:166 Resp: 399435

Ion	Ratio	Lower	Upper
166	100		
164	80.3	30.0	130.0



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP015.D
Acq On : 25 Sep 2006 18:51
Sample : A6091505-08 CH2MHILL
Misc : 387ml, 19.6/12.65
MS Integration Params: rteint.p
Quant Time: Sep 26 9:05 2006

Vial: 8
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00
Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	69442	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	105916	2532.68	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 126.63%				
Target Compounds							Qvalue
3) Chloroethane	5.58	64	178	15.76	ppbv	#	100
4) 1,1-Dichloroethene	7.07	96	131	4.62	pptv	#	1
5) Methylene Chloride	7.68	49	20615	993.03	pptv		79
6) t-1,2-Dichloroethene	8.13	96	107	3.70	pptv		59
7) 1,1-Dichloroethane	8.61	63	5171	113.83	pptv		87
8) cis-1,2-Dichloroethene	9.30	96	4486	144.81	pptv	#	1
9) Chloroform	9.49	83	10222	160.89	pptv		99
10) 1,1,1-Trichloroethane	9.98	97	6599	98.64	pptv		97
12) 1,2-Dichloroethane	10.34	62	393	10.95	pptv	#	31
13) Carbon Tetrachloride	10.29	117	10059	133.95	pptv		100
14) Benzene	10.43	78	41503	356.68	pptv		93
15) Trichloroethene	11.12	130	8344	173.43	pptv		86
16) 1,1,2-Trichloroethane	12.82	97	9050	213.28	pptv		85
17) Tetrachloroethene	13.30	166	338804	4698.05	pptv		100

(#) = qualifier out of range (m) = manual integration

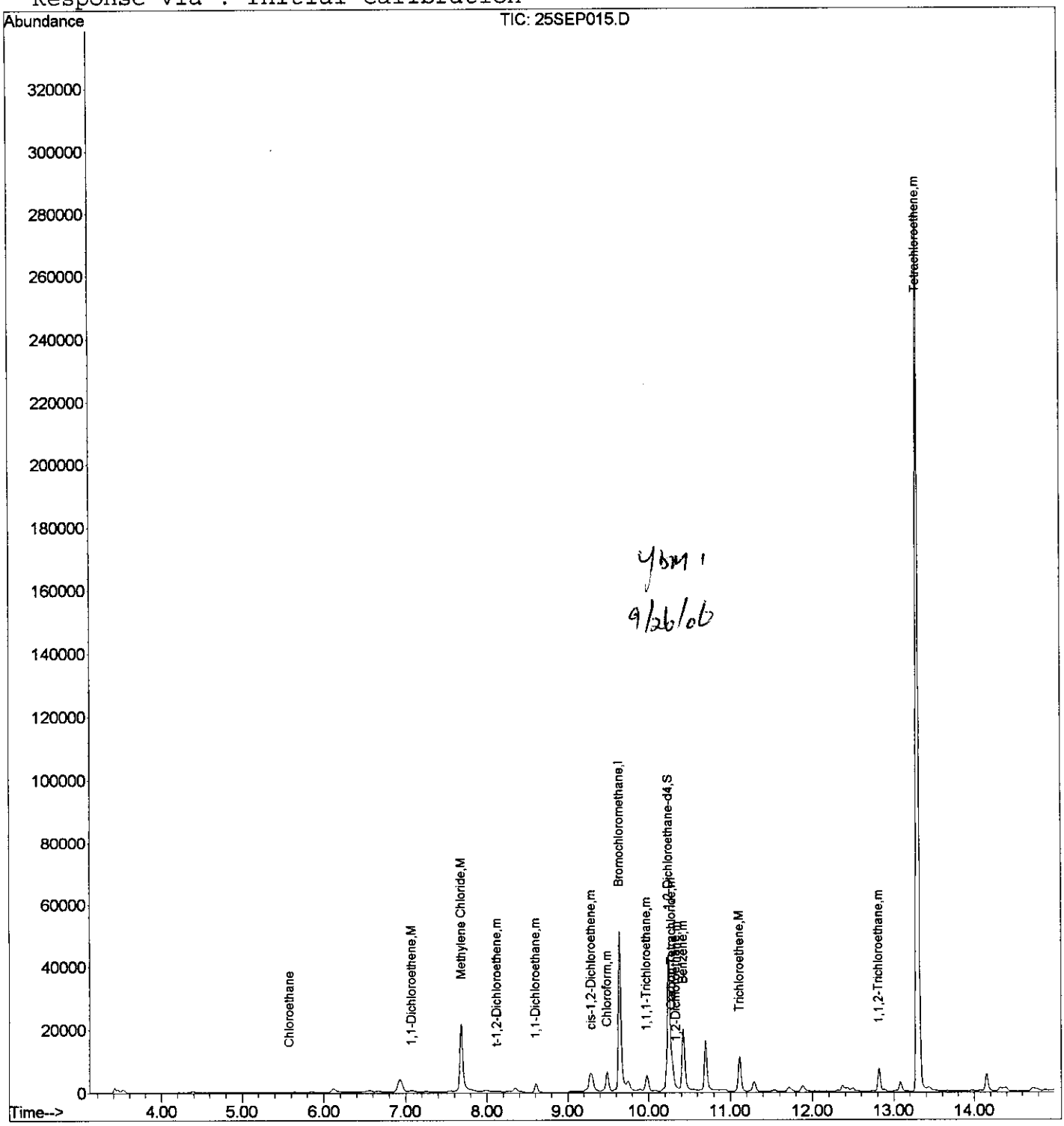
Quantitation Report

Data File : D:\GCMSB\060925\25SEP015.D
Acq On : 25 Sep 2006 18:51
Sample : A6091505-08 CH2MHILL
Misc : 387ml, 19.6/12.65
MS Integration Params: rteint.p
Quant Time: Sep 26 9:05 2006

Vial: 8
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

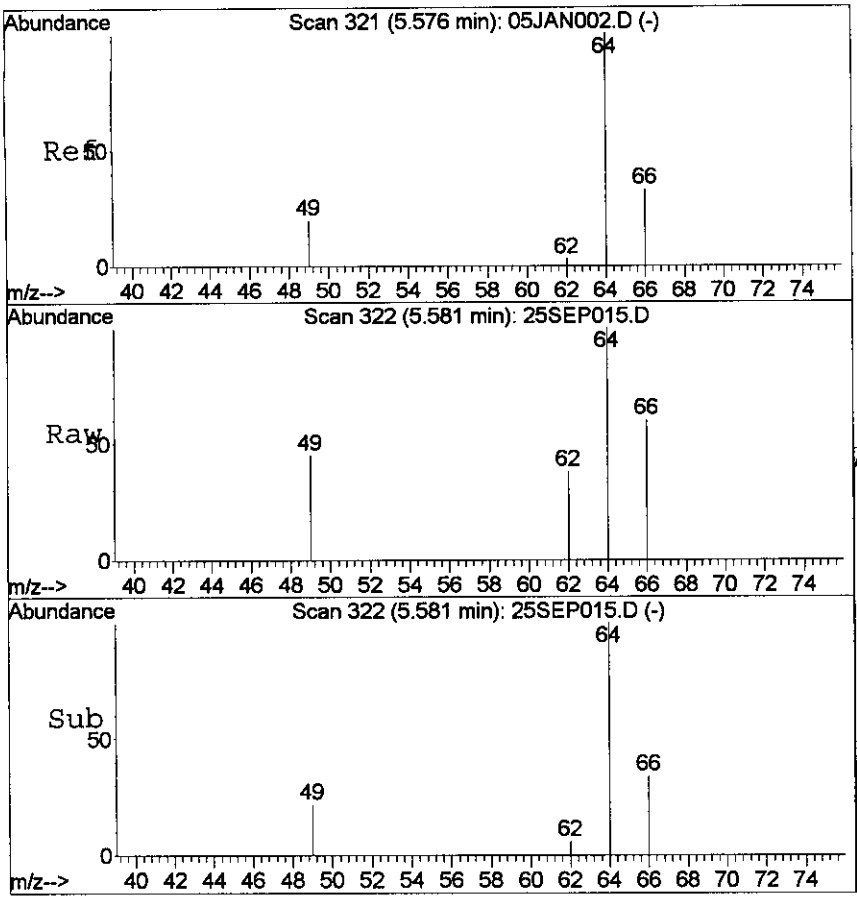
Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



YDM
9/26/06

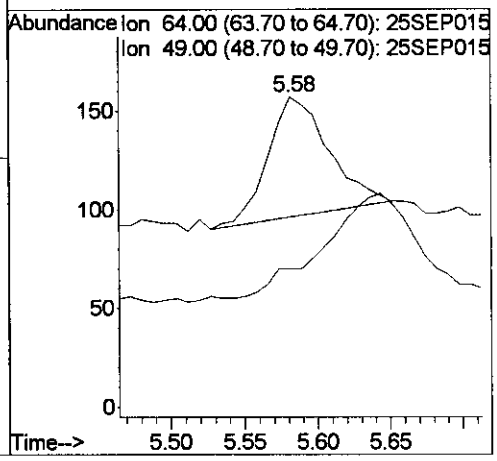
94

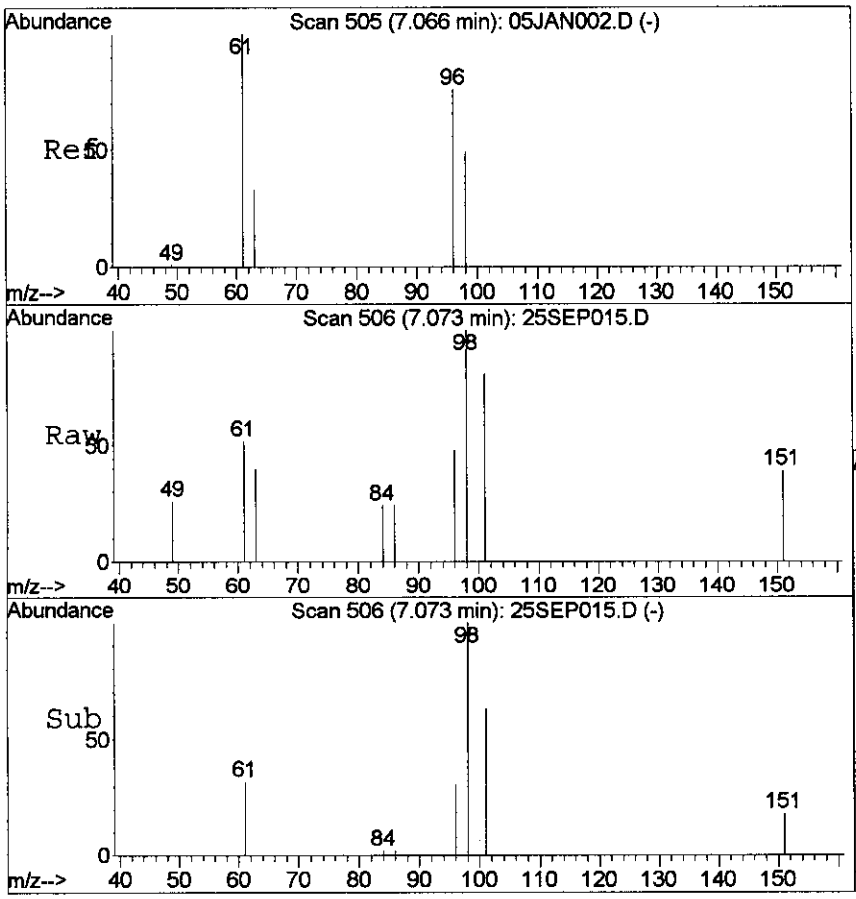


#3
Chloroethane
Concen: 15.76 ppbv
RT: 5.58 min Scan# 322
Delta R.T. 0.01 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion: 64 Resp: 178

Ion	Ratio	Lower	Upper
64	100		
49	0.0	0.0	0.0

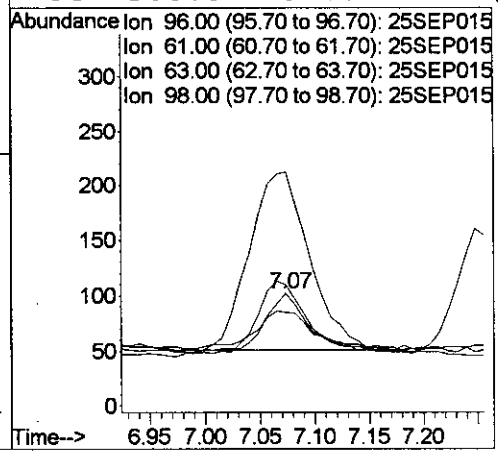


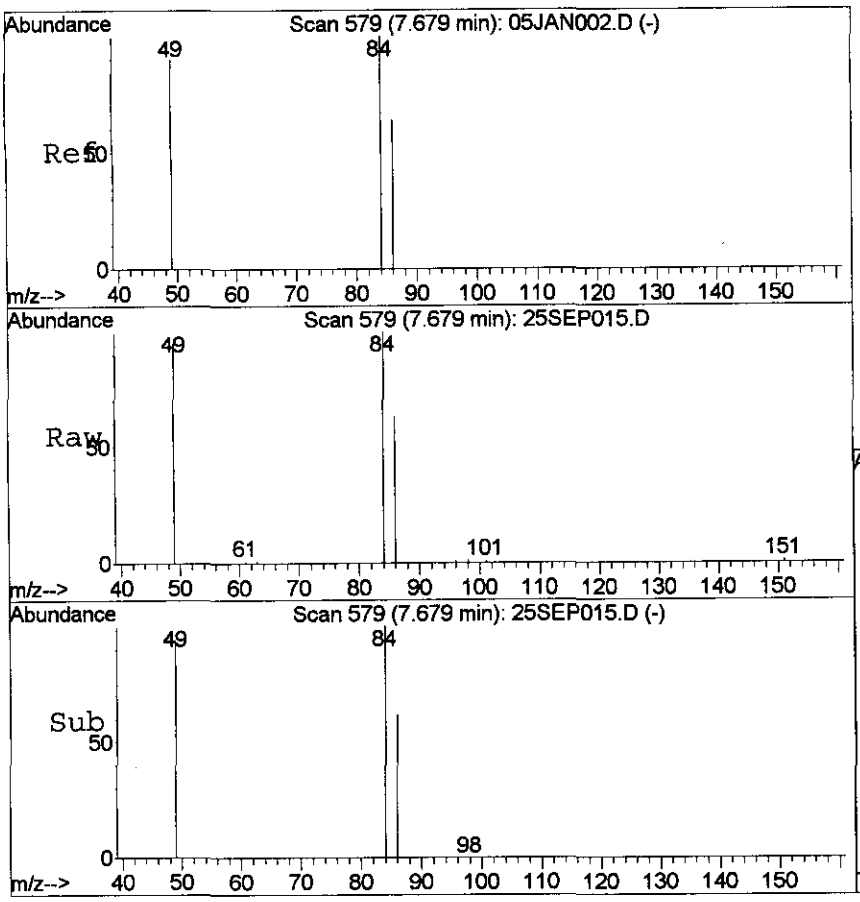


#4
1,1-Dichloroethene
Concen: 4.62 pptv
RT: 7.07 min Scan# 506
Delta R.T. 0.01 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion: 96 Resp: 131

Ion	Ratio	Lower	Upper
96	100		
61	120.6	49.0	149.0
63	62.7	0.0	84.0
98	308.8	14.0	114.0#

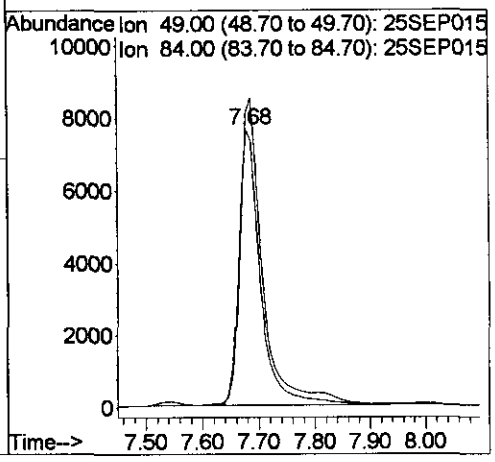


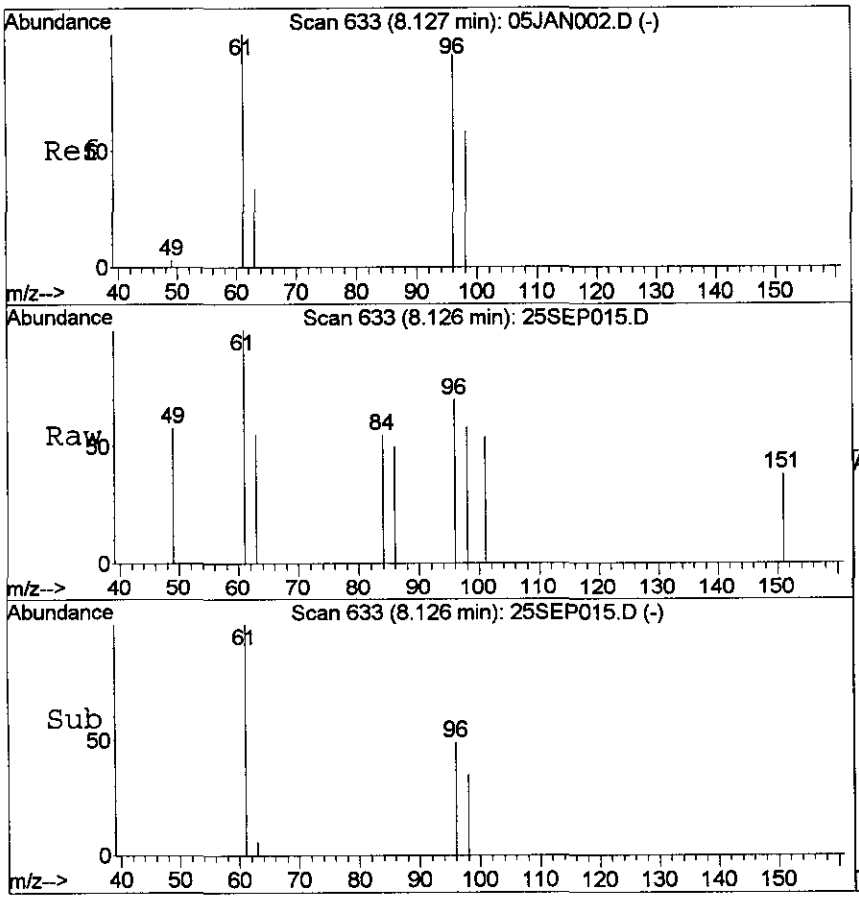


#5
Methylene Chloride
Concen: 993.03 pptv
RT: 7.68 min Scan# 579
Delta R.T. -0.00 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion: 49 Resp: 20615

Ion	Ratio	Lower	Upper
49	100		
84	105.6	80.0	180.0

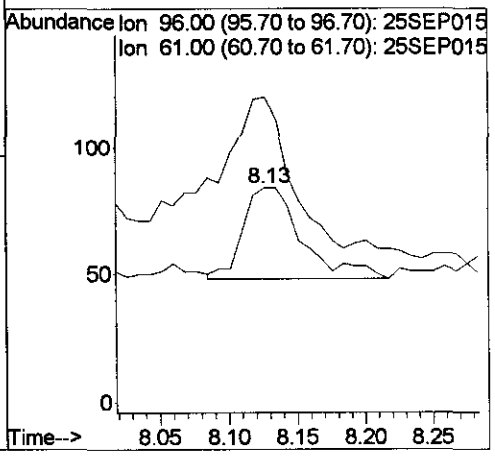


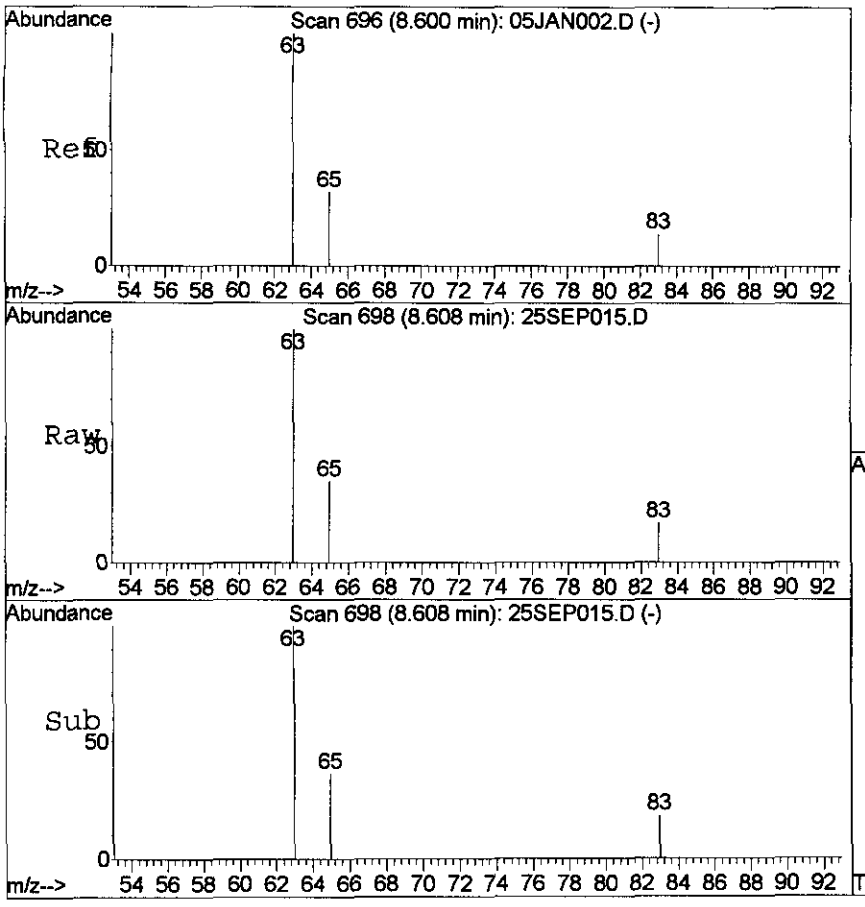


#6
t-1,2-Dichloroethene
Concen: 3.70 pptv
RT: 8.13 min Scan# 633
Delta R.T. 0.00 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion: 96 Resp: 107

Ion	Ratio	Lower	Upper
96	100		
61	131.4	42.6	142.6

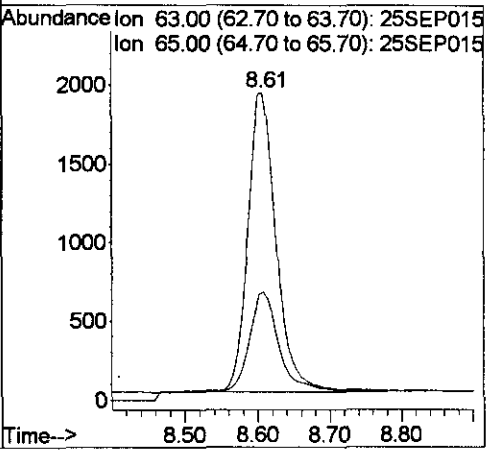


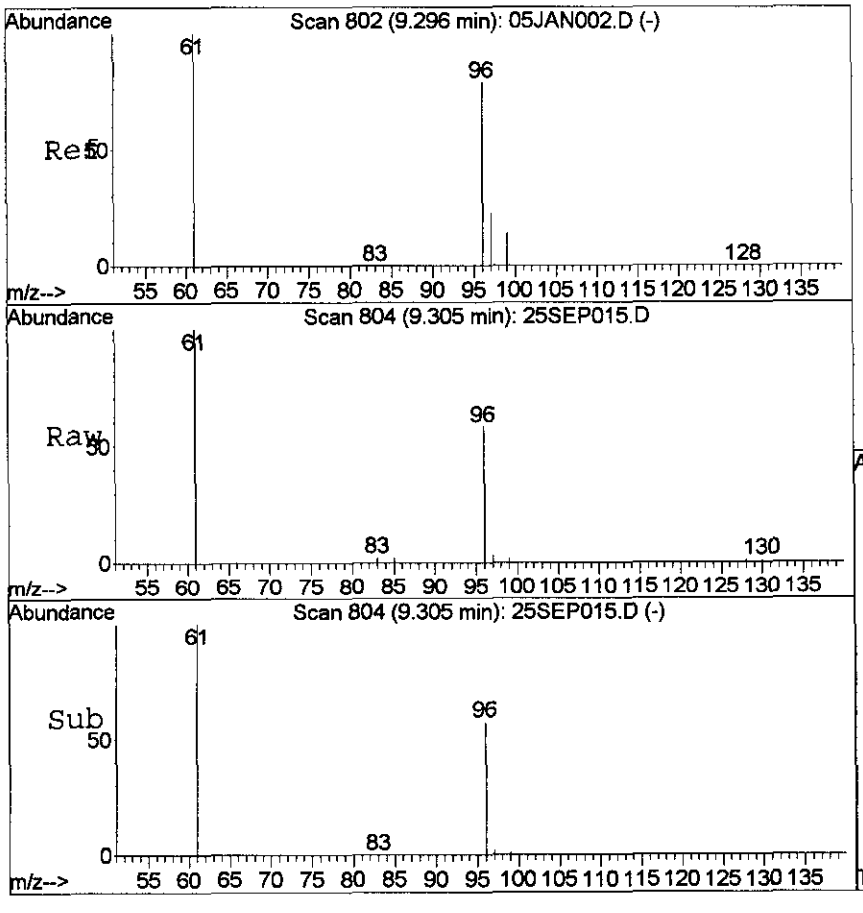


#7
1,1-Dichloroethane
Concen: 113.83 pptv
RT: 8.61 min Scan# 698
Delta R.T. 0.01 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion: 63 Resp: 5171

Ion	Ratio	Lower	Upper
63	100		
65	40.5	16.5	49.5

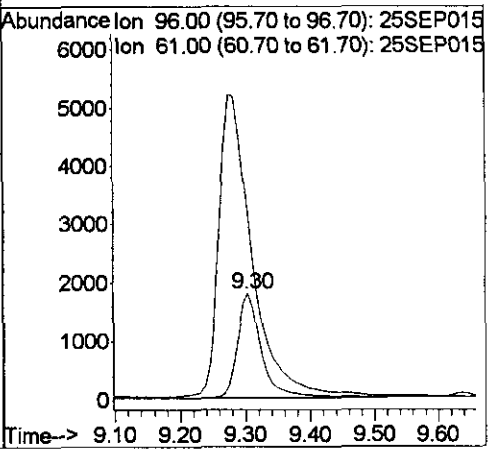


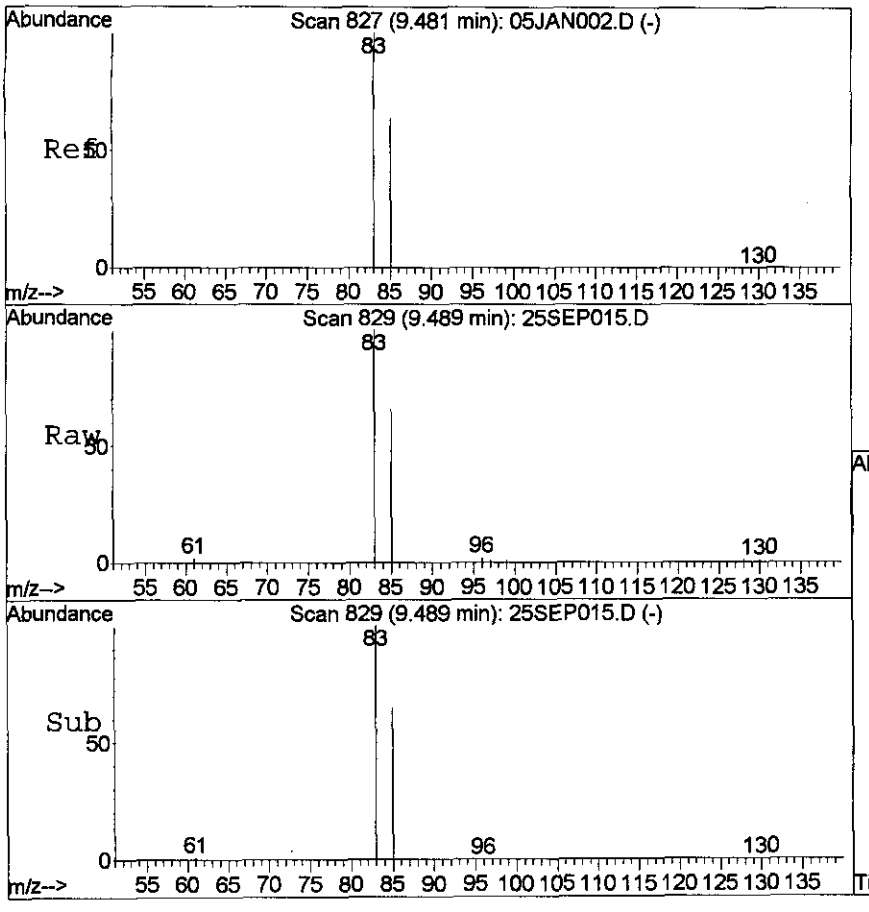


#8
cis-1,2-Dichloroethene
Concen: 144.81 pptv
RT: 9.30 min Scan# 804
Delta R.T. 0.01 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion: 96 Resp: 4486

Ion	Ratio	Lower	Upper
96	100		
61	405.8	64.5	96.7#

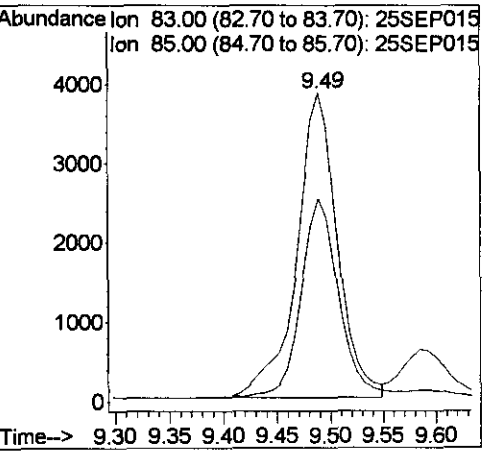


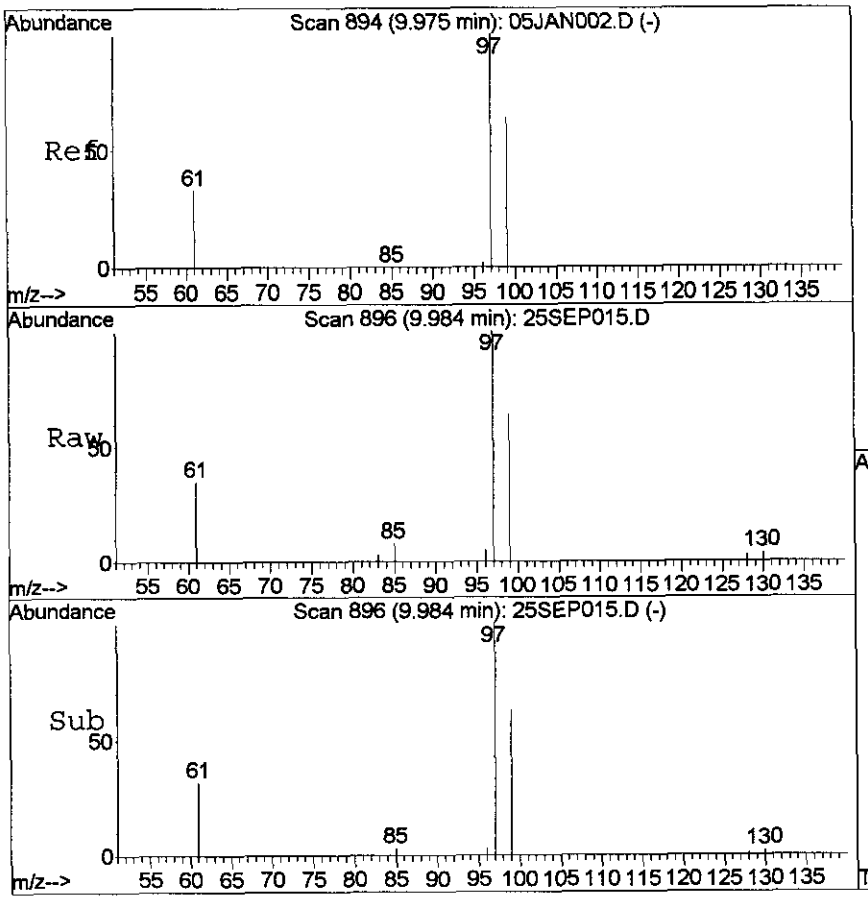


#9
Chloroform
Concen: 160.89 pptv
RT: 9.49 min Scan# 829
Delta R.T. 0.01 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion: 83 Resp: 10222

