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CONSULTING ENGINEERS

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INTERIM REPORT NO. 3

SDMS DocID 000230848

SDMS # 230848

BASELINE AIR SURVEY
PRE-DESIGN INVESTIGATION TASK A-1
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

Prepared for:

Industri-Plex Site Remedial Trust
800 North Lindbergh Boulevard
St. Louis, Missouri

DISTRIBUTION:

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December 1990 Project No.: 893-6255

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Golder Associates Inc.
CONSULTING ENGINEERS

December 14, 1990 Project No. 893-6255

United States Environmental Protection Agency
Waste Management Division
J.F.K. Federal Building, HRS-CAN-3
Boston, MA 02203-2211

Attn: Joseph DeCola
Remedial Project Manager

RE: INDUSTRI-PLEX SITE, BASELINE AIR SURVEY,
INTERIM REPORT NO. 3

Gentlemen:

On behalf of the Industri-Plex Site Remedial Trust, we are submitting the attached Interim Report No. 3 for Pre-Design Investigation Task A-1, Baseline Air Survey. These data, along with data from future sampling rounds, are intended to document the baseline air quality at the site prior to initiation of Remedial Action.

If you have any questions, please contact us.

Very truly yours,

GOLDER ASSOCIATES INC.

James W. Voss, Principal
Project Director

RMG/JWV/bjt
C:A-1CL

Attachments

cc: J. Naparstek, MDEP
A. Ostrofsky, NUS
D.L. Baumgartner, ISRT
W.L. Smull, ISRT (w/o attachments)

1.0 INTRODUCTION

1.1 Objectives

One of the requirements of the Consent Decree for the Industri-Plex Site Pre-Design Investigation, as stated in the Remedial Design/Action Plan (RDAP), is to conduct:

> "a baseline investigation to establish an effective air monitoring program and to determine acceptable on-site and off-site air quality standards for hazardous volatile compounds and/or other odorous compounds and dust relative to planned grading, consolidation, excavation, dredging, groundwater treatment and capping activities."

A baseline air survey is being conducted under Pre-Design Investigation Task A-1 to document the baseline conditions relative to potential types of emissions expected during remedial action. Specifically, the air survey addresses Air Data Need No. 3 given on page 107 of the Pre-Design Work Plan. Target Compound List volatile organic compounds (TCL VOCs) constitute the hazardous volatile compounds, and reduced sulfur compounds (including hydrogen sulfide and methyl mercaptan) constitute the major odorous compounds. The concentration of dust (as well as the concentrations of arsenic, lead, and chromium in dust) will also be determined.

Four rounds of air sampling are planned. This interim report presents the methods and results for the third round of air sampling conducted in November 1990. The fourth quarter sampling results will be included, along with all previous quarterly data and proposed air quality standards, in the Task A-1 Interim Final Report.

1.2 History and Source Areas

Pertinent site history regarding air quality and the results of previous investigations are given in Section 3.5.3.1 and Appendix A of the Pre-Design Work Plan. The Record of Decision (ROD) states that repeated complaints have been received from local citizens in the past, especially southeast of the site, with respect to offensive odors generated by the hide piles. These complaints have been associated with former site development activities and rain storms. Increased odors during storms are believed to be largely due to exposure of fresh areas of the hide piles to the atmosphere after slumping of the unstable slopes, and due to increased emissions as a result of pressure gradients induced by lower barometric pressure during storms events.

The hide piles are a source of odors at the site. The composition of the hide pile gas was determined during the Remedial Investigation, and the odorous areas and compounds at the site were identified by soil gas sampling/laboratory analysis and use of an odor panel. The East Hide Pile was determined to be the dominant odor source. The odorous compounds were determined to be mainly hydrogen sulfide, which occurred at concentrations of 5,600 to 21,000 ppm within the East Hide Pile. Hydrogen sulfide was not detectable above ground using portable monitoring equipment. Methyl mercaptan was detected in East Hide Pile gas at concentrations ranging up to 150 ppm. Other mercaptan compounds were also detected at individual concentrations of up to 180 ppm. Benzene and toluene were detected in East Hide Pile gas at 1 to 11 ppm. Additional compositional data for the East Hide Pile gas are being collected under Pre-Design Investigation Task A-2. The East Hide Pile remediation

will include a gas collection layer and a gas treatment plant.