Ion	Ratio	Lower	Upper
83	100		
85	65.5	15.0	115.0

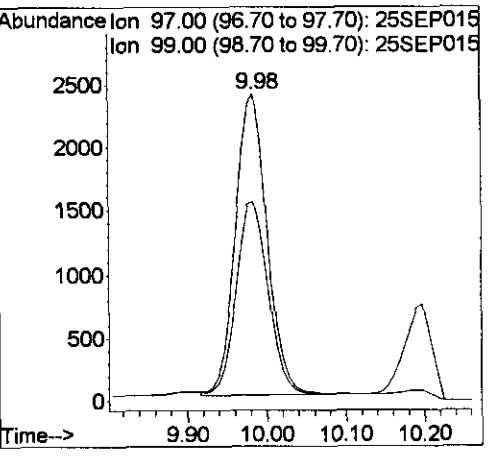


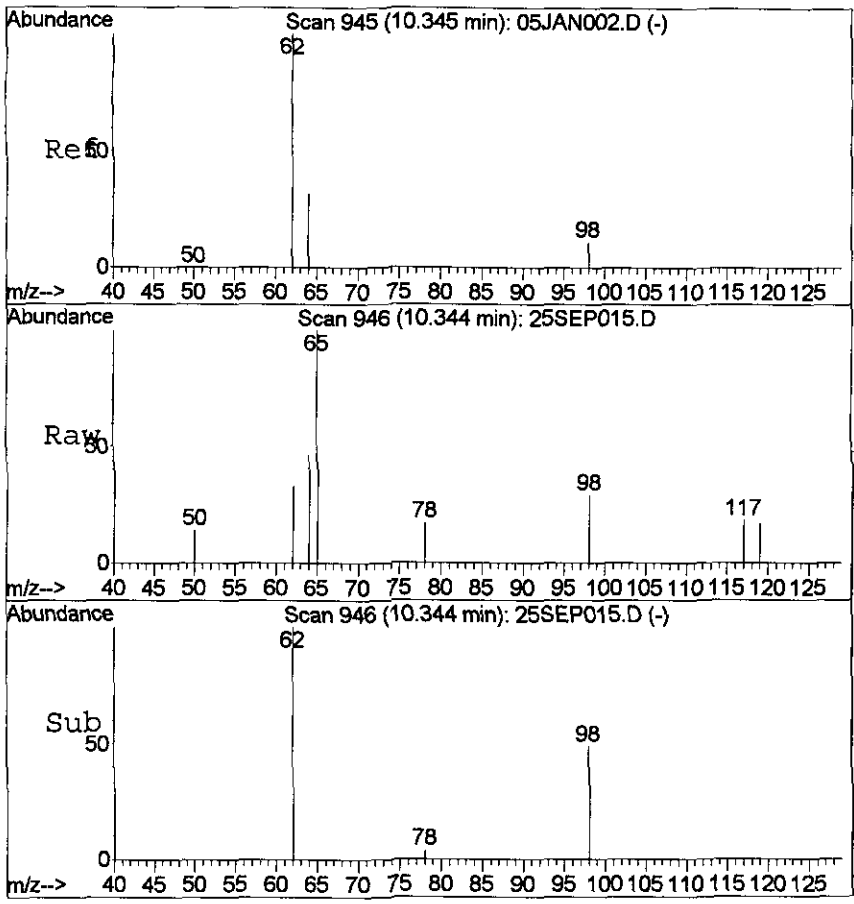


#10
1,1,1-Trichloroethane
Concen: 98.64 pptv
RT: 9.98 min Scan# 896
Delta R.T. 0.01 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion: 97 Resp: 6599

Ion	Ratio	Lower	Upper
97	100		
99	63.0	15.0	115.0

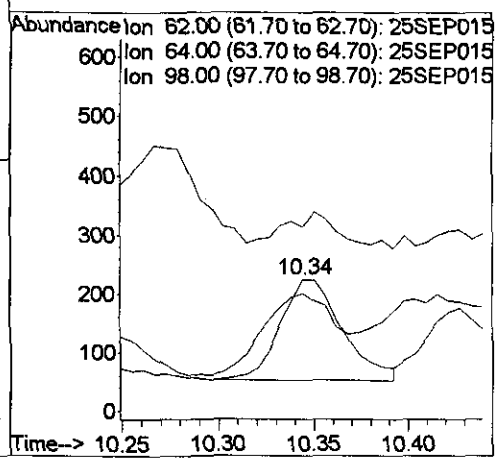


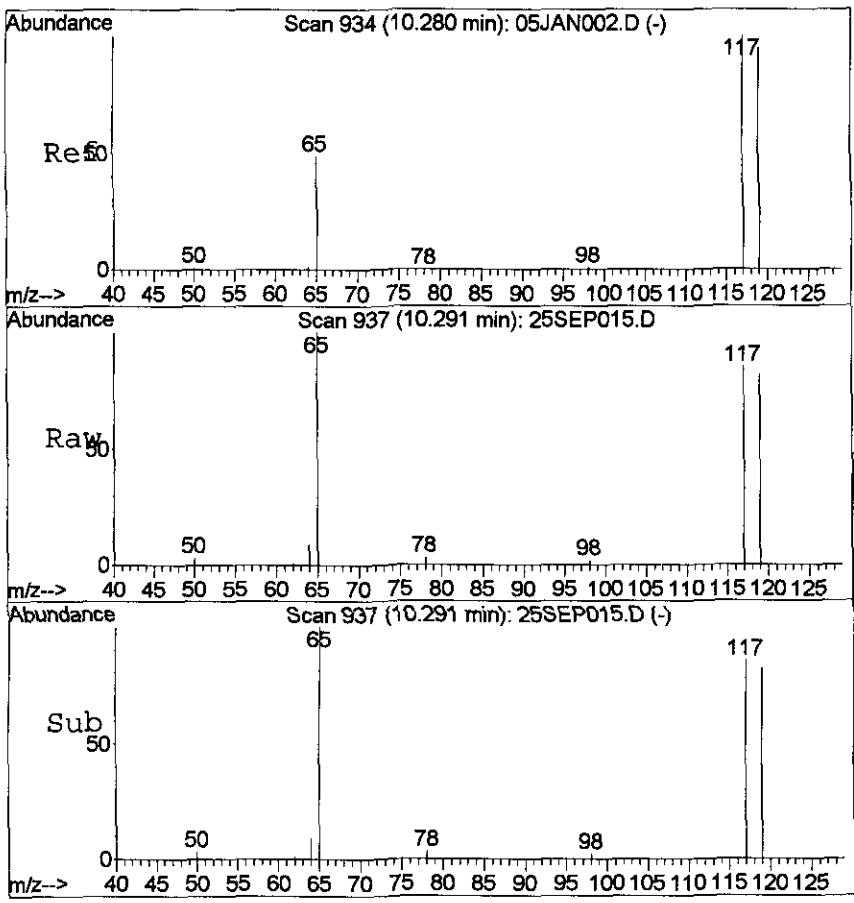


#12
1,2-Dichloroethane
Concen: 10.95 pptv
RT: 10.34 min Scan# 946
Delta R.T. -0.00 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion: 62 Resp: 393

Ion	Ratio	Lower	Upper
62	100		
64	1.5	0.0	82.0
98	53.4	0.0	32.0#

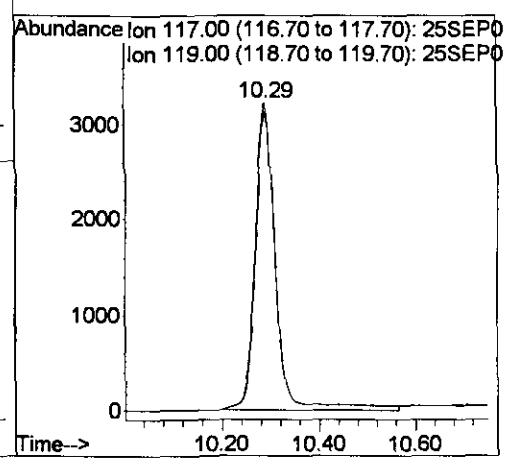


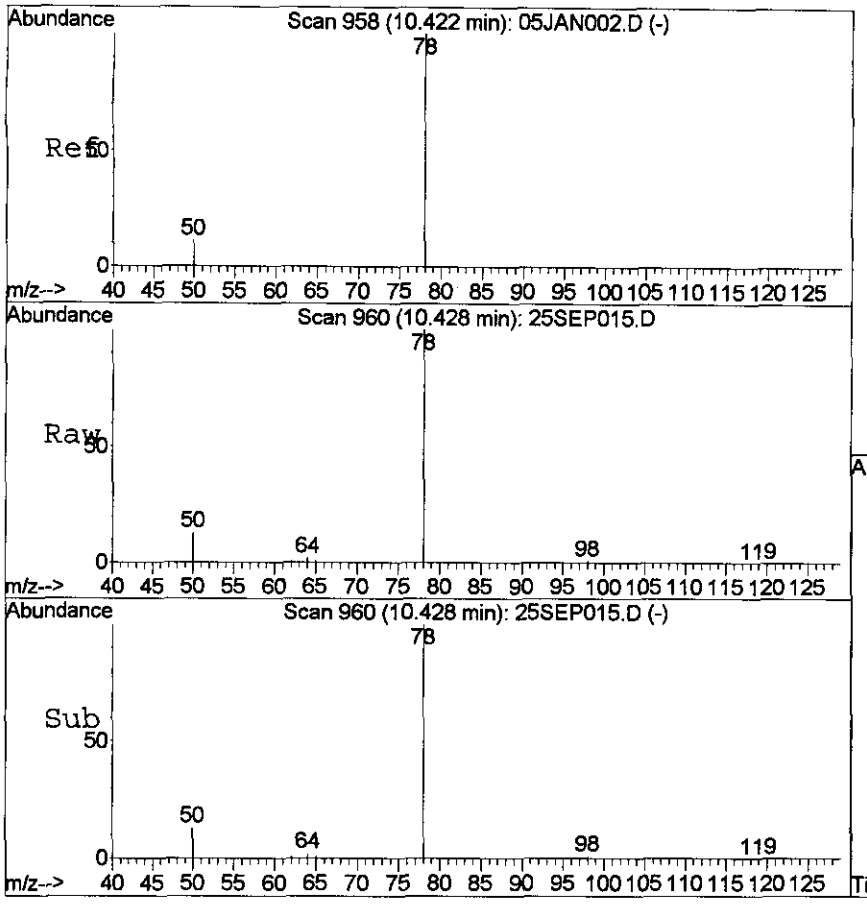


#13
Carbon Tetrachloride
Concen: 133.95 pptv
RT: 10.29 min Scan# 937
Delta R.T. 0.01 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion:117 Resp: 10059

Ion	Ratio	Lower	Upper
117	100		
119	96.8	47.0	147.0

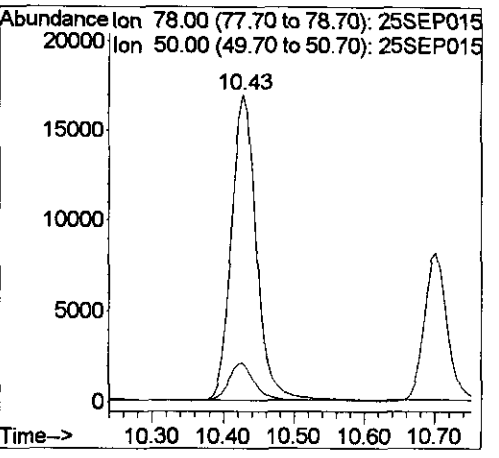


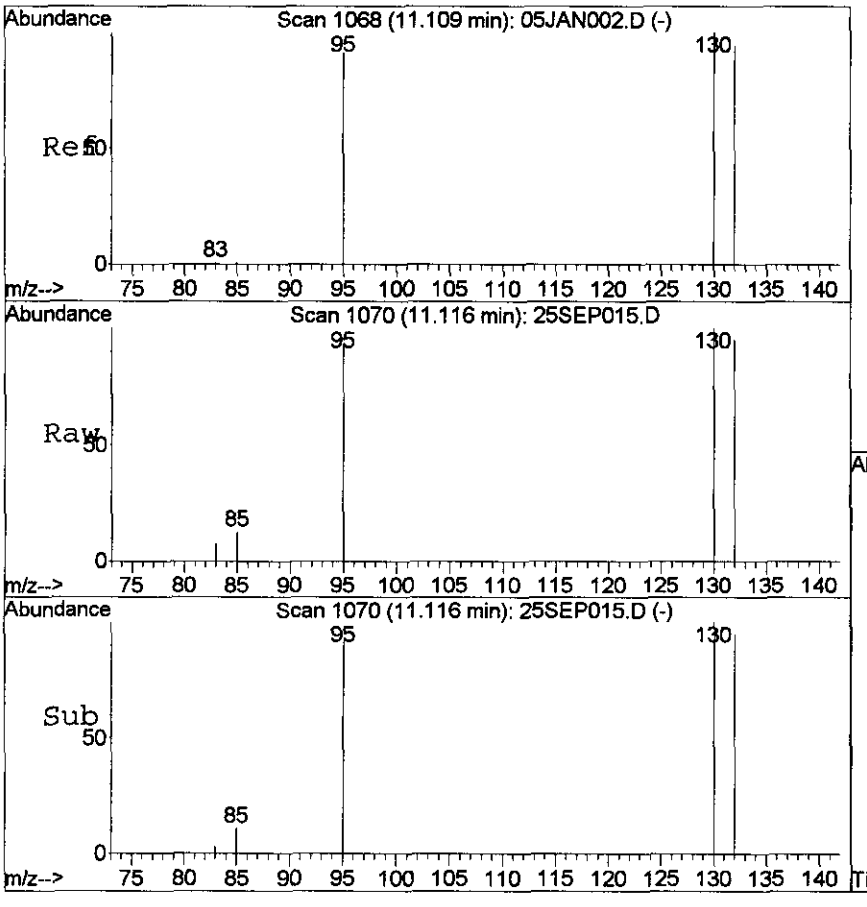


#14
Benzene
Concen: 356.68 pptv
RT: 10.43 min Scan# 960
Delta R.T. 0.01 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion: 78 Resp: 41503

Ion	Ratio	Lower	Upper
78	100		
50	12.5	5.0	15.0

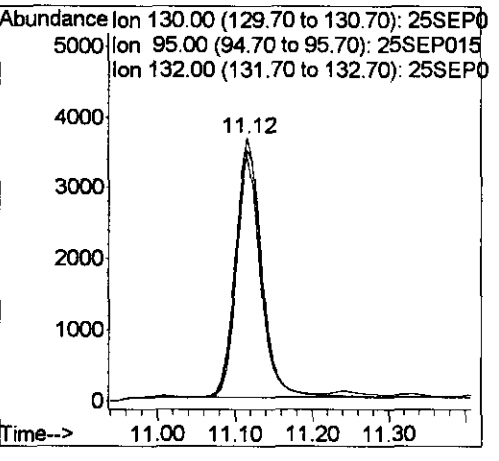


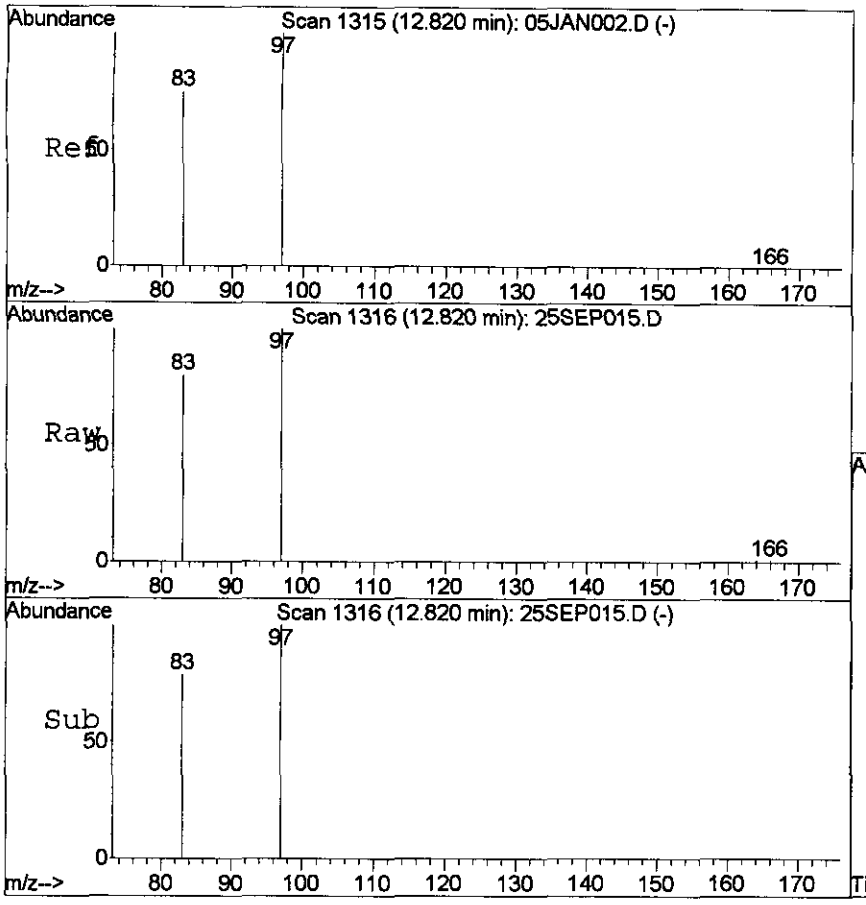


#15
Trichloroethene
Concen: 173.43 pptv
RT: 11.12 min Scan# 1070
Delta R.T. 0.01 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion:130 Resp: 8344

Ion	Ratio	Lower	Upper
130	100		
95	92.1	16.0	116.0
132	95.3	75.0	115.0

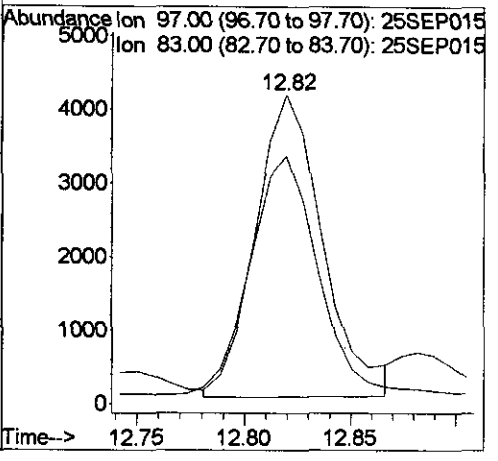


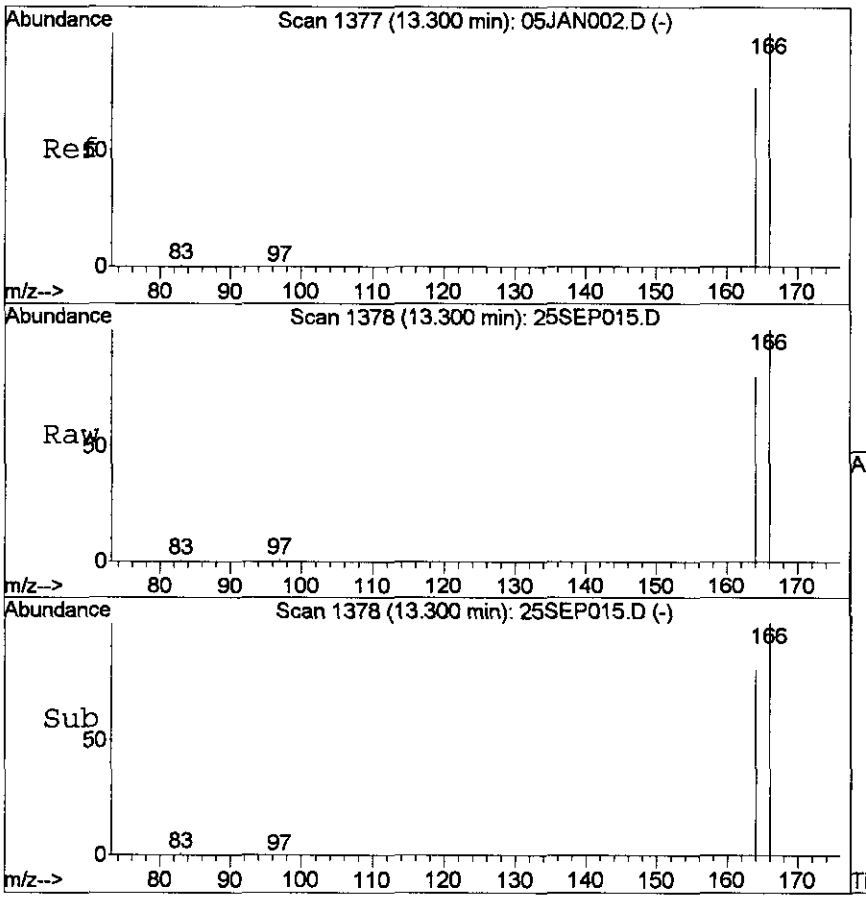


#16
1,1,2-Trichloroethane
Concen: 213.28 pptv
RT: 12.82 min Scan# 1316
Delta R.T. -0.00 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion: 97 Resp: 9050

Ion	Ratio	Lower	Upper
97	100		
83	81.6	19.0	119.0

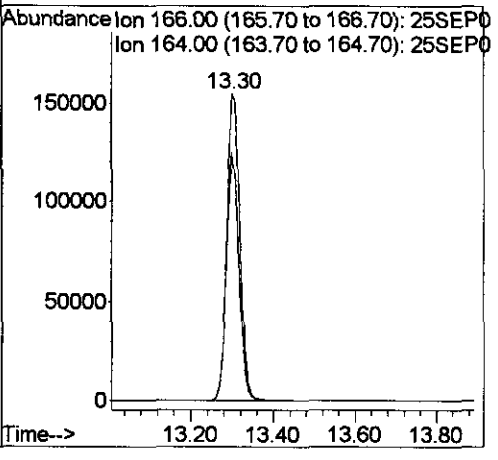




#17
Tetrachloroethene
Concen: 4698.05 pptv
RT: 13.30 min Scan# 1378
Delta R.T. -0.00 min
Lab File: 25SEP015.D
Acq: 25 Sep 2006 18:51

Tgt Ion:166 Resp: 338804

Ion	Ratio	Lower	Upper
166	100		
164	80.4	30.0	130.0



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP016.D Vial: 9
Acq On : 25 Sep 2006 19:28 Operator: JM
Sample : A6091505-09 CH2MHILL Inst : GC/MS 597
Misc : 250ml, Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 26 9:05 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	74095	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	100790	2258.75	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 112.94%				
Target Compounds							Qvalue
5) Methylene Chloride	7.69	49	840	37.92	pptv		89
9) Chloroform	9.49	83	122	1.80	pptv		89
12) 1,2-Dichloroethane	10.35	62	102	2.66	pptv		67
13) Carbon Tetrachloride	10.29	117	1040	12.98	pptv		90
14) Benzene	10.43	78	3320	26.74	pptv	#	64
15) Trichloroethene	11.12	130	71	1.38	pptv	#	49
17) Tetrachloroethene	13.31	166	100	1.30	pptv		91

(#) = qualifier out of range (m) = manual integration

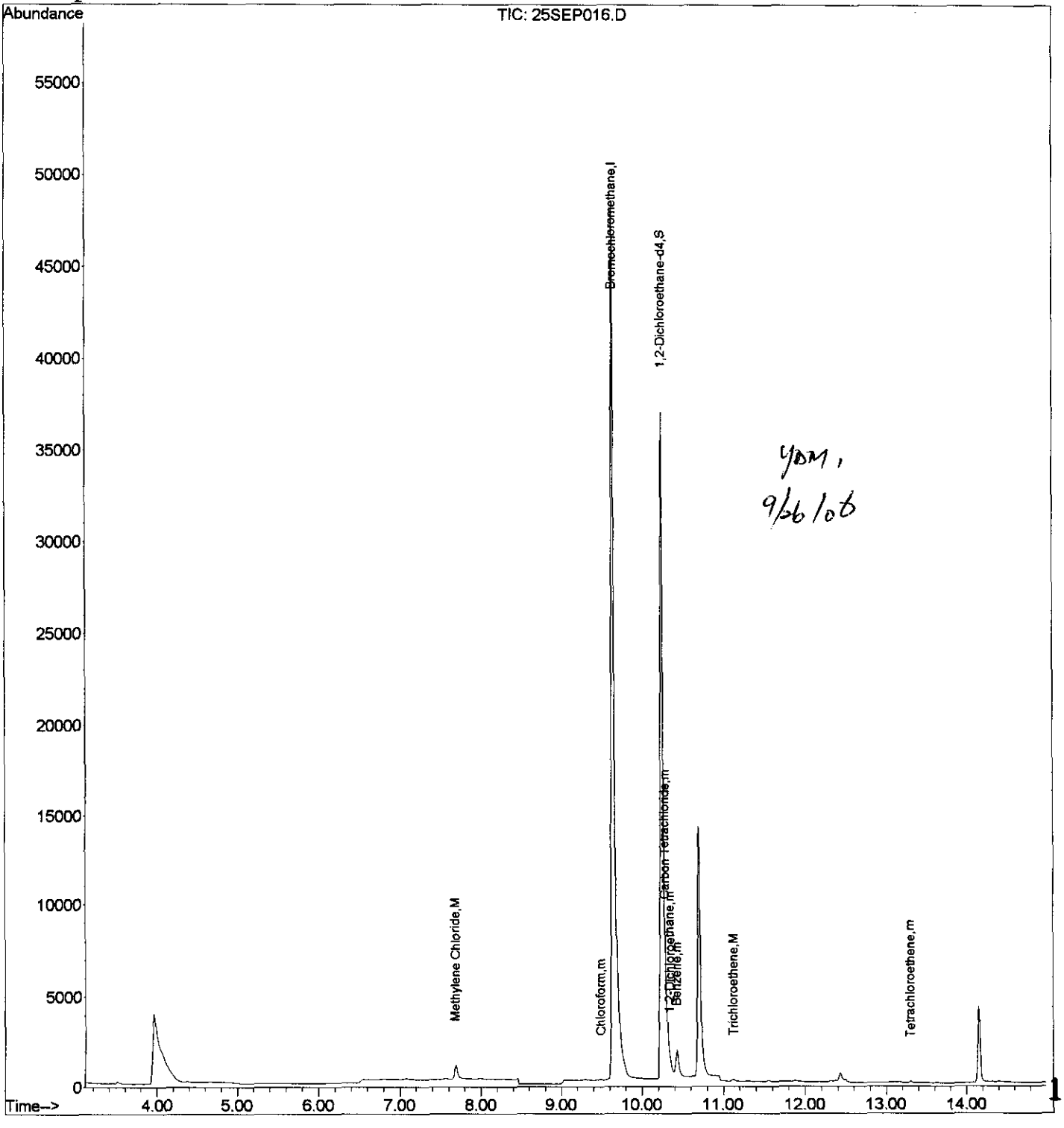
Quantitation Report

Data File : D:\GCMSB\060925\25SEP016.D
Acq On : 25 Sep 2006 19:28
Sample : A6091505-09 CH2MHILL
Misc : 250ml,
MS Integration Params: rteint.p
Quant Time: Sep 26 9:05 2006

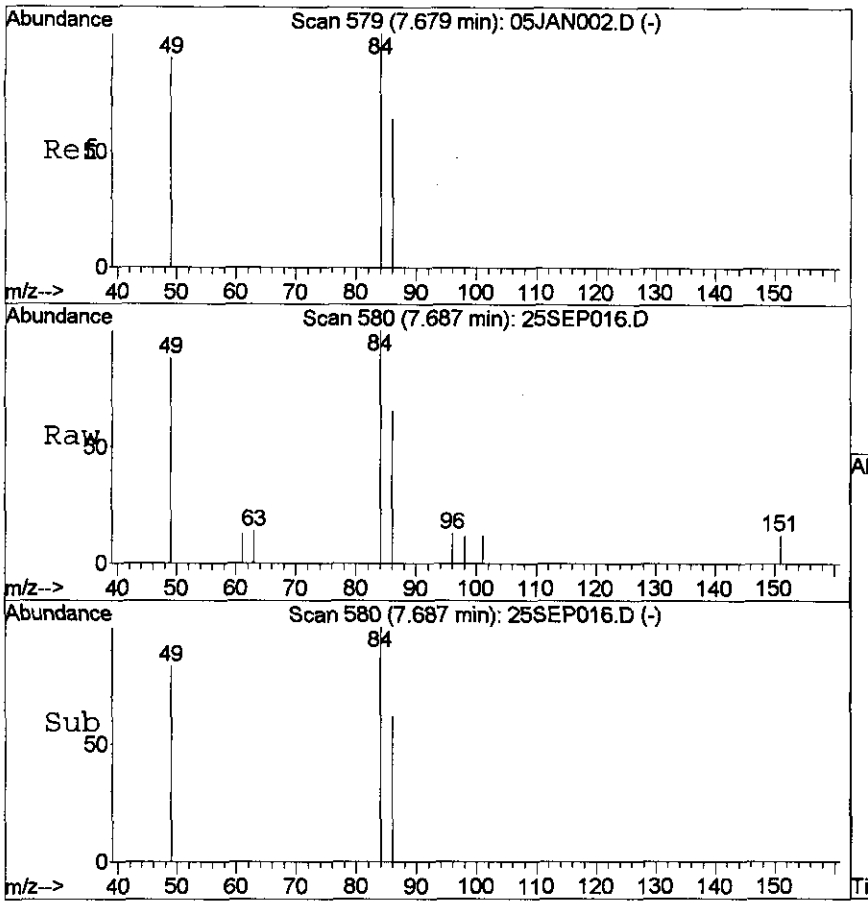
Vial: 9
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



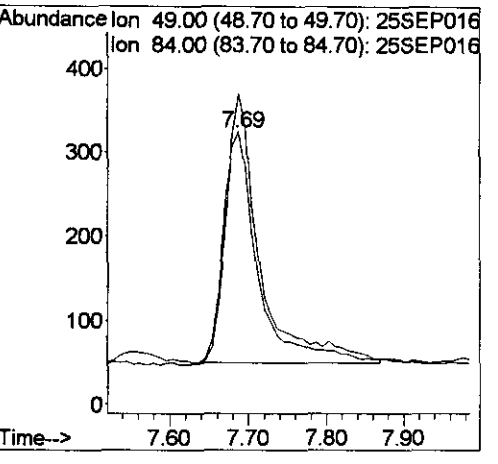
JM, 9/26/06

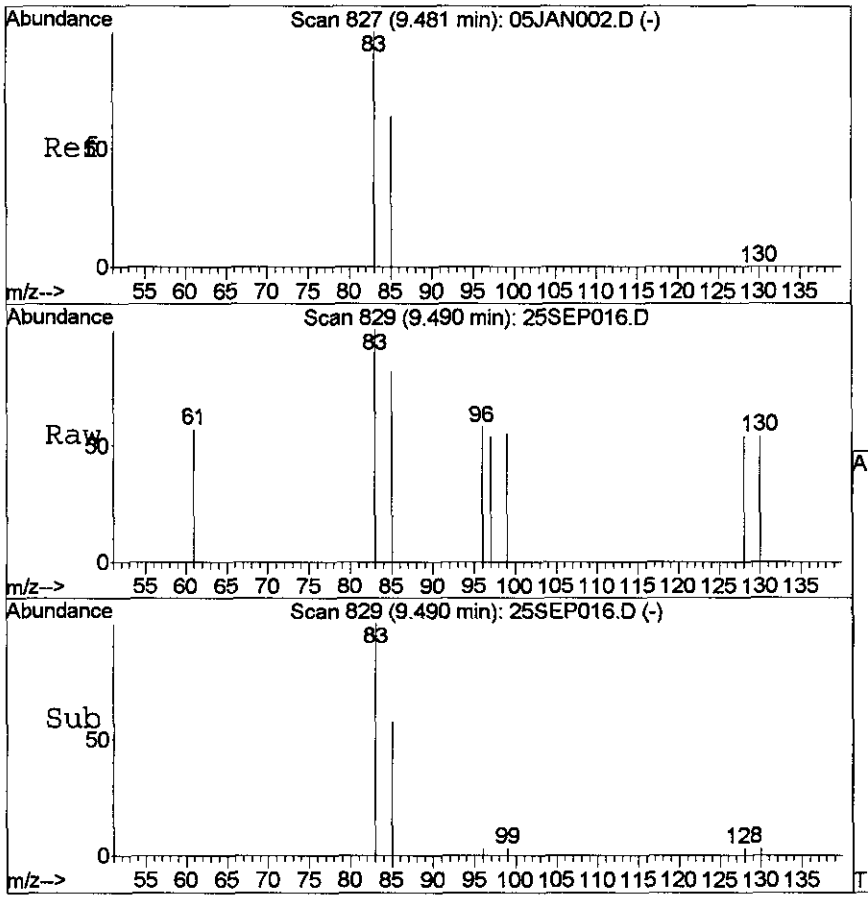


#5
Methylene Chloride
Concen: 37.92 pptv
RT: 7.69 min Scan# 580
Delta R.T. 0.01 min
Lab File: 25SEP016.D
Acq: 25 Sep 2006 19:28

Tgt Ion: 49 Resp: 840

Ion	Ratio	Lower	Upper
49	100		
84	117.3	80.0	180.0

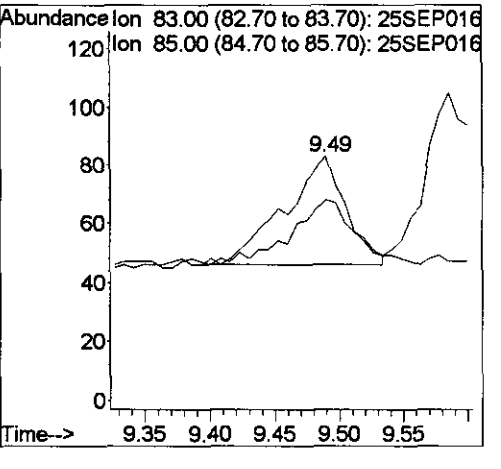


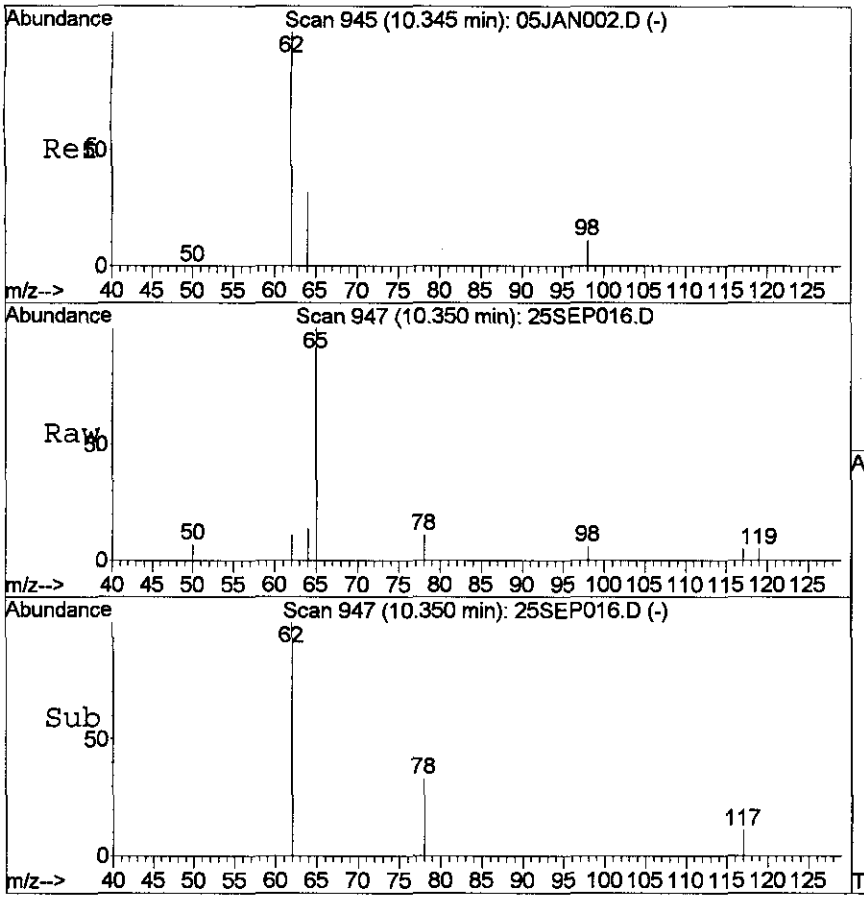


#9
Chloroform
Concen: 1.80 pptv
RT: 9.49 min Scan# 829
Delta R.T. 0.01 min
Lab File: 25SEP016.D
Acq: 25 Sep 2006 19:28

Tgt Ion: 83 Resp: 122

Ion	Ratio	Lower	Upper
83	100		
85	56.3	15.0	115.0

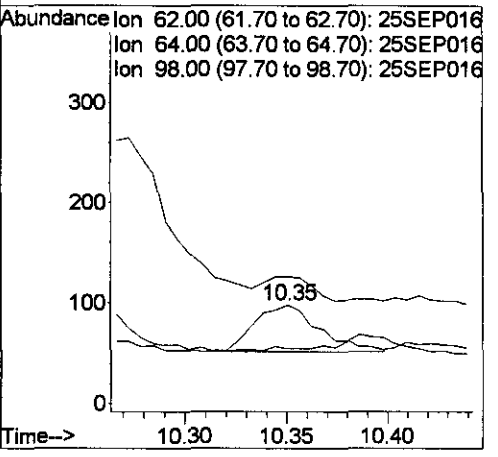


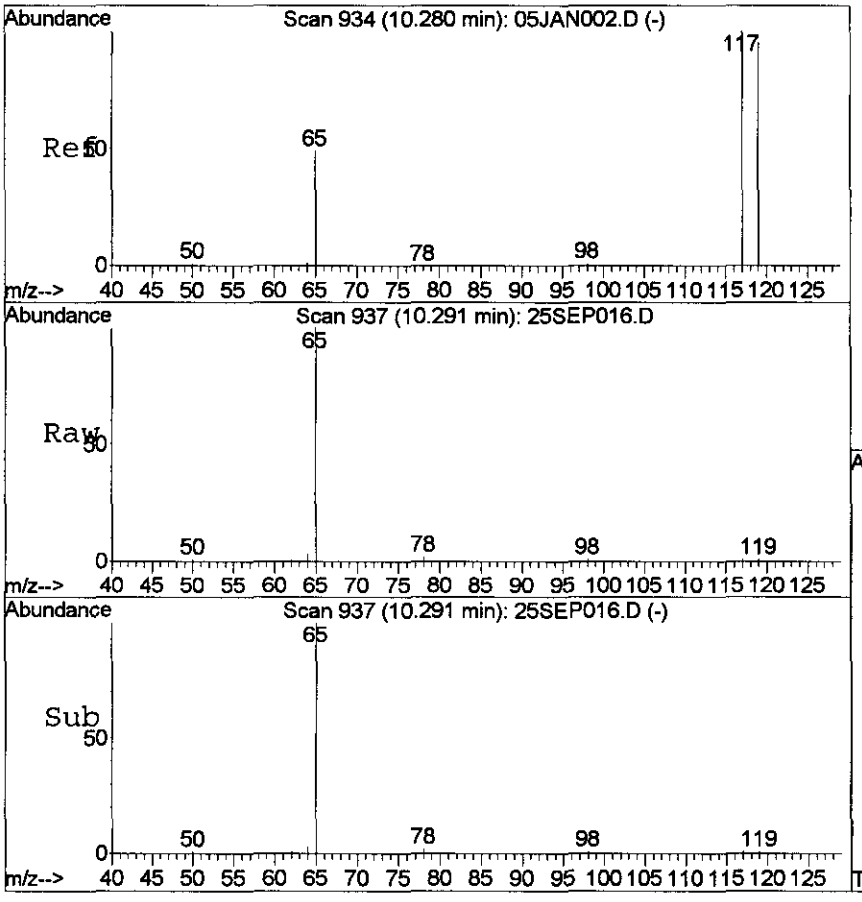


#12
1,2-Dichloroethane
Concen: 2.66 pptv
RT: 10.35 min Scan# 947
Delta R.T. 0.01 min
Lab File: 25SEP016.D
Acq: 25 Sep 2006 19:28

Tgt Ion: 62 Resp: 102

Ion	Ratio	Lower	Upper
62	100		
64	13.3	0.0	82.0
98	0.0	0.0	32.0

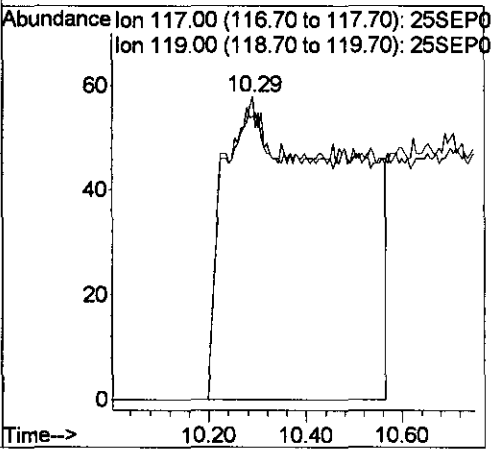


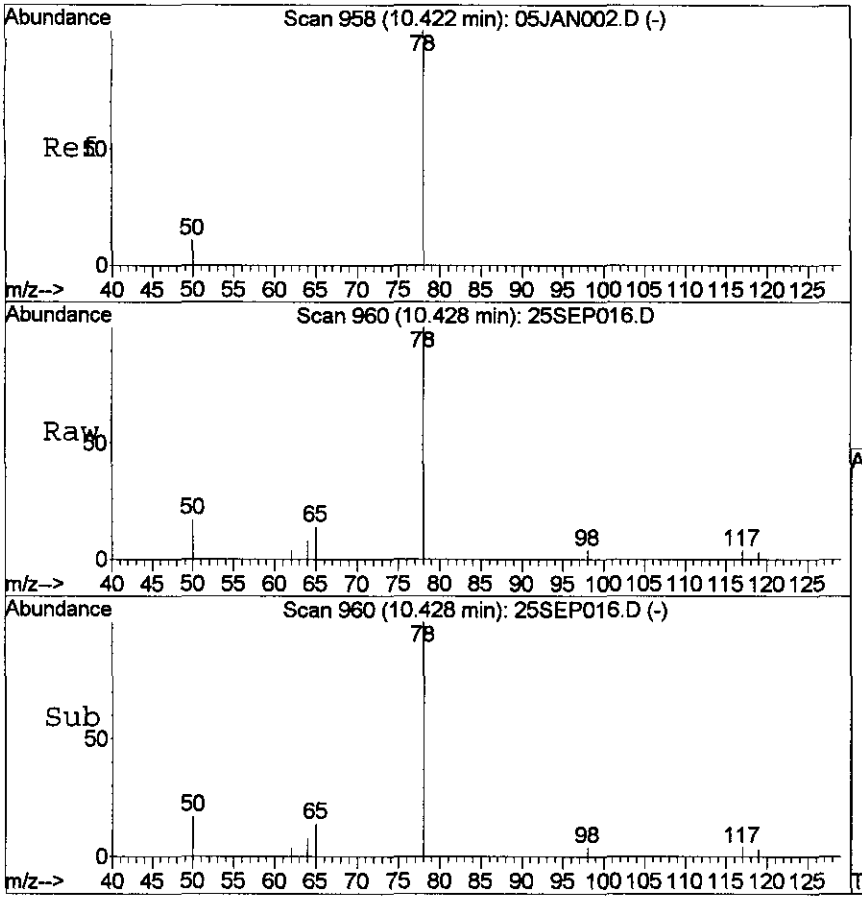


#13
Carbon Tetrachloride
Concen: 12.98 pptv
RT: 10.29 min Scan# 937
Delta R.T. 0.01 min
Lab File: 25SEP016.D
Acq: 25 Sep 2006 19:28

Tgt Ion:117 Resp: 1040

Ion	Ratio	Lower	Upper
117	100		
119	87.3	47.0	147.0

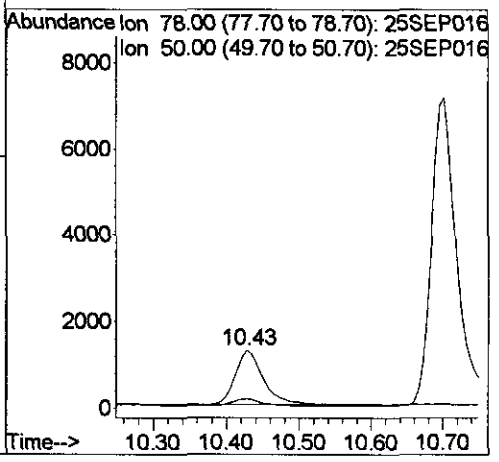


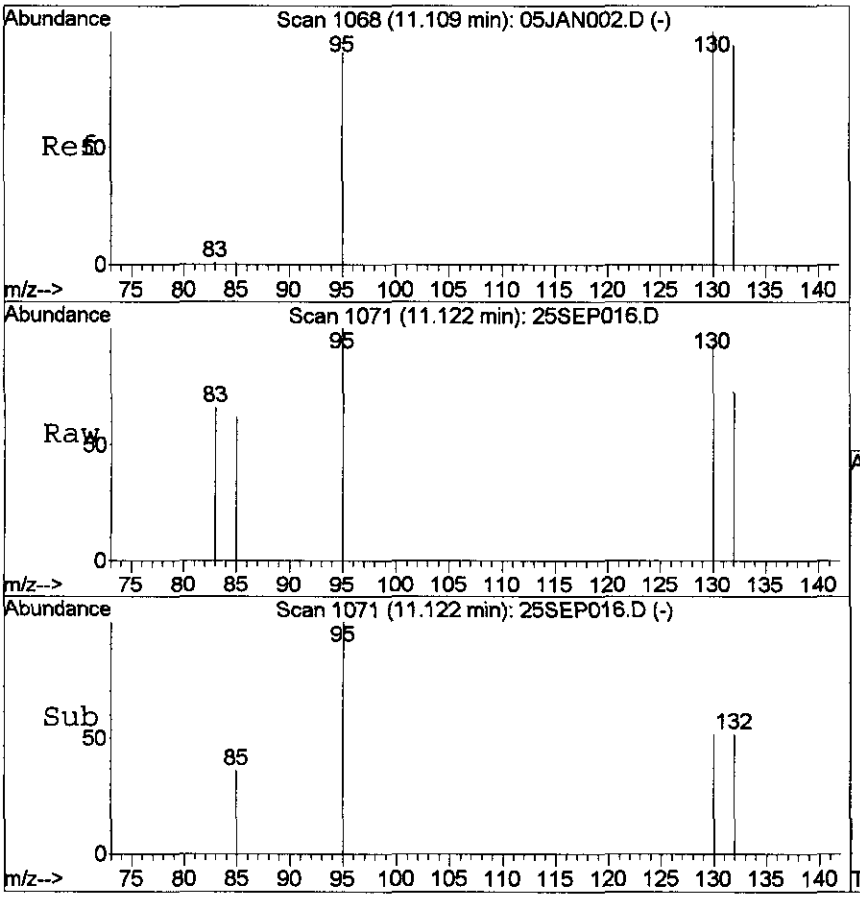


#14
Benzene
Concen: 26.74 pptv
RT: 10.43 min Scan# 960
Delta R.T. 0.01 min
Lab File: 25SEP016.D
Acq: 25 Sep 2006 19:28

Tgt Ion: 78 Resp: 3320

Ion	Ratio	Lower	Upper
78	100		
50	23.2	5.0	15.0#

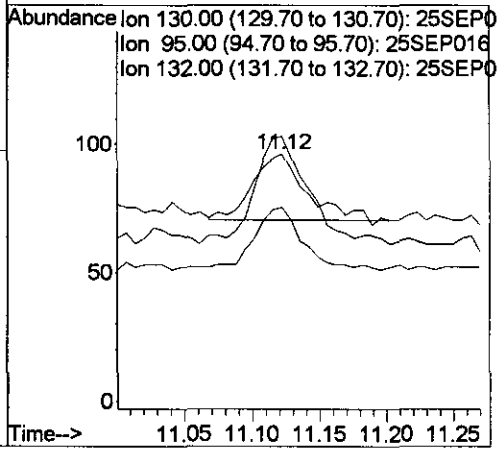


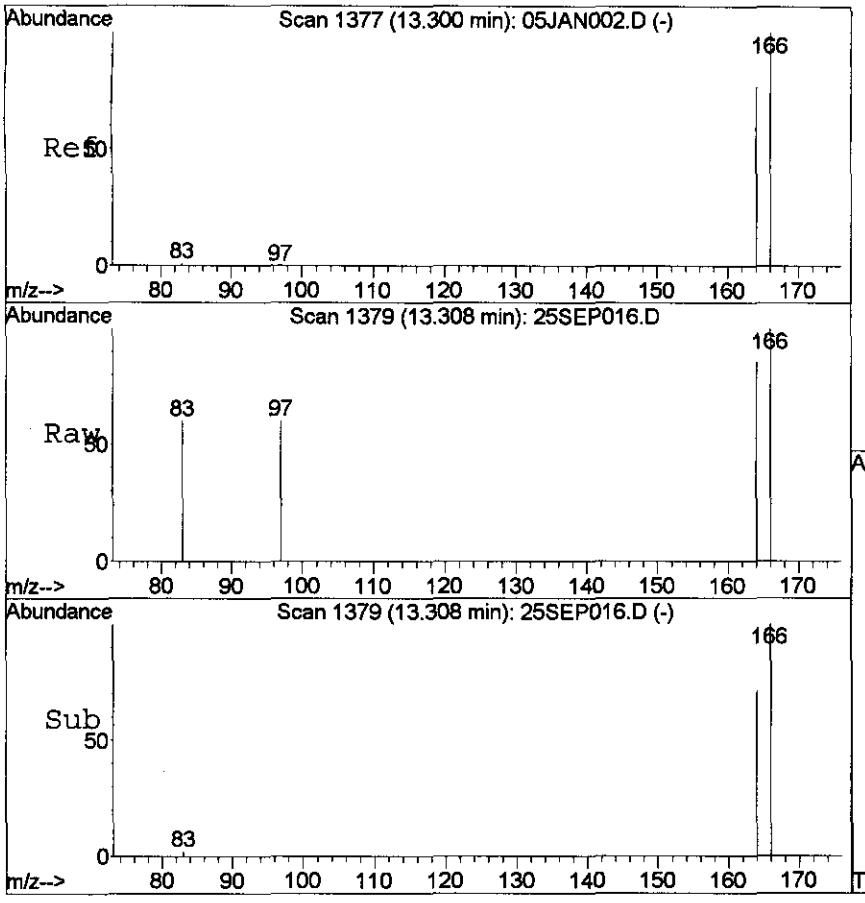


#15
Trichloroethene
Concen: 1.38 pptv
RT: 11.12 min Scan# 1071
Delta R.T. 0.01 min
Lab File: 25SEP016.D
Acq: 25 Sep 2006 19:28

Tgt Ion:130 Resp: 71

Ion	Ratio	Lower	Upper
130	100		
95	158.8	16.0	116.0#
132	90.2	75.0	115.0

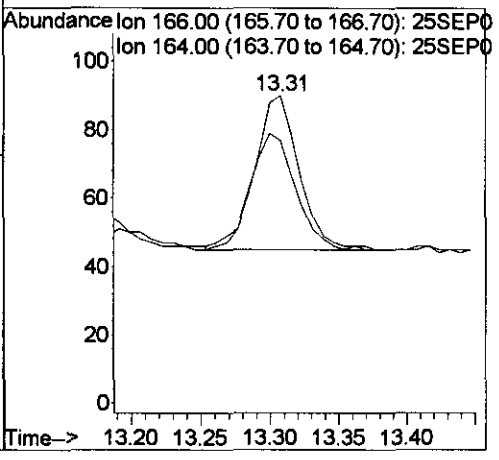




#17
Tetrachloroethene
Concen: 1.30 pptv
RT: 13.31 min Scan# 1379
Delta R.T. 0.01 min
Lab File: 25SEP016.D
Acq: 25 Sep 2006 19:28

Tgt Ion:166 Resp: 100

Ion	Ratio	Lower	Upper
166	100		
164	71.9	30.0	130.0



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP019.D Vial: 9
Acq On : 27 Sep 2006 19:22 Operator: JM
Sample : A6091505-07 CH2MHILL Inst : GC/MS 597
Misc : 411ml, 19.6/11.92 Multiplr: 0.20
MS Integration Params: rteint.p
Quant Time: Sep 28 8:47 2006 Quant Results File: TO15ADD.RES

Quant Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D
DataAcq Meth : TO060919

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	8.93	49	58382	10.00	ppbv	0.00
22) 1,4-Difluorobenzene	10.29	114	122493	10.00	ppbv	0.00
29) Chlorobenzene-d5	14.80	117	100737	10.00	ppbv	0.00
System Monitoring Compounds						
23) 1,2-Dichloroethane-d4	9.70	65	62266	9.26	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 92.60%			
27) Toluene-d8	12.53	98	127777	10.37	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 103.70%			
31) 4-Bromofluorobenzene	16.76	95	89323	8.85	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 88.50%			
Target Compounds						Qvalue
2) Propane	3.15	44	455599	14431.23	ppbv #	70
3) Propene	3.15	41	163843	1847.85	ppbv #	48
4) 1,1-Difluoroethane	3.15	51	256180	99.62	ppbv	94
5) isobutane	3.50	43	67111	4784.56	ppbv	97
6) Isobutene	3.77	56	11205	5241.65	ppbv #	1
7) 1,3-Butadiene	0.00	54	0	N.D.		
8) Methanol	0.00	31	0	N.D.		
9) Acetaldehyde	4.01	43	47895	12305.81	ppbv	96
10) Isopentane	5.16	43	23079	1178.30	ppbv #	69
11) Dichlorofluoromethane	0.00	67	0	N.D.		
12) Ethanol	4.87	45	80065	11668.46	ppbv #	89
13) PFTBA	0.00	69	0	N.D.		
14) Isopropanol	5.61	45	21492	523.05	ppbv	95
15) Propylene oxide	5.73	58	148115	4030.19	ppbv #	66
16) Acreolin	5.65	56	5080	4.11	ppbv	85
17) Acrylonitrile	0.00	53	0	N.D.		
18) n-Hexane	7.38	57	192	N.D.		
19) Isopropyl ether	7.68	45	194	0.65	ppbv #	1
20) 2,2-Dichloropropane	0.00	77	0	N.D.		
21) 2,2,4-Trimethylpentane	9.64	57	2147	106.75	ppbv #	35
24) Heptane	0.00	100	0	N.D.		
25) 1,4-Dioxane	0.00	88	0	N.D.		
26) 2-chloroethylvinylether	0.00	63	0	N.D.		
28) Tetrahydrothiophene	0.00	88	0	N.D.		
30) Cyclohexanone	16.34	98	1839	249.08	ppbv #	5
32) n-Decane	17.05	57	1667	117.42	ppbv #	39
33) Phenol	17.69	94	18922	14.46	ppbv	94
34) Dicyclopentadiene	0.00	66	0	N.D.		
35) Naphthalene	22.02	128	15545	416.54	ppbv	88

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP019.D Vial: 9
Acq On : 27 Sep 2006 19:22 Operator: JM
Sample : A6091505-07 CH2MHILL Inst : GC/MS 597
Misc : 411ml, 19.6/11.92 Multiplr: 0.20
MS Integration Params: rteint.p
Quant Time: Sep 28 8:47 2006 Quant Results File: TO15ADD.RES

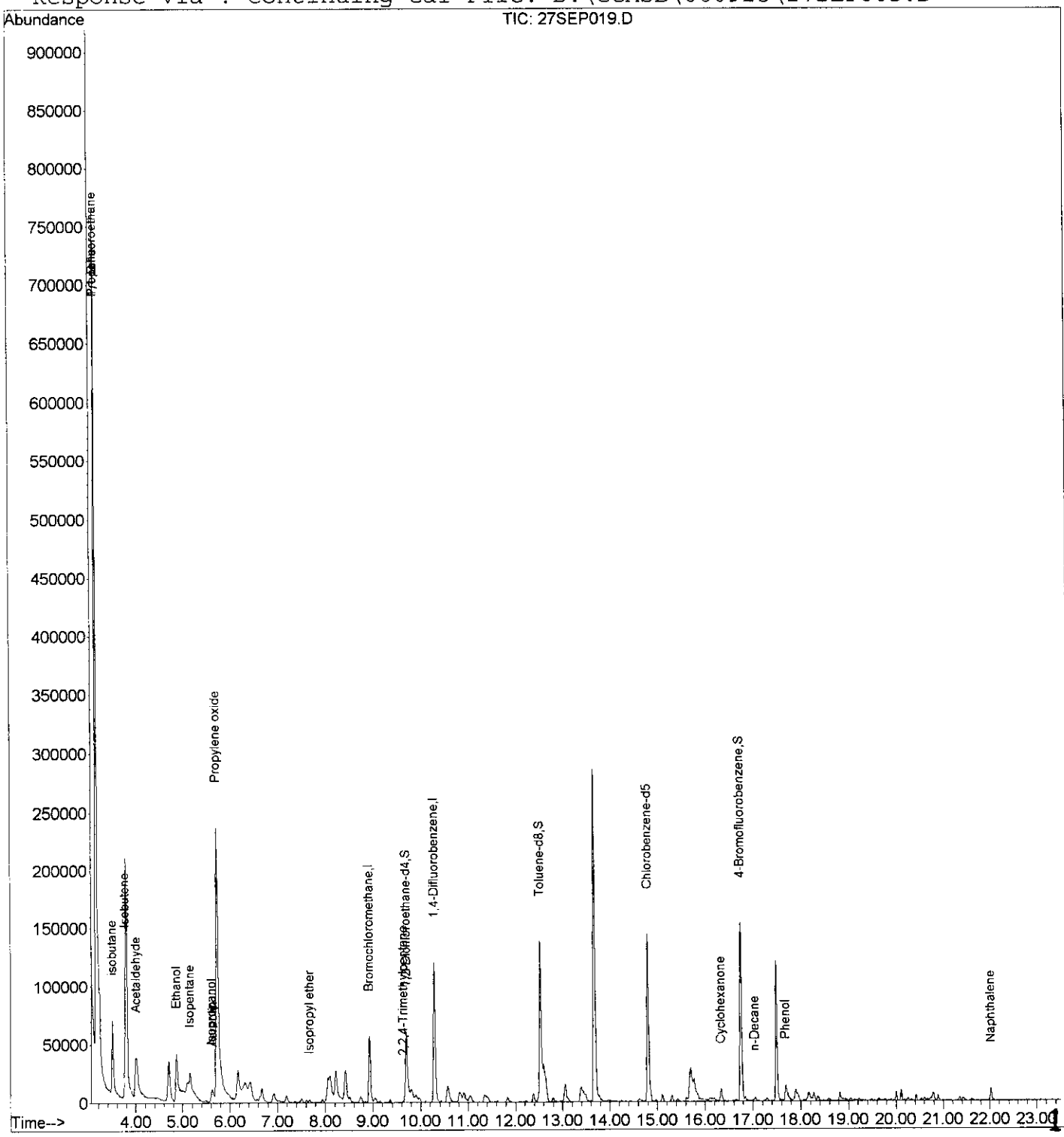
Quant Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D
DataAcq Meth : TO060919

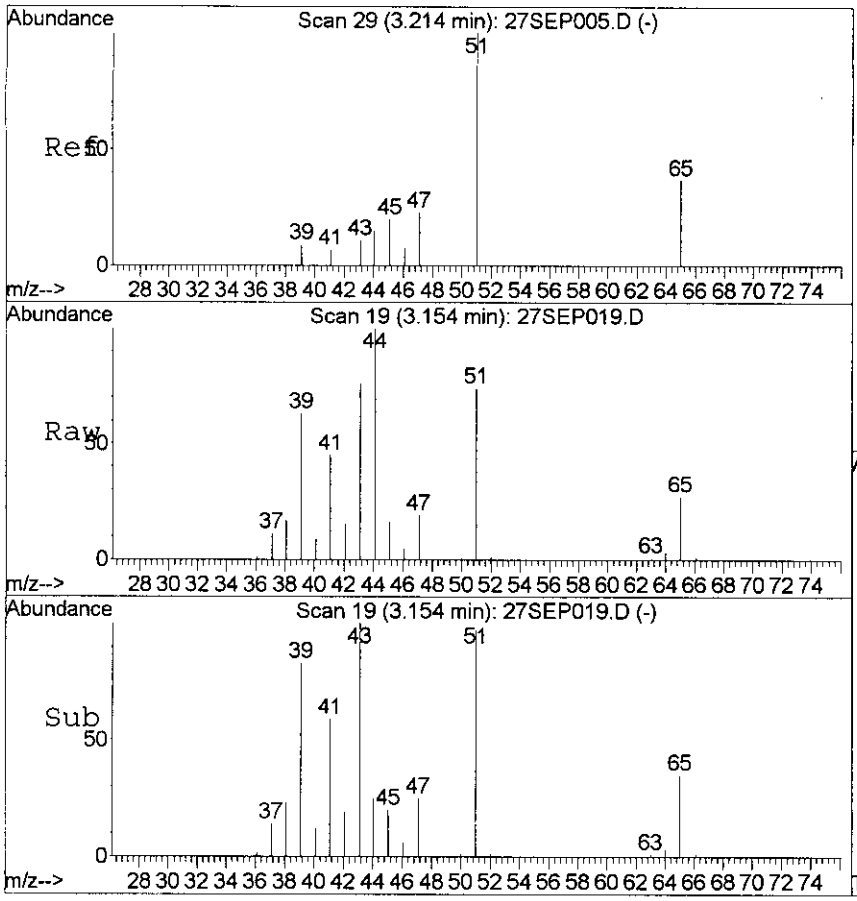
	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
36)	1,2,3-Trichlorobenzene	0.00	180	0	N.D.		
37)	Ferrocene	0.00	186	0	N.D.		