Benzene and toluene could also potentially be emitted from the groundwater treatment plant which will be installed in order to remediate Hazardous Substances in groundwater. Dust, and metals in dust, might be introduced into the air during site grading and capping activities that will remediate Hazardous Substances in soil.

2.0. FIELD METHODS

Sampling locations were selected based upon the results of air dispersion modeling using regional meteorological data conducted during the Remedial Investigation/Feasibility Study (RI/FS) and the historical locations of odor complaints. Sample locations were given in Figure 47 of the Pre-Design Work Plan. Some of the sampling points were slightly relocated based upon a field inspection by Mr. Bob Glazier (Golder Associates Task Leader) and Mr. Arnie Ostrofsky (NUS Project Manager). The revised locations are given in Figure 1 of this report along with the location numbers used in the laboratory report. The field duplicate of location 5 was designated location number 13. The trip blank for the dust filter cassettes was numbered 14, the spike cassette was numbered 15. The trip blank and spiked Summa canisters were not assigned sample location numbers.

Air samples were collected in accordance with the procedures given in Section 5.1 and Attachment 1 of the Pre-Design Investigation Field Sampling Plan (FSP). Samples were collected during a 24-hour period on November 5-6 1990. Samples were not collected at location 12 due to repeated vandalism or disturbance on previous sampling events, and the lack of a suitable nearby public place as a replacement sampling location.

The sampler inlets were positioned at least three feet above average grade by either placing them on top of large isolated boulders (locations 2, 6, 7, and 8) or suspending them from low tree branches (locations 1, 3, 4, 5, and 11) such that other nearby branches did not obstruct the sampler inlet ports. The sampler at location 10 was suspended from the top of unused playground equipment in the middle of an open field. At location 9, the samplers

were positioned on top of a overhang above the school doorway on the side of the school facing the Industri-Plex Site. The school principal previously indicated that classroom windows must be shut at times due to odors from the site.

All sampler inlets were facing into the wind at the start of sampling. A duplicate sample was collected for all analyses at location 5, and a trip blank canister and filter cassette accompanied the samplers on the round trip from lab to site and back to the lab. A Summa canister spiked with the reduced sulfur analyses (hydrogen sulfide, methylmercaptan, dimethylsulfide, and dimethyldisulfide) was shipped to the site on the first day of sampling and back to the laboratory with the samples the following day. The spiked canister was analyzed last by the laboratory.

TCL VOCs, methane, and reduced sulfur compounds were collected in 15-liter Summa passivated canisters. The vacuum flow regulators were calibrated to approximately 8 milliliters per minute by the laboratory and the flow rate/vacuum pressure was recorded by the laboratory on the canister chain-of-custody record prior to shipping. The vacuum pressure was checked and recorded in the field prior to and after sampling. Upon receipt by the laboratory, the vacuum pressure and vacuum flow regulator calibration were checked and recorded. These verifications are documented on the canister chain of custody forms (given in the lab report in Appendix A) and in Table 1. Sampling was initiated by removing the inlet valve dust cover and opening the valve. The valve was closed and the inlet dust cover replaced approximately 24 hours later. Chain of custody documentation was completed and the samples were sealed in shipping containers and

sent by overnight courier to Enseco's Air Toxics laboratory in El Monte, California.