Quantitation Report

Data File : D:\GCMSB\060925\27SEP019.D Vial: 9
Acq On : 27 Sep 2006 19:22 Operator: JM
Sample : A6091505-07 CH2MHILL Inst : GC/MS 597
Misc : 411ml, 19.6/11.92 Multiplr: 0.20
MS Integration Params: rteint.p
Quant Time: Sep 28 8:47 2006 Quant Results File: TO15ADD.RES

Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D

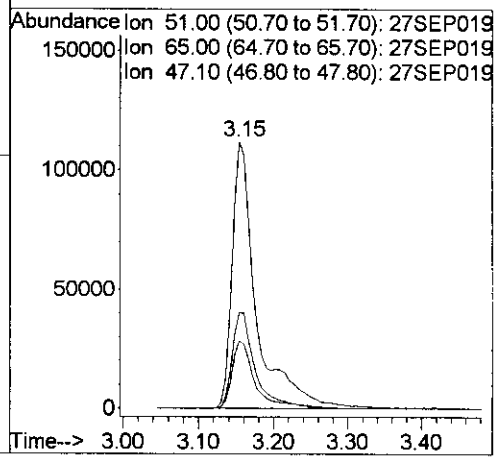




#4
1,1-Difluoroethane
Concen: 99.62 ppbv
RT: 3.15 min Scan# 19
Delta R.T. -0.06 min
Lab File: 27SEP019.D
Acq: 27 Sep 2006 19:22

Tgt Ion: 51 Resp: 256180

Ion	Ratio	Lower	Upper
51	100		
65	34.0	30.4	45.6
47	23.9	21.3	31.9



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP020.D Vial: 10
Acq On : 27 Sep 2006 20:01 Operator: JM
Sample : A6091505-08 CH2MHILL Inst : GC/MS 597
Misc : 387ml, 19.6/12.65 Multiplr: 0.20
MS Integration Params: rteint.p
Quant Time: Sep 28 8:47 2006 Quant Results File: TO15ADD.RES

Quant Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D
DataAcq Meth : TO060919

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	8.93	49	57627	10.00	ppbv	0.00
22) 1,4-Difluorobenzene	10.29	114	122244	10.00	ppbv	0.00
29) Chlorobenzene-d5	14.80	117	101734	10.00	ppbv	0.00
System Monitoring Compounds						
23) 1,2-Dichloroethane-d4	9.69	65	62709	9.35	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 93.50%			
27) Toluene-d8	12.53	98	127195	10.34	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 103.40%			
31) 4-Bromofluorobenzene	16.75	95	91400	8.97	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 89.70%			
Target Compounds						Qvalue
2) Propane	3.15	44	242856	7793.32	ppbv	91
3) Propene	3.15	41	143228	1636.52	ppbv #	51
4) 1,1-Difluoroethane	3.17	51	40291	15.87	ppbv	97
5) isobutane	3.51	43	62041	4481.05	ppbv	95
6) Isobutene	3.77	56	8362	3962.96	ppbv #	1
7) 1,3-Butadiene	0.00	54	0	N.D.		
8) Methanol	0.00	31	0	N.D.		
9) Acetaldehyde	4.02	43	23986	6243.54	ppbv	92
10) Isopentane	5.15	43	46500	2405.17	ppbv #	62
11) Dichlorofluoromethane	0.00	67	0	N.D.		
12) Ethanol	4.88	45	365325	53939.06	ppbv	92
13) PFTBA	0.00	69	0	N.D.		
14) Isopropanol	5.63	45	80972	1996.42	ppbv	95
15) Propylene oxide	5.73	58	188954	5208.78	ppbv #	60
16) Acreolin	5.64	56	5703	4.68	ppbv	76
17) Acrylonitrile	0.00	53	0	N.D.		
18) n-Hexane	7.37	57	10751	17.18	ppbv #	75
19) Isopropyl ether	7.65	45	1426	4.85	ppbv #	63
20) 2,2-Dichloropropane	0.00	77	0	N.D.		
21) 2,2,4-Trimethylpentane	9.64	57	24253	1221.62	ppbv	81
24) Heptane	0.00	100	0	N.D.		
25) 1,4-Dioxane	0.00	88	0	N.D.		
26) 2-chloroethylvinylether	0.00	63	0	N.D.		
28) Tetrahydrothiophene	0.00	88	0	N.D.		
30) Cyclohexanone	16.34	98	5591	749.85	ppbv #	21
32) n-Decane	17.05	57	19422	1354.63	ppbv #	80
33) Phenol	17.68	94	31142	23.57	ppbv	97
34) Dicyclopentadiene	0.00	66	0	N.D.		
35) Naphthalene	22.02	128	1494	39.64	ppbv #	70

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP020.D Vial: 10
Acq On : 27 Sep 2006 20:01 Operator: JM
Sample : A6091505-08 CH2MHILL Inst : GC/MS 597
Misc : 387ml, 19.6/12.65 Multiplr: 0.20
MS Integration Params: rteint.p
Quant Time: Sep 28 8:47 2006 Quant Results File: TO15ADD.RES

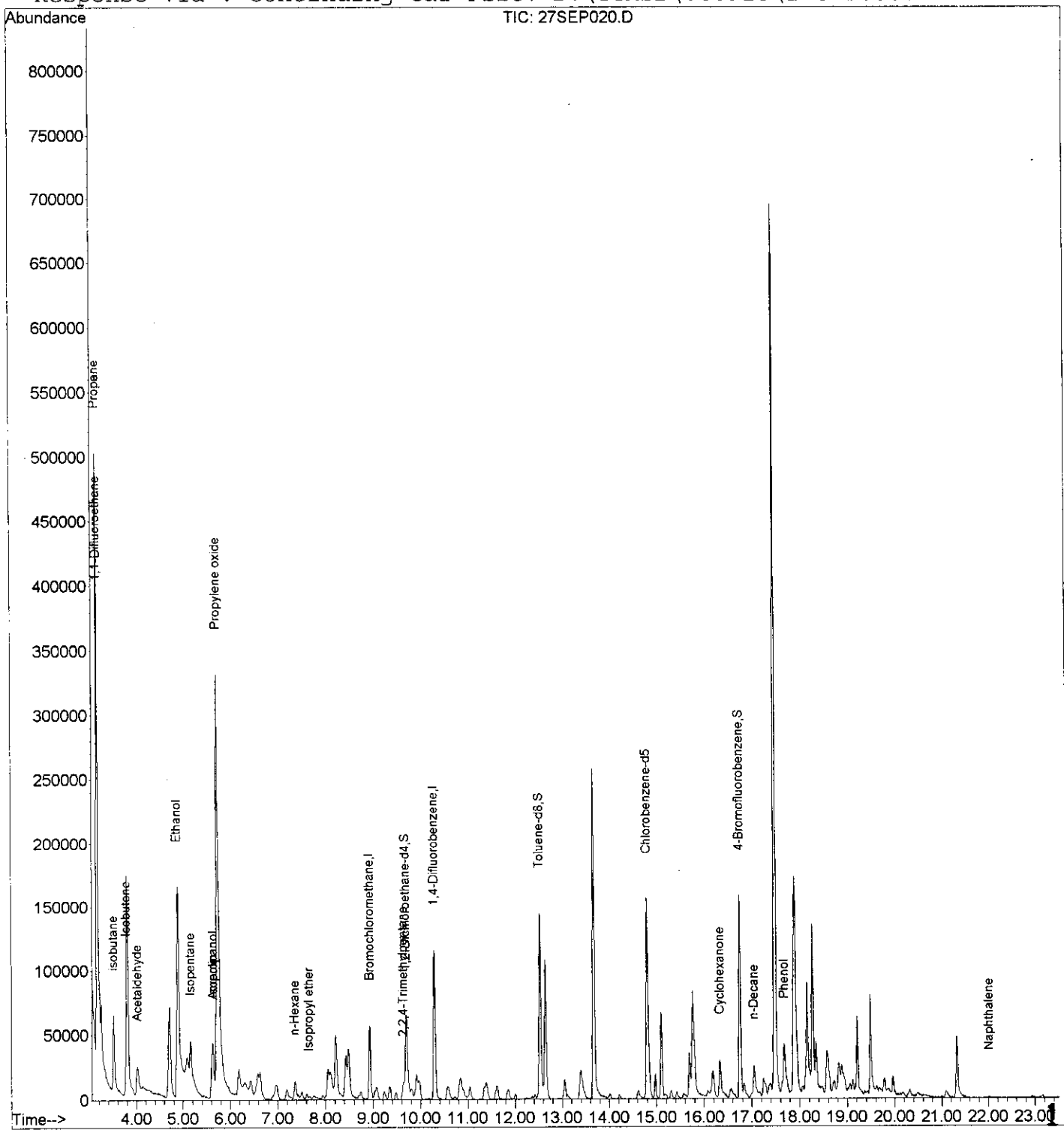
Quant Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D
DataAcq Meth : TO060919

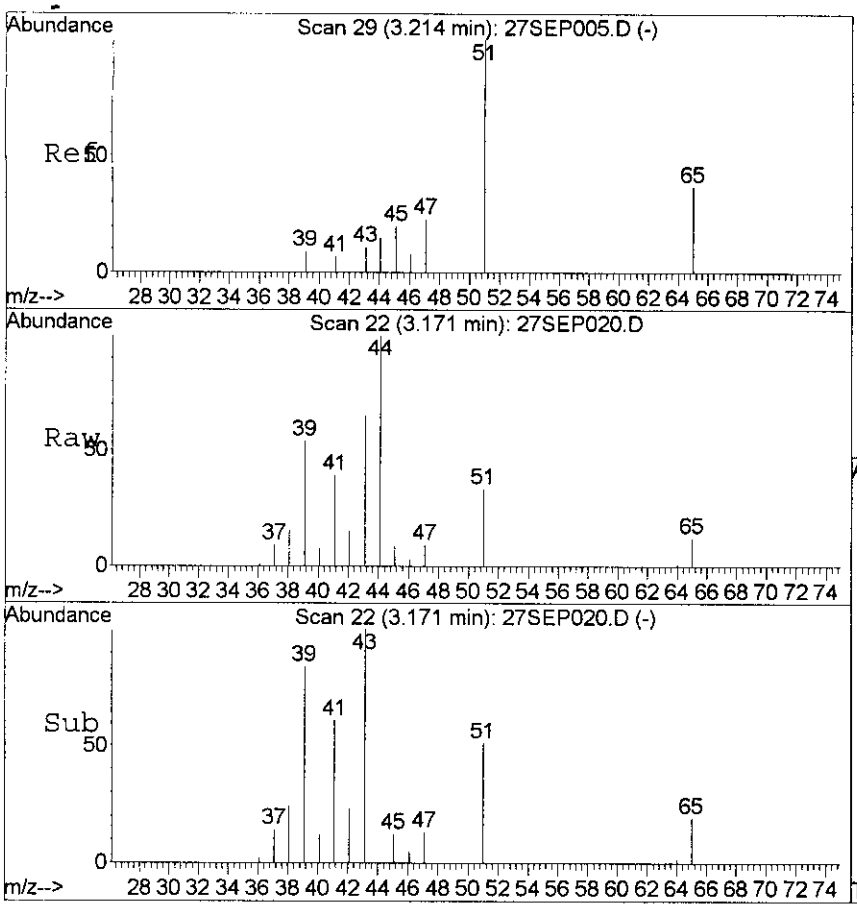
	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
36)	1,2,3-Trichlorobenzene	0.00	180	0	N.D.		
37)	Ferrocene	0.00	186	0	N.D.		

Quantitation Report

Data File : D:\GCMSB\060925\27SEP020.D Vial: 10
Acq On : 27 Sep 2006 20:01 Operator: JM
Sample : A6091505-08 CH2MHILL Inst : GC/MS 597
Misc : 387ml, 19.6/12.65 Multiplr: 0.20
MS Integration Params: rteint.p
Quant Time: Sep 28 8:47 2006 Quant Results File: TO15ADD.RES

Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D

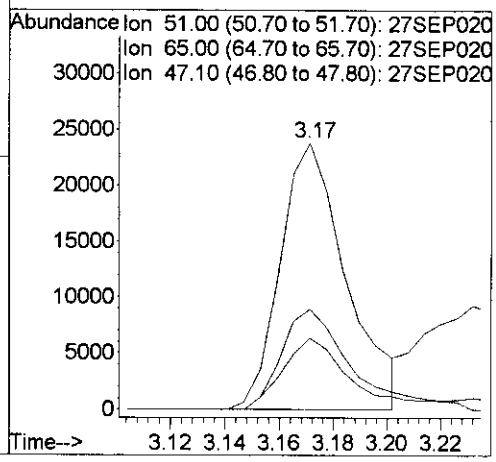




#4
1,1-Difluoroethane
Concen: 15.87 ppbv
RT: 3.17 min Scan# 22
Delta R.T. -0.04 min
Lab File: 27SEP020.D
Acq: 27 Sep 2006 20:01

Tgt Ion: 51 Resp: 40291

Ion	Ratio	Lower	Upper
51	100		
65	39.9	30.4	45.6
47	27.8	21.3	31.9



3. Initial Calibration

a. ICAL Summary
b. Results/Chromatograms

Initial Calibration Criteria:

90% of target compounds must have RSD <30%
All target compounds must have RSD <50%

Response Factor Report GC/MS 597

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration

Calibration Files
5 =09SEP014.D 50 =09SEP017.D 200 =08SEP020.D
500 =08SEP021.D 2000 =08SEP022.D 10pp =08SEP023.D

		Compound	5	50	200	500	2000	10pp	Avg	%RSD
1)	I	Bromochloromethane	----------	----------	ISTD	----------	----------	----------		
2)	m	Vinyl Chloride	0.642	0.532	0.679	0.681	0.525	0.538	0.600	12.63
3)		Chloroethane	0.298	0.269	0.383	0.380	0.308	0.315	0.325	14.18
4)	M	1,1-Dichloroethene	0.844	0.666	0.924	0.943	0.746	0.779	0.817	13.09
5)	M	Methylene Chloride		0.605	0.677	0.662	0.516	0.531	0.598	12.30
6)	m	t-1,2-Dichloroethen	0.925	0.677	0.928	0.948	0.738	0.784	0.833	13.81
7)	m	1,1-Dichloroethane	1.304	1.100	1.502	1.538	1.192	1.213	1.308	13.51
8)	m	cis-1,2-Dichloroeth	0.894	0.740	0.996	1.025	0.820	0.877	0.892	11.94
9)	m	Chloroform	2.067	1.547	2.020	2.073	1.607	1.666	1.830	13.56
10)	m	1,1,1-Trichloroetha	1.765	1.614	2.237	2.304	1.789	1.853	1.927	14.44
11)	S	1,2-Dichloroethane-	1.136	1.136	1.148	1.184	1.276	1.347	1.204	7.28
12)	m	1,2-Dichloroethane	1.293	0.838	1.110	1.140	0.888	0.934	1.034	16.94
13)	m	Carbon Tetrachlorid	1.800	2.187	2.451	2.463	2.004	2.073	2.163	12.04
14)	m	Benzene		4.411	3.898	3.549	2.440	2.459	3.351	26.21
15)	M	Trichloroethene	1.486	1.107	1.528	1.587	1.252	1.354	1.386	13.21
16)	m	1,1,2-Trichloroetha	1.335	0.891	1.425	1.459	1.090	1.133	1.222	18.11
17)	m	Tetrachloroethene	2.071	1.721	2.367	2.444	1.883	1.977	2.077	13.50

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data File : D:\GCMSB\050905\09SEP014.D
Acq On : 9 Sep 2005 16:41
Sample : 5 pptv SIM std
Misc : 25ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:21 2006

Vial: 7
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00
Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:18:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0725

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	103355	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.24	65	117404	1886.14	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 94.31%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.48	62	166	5.36	pptv		77
3) Chloroethane	5.60	64	77	4.58	ppbv	#	100
4) 1,1-Dichloroethene	7.08	96	218	4.12	pptv		86
5) Methylene Chloride	7.69	49	395	12.78	pptv		86
6) t-1,2-Dichloroethene	8.13	96	239	5.46	pptv		92
7) 1,1-Dichloroethane	8.60	63	337	4.98	pptv	#	1
8) cis-1,2-Dichloroethene	9.30	96	231	3.96	pptv	#	49
9) Chloroform	9.48	83	534	5.65	pptv		95
10) 1,1,1-Trichloroethane	9.98	97	456	4.58	pptv		92
12) 1,2-Dichloroethane	10.34	62	334	6.25	pptv		71
13) Carbon Tetrachloride	10.28	117	465m	4.15	pptv		
14) Benzene	10.43	78	7472	43.14	pptv	#	86
15) Trichloroethene	11.11	130	384	5.36	pptv		88
16) 1,1,2-Trichloroethane	12.82	97	345	5.46	pptv		96
17) Tetrachloroethene	13.30	166	535	4.99	pptv		91

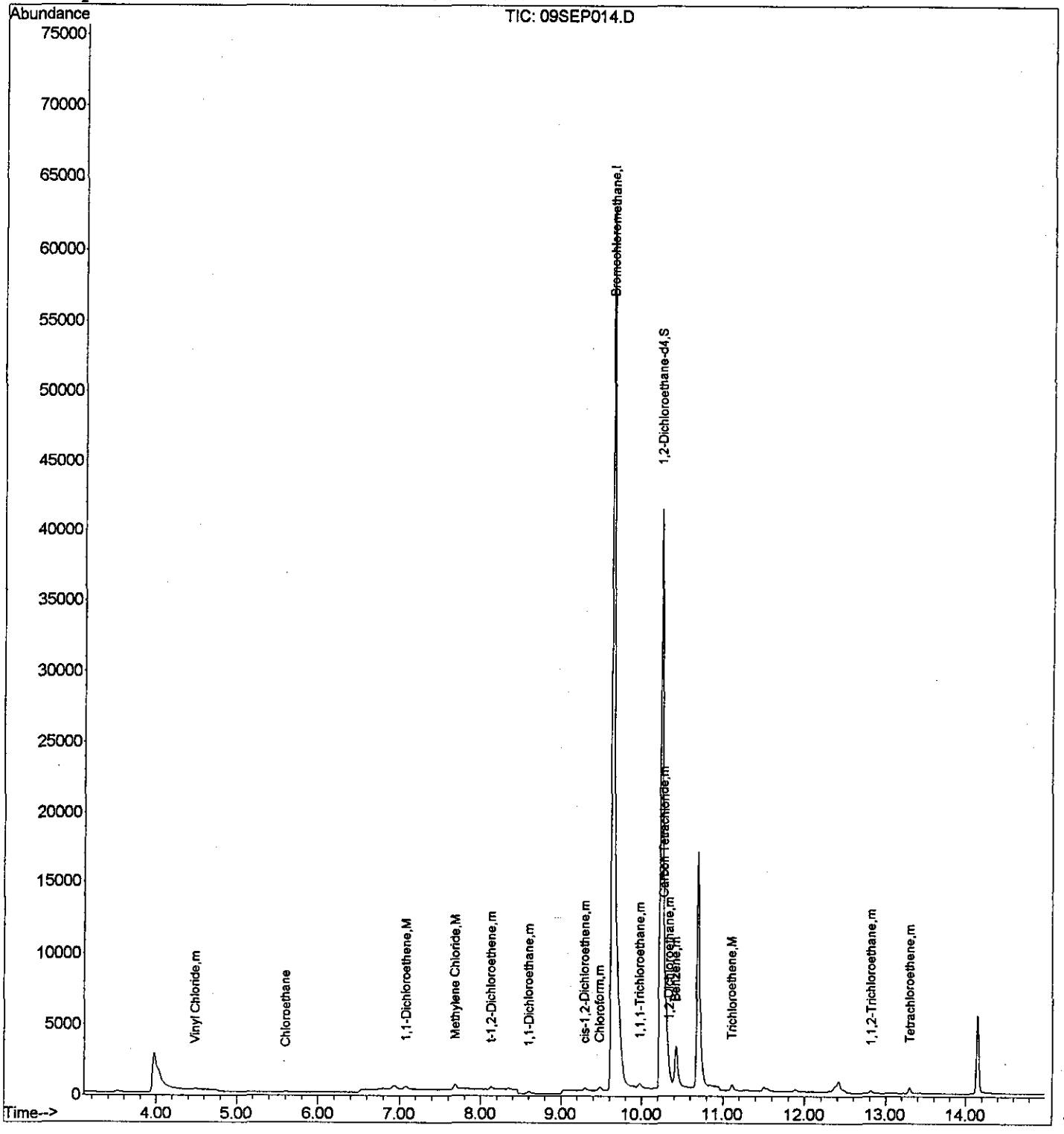
(#) = qualifier out of range (m) = manual integration
09SEP014.D SIM909AD.M Mon Sep 25 10:22:05 2006 GCMSB Page 1

Quantitation Report

Data File : D:\GCMSB\050905\09SEP014.D
Acq On : 9 Sep 2005 16:41
Sample : 5 pptv SIM std
Misc : 25ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:21 2006

Vial: 7
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00
Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:21:28 2006
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\050905\09SEP017.D Vial: 7
Acq On : 9 Sep 2005 18:34 Operator: JM
Sample : 50 pptv SIM std Inst : GC/MS 597
Misc : 250ml, Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 25 10:19 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:19:01 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0725

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.64	130	98378	2000.00	pptv	0.00
System Monitoring Compounds						
11) 1,2-Dichloroethane-d4	10.24	65	111771	1886.56	pptv	0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 94.33%			
Target Compounds						Qvalue
2) Vinyl Chloride	4.47	62	1308	44.34	pptv	98
3) Chloroethane	5.60	64	661	41.31	ppbv #	100
4) 1,1-Dichloroethene	7.07	96	1639	33.76	pptv	84
5) Methylene Chloride	7.68	49	1488	40.17	pptv	83
6) t-1,2-Dichloroethene	8.13	96	1666	38.65	pptv	92
7) 1,1-Dichloroethane	8.60	63	2706	42.05	pptv	81
8) cis-1,2-Dichloroethene	9.30	96	1821	33.95	pptv #	51
9) Chloroform	9.48	83	3805	42.27	pptv	100
10) 1,1,1-Trichloroethane	9.98	97	3969	41.88	pptv	100
12) 1,2-Dichloroethane	10.34	62	2061	40.53	pptv	99
13) Carbon Tetrachloride	10.28	117	5380	37.71	pptv	98
14) Benzene	10.42	78	10848	28.97	pptv	92
15) Trichloroethene	11.11	130	2723	39.95	pptv	90
16) 1,1,2-Trichloroethane	12.81	97	2191	36.45	pptv	87
17) Tetrachloroethene	13.29	166	4233	41.44	pptv	100

(#) = qualifier out of range (m) = manual integration

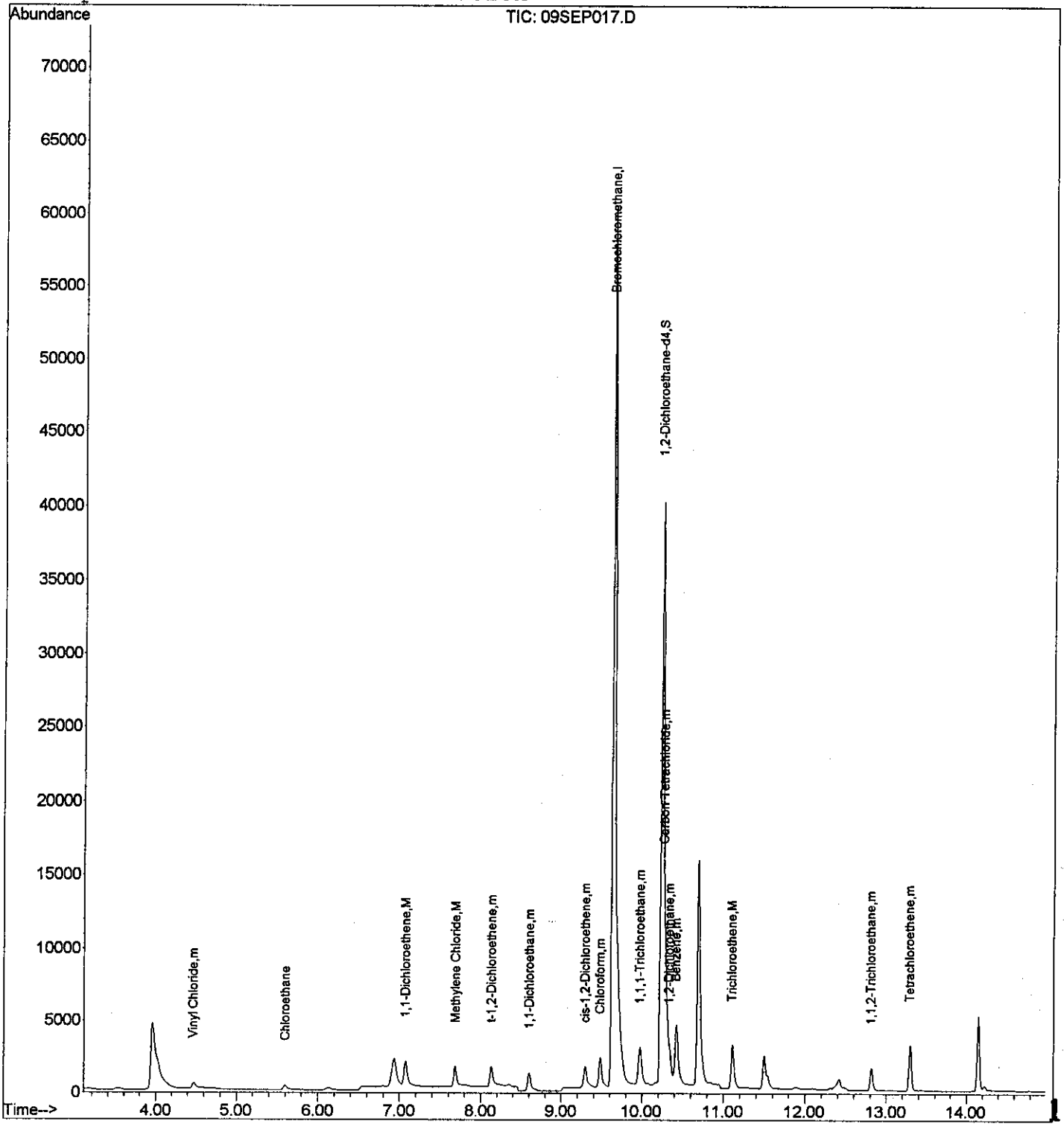
Quantitation Report

Data File : D:\GCMSB\050905\09SEP017.D
Acq On : 9 Sep 2005 18:34
Sample : 50 pptv SIM std
Misc : 250ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:19 2006

Vial: 7
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:19:01 2006
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\050905\08SEP020.D Vial: 3
Acq On : 8 Sep 2005 21:00 Operator: JM
Sample : 200 pptv SIM std Inst : GC/MS 597
Misc : 50ml, Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 25 10:19 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:19:17 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0725

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	100886	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.24	65	115795	1905.90	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 95.30%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.46	62	6852	226.49	pptv		98
3) Chloroethane	5.59	64	3859	235.18	ppbv	#	100
4) 1,1-Dichloroethene	7.07	96	9325	193.20	pptv		89
5) Methylene Chloride	7.68	49	6827	179.73	pptv		91
6) t-1,2-Dichloroethene	8.13	96	9359	213.61	pptv		86
7) 1,1-Dichloroethane	8.60	63	15158	229.68	pptv		97
8) cis-1,2-Dichloroethene	9.30	96	10052	187.79	pptv	#	56
9) Chloroform	9.48	83	20379	220.78	pptv		99
10) 1,1,1-Trichloroethane	9.98	97	22567	232.19	pptv		100
12) 1,2-Dichloroethane	10.34	62	11196	214.70	pptv		99
13) Carbon Tetrachloride	10.28	117	24723	168.96	pptv		100
14) Benzene	10.42	78	39327	102.42	pptv		97
15) Trichloroethene	11.11	130	15416	220.55	pptv		90
16) 1,1,2-Trichloroethane	12.81	97	14375	233.19	pptv		89
17) Tetrachloroethene	13.30	166	23882	228.00	pptv		95

(#) = qualifier out of range (m) = manual integration

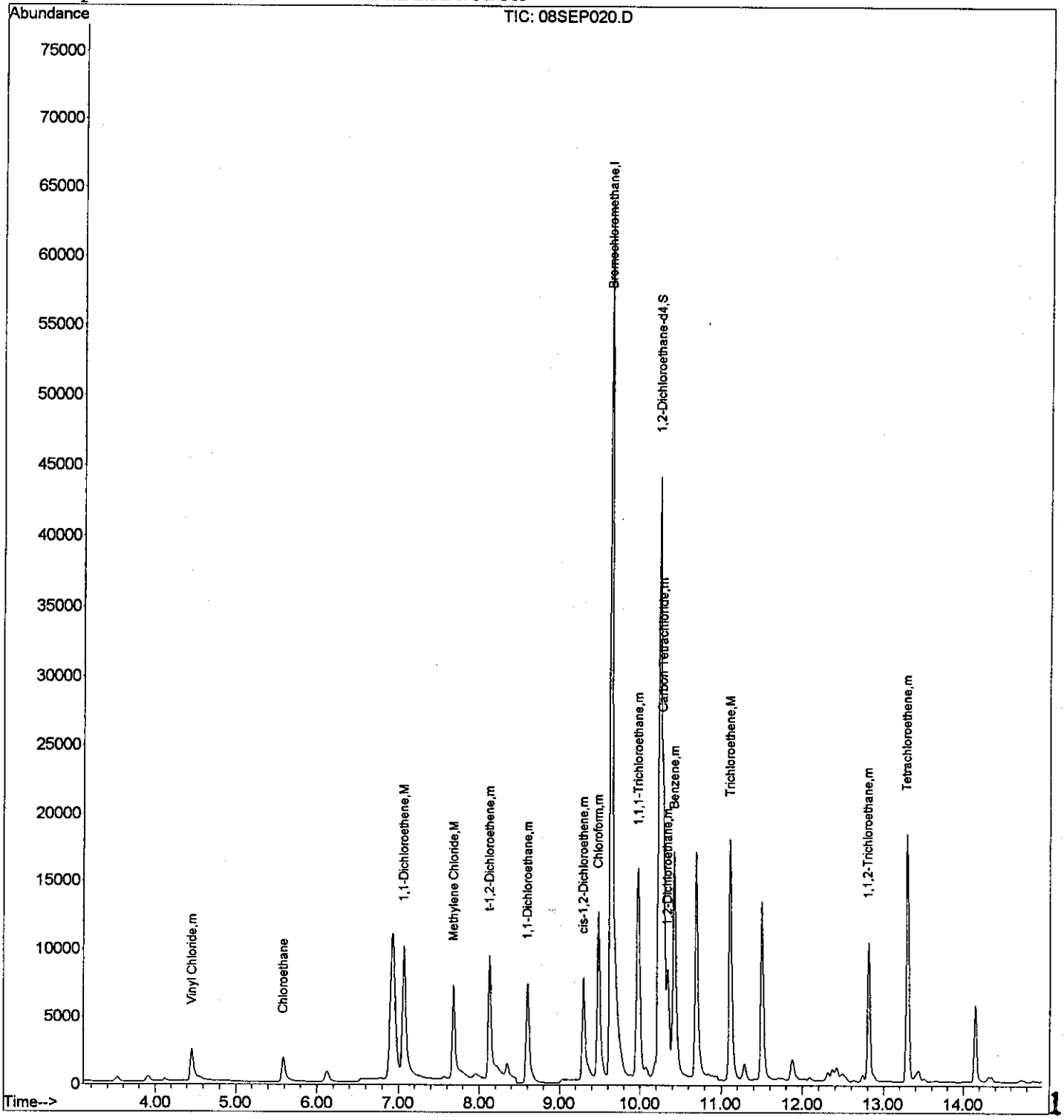
Quantitation Report

Data File : D:\GCMSB\050905\08SEP020.D
Acq On : 8 Sep 2005 21:00
Sample : 200 pptv SIM std
Misc : 50ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:19 2006

Vial: 3
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:19:17 2006
Response via : Initial Calibration



123

Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\050905\08SEP021.D
Acq On : 8 Sep 2005 21:39
Sample : 500 pptv SIM std
Misc : 125ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:19 2006

Vial: 3
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00
Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:19:37 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0725

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	101008	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.24	65	119581	1965.83	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 98.29%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.45	62	17193	567.62	pptv		96
3) Chloroethane	5.58	64	9596	584.11	ppbv	#	100
4) 1,1-Dichloroethene	7.07	96	23802	512.68	pptv		89
5) Methylene Chloride	7.68	49	16706	439.27	pptv		87
6) t-1,2-Dichloroethene	8.13	96	23943	550.55	pptv		84
7) 1,1-Dichloroethane	8.60	63	38832	587.70	pptv		99
8) cis-1,2-Dichloroethene	9.30	96	25872	498.07	pptv	#	54
9) Chloroform	9.48	83	52346	566.41	pptv		99
10) 1,1,1-Trichloroethane	9.98	97	58178	597.86	pptv		100
12) 1,2-Dichloroethane	10.34	62	28779	551.21	pptv		98
13) Carbon Tetrachloride	10.28	117	62196	424.55	pptv		100
14) Benzene	10.42	78	89610	233.08	pptv		95
15) Trichloroethene	11.11	130	40072	572.61	pptv		90
16) 1,1,2-Trichloroethane	12.81	97	36834	596.81	pptv		89
17) Tetrachloroethene	13.29	166	61705	588.39	pptv		100

(#) = qualifier out of range (m) = manual integration

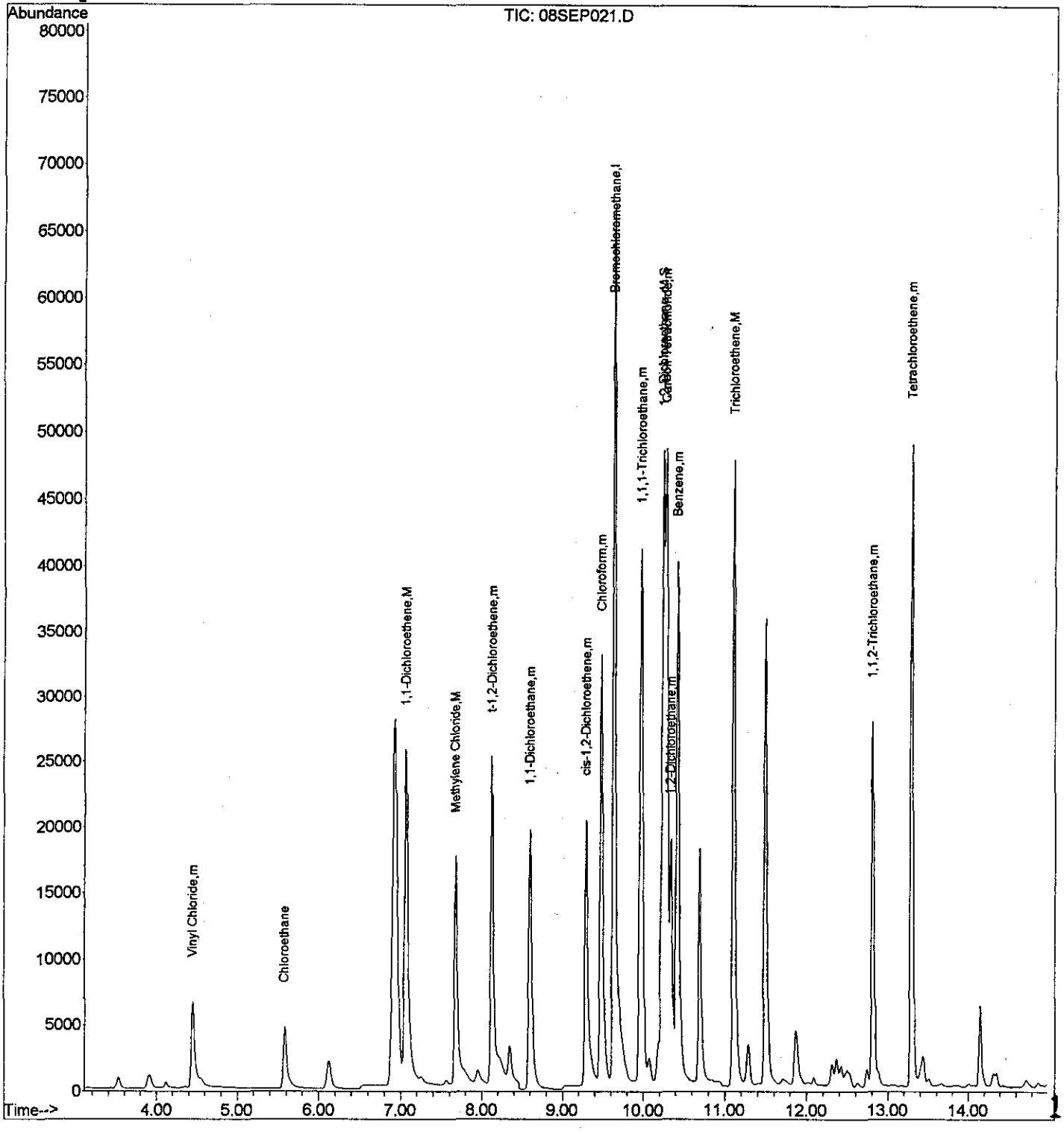
Quantitation Report

Data File : D:\GCMSB\050905\08SEP021.D
Acq On : 8 Sep 2005 21:39
Sample : 500 pptv SIM std
Misc : 125ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:19 2006

Vial: 3
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:19:37 2006
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\050905\08SEP022.D
Acq On : 8 Sep 2005 22:17
Sample : 2000 pptv SIM std
Misc : 50ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:20 2006

Vial: 7
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:19:54 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0725

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	101234	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.24	65	129178	2118.86	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 105.94%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.44	62	53167	1751.37	pptv		97
3) Chloroethane	5.57	64	31132	1890.77	ppbv	#	100
4) 1,1-Dichloroethene	7.07	96	75503	1695.18	pptv		89
5) Methylene Chloride	7.67	49	52189	1369.20	pptv		85
6) t-1,2-Dichloroethene	8.12	96	74735	1731.48	pptv		82
7) 1,1-Dichloroethane	8.60	63	120659	1822.01	pptv		100
8) cis-1,2-Dichloroethene	9.30	96	83051	1653.38	pptv	#	38
9) Chloroform	9.48	83	162661	1756.15	pptv		100
10) 1,1,1-Trichloroethane	9.98	97	181092	1856.81	pptv		100
12) 1,2-Dichloroethane	10.34	62	89938	1718.74	pptv		99
13) Carbon Tetrachloride	10.28	117	202838	1381.48	pptv		99
14) Benzene	10.42	78	247013	641.07	pptv		96
15) Trichloroethene	11.11	130	126696	1806.39	pptv		89
16) 1,1,2-Trichloroethane	12.81	97	110321	1783.50	pptv		92
17) Tetrachloroethene	13.29	166	190619	1813.43	pptv		100

(#) = qualifier out of range (m) = manual integration

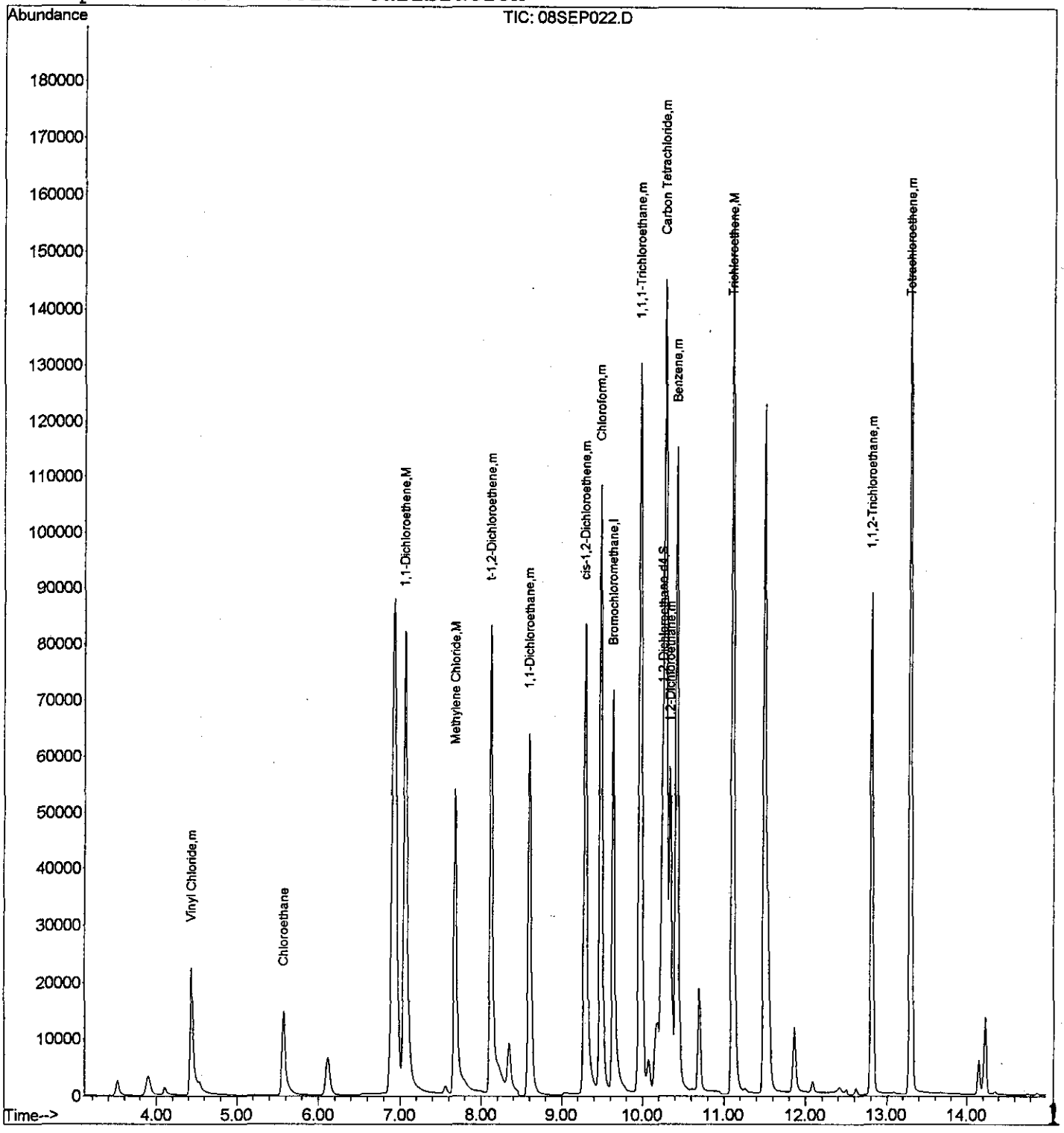
Quantitation Report

Data File : D:\GCMSB\050905\08SEP022.D
Acq On : 8 Sep 2005 22:17
Sample : 2000 pptv SIM std
Misc : 50ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:20 2006

Vial: 7
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:19:54 2006
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\050905\08SEP023.D
Acq On : 8 Sep 2005 22:55
Sample : 10 ppbv SIM std
Misc : 250ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:20 2006

Vial: 7
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:20:09 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0725

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	101081	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.24	65	136152	2236.63	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 111.83%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.41	62	271929	8972.15	pptv		99
3) Chloroethane	5.56	64	159170	9681.67	ppbv	#	100
4) 1,1-Dichloroethene	7.06	96	393857	9178.76	pptv		87
5) Methylene Chloride	7.67	49	268214	7047.35	pptv		90
6) t-1,2-Dichloroethene	8.12	96	396311	9301.21	pptv		88
7) 1,1-Dichloroethane	8.60	63	613180	9273.35	pptv		99
8) cis-1,2-Dichloroethene	9.30	96	443458	9301.30	pptv	#	39
9) Chloroform	9.48	83	841943	9103.68	pptv		99
10) 1,1,1-Trichloroethane	9.98	97	936314	9614.92	pptv		100
12) 1,2-Dichloroethane	10.34	62	472207	9037.67	pptv		99
13) Carbon Tetrachloride	10.28	117	1047659	7144.43	pptv		100
14) Benzene	10.42	78	1242743	3230.14	pptv		96
15) Trichloroethene	11.11	130	684396	9772.68	pptv		90
16) 1,1,2-Trichloroethane	12.81	97	572735	9272.77	pptv		92
17) Tetrachloroethene	13.29	166	999021	9517.31	pptv		100

(#) = qualifier out of range (m) = manual integration

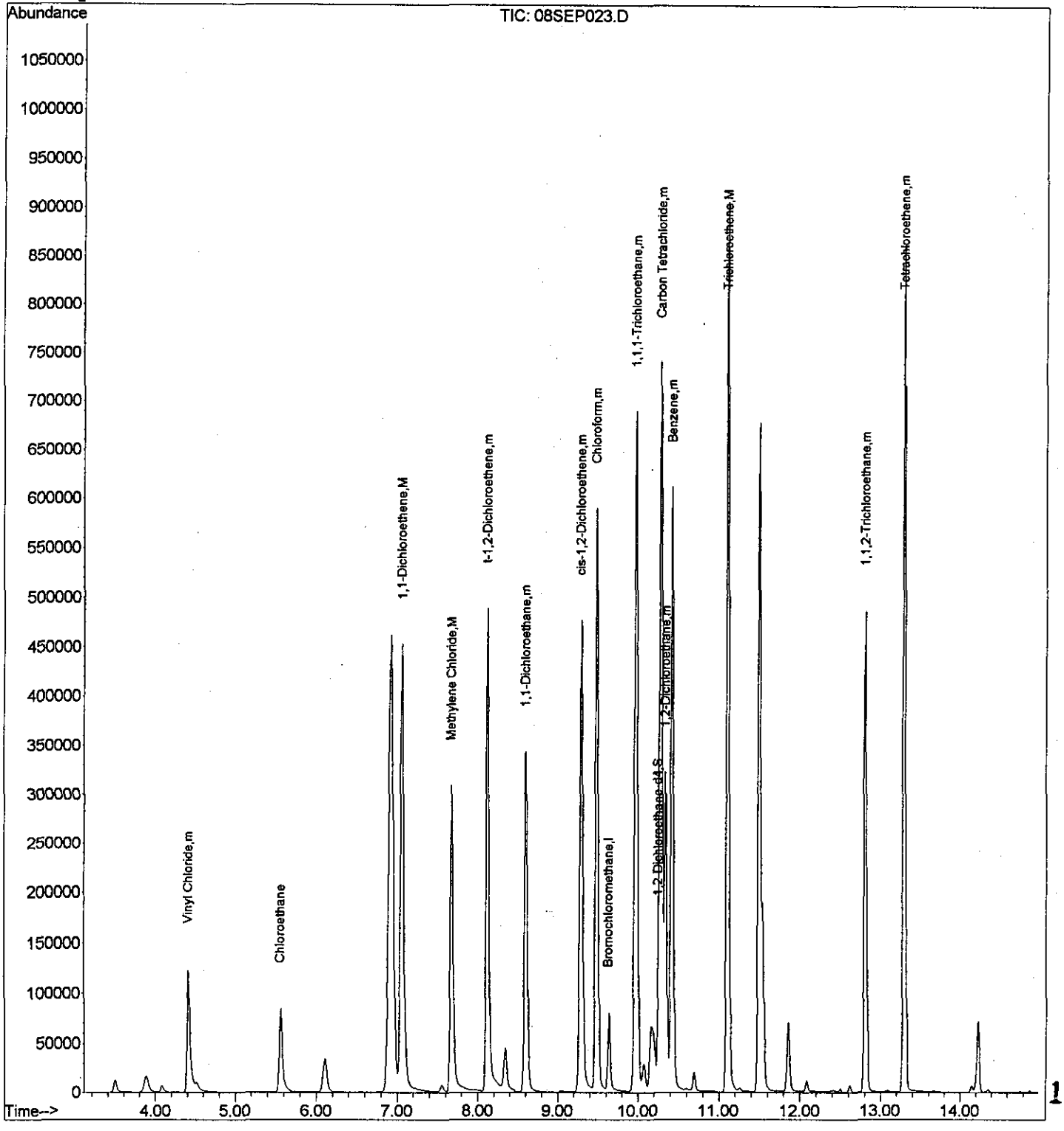
Quantitation Report

Data File : D:\GCMSB\050905\08SEP023.D
Acq On : 8 Sep 2005 22:55
Sample : 10 ppbv SIM std
Misc : 250ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:20 2006

Vial: 7
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:20:09 2006
Response via : Initial Calibration



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4. Continuing Calibration

a. CCAL Summary
b. Results/Chromatograms

Continuing Calibration Criteria:

90% of target compounds must have %Diff <30%
All target compounds must have %Diff <50%

Evaluate Continuing Calibration Report

Data File : D:\GCMSB\060925\25SEP002.D
Acq On : 25 Sep 2006 10:07
Sample : SIM Shift Check
Misc : 125ml,
MS Integration Params: rteint.p

Vial: 1
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 40% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Bromochloromethane	1.000	1.000	0.0	82	0.00
2	m	Vinyl Chloride	0.600	0.707	-17.8	85	0.03
3		Chloroethane	0.325	0.393	-20.9	85	0.02
4	M	1,1-Dichloroethene	0.817	0.838	-2.6	73	0.02
5	M	Methylene Chloride	0.598	0.695	-16.2	86	0.00
6	m	t-1,2-Dichloroethene	0.833	0.923	-10.8	80	0.00
7	m	1,1-Dichloroethane	1.308	1.490	-13.9	79	0.00
8	m	cis-1,2-Dichloroethene	0.892	0.994	-11.4	80	0.00
9	m	Chloroform	1.830	1.967	-7.5	78	0.00
10	m	1,1,1-Trichloroethane	1.927	2.062	-7.0	73	0.00
11	S	1,2-Dichloroethane-d4	1.204	1.330	-10.5	92	0.00
12	m	1,2-Dichloroethane	1.034	1.163	-12.5	84	0.00
13	m	Carbon Tetrachloride	2.163	2.172	-0.4	72	0.01
14	m	Benzene	3.351	3.096	7.6	72	0.00
15	M	Trichloroethene	1.386	1.471	-6.1	76	0.00
16	m	1,1,2-Trichloroethane	1.222	1.291	-5.6	73	0.00
17	m	Tetrachloroethene	2.077	2.108	-1.5	71	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
25SEP002.D SIM909AD.M Mon Sep 25 10:37:01 2006 GCMSB Page 1

Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP002.D
Acq On : 25 Sep 2006 10:07
Sample : SIM Shift Check
Misc : 125ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:36 2006

Vial: 1
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	82802	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	110148	2208.90	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 110.45%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.47	62	14625	589.16	pptv		97
3) Chloroethane	5.60	64	8132	603.83	ppbv	#	100
4) 1,1-Dichloroethene	7.08	96	17339	512.60	pptv		83
5) Methylene Chloride	7.69	49	14382	581.00	pptv		80
6) t-1,2-Dichloroethene	8.13	96	19100	553.55	pptv		78
7) 1,1-Dichloroethane	8.61	63	30840	569.37	pptv		99
8) cis-1,2-Dichloroethene	9.30	96	20574	556.99	pptv	#	48
9) Chloroform	9.49	83	40719	537.48	pptv		99
10) 1,1,1-Trichloroethane	9.98	97	42685	535.09	pptv		100
12) 1,2-Dichloroethane	10.35	62	24068	562.33	pptv		98
13) Carbon Tetrachloride	10.29	117	44963	502.13	pptv		99
14) Benzene	10.43	78	64081	461.86	pptv		93
15) Trichloroethene	11.12	130	30450	530.79	pptv		87
16) 1,1,2-Trichloroethane	12.82	97	26717	528.05	pptv		88
17) Tetrachloroethene	13.31	166	43636	507.45	pptv		94

(#) = qualifier out of range (m) = manual integration

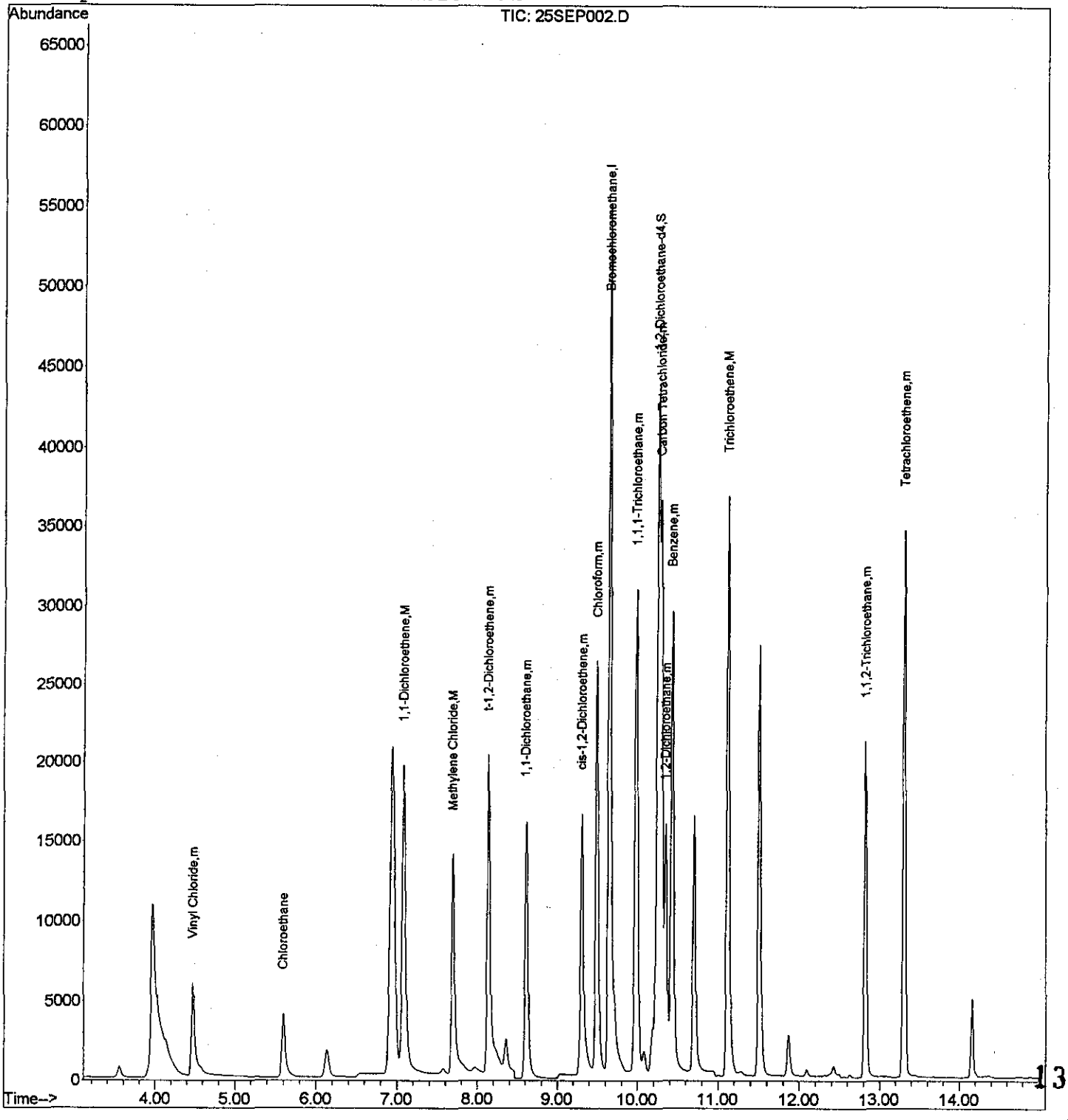
Quantitation Report

Data File : D:\GCMSB\060925\25SEP002.D
Acq On : 25 Sep 2006 10:07
Sample : SIM Shift Check
Misc : 125ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 10:36 2006

Vial: 1
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP005.D
Acq On : 27 Sep 2006 11:31
Sample : 10 ppbv 1,1-DFA
Misc : 50ml,
MS Integration Params: rteint.p
Quant Time: Sep 27 11:58 2006

Vial: 1
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00
Quant Results File: TO15ADD.RES

Quant Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D
DataAcq Meth : TO060919

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	8.93	49	55441	10.00	ppbv	0.00
22) 1,4-Difluorobenzene	10.29	114	105988	10.00	ppbv	0.00
29) Chlorobenzene-d5	14.80	117	88483	10.00	ppbv	0.00
System Monitoring Compounds						
23) 1,2-Dichloroethane-d4	9.70	65	58173	10.00	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 100.00%			
27) Toluene-d8	12.53	98	106647	10.00	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 100.00%			
31) 4-Bromofluorobenzene	16.76	95	88666	10.00	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 100.00%			
Target Compounds						Qvalue
2) Propane	3.21	44	2998	100.00	ppbv #	52
3) Propene	3.22	41	842	10.00	ppbv #	29
4) 1,1-Difluoroethane	3.21	51	24420	10.00	ppbv	93
5) isobutane	3.57	43	1332	100.00	ppbv #	34
6) Isobutene	0.00	56	0	N.D.		
7) 1,3-Butadiene	0.00	54	0	N.D.		
8) Methanol	0.00	31	0	N.D.		
9) Acetaldehyde	4.09	43	924	250.00	ppbv #	1
10) Isopentane	0.00	43	0	N.D.		
11) Dichlorofluoromethane	0.00	67	0	N.D.		
12) Ethanol	0.00	45	0	N.D.		
13) PFTBA	0.00	69	0	N.D.		
14) Isopropanol	0.00	45	0	N.D.		
15) Propylene oxide	5.80	58	3490	100.00	ppbv #	56
16) Acreolin	0.00	56	0	N.D.		
17) Acrylonitrile	0.00	53	0	N.D.		
18) n-Hexane	0.00	57	0	N.D.		
19) Isopropyl ether	0.00	45	0	N.D.		
20) 2,2-Dichloropropane	0.00	77	0	N.D.		
21) 2,2,4-Trimethylpentane	0.00	57	0	N.D.		
24) Heptane	0.00	100	0	N.D.		
25) 1,4-Dioxane	0.00	88	0	N.D.		
26) 2-chloroethylvinylether	0.00	63	0	N.D.		
28) Tetrahydrothiophene	0.00	88	0	N.D.		
30) Cyclohexanone	16.34	98	1297	200.00	ppbv #	1
32) n-Decane	17.05	57	1247	100.00	ppbv #	39
33) Phenol	17.66	94	574553	500.00	ppbv	89
34) Dicyclopentadiene	18.70	66	385	250.00	ppbv #	64
35) Naphthalene	22.02	128	6556	200.00	ppbv #	70

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP005.D Vial: 1
Acq On : 27 Sep 2006 11:31 Operator: JM
Sample : 10 ppbv 1,1-DFA Inst : GC/MS 597
Misc : 50ml, Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 27 11:58 2006 Quant Results File: TO15ADD.RES

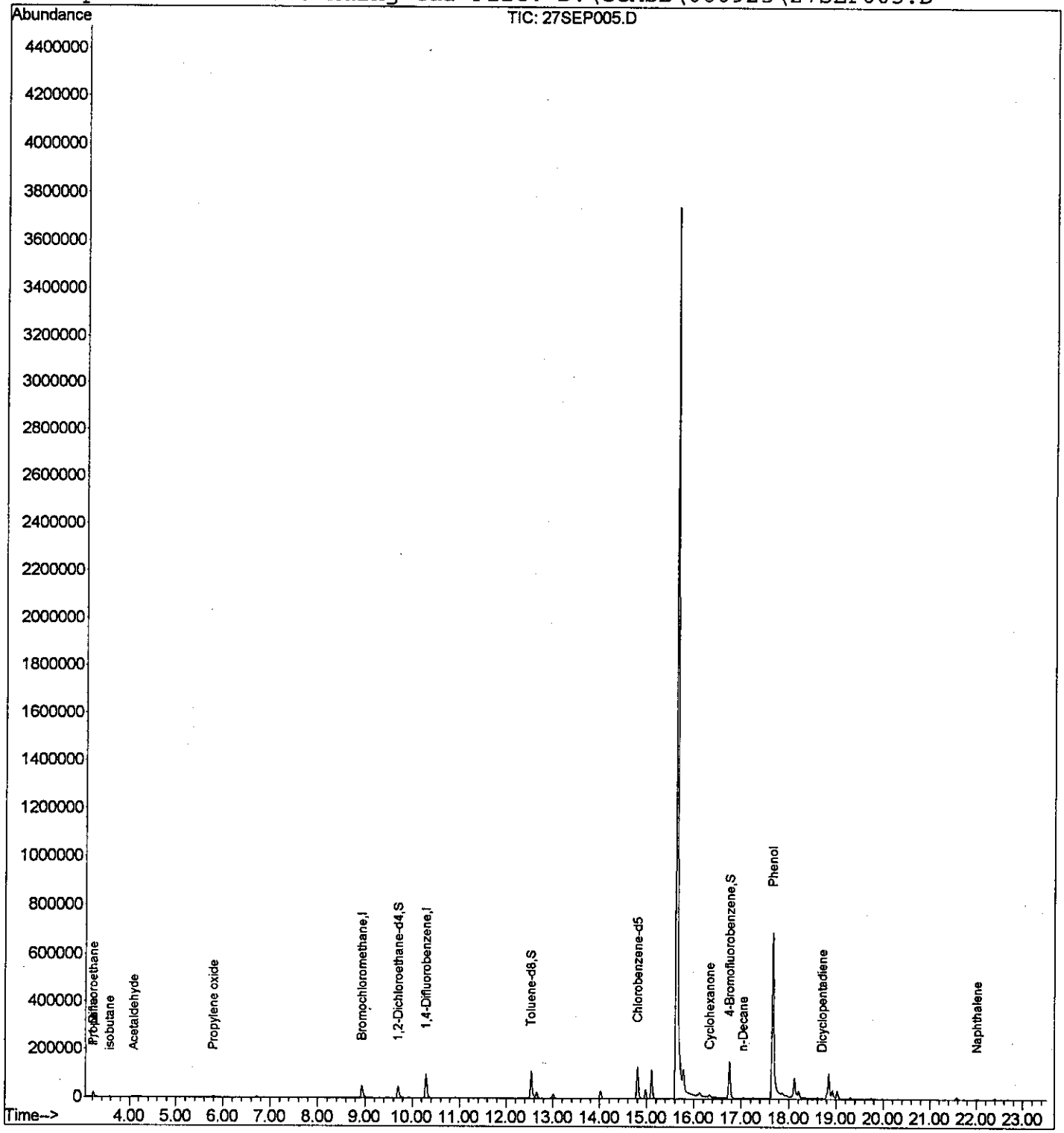
Quant Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D
DataAcq Meth : TO060919

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
36)	1,2,3-Trichlorobenzene	0.00	180	0	N.D.		
37)	Ferrocene	0.00	186	0	N.D.		