Dust was collected on filter cassette cartridges using an SKC Model 224-PCXR7 programmable personal sampling pump. The pump was set to a flow rate of 2 liters per minute just prior to sampling using a rotameter which had been calibrated to a primary standard (1000-ml film type flowmeter). Correction of the flow rate to standard dry air conditions (760 mm Hg, 298 K [25 degrees Celsius], 0 percent relative humidity) results in a flow rate of 2028.6 ml/min using the time-weighted-average conditions given in Section 6 below. The pump was programmed to alternately pump for one minute then shut down for two minutes such that approximately 977 liters of air was sampled over a period of 24-hours. Two separate pumps were used to collect field duplicate dust samples at location 5. Twenty four hours after the start of sampling, the pumps shut down, the inlet caps were replaced on the cassettes, and they were shipped under chain of custody to Radian Corporation in Research Triangle Park, North Carolina by overnight courier. The flow rate of each pump was checked after sampling. The flow checks for the dust sampling pumps are documented in Table 1 and Appendix B. The final flow rate of all dust sampling pumps was within 12 percent of the original flow rate (see Table 1 and Appendix B).

All samplers deployed on November 5, 1990, appeared to be intact and did not show evidence of tampering. The vacuum pressure of all Summa canisters were checked upon receipt at the laboratory and were within 2 inches of mercury of the value recorded in the field, except for the canisters at locations 10 and 11 which were within 4 inches of mercury of the reading at the end of sampling (see Table 1

and lab report in Appendix A). The flow rate of all vacuum flow regulators was within 7 percent of the original flow rate, except for the canister at location 7, which was within 24 percent. The dust pumps at locations 5 and 8 had prematurely discontinued sampling after 1212 minutes and 1321 minutes respectively (out of a planned total sampling period of 1440 minutes [24 hours]). The pumping program (one minute on, two minutes off cycle) for the dust pump at location 8 was not functioning properly. Therefore the pump sampled continuously for a period of 1321 minutes (22 hours).

3.0 LAB METHODS

Summa canister samples were received by Enseco on November 7, 1990. Dust cassette samples were received by Radian Corporation on November 7, 1990. Samples were analyzed in accordance with the procedures and analytical methods given in the FSP and the QAPjP.

It was not possible to spike the Summa canisters with both sulfur containing compounds and TCL VOCs because they would react with each other. Therefore, because the odorous sulfur compounds are of greatest concern at the site, the canisters were only spiked with the sulfur compounds.

Laboratory Control Samples and Duplicate Control Samples were analyzed with each batch of samples from the site.

4.0 LAB RESULTS

The results of the analyses are presented in Appendix A and summarized in Tables 2 and 3. Methane and reduced sulfur compounds were not detected in any of the samples. The following TCL VOCs were detected (maximum concentrations detected in parentheses): trichlorofluoromethane (78 ppbv); 1,1,2-trichloro-1,2,2-trifluoroethane (5.9 ppbv); 2-butanone (19 ppbv); 1,1,1-trichloroethane (3 ppbv); and toluene (23 ppbv). None of the above compounds were detected in the trip blank. Total dust measurements range from less than 10 to 267 micrograms per cubic meter. However, the field blank contained 100 ug of dust. The metals arsenic, lead, and chromium were not detected in any samples except for the sample from location 10 which contained 0.35 ug/m^3, chromium. The reporting limits for arsenic, chromium, and lead were approximately 0.8 ug/m^3, 0.1 ug/m^3, and 1.0 ug/m^3, respectively.

5.0 ASSESSMENT OF DATA USABILITY

There are no hold times for these analyses, but it was planned to analyze as many of the sensitive compounds as possible within 72 hours of receipt by the lab. Sensitive analyses include TCL VOCs and reduced sulfur compounds. All of the twelve TCL VOC and sulfur compound samples were analyzed within 72 hours of receipt by the lab. The methane analysis was conducted within 7 days after receipt by the lab. The sulfur compound stability study documented in the lab report indicates that sulfur compounds might have been slightly affected by storage. However, no sample storage effects were noted on spiked canisters stored for a period of seven days during the first round of sampling. Any corrections to the data will be assessed when all four rounds of spike sample stability data are available. There are no project-specific data to support such a conclusion for the TCL VOCs, but stability studies have been performed for select TCL VOCs, and these will be included with the final report.