(#) = qualifier out of range (m) = manual integration

Misc : 50ml, Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 27 11:58 2006 Quant Results File: TO15ADD.RES

Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D



(#) = qualifier out of range (m) = manual integration

5. Tune Summaries

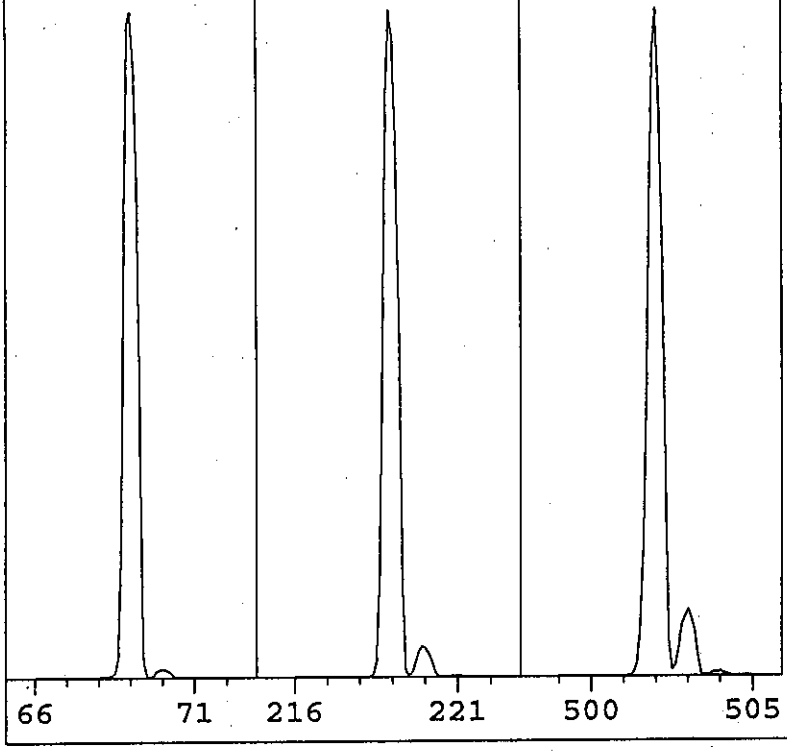
a. ICAL Summary
b. CCAL Tune Summary

Criteria as listed in report

HP5973

Instrument: GC/MS 5973 #1
Fri Sep 09 12:23:27 2005
C:\HPCHEM\1\5973\SI50720.U

Mass	69.00	Mass	218.90	Mass	502.00
Ab	315330	Ab	364873	Ab	32966
Pw50	0.50	Pw50	0.51	Pw50	0.51

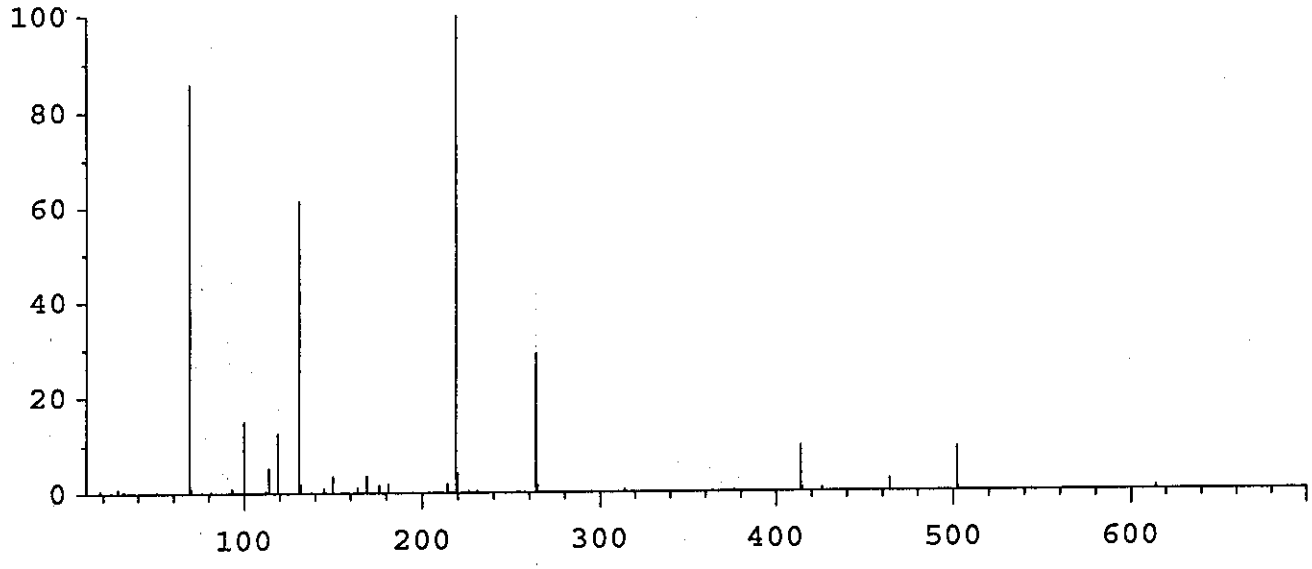


Ion Pol	POS	MassGain	37
		MassOffs	-12
Emission	34.6	AmuGain	1858
EleEnergy	69.9	AmuOffs	132
Filament	1	Wid219	-0.010
		DC Pol	NEG
Repeller	19.90		
IonFocus	83.5	HED	ON
EntLens	18.5	EMVolts	1788
EntOffs	17.82		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10

Zones:

MS Source	230	TurboSpd	100
MS Quad	150		

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100
101 peaks Base: 218.90 Abundance: 266112

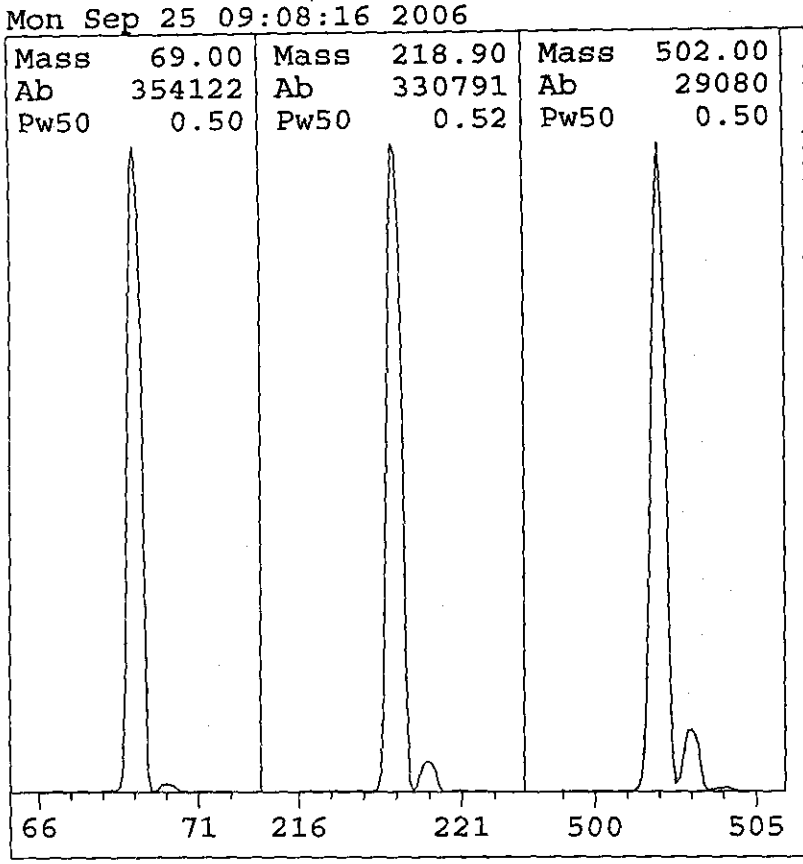


Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	228608	100.00	70.00	2646	1.16
218.90	266112	116.41	220.00	11510	4.33
502.00	25272	11.05	503.00	2471	9.78

TARGET MASS:	50	69	131	219	414	502
TARGET ABUND(%):	1.0	100.0	55.0	45.0	3.5	2.0
ACTUAL TUNE ABUND(%):	0.5	100.0	71.7	116.4	11.4	11.1

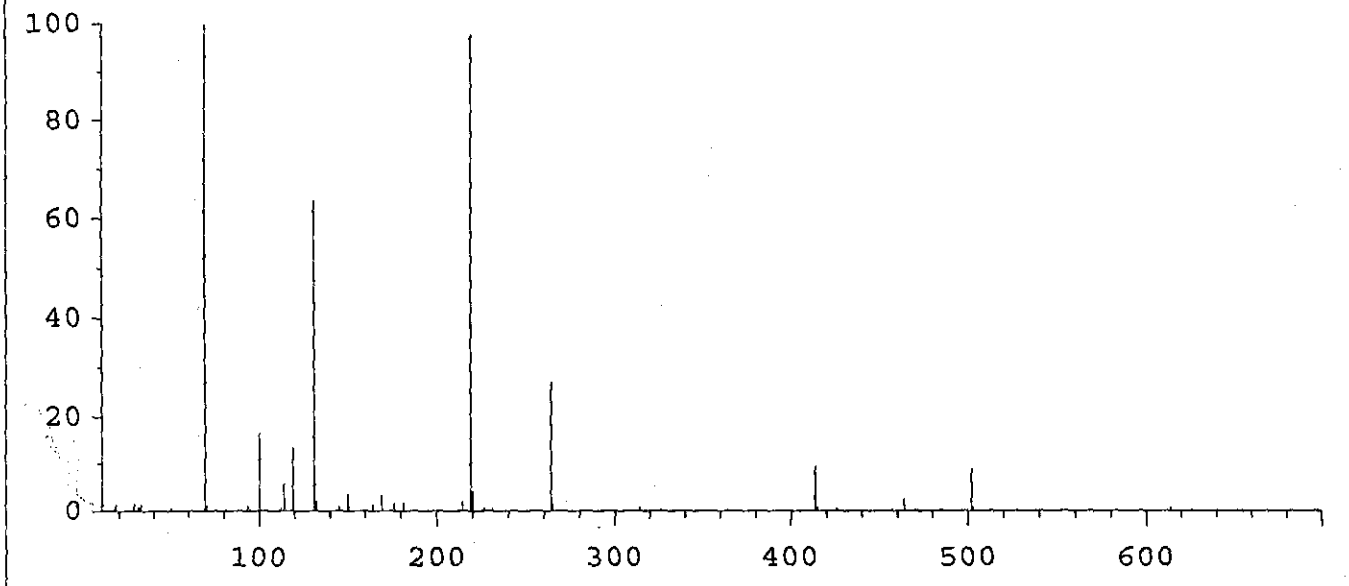
HP5973

Instrument: GC/MS 5973 #1
Mon Sep 25 09:08:16 2006
C:\HPCHEM\1\5973\SI50720.U



Ion Pol	POS	MassGain	37
		MassOffs	-12
Emission	34.6	AmuGain	1858
EleEnergy	69.9	AmuOffs	132
Filament	1	Wid219	-0.010
		DC Pol	NEG
Repeller	19.90		
IonFocus	83.5	HED	ON
EntLens	18.5	EMVolts	1788
EntOffs	17.82		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10
Zones:			
MS Source	230	TurboSpd	100
MS Quad	150		

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100
98 peaks Base: 69.00 Abundance: 248576

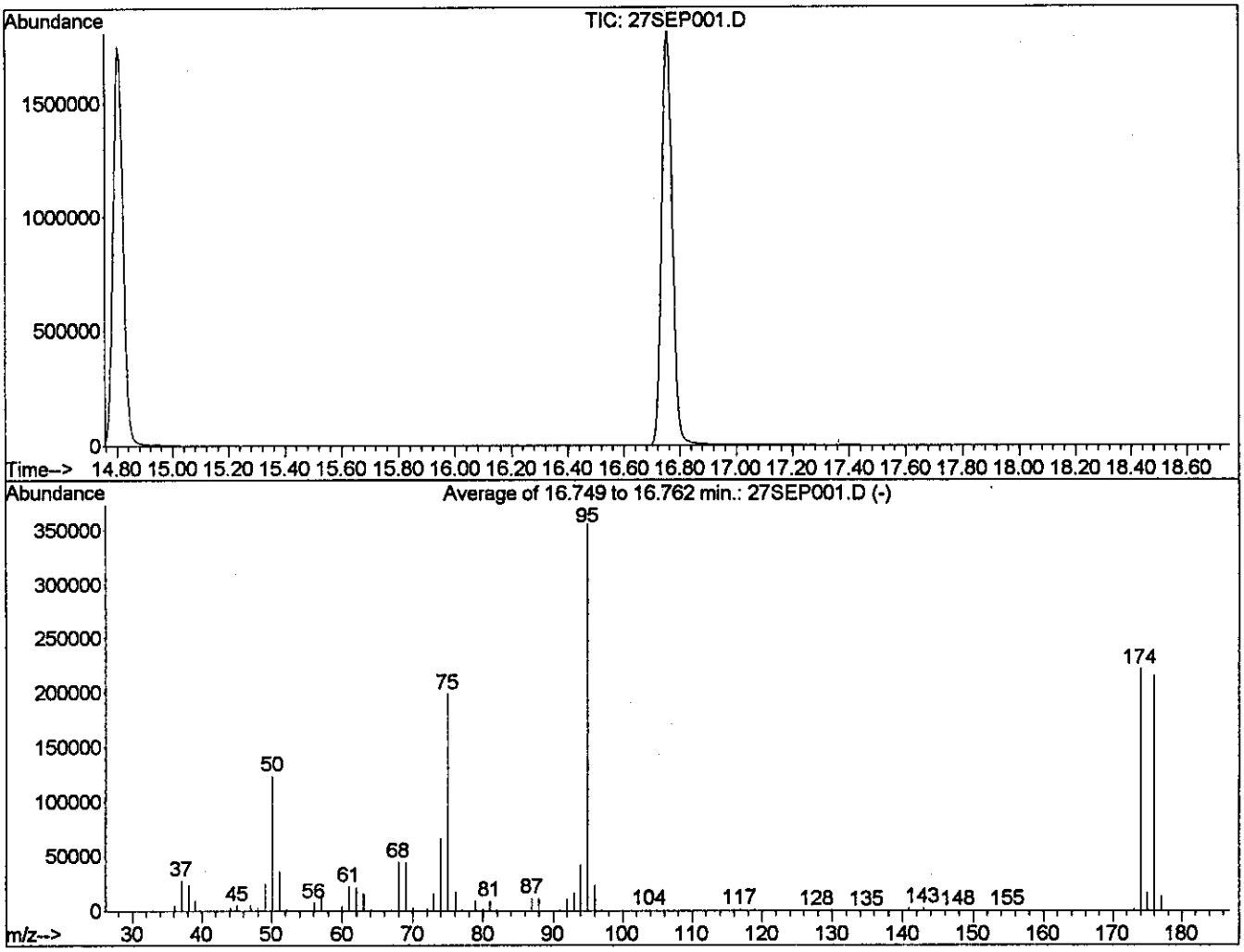


Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	248576	100.00	70.00	2977	1.20
219.00	242368	97.50	220.00	10662	4.40
502.00	22824	9.18	503.00	2294	10.05

TARGET MASS:	50	69	131	219	414	502
TARGET ABUND(%):	1.0	100.0	40.0	40.0	3.5	1.5
ACTUAL TUNE ABUND(%):	0.7	100.0	63.7	97.5	9.5	9.2

Data File : D:\GCMSB\060925\27SEP001.D
Acq On : 27 Sep 2006 9:20
Sample : BFB
Misc : 50ml,
MS Integration Params: RTEINT.P
Method : D:\GCMSB\METHODS\TO060919.M (RTE Integrator)
Title : EPA TO-14/TO-15 (09/27/05) RTxVolatiles 0.32mm

Vial: 16
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00



AutoFind: Scans 2254, 2255, 2256; Background Corrected with Scan 2242

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	34.9	124256	PASS
75	95	30	60	55.7	198592	PASS
95	95	100	100	100.0	356224	PASS
96	95	5	9	6.7	23907	PASS
173	174	0.00	2	0.6	1427	PASS
174	95	50	100	62.0	220907	PASS
175	174	5	9	7.5	16617	PASS
176	174	95	101	97.1	214571	PASS
177	176	5	9	6.3	13521	PASS

6. Method Blank

a. Results/Chromatograms

Method Blank Criteria:

All compounds < Reporting Limit

Quantitation Report (QT Reviewed)

Data File : D:\GCMSB\060925\25SEP005.D
Acq On : 25 Sep 2006 12:02
Sample : Method Blank
Misc : 250ml, #5961
MS Integration Params: rteint.p
Quant Time: Sep 25 12:43 2006

Vial: 3
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00
Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	80084	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	104947	2176.03	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 108.80%				
Target Compounds							Qvalue
5) Methylene Chloride	7.69	49	1201	50.16	pptv		83
12) 1,2-Dichloroethane	10.35	62	129	3.12	pptv		64
14) Benzene	10.43	78	1949	14.52	pptv	#	65
15) Trichloroethene	11.12	130	62	1.12	pptv	#	77

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(#) = qualifier out of range (m) = manual integration

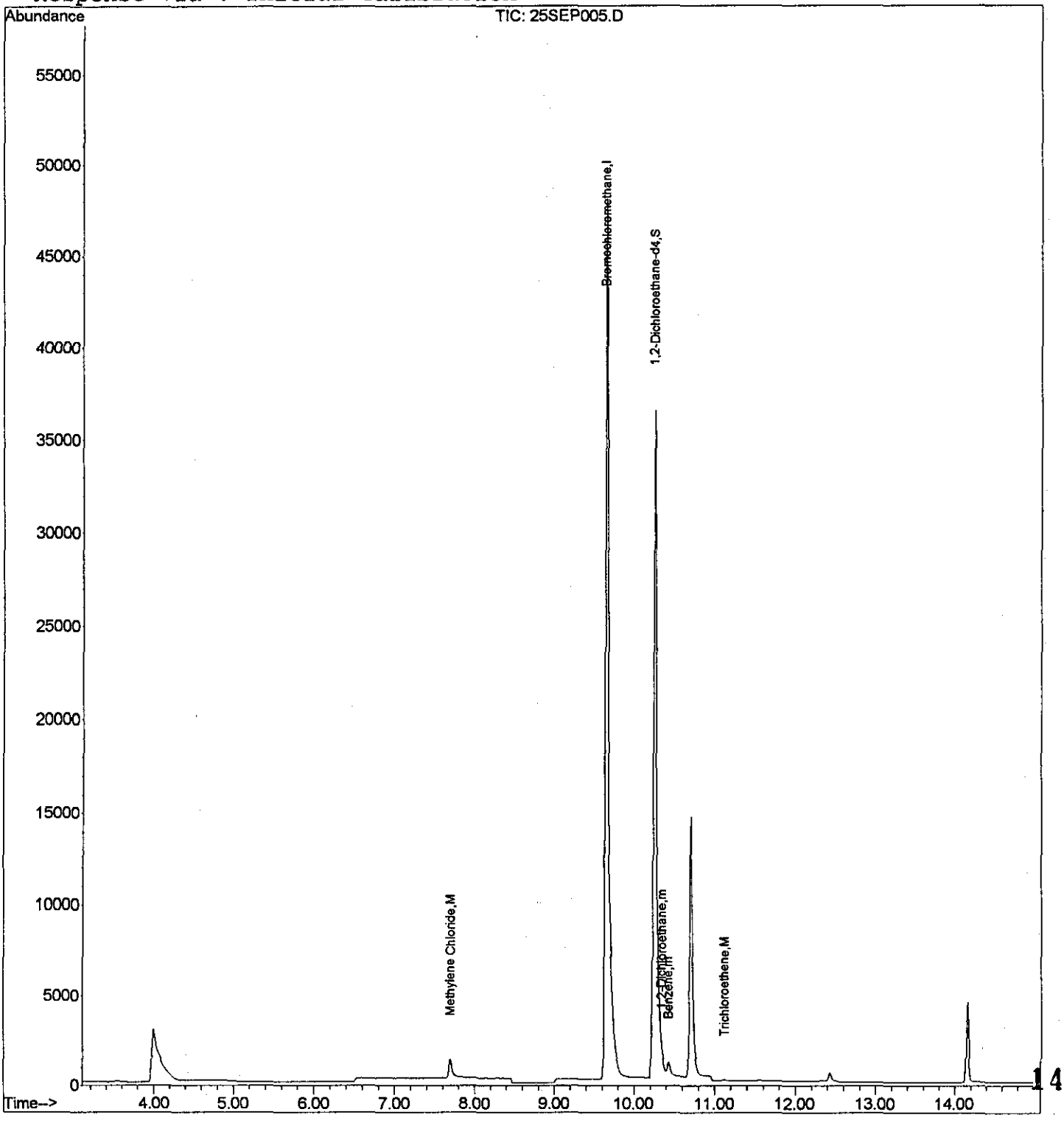
Quantitation Report

Data File : D:\GCMSB\060925\25SEP005.D
Acq On : 25 Sep 2006 12:02
Sample : Method Blank
Misc : 250ml, #5961
MS Integration Params: rteint.p
Quant Time: Sep 25 12:43 2006

Vial: 3
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00

Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP008.D Vial: 5
Acq On : 27 Sep 2006 13:12 Operator: JM
Sample : Method Blank Inst : GC/MS 597
Misc : 250ml, #5961 Multiplr: 0.20
MS Integration Params: rteint.p
Quant Time: Sep 28 15:36 2006 Quant Results File: TO15ADD.RES

Quant Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D
DataAcq Meth : TO060919

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	8.94	49	55016	10.00	ppbv	0.00
22) 1,4-Difluorobenzene	10.30	114	110305	10.00	ppbv	0.00
29) Chlorobenzene-d5	14.91	117	425	10.00	ppbv	0.11
System Monitoring Compounds						
23) 1,2-Dichloroethane-d4	9.70	65	58957	9.74	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 97.40%			
27) Toluene-d8	12.54	98	110008	9.91	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.10%			
31) 4-Bromofluorobenzene	16.88	95	195	4.58	ppbv	0.13
Spiked Amount 10.000	Range 80 - 120		Recovery = 45.80%#			
Target Compounds						Qvalue
2) Propane	3.21	44	5553	186.65	ppbv #	67
3) Propene	3.21	41	5586	66.85	ppbv #	39
4) 1,1-Difluoroethane	3.29	51	2474	1.02	ppbv #	~~0.204~~
5) isobutane	0.00	43	0	N.D.		
6) Isobutene	0.00	56	0	N.D.		
7) 1,3-Butadiene	0.00	54	0	N.D.		
8) Methanol	0.00	31	0	N.D.		
9) Acetaldehyde	4.09	43	1446	394.26	ppbv #	29
10) Isopentane	0.00	43	0	N.D.		
11) Dichlorofluoromethane	0.00	67	0	N.D.		
12) Ethanol	0.00	45	0	N.D.		
13) PFTBA	0.00	69	0	N.D.		
14) Isopropanol	0.00	45	0	N.D.		
15) Propylene oxide	5.82	58	2302	66.47	ppbv #	56
16) Acreolin	0.00	56	0	N.D.		
17) Acrylonitrile	0.00	53	0	N.D.		
18) n-Hexane	0.00	57	0	N.D.		
19) Isopropyl ether	0.00	45	0	N.D.		
20) 2,2-Dichloropropane	0.00	77	0	N.D.		
21) 2,2,4-Trimethylpentane	0.00	57	0	N.D.		
24) Heptane	0.00	100	0	N.D.		
25) 1,4-Dioxane	0.00	88	0	N.D.		
26) 2-chloroethylvinylether	0.00	63	0	N.D.		
28) Tetrahydrothiophene	0.00	88	0	N.D.		
30) Cyclohexanone	0.00	98	0	N.D.		
32) n-Decane	0.00	57	0	N.D.		
33) Phenol	0.00	94	0	N.D.		
34) Dicyclopentadiene	0.00	66	0	N.D.		
35) Naphthalene	0.00	128	0	N.D.		

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(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP008.D Vial: 5
Acq On : 27 Sep 2006 13:12 Operator: JM
Sample : Method Blank Inst : GC/MS 597
Misc : 250ml, #5961 Multiplr: 0.20
MS Integration Params: rteint.p
Quant Time: Sep 28 15:36 2006 Quant Results File: TO15ADD.RES

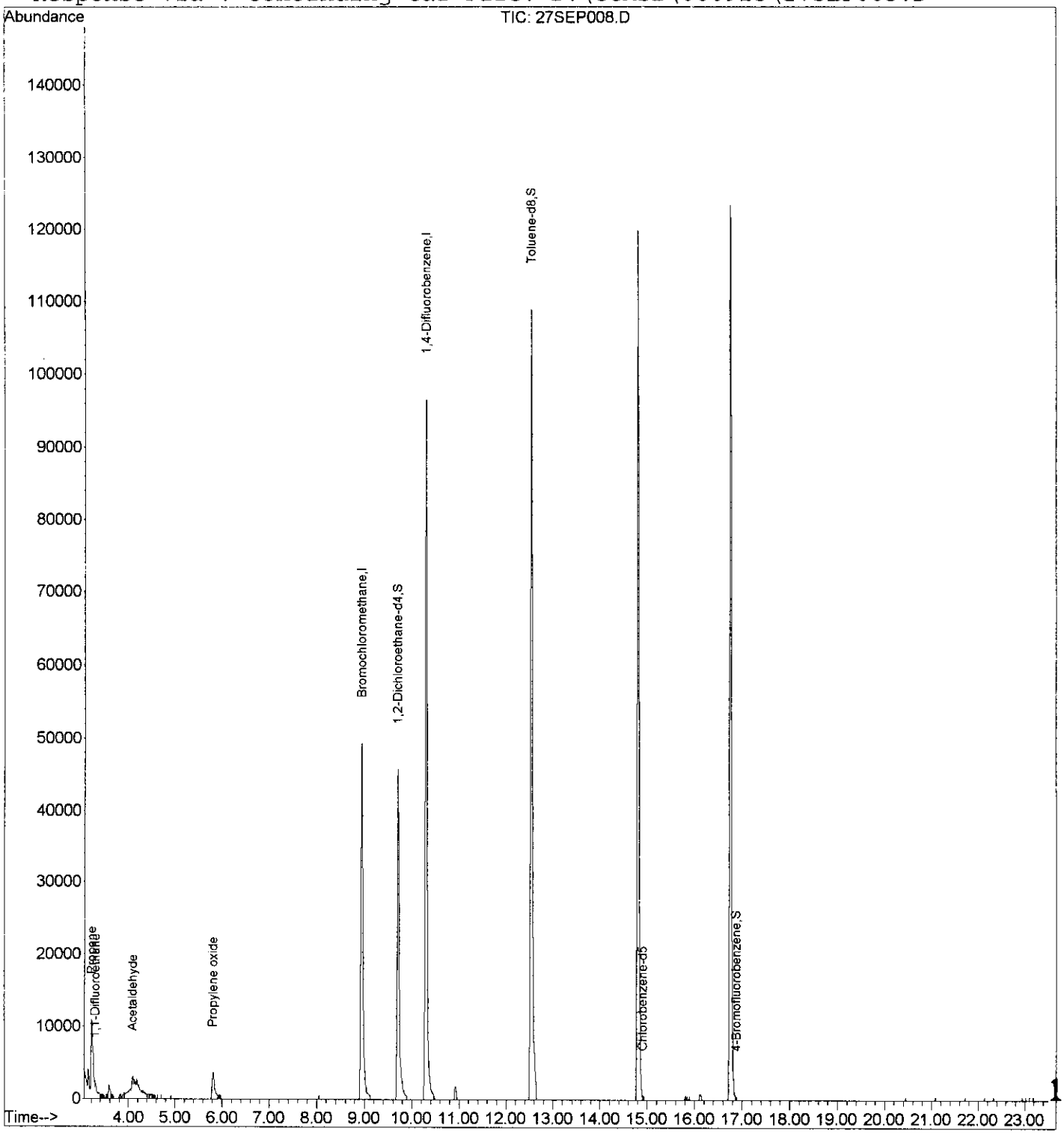
Quant Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D
DataAcq Meth : TO060919

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
36)	1,2,3-Trichlorobenzene	0.00	180	0	N.D.		
37)	Ferrocene	0.00	186	0	N.D.		

Quantitation Report

Data File : D:\GCMSB\060925\27SEP008.D Vial: 5
Acq On : 27 Sep 2006 13:12 Operator: JM
Sample : Method Blank Inst : GC/MS 597
Misc : 250ml, #5961 Multiplr: 0.20
MS Integration Params: rteint.p
Quant Time: Sep 28 15:36 2006 Quant Results File: TO15ADD.RES

Method : D:\GCMSB\METHODS\TO15ADD.M (RTE Integrator)
Title : EPA TO-15(09/16/99),GC Column:RTxVolatiles 0.32mm
Last Update : Wed Sep 27 11:58:08 2006
Response via : Continuing Cal File: D:\GCMSB\060925\27SEP005.D



7. LCS/LCSD

a. Results/Chromatograms

Criteria as listed on report

Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP003.D Vial: 2
Acq On : 25 Sep 2006 10:46 Operator: JM
Sample : LCS Inst : GC/MS 597
Misc : 125ml, Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 25 11:15 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.64	130	81865	2000.00	pptv	0.00
System Monitoring Compounds						
11) 1,2-Dichloroethane-d4	10.25	65	108912	2209.11	pptv	0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 110.46%			
Target Compounds						Qvalue
2) Vinyl Chloride	4.45	62	15219	620.10	pptv	99
3) Chloroethane	5.59	64	8254	619.90	ppbv #	100
4) 1,1-Dichloroethene	7.07	96	17946	536.62	pptv	82
5) Methylene Chloride	7.69	49	14262	582.75	pptv	86
6) t-1,2-Dichloroethene	8.13	96	19136	560.94	pptv	86
7) 1,1-Dichloroethane	8.60	63	31001	578.89	pptv	99
8) cis-1,2-Dichloroethene	9.30	96	20882	571.80	pptv #	49
9) Chloroform	9.49	83	43251	577.43	pptv	100
10) 1,1,1-Trichloroethane	9.98	97	43172	547.39	pptv	99
12) 1,2-Dichloroethane	10.34	62	24385	576.26	pptv	99
13) Carbon Tetrachloride	10.29	117	45303	511.71	pptv	100
14) Benzene	10.43	78	64096	467.25	pptv	93
15) Trichloroethene	11.12	130	31011	546.76	pptv	87
16) 1,1,2-Trichloroethane	12.82	97	27284	545.42	pptv	90
17) Tetrachloroethene	13.30	166	44951	528.73	pptv	99

148

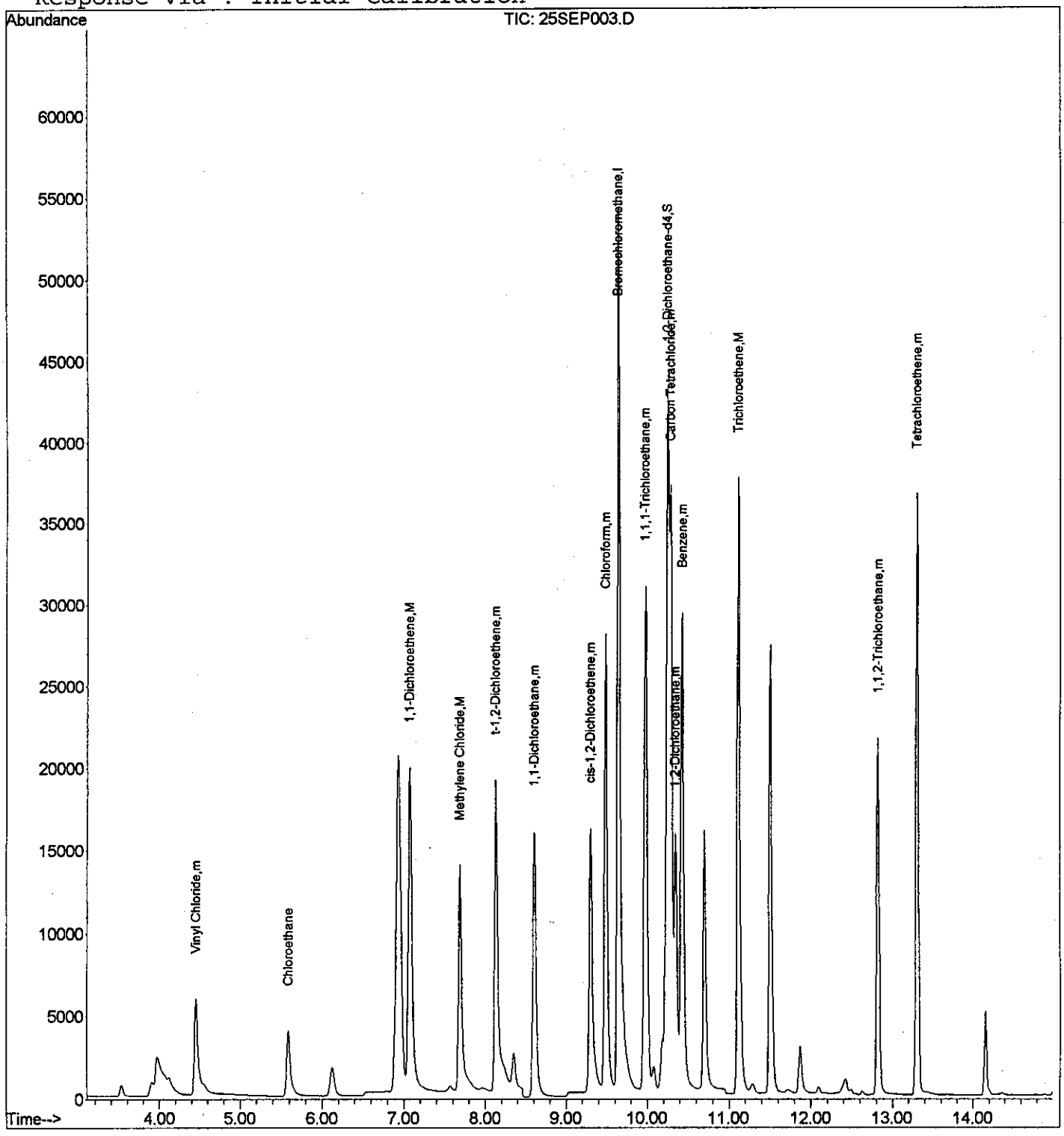
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : D:\GCMSB\060925\25SEP003.D
Acq On : 25 Sep 2006 10:46
Sample : LCS
Misc : 125ml,
MS Integration Params: rteint.p
Quant Time: Sep 25 11:15 2006

Vial: 2
Operator: JM
Inst : GC/MS 597
Multiplr: 1.00
Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



149

Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\25SEP004.D Vial: 2
Acq On : 25 Sep 2006 11:24 Operator: JM
Sample : LCSD Inst : GC/MS 597
Misc : 125ml, Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 25 11:52 2006 Quant Results File: SIM909AD.RES

Quant Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration
DataAcq Meth : SIAD0909

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.64	130	81037	2000.00	pptv		0.00
System Monitoring Compounds							
11) 1,2-Dichloroethane-d4	10.25	65	108003	2213.06	pptv		0.00
Spiked Amount 2000.000	Range 70 - 130		Recovery = 110.65%				
Target Compounds							Qvalue
2) Vinyl Chloride	4.46	62	15097	621.42	pptv		97
3) Chloroethane	5.59	64	8091	613.87	ppbv	#	100
4) 1,1-Dichloroethene	7.07	96	17805	537.84	pptv		82
5) Methylene Chloride	7.69	49	14171	584.95	pptv		88
6) t-1,2-Dichloroethene	8.14	96	18918	560.21	pptv		87
7) 1,1-Dichloroethane	8.61	63	30648	578.15	pptv		99
8) cis-1,2-Dichloroethene	9.30	96	20519	567.60	pptv	#	48
9) Chloroform	9.49	83	42789	577.10	pptv		99
10) 1,1,1-Trichloroethane	9.98	97	42750	547.58	pptv		99
12) 1,2-Dichloroethane	10.34	62	24122	575.87	pptv		99
13) Carbon Tetrachloride	10.29	117	44967	513.11	pptv		100
14) Benzene	10.43	78	63502	467.65	pptv		93
15) Trichloroethene	11.12	130	30577	544.61	pptv		87
16) 1,1,2-Trichloroethane	12.82	97	27000	545.26	pptv		91
17) Tetrachloroethene	13.30	166	44521	529.02	pptv		99

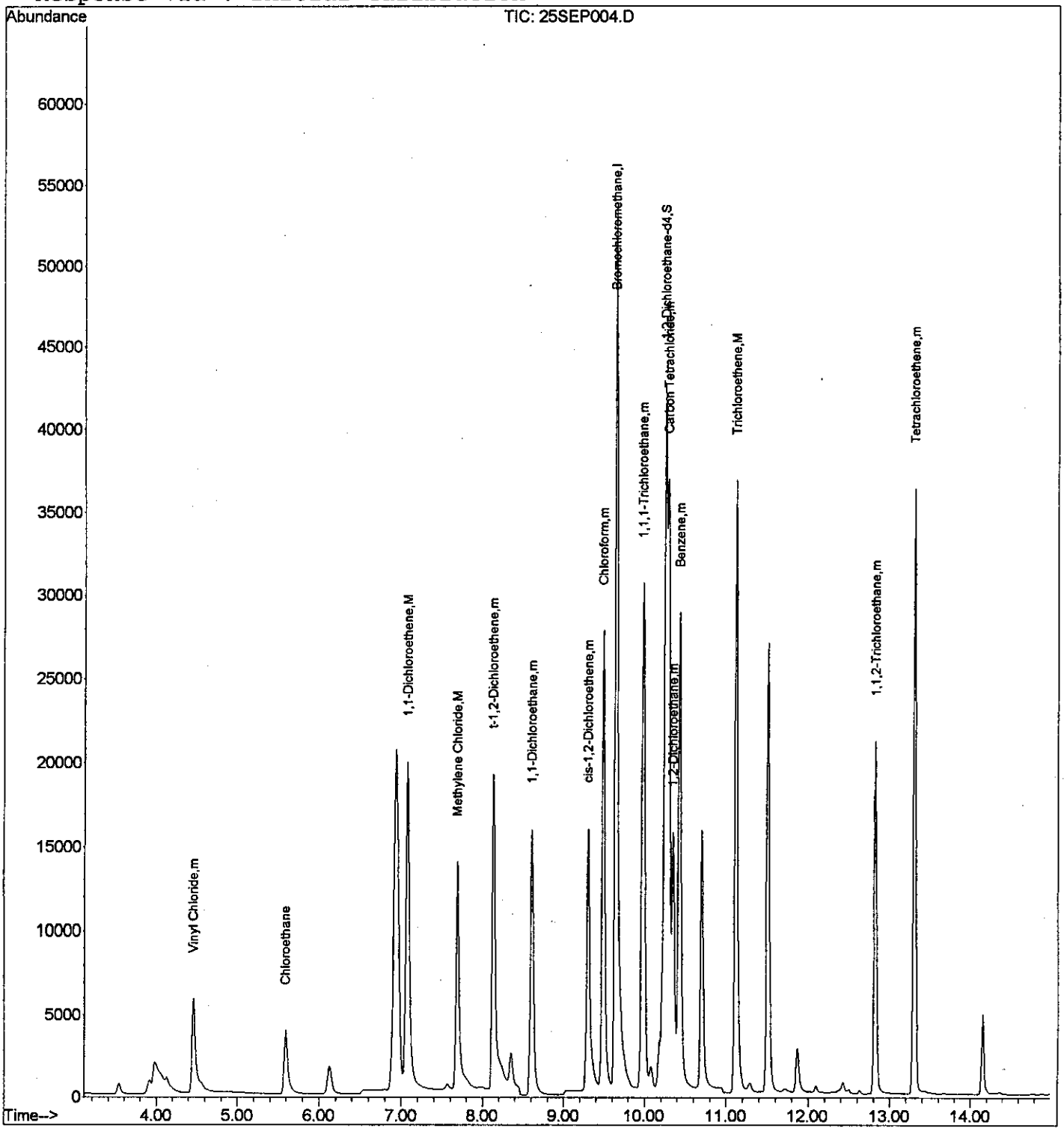
150

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : D:\GCMSB\060925\25SEP004.D Vial: 2
Acq On : 25 Sep 2006 11:24 Operator: JM
Sample : LCSD Inst : GC/MS 597
Misc : 125ml, Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Sep 25 11:52 2006 Quant Results File: SIM909AD.RES

Method : D:\GCMSB\METHODS\SIM909AD.M (RTE Integrator)
Title : SIM(09/09/05),GC Column:RTxVolatiles 0.32mm
Last Update : Mon Sep 25 10:22:28 2006
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP003.D Vial: 5
Acq On : 27 Sep 2006 10:26 Operator: JM
Sample : LCS Inst : GC/MS 597
Misc : 50ml, Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 27 10:49 2006 Quant Results File: TO060919.RES

Quant Method : D:\GCMSB\METHODS\TO060919.M (RTE Integrator)
Title : EPA TO-14/TO-15 (09/27/05) RTxVolatiles 0.32mm
Last Update : Wed Sep 20 09:23:10 2006
Response via : Initial Calibration
DataAcq Meth : TO060919

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	8.93	49	56525	10.00	ppbv	0.00
24) 1,4-Difluorobenzene	10.29	114	107625	10.00	ppbv	0.00
36) Chlorobenzene-d5	14.80	117	87591	10.00	ppbv	0.00
System Monitoring Compounds						
26) 1,2-Dichloroethane-d4	9.70	65	60414	10.39	ppbv	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 103.90%			
34) Toluene-d8	12.53	98	109550	9.80	ppbv	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.00%			
53) 4-Bromofluorobenzene	16.75	95	81557	10.05	ppbv	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.50%			
Target Compounds						Qvalue
2) Dichlorodifluoromethane (1	3.24	85	93226	11.31	ppbv	95
3) Chloromethane	3.62	50	34218	10.45	ppbv	98
4) 1,2-Cl-1,1,2,2-F ethane (1	3.48	85	89672	10.93	ppbv	95
5) Vinyl Chloride	3.83	62	30671	10.62	ppbv	95
6) Bromomethane	4.50	94	19005	11.63	ppbv	85
7) Chloroethane	4.65	64	15663	11.27	ppbv	83
8) Trichlorofluoromethane (11	5.11	101	89196	11.43	ppbv	97
9) 1,1-Dichloroethene	6.00	61	63910	10.71	ppbv	80
10) Carbon Disulfide	6.68	76	73984	10.49	ppbv	98
11) 1,1,2-Cl 1,2,2-F ethane (1	5.84	151	41714	11.45	ppbv	94
12) Acetone	5.75	43	100268	11.60	ppbv	72
13) Methylene Chloride	6.63	84	22036	10.58	ppbv	81
14) t-1,2-Dichloroethene	7.12	96	24929	10.45	ppbv	96
15) 1,1-Dichloroethane	7.67	63	69132	10.90	ppbv	97
16) Vinyl Acetate	7.66	43	88533	9.78	ppbv	63
17) c-1,2-Dichloroethene	8.51	96	27473	10.58	ppbv	89
18) 2-Butanone	8.22	72	11686	9.35	ppbv #	25
19) t-Butyl Methyl Ether	6.98	73	90985	10.37	ppbv	71
20) Chloroform	8.74	83	70212	10.93	ppbv	90
21) 1,1,1-Trichloroethane	9.35	97	75305	11.34	ppbv	89
22) 1,1-Dichloropropene	9.58	75	47545	10.22	ppbv	88
23) Carbon Tetrachloride	9.74	117	63903	10.94	ppbv	94
25) Benzene	9.92	78	93867	9.57	ppbv	85
27) 1,2-Dichloroethane	9.83	62	67954	10.56	ppbv	95
28) Trichloroethene	10.81	130	32677	10.01	ppbv	92
29) 1,2-Dichloropropane	11.00	63	38663	9.77	ppbv	81
30) Bromodichloromethane	11.32	83	72114	10.11	ppbv	99
31) Dibromomethane	11.37	93	34438	10.05	ppbv	97
32) c-1,3-Dichloropropene	12.10	75	47567	9.53	ppbv	64

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP003.D Vial: 5
Acq On : 27 Sep 2006 10:26 Operator: JM
Sample : LCS Inst : GC/MS 597
Misc : 50ml, Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 27 10:49 2006 Quant Results File: TO060919.RES

Quant Method : D:\GCMSB\METHODS\TO060919.M (RTE Integrator)
Title : EPA TO-14/TO-15 (09/27/05) RTxVolatiles 0.32mm
Last Update : Wed Sep 20 09:23:10 2006
Response via : Initial Calibration
DataAcq Meth : TO060919

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
33)	4-Methyl-2-Pentanone	11.83	43	102622	9.03	ppbv		86
35)	Toluene	12.65	91	107045	9.61	ppbv		94
37)	t-1,3-Dichloropropene	12.82	75	47551	9.69	ppbv		70
38)	1,1,2-Trichloroethane	13.06	97	37405	10.24	ppbv		80
39)	1,3-Dichloropropane	13.43	76	50230	9.08	ppbv	#	89
40)	Tetrachloroethene	13.68	166	44214	10.22	ppbv		95
41)	2-Hexanone	13.10	58	32630	8.96	ppbv		77
42)	Dibromochloromethane	13.84	129	53757	10.19	ppbv		98
43)	1,2-Dibromoethane	14.16	107	52315	10.14	ppbv		100
44)	Chlorobenzene	14.86	112	75745	10.02	ppbv		83
45)	1,1,1,2-Tetrachloroethane	14.92	131	37214	9.82	ppbv		93
46)	Ethylbenzene	14.97	91	146764	10.22	ppbv		97
47)	p,&m-Xylene	15.10	91	234954	21.10	ppbv		94
48)	o-Xylene	15.78	91	118353	10.23	ppbv		94
49)	Styrene	15.80	104	71968	9.93	ppbv		93
50)	Bromoform	16.27	173	42846	9.20	ppbv		96
51)	Isopropyl benzene	16.38	105	155273	9.58	ppbv		94
52)	1,1,2,2-Tetrachloroethane	16.55	83	79563	10.22	ppbv		91
54)	Benzyl Chloride	18.74	91	54377	8.36	ppbv		82
55)	1,2,3-Trichloropropane	16.81	110	20620	8.43	ppbv	#	59
56)	n-Propyl Benzene	17.09	91	183880	9.92	ppbv		100
57)	Bromobenzene	17.10	77	88482	9.22	ppbv		93
58)	4-Ethyl Toluene	17.28	105	147260	10.08	ppbv		91
59)	1,3,5-Trimethylbenzene	17.35	105	131968	10.82	ppbv		88
60)	2-Chlorotoluene	17.35	91	140192	10.27	ppbv		99
61)	4-Chlorotoluene	17.43	91	121293	9.79	ppbv		95
62)	tert-Butylbenzene	17.91	119	135076	10.74	ppbv		93
63)	1,2,4-Trimethylbenzene	17.95	105	128181	10.85	ppbv		97
64)	sec-Butylbenzene	18.22	105	197497	10.48	ppbv		95
65)	p-Isopropyltoluene	18.40	119	143245	10.42	ppbv		96
66)	1,3-Dichlorobenzene	18.50	146	63377	10.14	ppbv		85
67)	1,4-Dichlorobenzene	18.62	146	63634	10.22	ppbv		85
68)	n-Butylbenzene	18.95	91	144977	10.12	ppbv		99
69)	1,2-Dichlorobenzene	19.10	146	62946	10.23	ppbv		84
70)	1,2-Dibromo-3-chloropropan	20.14	157	25891	8.04	ppbv	#	83
71)	1,2,4-Trichlorobenzene	21.60	180	35371	10.10	ppbv		94
72)	Hexachlorobutadiene	21.91	225	55763	11.36	ppbv		97

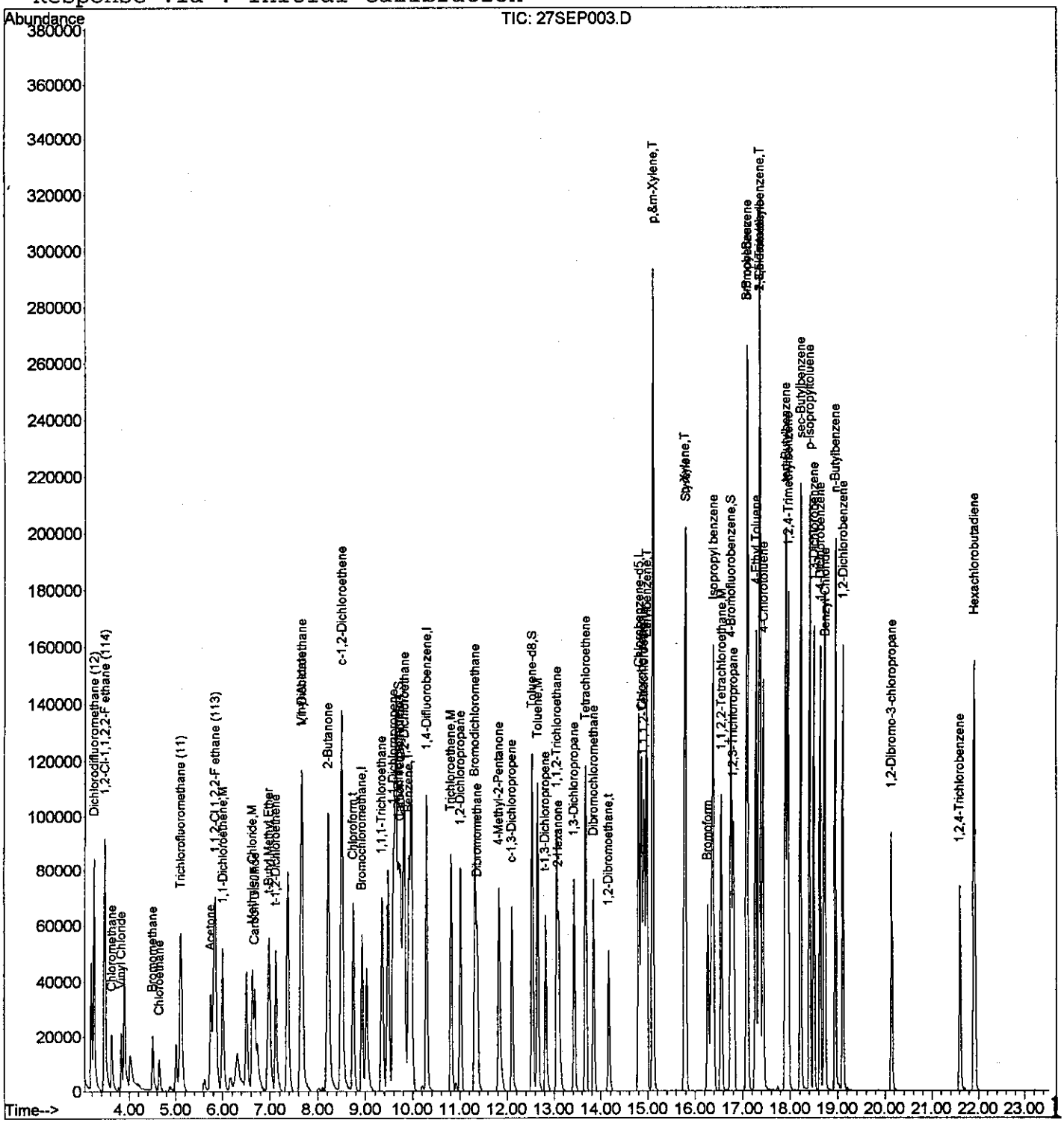
153

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : D:\GCMSB\060925\27SEP003.D Vial: 5
Acq On : 27 Sep 2006 10:26 Operator: JM
Sample : LCS Inst : GC/MS 597
Misc : 50ml, Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 27 10:49 2006 Quant Results File: TO060919.RES

Method : D:\GCMSB\METHODS\TO060919.M (RTE Integrator)
Title : EPA TO-14/TO-15 (09/27/05) RTxVolatiles 0.32mm
Last Update : Wed Sep 20 09:23:10 2006
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP004.D Vial: 5
Acq On : 27 Sep 2006 10:58 Operator: JM
Sample : LCSD Inst : GC/MS 597
Misc : 50ml, Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 27 11:22 2006 Quant Results File: TO060919.RES

Quant Method : D:\GCMSB\METHODS\TO060919.M (RTE Integrator)
Title : EPA TO-14/TO-15 (09/27/05) RTxVolatiles 0.32mm
Last Update : Wed Sep 20 09:23:10 2006
Response via : Initial Calibration
DataAcq Meth : TO060919

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	8.93	49	56561	10.00	ppbv	0.00
24) 1,4-Difluorobenzene	10.29	114	109808	10.00	ppbv	0.00
36) Chlorobenzene-d5	14.80	117	90288	10.00	ppbv	0.00
System Monitoring Compounds						
26) 1,2-Dichloroethane-d4	9.69	65	64594	10.89	ppbv	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 108.90%			
34) Toluene-d8	12.53	98	110974	9.73	ppbv	-0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 97.30%			
53) 4-Bromofluorobenzene	16.75	95	83910	10.03	ppbv	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.30%			
Target Compounds						Qvalue
2) Dichlorodifluoromethane (1	3.24	85	95293	11.56	ppbv	91
3) Chloromethane	3.62	50	34905	10.65	ppbv	98
4) 1,2-Cl-1,1,2,2-F ethane (1	3.47	85	90527	11.03	ppbv	91
5) Vinyl Chloride	3.83	62	30504	10.56	ppbv	92
6) Bromomethane	4.51	94	18752	11.47	ppbv	97
7) Chloroethane	4.65	64	16391	11.79	ppbv	90
8) Trichlorofluoromethane (11	5.11	101	90723	11.62	ppbv	96
9) 1,1-Dichloroethene	6.00	61	64468	10.79	ppbv	83
10) Carbon Disulfide	6.68	76	74241	10.52	ppbv	99
11) 1,1,2-Cl 1,2,2-F ethane (1	5.84	151	41497	11.38	ppbv	96
12) Acetone	5.74	43	102463	11.85	ppbv	75
13) Methylene Chloride	6.63	84	23555	11.30	ppbv	95
14) t-1,2-Dichloroethene	7.12	96	25274	10.58	ppbv	94
15) 1,1-Dichloroethane	7.67	63	68381	10.77	ppbv	91
16) Vinyl Acetate	7.65	43	90753	10.02	ppbv	64
17) c-1,2-Dichloroethene	8.51	96	27640	10.64	ppbv	94
18) 2-Butanone	8.23	72	11710	9.36	ppbv #	35
19) t-Butyl Methyl Ether	6.98	73	90584	10.32	ppbv	76
20) Chloroform	8.74	83	70520	10.97	ppbv	89
21) 1,1,1-Trichloroethane	9.36	97	75788	11.40	ppbv	87
22) 1,1-Dichloropropene	9.59	75	48025	10.32	ppbv	85
23) Carbon Tetrachloride	9.73	117	63926	10.93	ppbv	98
25) Benzene	9.91	78	93182	9.31	ppbv	84
27) 1,2-Dichloroethane	9.82	62	68816	10.49	ppbv	96
28) Trichloroethene	10.81	130	31713	9.52	ppbv	86
29) 1,2-Dichloropropane	11.01	63	38396	9.51	ppbv	78
30) Bromodichloromethane	11.32	83	72319	9.94	ppbv	99
31) Dibromomethane	11.37	93	34114	9.76	ppbv	97
32) c-1,3-Dichloropropene	12.10	75	48222	9.47	ppbv	62

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : D:\GCMSB\060925\27SEP004.D Vial: 5
Acq On : 27 Sep 2006 10:58 Operator: JM
Sample : LCSD Inst : GC/MS 597
Misc : 50ml, Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 27 11:22 2006 Quant Results File: TO060919.RES

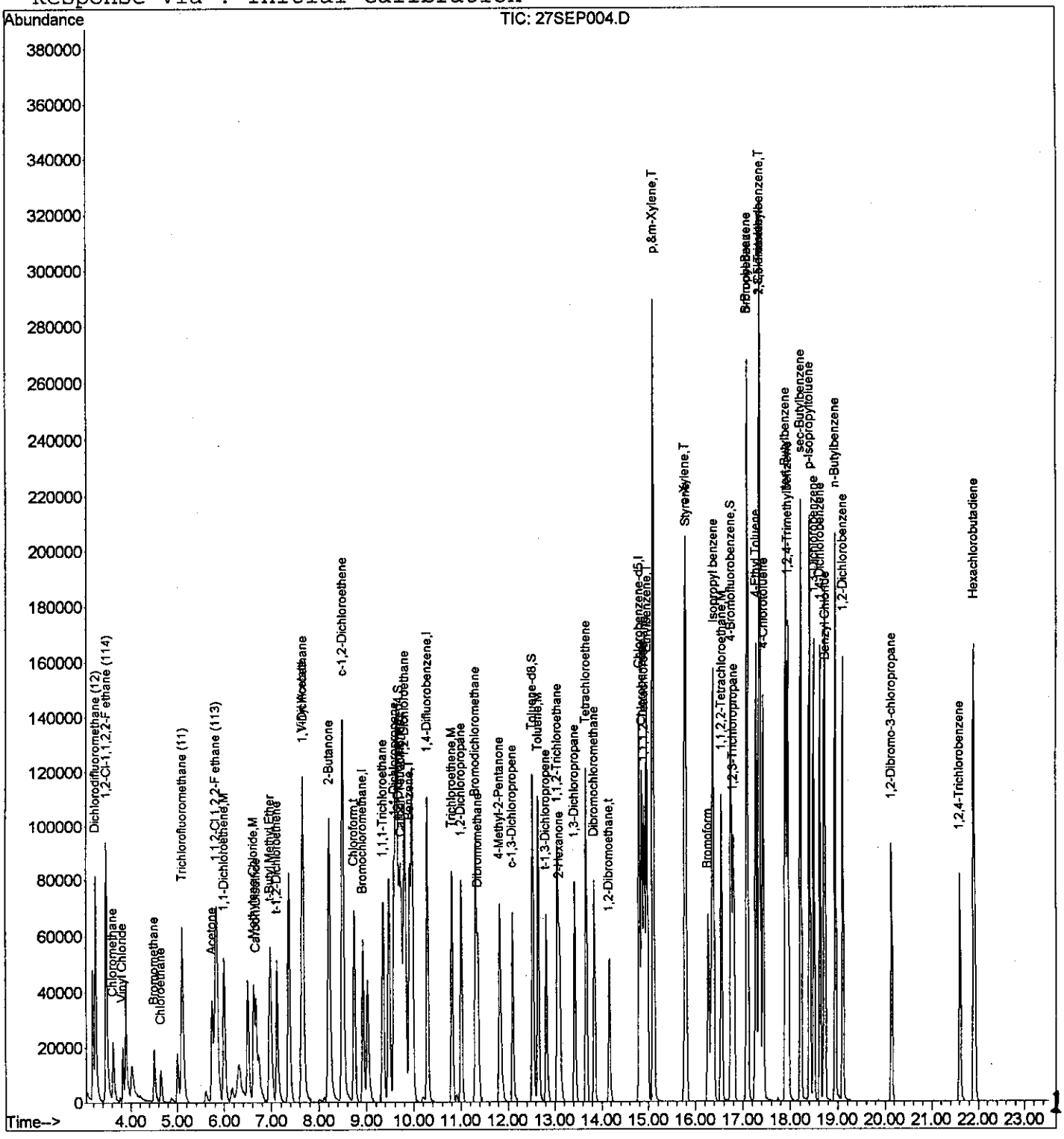
Quant Method : D:\GCMSB\METHODS\TO060919.M (RTE Integrator)
Title : EPA TO-14/TO-15 (09/27/05) RTxVolatiles 0.32mm
Last Update : Wed Sep 20 09:23:10 2006
Response via : Initial Calibration
DataAcq Meth : TO060919

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
33)	4-Methyl-2-Pentanone	11.82	43	104144	8.99	ppbv		82
35)	Toluene	12.65	91	108631	9.56	ppbv		98
37)	t-1,3-Dichloropropene	12.82	75	48048	9.50	ppbv		74
38)	1,1,2-Trichloroethane	13.06	97	38193	10.14	ppbv		79
39)	1,3-Dichloropropane	13.43	76	50761	8.90	ppbv	#	89
40)	Tetrachloroethene	13.67	166	44041	9.87	ppbv		97
41)	2-Hexanone	13.11	58	32239	8.59	ppbv		75
42)	Dibromochloromethane	13.84	129	54265	9.98	ppbv		95
43)	1,2-Dibromoethane	14.16	107	52307	9.84	ppbv		93
44)	Chlorobenzene	14.86	112	76361	9.80	ppbv		85
45)	1,1,1,2-Tetrachloroethane	14.91	131	36521	9.35	ppbv		95
46)	Ethylbenzene	14.97	91	145953	9.86	ppbv		96
47)	p,&m-Xylene	15.10	91	239327	20.85	ppbv		94
48)	o-Xylene	15.78	91	119201	10.00	ppbv		93
49)	Styrene	15.80	104	74076	9.91	ppbv		89
50)	Bromoform	16.27	173	43927	9.15	ppbv		94
51)	Isopropyl benzene	16.38	105	155868	9.33	ppbv		96
52)	1,1,2,2-Tetrachloroethane	16.55	83	80251	10.00	ppbv		94
54)	Benzyl Chloride	18.74	91	54730	8.16	ppbv		82
55)	1,2,3-Trichloropropane	16.81	110	20283	8.04	ppbv	#	66
56)	n-Propyl Benzene	17.09	91	184960	9.68	ppbv		97
57)	Bromobenzene	17.10	77	88469	8.94	ppbv		96
58)	4-Ethyl Toluene	17.28	105	148420	9.86	ppbv		91
59)	1,3,5-Trimethylbenzene	17.35	105	136264	10.84	ppbv		89
60)	2-Chlorotoluene	17.35	91	142878	10.15	ppbv		96
61)	4-Chlorotoluene	17.43	91	122445	9.59	ppbv		92
62)	tert-Butylbenzene	17.90	119	137002	10.56	ppbv		94
63)	1,2,4-Trimethylbenzene	17.95	105	129157	10.60	ppbv		91
64)	sec-Butylbenzene	18.22	105	199147	10.25	ppbv		96
65)	p-Isopropyltoluene	18.40	119	145220	10.25	ppbv		96
66)	1,3-Dichlorobenzene	18.50	146	65064	10.10	ppbv		85
67)	1,4-Dichlorobenzene	18.63	146	64894	10.11	ppbv		88
68)	n-Butylbenzene	18.95	91	143613	9.72	ppbv		99
69)	1,2-Dichlorobenzene	19.10	146	64735	10.21	ppbv		85
70)	1,2-Dibromo-3-chloropropan	20.14	157	26378	7.95	ppbv	#	77
71)	1,2,4-Trichlorobenzene	21.60	180	37913	10.51	ppbv		93
72)	Hexachlorobutadiene	21.91	225	58068	11.48	ppbv		96

(#) = qualifier out of range (m) = manual integration

Data File : D:\GCMSB\060925\27SEP004.D Vial: 5
Acq On : 27 Sep 2006 10:58 Operator: JM
Sample : LCSD Inst : GC/MS 597
Misc : 50ml, Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 27 11:22 2006 Quant Results File: TO060919.RES

Method : D:\GCMSB\METHODS\TO060919.M (RTE Integrator)
Title : EPA TO-14/TO-15 (09/27/05) RTxVolatiles 0.32mm
Last Update : Wed Sep 20 09:23:10 2006
Response via : Initial Calibration



Attachment D
ICF Data Review Memo

ICF International / Laboratory Data Consultants
Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300; Fax: (510) 412-2304.

MEMORANDUM

TO: Travis Cain, Remedial Project Manager
Site Cleanup Section 2, SFD-7-2

THROUGH: Rose Fong, ESAT Task Order Manager (TOM)
Quality Assurance (QA) Program, MTS-3

FROM: Doug Lindelof, Data Review Task Manager
Region 9 Environmental Services Assistance Team (ESAT)

ESAT Contract No.: EP-W-06-041
Technical Direction Form No.: 00105022

DATE: November 15, 2006

SUBJECT: Review of Analytical Data, Tier 3

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	Industrial Waste Processing
Site Account No.:	09 G9 LA01
CERCLIS ID No.:	CAD980736284
Case No.:	A6091505
SDG No.:	A6091505
Laboratory:	Air Technology Laboratories, Inc.
Analysis:	Volatiles by EPA Method TO-15
Samples:	9 Air Samples (see Case Summary)
Collection Date:	September 12, 2006
Reviewer:	Calvin Tanaka Laboratory Data Consultants (LDC)

This report has been reviewed by the EPA TOM for the ESAT contract, whose signature appears above.

If there are any questions, please contact Rose Fong (QA Program/EPA) at (415) 972-3812.

Attachment

SAMPLING ISSUES: [ ] Yes [X] No

Data Validation Report

Case No.: A6091505
SDG No.: A6091505
Site: Industrial Waste Processing
Laboratory: Air Technology Laboratories, Inc.
Reviewer: Calvin Tanaka, ESAT/LDC
Date: November 15, 2006

I. CASE SUMMARY

Sample Information

Samples:	AA-01, AA-02, WI-01, WI-02, WI-03, WI-04, DW-01, DW-02, and TB-01
Matrix:	Air
Analysis:	Volatile
Methods:	EPA Method TO-15, Selective Ion Monitoring (SIM)
Collection Date:	September 12, 2006
Sample Receipt Date:	September 14, 2006
Analysis Date:	September 25 and 27, 2006

Field QC

Field Blanks (FB):	Not Provided
Equipment Blanks (EB):	Not Provided
Trip Blank (TB):	TB-01
Background Samples (BG):	Not Provided
Field Duplicates (D1):	DW-01 and DW-02

Laboratory QC

Method Blanks & Associated Samples:

Method Blank:	AA-01, AA-02, WI-01, WI-02, WI-03, WI-04, DW-01, DW-02, and TB-01

Tables

1B: Data Qualifier Definitions for Organic Data Review

Sampling Issues

None.

Additional Comments

The calibration standard solutions contain one internal standard, one surrogate, and 15 volatile organic compounds. The laboratory reported results for vinyl chloride, 1,1-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene, and tetrachloroethene only; results below the laboratory reporting limits were not reported on the sample result forms.

For the analysis of 1,1-difluoroethane, the laboratory performed a one-point calibration on September 27, 2006. The 1,1-difluoroethane in samples DW-01 and DW-02 were quantitated from the response factor obtained from this standard. Calculations were reviewed and found to be satisfactory.

This report was prepared in accordance with the following documents:

X Compendium Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, January 1997;

X ESAT Region 9 Standard Operating Procedure 901, *Guidelines for Data Review of Contract Laboratory Program Analytical Services (CLPAS) Volatile and Semivolatile Data Packages*; and

X *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, October 1999.

II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	Parameter	Acceptable	Comment
1.	Holding Time/Preservation	Yes	
2.	GC/MS Tune/GC Performance	Yes	
3.	Initial Calibration	Yes	
4.	Continuing Calibration	Yes	
5.	Laboratory Blanks	Yes	
6.	Field Blanks	Yes	
7.	Deuterated Monitoring Compounds	Yes	
8.	Matrix Spike/Matrix Spike Duplicates	N/A	
9.	Laboratory Control Samples/Duplicates	Yes	
10.	Internal Standards	Yes	
11.	Compound Identification	Yes	
12.	Compound Quantitation	Yes	
13.	System Performance	Yes	
14.	Field Duplicate Sample Analysis	No	A

N/A = Not Applicable

III. VALIDITY AND COMMENTS

A. In the analysis of the field duplicate pair, the following outliers were reported.

Analyte	DW-01 (D1) Conc., Φg/m^3	DW-02 (D1) Conc., Φg/m^3	RPD (<25%)
1,1-Dichloroethane	0.62	0.46	30
cis-1,2-Dichloroethene	0.77	0.57	30

Analyte	DW-01 (D1) Conc., ppbv	DW-02 (D1) Conc., ppbv	RPD (<25%)
1,1-Difluoroethane	20	3.2	145

The effect on data quality is not known.

The analysis of field duplicate samples is a measure of both field and analytical precision. The imprecision in the results of the analysis of the field duplicate pair may be due to the sample matrix or poor sampling or laboratory technique.

TABLE 1B

DATA QUALIFIER DEFINITIONS FOR ORGANIC DATA REVIEW

The definitions of the following qualifiers are prepared according to the document, "USEPA Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review," June 2001.

U	The analyte was analyzed for, but was not detected above the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.
L	Indicates results which fall below the Contract Required Quantitation Limit. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected above the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.
R	The sample results are unusable. The analyte may or may not be present in the sample.

Attachment E
Risk Calculation Tables

Preliminary Remediation Goals for Ambient Air, USEPA Region 9, Residential Scenario

		PRGs		Inside Warehouse														
Compound	**Units**	**Cancer**	**NC**	**WI-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-03**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-04**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**
Vinyl chloride	µg/m^3	0.10567	104.39	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethene	µg/m^3		208.05	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethane	µg/m^3	1.17959	521.43	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
cis-1,2-Dichloroethene	µg/m^3		36.5	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1,1-Trichloroethane	µg/m^3		2299.5	0.12	--	0.00005	0.12	--	0.00005	0.12	--	0.00005	0.094	--	0.00004	0.1	--	0.00004
Trichloroethene	µg/m^3	0.01681	36.5	0.055	3.27E-06	0.00151	0.056	3.33E-06	0.00153	0.065	3.87E-06	0.00178	0.18	1.07E-05	0.00493	0.032	1.90E-06	0.00088
Trichloroethene (Cal-mod)	µg/m^3	0.96053	620.5	0.055	5.73E-08	0.00009	0.056	5.83E-08	0.00009	0.065	6.77E-08	0.00010	0.18	1.87E-07	0.00029	0.032	3.33E-08	0.00005
Tetrachloroethene	µg/m^3	0.32018	36.5	7.1	2.22E-05	0.19452	7	2.19E-05	0.19178	6.9	2.16E-05	0.18904	7.3	2.28E-05	0.20000	0.29	9.06E-07	0.00795
Total					**2.54E-05**	**0.1962**		**2.52E-05**	**0.1935**		**2.54E-05**	**0.1910**		**3.35E-05**	**0.2053**		**2.81E-06**	**0.0089**
Total using Cal-Mod TCE PRG					**2.22E-05**			**2.19E-05**			**2.16E-05**			**2.30E-05**			**9.39E-07**	

		PRGs		Dry Well						Ambient Air					
Compound	**Units**	**Cancer**	**NC**	**DW-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**DW-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**AA-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**AA-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**
Vinyl chloride	µg/m^3	0.10567	104.39	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethene	µg/m^3		208.05	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethane	µg/m^3	1.17959	521.43	0.62	5.26E-07	0.00119	0.46	3.90E-07	0.00088	nd	--	--	nd	--	--
cis-1,2-Dichloroethene	µg/m^3		36.5	0.77	--	0.02110	0.57	--	0.01562	nd	--	--	nd	--	--
1,1,1-Trichloroethane	µg/m^3		2299.5	0.58	--	0.00025	0.54	--	0.00023	0.13	--	0.00006	0.14	--	0.00006
Trichloroethene	µg/m^3	0.01681	36.5	1	5.95E-05	0.02740	0.93	5.53E-05	0.02548	0.053	3.15E-06	0.0015	0.065	3.87E-06	0.00178
Trichloroethene (Cal-mod)	µg/m^3	0.96053	620.5	1	1.04E-06	0.00161	0.93	9.68E-07	0.00150	0.053	5.52E-08	0.0001	0.065	6.77E-08	0.00010
Tetrachloroethene	µg/m^3	0.32018	36.5	37	1.16E-04	1.01370	32	9.99E-05	0.87671	0.29	9.06E-07	0.0079	2	6.25E-06	0.05479
Total					**1.76E-04**	**1.0652**		**1.56E-04**	**0.9204**		**4.06E-06**	**0.0095**		**1.01E-05**	**0.0567**
Total using Cal-Mod TCE PRG					**1.17E-04**			**1.01E-04**			**9.61E-07**			**6.31E-06**	

Environmental Screening Levels for Indoor Air, San Francisco Regional Water Quality Control Board, Residential Scenario

		Residential ESLs		Inside Warehouse														
Compound	Units	Cancer	NC	WI-01	Cancer Risk Ratio	Hazard Quotient Ratio	WI-01	Cancer Risk Ratio	Hazard Quotient Ratio	WI-02	Cancer Risk Ratio	Hazard Quotient Ratio	WI-03	Cancer Risk Ratio	Hazard Quotient Ratio	WI-04	Cancer Risk Ratio	Hazard Quotient Ratio
Vinyl chloride	µg/m^3	0.031543	20.878	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethene	µg/m^3		41.61	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethane	µg/m^3	1.494152	102.2	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
cis-1,2-Dichloroethene	µg/m^3		7.3	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1,1-Trichloroethane	µg/m^3		2299.5	0.12	--	0.00005	0.12	--	0.00005	0.12	--	0.00005	0.094	--	0.00004	0.1	--	0.00004
Trichloroethene	µg/m^3	1.216667	124.1	0.055	4.52E-08	0.00044	0.056	4.60E-08	0.00045	0.065	5.34E-08	0.00052	0.18	1.48E-07	0.00145	0.032	2.63E-08	0.00026
Tetrachloroethene	µg/m^3	0.405556	7.3	7.1	1.75E-05	0.97260	7	1.73E-05	0.95890	6.9	1.70E-05	0.94521	7.3	1.80E-05	1.00000	0.29	7.15E-07	0.03973
Total					**1.76E-05**	**0.9731**		**1.73E-05**	**0.9594**		**1.71E-05**	**0.9458**		**1.81E-05**	**1.0015**		**7.41E-07**	**0.0400**

		Residential ESLs		Dry Well						Ambient Air					
Compound	Units	Cancer	NC	DW-01	Cancer Risk Ratio	Hazard Quotient Ratio	DW-02	Cancer Risk Ratio	Hazard Quotient Ratio	AA-01	Cancer Risk Ratio	Hazard Quotient Ratio	AA-02	Cancer Risk Ratio	Hazard Quotient Ratio
Vinyl chloride	µg/m^3	0.031543	20.878	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethene	µg/m^3		41.61	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethane	µg/m^3	1.494152	102.2	0.62	4.15E-07	0.00607	0.46	3.08E-07	0.00450	nd	--	--	nd	--	--
cis-1,2-Dichloroethene	µg/m^3		7.3	0.77	--	0.10548	0.57	--	0.07808	nd	--	--	nd	--	--
1,1,1-Trichloroethane	µg/m^3		2299.5	0.58	--	0.00025	0.54	--	0.00023	0.13	--	0.00006	0.14	--	0.00006
Trichloroethene	µg/m^3	1.216667	124.1	1	8.22E-07	0.00806	0.93	7.64E-07	0.00749	0.053	4.36E-08	0.0004	0.065	5.34E-08	0.00052
Tetrachloroethene	µg/m^3	0.405556	7.3	37	9.12E-05	5.06849	32	7.89E-05	4.38356	0.29	7.15E-07	0.0397	2	4.93E-06	0.27397
Total					**9.25E-05**	**5.1883**		**8.00E-05**	**4.4739**		**7.59E-07**	**0.0402**		**4.98E-06**	**0.2746**

Environmental Screening Levels for Indoor Air, San Francisco Regional Water Quality Control Board, Industrial Scenario

		Industrial ESLs		Inside Warehouse														
Compound	**Units**	**Cancer**	**NC**	**WI-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-03**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-04**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**
Vinyl chloride	µg/m^3	0.05299	29.2292	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethene	µg/m^3		58.254	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethane	µg/m^3	2.51018	143.08	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
cis-1,2-Dichloroethene	µg/m^3		10.22	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1,1-Trichloroethane	µg/m^3		643.86	0.12	--	0.00019	0.12	--	0.00019	0.12	--	0.00019	0.094	--	0.00015	0.1	--	0.00016
Trichloroethene	µg/m^3	2.044	173.74	0.055	2.69E-08	0.00032	0.056	2.74E-08	0.00032	0.065	3.18E-08	0.00037	0.18	8.81E-08	0.00104	0.032	1.57E-08	0.00018
Tetrachloroethene	µg/m^3	0.68133	10.22	7.1	1.04E-05	0.69472	7	1.03E-05	0.68493	6.9	1.01E-05	0.67515	7.3	1.07E-05	0.71429	0.29	4.26E-07	0.02838
Total					**1.04E-05**	**0.6952**		**1.03E-05**	**0.6854**		**1.02E-05**	**0.6757**		**1.08E-05**	**0.7155**		**4.41E-07**	**0.0287**

		Industrial ESLs		Dry Well						Ambient Air					
Compound	**Units**	**Cancer**	**NC**	**DW-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**DW-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**AA-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**AA-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**
Vinyl chloride	µg/m^3	0.05299	29.2292	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethene	µg/m^3		58.254	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethane	µg/m^3	2.51018	143.08	0.62	2.47E-07	0.00433	0.46	1.83E-07	0.00321	nd	--	--	nd	--	--
cis-1,2-Dichloroethene	µg/m^3		10.22	0.77	--	0.07534	0.57	--	0.05577	nd	--	--	nd	--	--
1,1,1-Trichloroethane	µg/m^3		643.86	0.58	--	0.00090	0.54	--	0.00084	0.13	--	0.00020	0.14	--	0.00022
Trichloroethene	µg/m^3	2.044	173.74	1	4.89E-07	0.00576	0.93	4.55E-07	0.00535	0.053	2.59E-08	0.0003	0.065	3.18E-08	0.00037
Tetrachloroethene	µg/m^3	0.68133	10.22	37	5.43E-05	3.62035	32	4.70E-05	3.13112	0.29	4.26E-07	0.0284	2	2.94E-06	0.19569
Total					**5.50E-05**	**3.7067**		**4.76E-05**	**3.1963**		**4.52E-07**	**0.0289**		**2.97E-06**	**0.1963**

California Human Health-Based Screening Levels for Indoor Air, California Department of Toxic Substances Control, Residential Scenario

		Residential CHHSLs		Inside Warehouse														
Compound	**Units**	**Cancer**	**NC**	**WI-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-03**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-04**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**
Vinyl chloride	µg/m^3	0.0311		nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethene	µg/m^3			nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethane	µg/m^3			nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
cis-1,2-Dichloroethene	µg/m^3		36.5	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1,1-Trichloroethane	µg/m^3		2290	0.12	--	0.00005	0.12	--	0.00005	0.12	--	0.00005	0.094	--	0.00004	0.1	--	0.00004
Trichloroethene	µg/m^3	1.22		0.055	4.51E-08	--	0.056	4.59E-08	--	0.065	5.33E-08	--	0.18	1.48E-07	--	0.032	2.62E-08	--
Tetrachloroethene	µg/m^3	0.412		7.1	1.72E-05	--	7	1.70E-05	--	6.9	1.67E-05	--	7.3	1.77E-05	--	0.29	7.04E-07	--
Total					**1.73E-05**	**0.00005**		**1.70E-05**	**0.00005**		**1.68E-05**	**0.00005**		**1.79E-05**	**0.00004**		**7.30E-07**	**0.00004**

		Residential CHHSLs		Dry Well						Ambient Air					
Compound	**Units**	**Cancer**	**NC**	**DW-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**DW-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**AA-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**AA-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**
Vinyl chloride	µg/m^3	0.0311		nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethene	µg/m^3			nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethane	µg/m^3			0.62	--	--	0.46	--	--	nd	--	--	nd	--	--
cis-1,2-Dichloroethene	µg/m^3		36.5	0.77	--	0.02110	0.57	--	0.01562	nd	--	--	nd	--	--
1,1,1-Trichloroethane	µg/m^3		2290	0.58	--	0.00025	0.54	--	0.00024	0.13	--	0.00006	0.14	--	0.00006
Trichloroethene	µg/m^3	1.22		1	8.20E-07	--	0.93	7.62E-07	--	0.053	4.34E-08	--	0.065	5.33E-08	--
Tetrachloroethene	µg/m^3	0.412		37	8.98E-05	--	32	7.77E-05	--	0.29	7.04E-07	--	2	4.85E-06	--
Total					**9.06E-05**	**0.0213**		**7.84E-05**	**0.0159**		**7.47E-07**	**0.00006**		**4.91E-06**	**0.00006**

California Human Health-Based Screening Levels for Indoor Air, California Department of Toxic Substances Control, Industrial Scenario

		Industrial CHHSLs		Inside Warehouse														
Compound	**Units**	**Cancer**	**NC**	**WI-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-03**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**WI-04**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**
Vinyl chloride	µg/m^3	0.0524		nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethene	µg/m^3			nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethane	µg/m^3			nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
cis-1,2-Dichloroethene	µg/m^3		51.1	nd	--	--	nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1,1-Trichloroethane	µg/m^3		3210	0.12	--	0.00004	0.12	--	0.00004	0.12	--	0.00004	0.094	--	0.00003	0.1	--	0.00003
Trichloroethene	µg/m^3	2.04		0.055	2.70E-08	--	0.056	2.75E-08	--	0.065	3.19E-08	--	0.18	8.82E-08	--	0.032	1.57E-08	--
Tetrachloroethene	µg/m^3	0.693		7.1	1.02E-05	--	7	1.01E-05	--	6.9	9.96E-06	--	7.3	1.05E-05	--	0.29	4.18E-07	--
Total					**1.03E-05**	**0.00004**		**1.01E-05**	**0.00004**		**9.99E-06**	**0.00004**		**1.06E-05**	**0.00003**		**4.34E-07**	**0.00003**

		Industrial CHHSLs		Dry Well						Ambient Air					
Compound	**Units**	**Cancer**	**NC**	**DW-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**DW-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**AA-01**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**	**AA-02**	**Cancer Risk Ratio**	**Hazard Quotient Ratio**
Vinyl chloride	µg/m^3	0.0524		nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethene	µg/m^3			nd	--	--	nd	--	--	nd	--	--	nd	--	--
1,1-Dichloroethane	µg/m^3			0.62	--	--	0.46	--	--	nd	--	--	nd	--	--
cis-1,2-Dichloroethene	µg/m^3		51.1	0.77	--	0.01507	0.57	--	0.01115	nd	--	--	nd	--	--
1,1,1-Trichloroethane	µg/m^3		3210	0.58	--	0.00018	0.54	--	0.00017	0.13	--	0.00004	0.14	--	0.00004
Trichloroethene	µg/m^3	2.04		1	4.90E-07	--	0.93	4.56E-07	--	0.053	2.60E-08	--	0.065	3.19E-08	--
Tetrachloroethene	µg/m^3	0.693		37	5.34E-05	--	32	4.62E-05	--	0.29	4.18E-07	--	2	2.89E-06	--
Total					**5.39E-05**	**0.0152**		**4.66E-05**	**0.0113**		**4.44E-07**	**0.00004**		**2.92E-06**	**0.00004**

Attachment 6

Technical Memorandum: Trip Report: Building Inspection and Evaluation, Industrial Waste Processing Superfund Site

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Trip Report: Building Inspection and Evaluation, Industrial Waste Processing Superfund Site, Fresno, California

PREPARED FOR: Travis Cain/ EPA

PREPARED BY: Alan Hodges/CH2M HILL

Caroline Ziegler/CH2M HILL

EPA WORK ASSIGNMENT: 249-ANLA- 09G9

DATE: April 25, 2007

Introduction

On April 3, 2007, a building and foundation inspection was conducted at the Industrial Waste Processing (IWP) Superfund site located at 7140 North Harrison Avenue (aka 7295 North Palm Bluffs Avenue), Fresno, CA (Figure 1). This inspection was conducted in response to recommendations presented in a technical memo on February 27, 2007 (CH2M HILL 2007), for the site. Recommendations included inspecting the building foundation for potential conduits for vapor intrusion, sealing any conduits that were found, and abandoning a monitoring well (DHS-IWP-A) that may contribute to vapor intrusion. It is anticipated that the DTSC will abandon the monitoring well. This report has been prepared to document the inspection of the building foundation and to present recommendations for precautionary measures to reduce potential indoor air impacts at the site. Photographs from the inspection are included in Attachment A. Field notes from the inspection are included in Attachment B.

Inspection Methods and Results

The primary objective of the inspection was to examine the building foundation, with particular attention being paid to identifying all potential entry routes for VOC contaminated soil gases, such as cracks in concrete walls or slabs, gaps in fieldstone walls, construction joints between walls and slabs, annulus space around utility pipes, and other potential conduits for vapor migration. Additionally, the ventilation fans in the bathroom area were inspected and evaluated to determine if the ventilation rate could be increased to allow for an appropriate air exchange frequency.

The inspection was conducted on April 3, 2007. The inspection was conducted in general accordance with recent guidance documents for evaluating subsurface vapor intrusion (DTSC 2004, EPA 2002). Because VOCs had been detected previously in indoor air in the bathroom area, the inspection focused on this area and the adjoining warehouse. In the bathroom area, an inspection indicated that vapors beneath the building slab could potentially pass through the annular space around a drain pipe beneath an interior wall,

and subsequently enter the bathrooms through annular spaces around water and drain lines that pass through the wall. A floor drain located in the men's bathroom had been suspected of serving as a potential vapor migration conduit. The seal around floor drain was observed to be intact and the trap beneath the floor drain was observed to be full, preventing vapors from coming through the drain pipe. The floor drain was equipped with a trap primer, a hole that connects to a small water line and discharges between the drain grate and the water level in the trap to ensure that the trap does not dry out over time. The trap primer was observed to not be operating and personnel in the building commented that the trap has occasionally dried out. Photographs were taken to show the locations of plumbing lines and fixtures, and are included in Attachment A.

The ventilation fan in the men's bathroom was observed to be rated for a flow rate of 50 cubic feet per minute. The room was measured to be 6 feet, 10 inches wide, 8 feet long and 7 feet, 9 inches high. Thus the air exchange rate with the fan running continually would be a little less than one exchange every 8 minutes. The flow rate of the fan is consistent with applicable ventilation standards for commercial buildings (ASHRAE 2004). Personnel in the building commented that fibers from the materials used in the warehouse build up around the fan grating periodically, and that these fibers are periodically removed to restore the efficiency of the fan. The women's bathroom was observed to have similar dimensions and ventilation as the men's bathroom.

Recommendations

Recommendations from the inspection are as follows:

- Apply caulking material to seal water and drain lines that pass through the wall into the men's and women's bathrooms. The caulking material should not contain VOCs. To further prevent air flow through the wall, insulating material should be sprayed in place inside the wall through the holes before the caulk is applied around the lines.
- Operate the trap primer for the floor drain in the men's bathroom.
- Operate the ventilation fans in the men's and women's bathrooms continually during normal working hours. If necessary, modify the electrical switch for the fans to meet this recommendation. Remove fibers from the fan gratings as needed to maintain fan efficiency and an appropriate ventilation rate.

It is anticipated that these measures can be initiated by the property owner with a minimal amount of effort by plumbing and ventilation technicians. The effectiveness of these measures should be confirmed by collecting another indoor air sample in the men's bathroom after the recommendations have been implemented and DTSC has properly abandoned monitoring well DHS-IWP-A.

References

American Society of Heating, Ventilation and Air Conditioning Engineers (ASHRAE). 2004. Standard 62.1 *Ventilation for Acceptable Indoor Air Quality*.

California Department of Toxic Substances Control (DTSC). 2004. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*. December.

United States Environmental Protection Agency (EPA). 2002. *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils.* November.

Figures

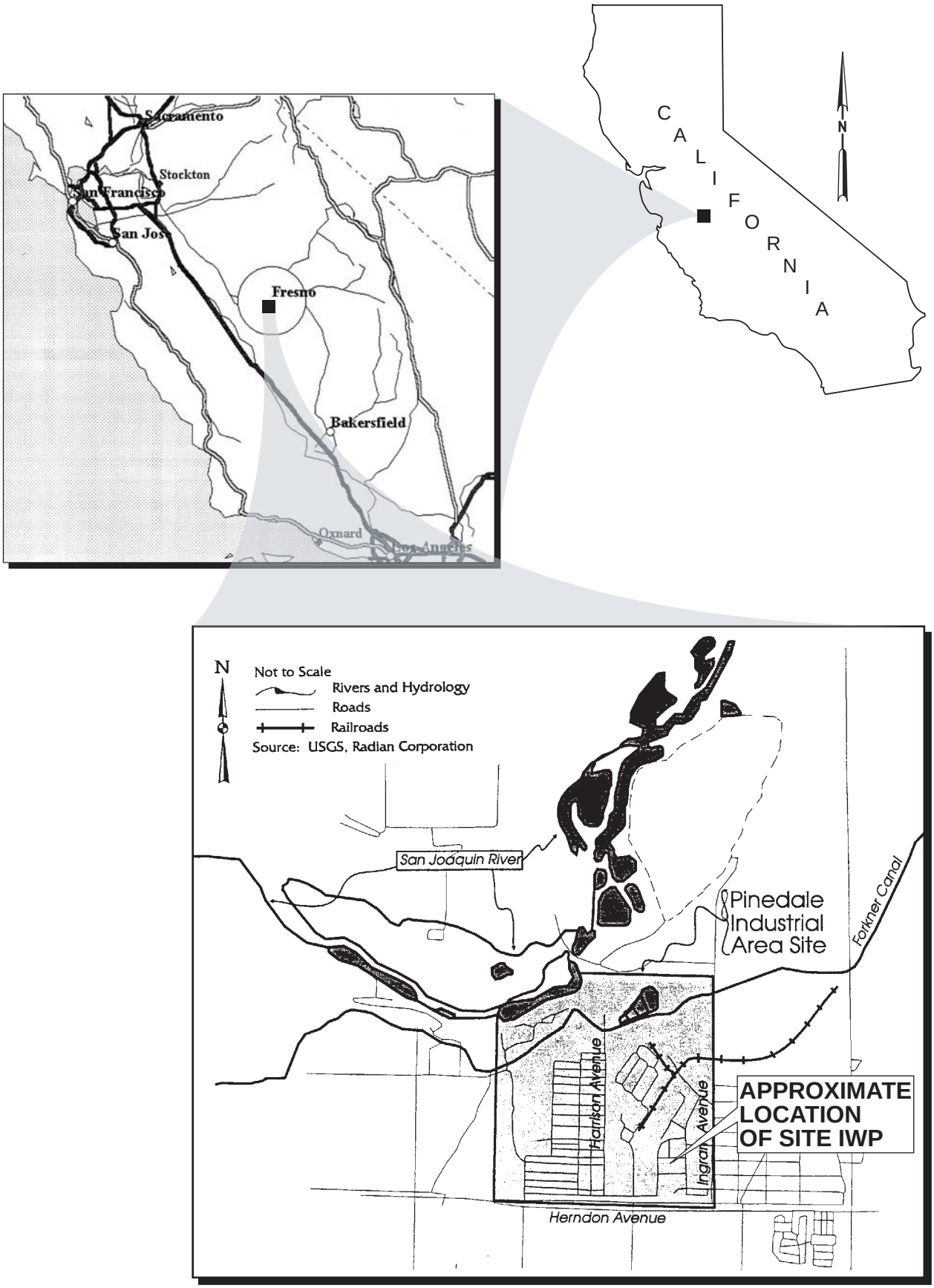
1. Site Location

Attachments

A. Photographs

B. Field Notes

Figure 1
Site Location



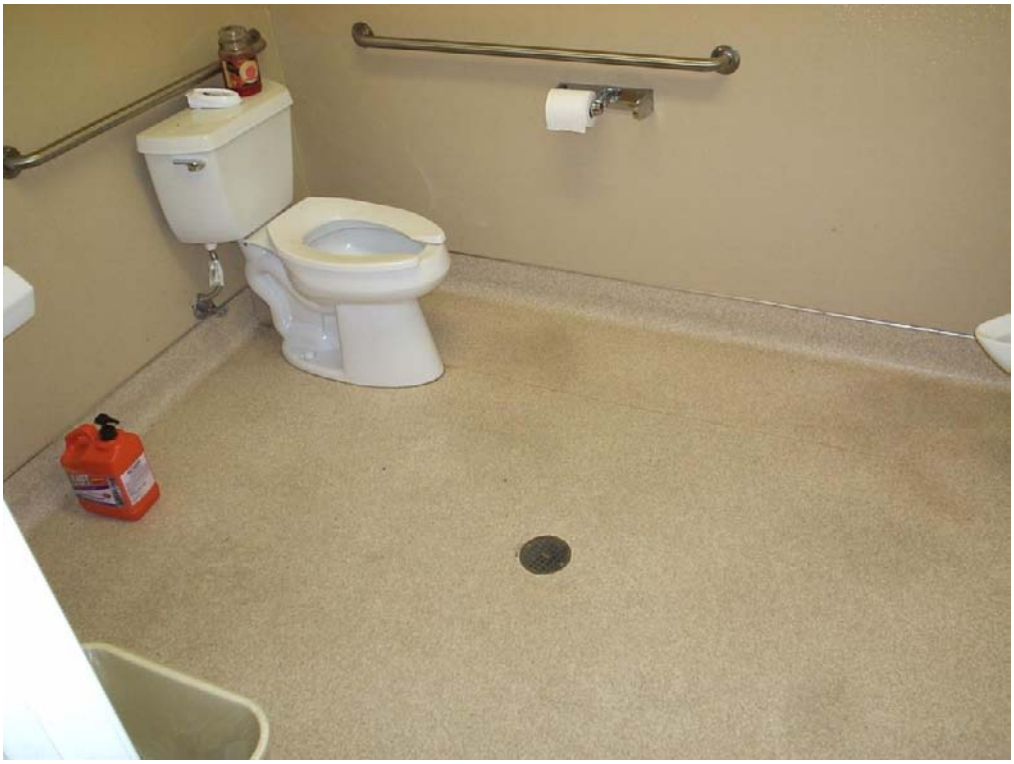
Source: Army Corps of Engineers, Omaha District, July 1993

FIGURE 1
LOCATION MAP
INDUSTRIAL WASTE PROCESSING
FRESNO, CALIFORNIA

CH2MHILL

315448.FR.01 Fig-1-Location Map.ai 06/29/04 HR SFO

Attachment A
Photographs



View of men’s bathroom showing floor drain.

View beneath sink in men’s bathroom showing water and drain lines

View of ceiling in men’s bathroom showing ventilation fan.

View beneath sink in women’s bathroom showing water and drain lines

Attachment B
Field Notes

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MEETING NOTES

PROJECT NUMBER: 339175 SHEET 1 OF 1

NOTES ISSUED BY: Caroline Ziegler

REGION: DATE: April 3, 2007

SUBJECT: IWP Superfund Site Visit

MEETING DATE: April 3, 2007 LOCATION: Fresno, CA

ATTENDEES: Travis Cain / US EPA Region 9
Caroline Ziegler / CH2M HILL
Alan Hodges / CH2M HILL

NOTES BY: Caroline Ziegler

TOPICS DISCUSSED	ACTION/NOTES
Fan in Men's Bathroom 50 cfm specs on the fan Nutone 696N-R02 105 Volts 60 htz 0.7 amps Room dimensions – Men's bathroom 8' 0"W x 6' 10"L x 7' 9"H. Suggest sealing under escutcheon plates at sink turn off and at toilet and at sink drain pipe that goes into the wall under the sink. The drain in the floor has a small opening that Alan will talk to the plumber about. Go ahead and do the sealing around the escutcheons in the womens bathroom as well. Site owner/operator (Pacific Tent & Awning) would be willing to have a separate switch for running the fans, then could leave them closed.	

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