The Laboratory Control Samples (LCS) and Duplicate Control Samples (DCS) for the TCL VOCs, reduced sulfur compounds, methane, and metals in dust (except lead) were within the control limits, indicating that laboratory precision and accuracy were acceptable. Reproducibility of the Summa Canister field duplicate is acceptable. All analyses in the field duplicate pair were less than the method detection limit except for trichlorofluoromethane (Freon 11) which was detected in the sample from location 5, but not in the duplicate sample designated location 13. One of the dust pumps in the field duplicate pair shut down prematurely, so there are no comparable field duplicate data for dust.

As discussed above, spike recoveries were within control limits for dimethylsulfide and dimethyldisulfide, but spike recoveries for hydrogen sulfide (26 percent) and methylmercaptan (58 percent) were not within the specified control limits. As discussed above, any corrections to the data will be assessed when all four rounds of spike stability data are available.

The total dust measurement data are presented in Table 3. The data have been corrected by the laboratory for mass loss in the blank filters (by adding the mass loss in the blanks) and for the actual volume of air sampled, which varied slightly at each location.

Data were reported for all samples. However, a sample was not collected at location 12 due to repeated tampering and vandalism. The overall data set is considered to be complete. Data are reported in standard units and were determined using accepted procedures. Therefore, the data are considered to be precise, accurate, comparable, complete, and representative of the conditions at the time of sampling.

6.0 METEOROLOGICAL DATA

Meteorological data, including wind speed and direction, relative humidity, temperature, and barometric pressure were recorded by the site weather station during sampling. The data are presented in Appendix C.

The average temperature, barometric pressure, and humidity during the sampling period were 59.41 degrees Fahrenheit (15.23 degrees centigrade), 29.92 inches of mercury (759.9 mm Hg), and 74.02 percent (vapor pressure of water=9.59 mm Hg), respectively. At the beginning of sampling (11:24), the dominant wind direction was from the west-northwest and the average wind speed was approximately 5 miles per hour (mph). The wind speed/direction fluctuated throughout the sampling period but was from the east at the end of sampling.

7.0 DATA REDUCTION

The concentration data for methane, reduced sulfur compounds, and TCL VOCs are reported by the laboratory in parts per million and parts per billion by volume (ppmv, ppbv) and therefore do not need to be corrected to standard pressure and temperature. Relative humidity corrections result in changes of less than 1 percent in the results and have not been applied to the data because the accepted precision of the method can cause results to differ by up to 20 percent. Data for dust have already been corrected to standard conditions by correcting the flow rate of the sampling pumps to standard conditions.

8.0 SUMMARY

The third round of air samples under Pre-Design Task A-1 were collected in accordance with the Pre-Design Work Plan and Field Sampling Plan. All samples were analyzed in accordance with the procedures given in the Field Sampling Plan. No reduced sulfur compounds or methane were detected at any of the sample locations. The only Target Compound List VOCs detected include trichlorofluoromethane (Freon 11); 1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113); 2-butanone (MEK); 1,1,1-trichloroethane; and toluene. None of these compounds were detected in the trip blank. The range in total dust concentrations was less than 10 to 267 micrograms per cubic meter. Valid data were collected for all analyses at all locations except location 12, which was not sampled. Location 12 is not considered to be critical, and the data do not need to be replaced. The dust data at sample locations 5 and 8 do not represent a full 24-hour time weighted average because the sampling pumps shut down prematurely. The dust data at location 8 are for a 22-hour time weighted average, and sampled a larger volume of air than the other samplers due to pump programming difficulties.

TABLE 1
SAMPLER CALIBRATION CHECKS

Sampler Type	Location	Flow Rate (ml/min) Initial	Final	Vacuum Pressure(a) Lab	Field
Summa Canister	1	7.1	6.7	30/12	30/12
	2	7.3	6.9	30/14	30/15
	3	7.2	6.7	30/16	30/18
	4	7.3	8.0	30/15	30/16
	5	7.3	7.3	30/12	30/12
	6	7.1	7.1	30/15	30/15
	7	7.5	5.7	30/15	30/15
	8	7.5	7.0	30/14	30/16
	9	7.3	7.5	30/12	30/14
	10	7.3	6.9	30/13	30/17
	11	7.2	7.3	30/13	30/16
	12	NA	NA	NA	NA
	13(b)	7.3	6.8	30/15	30/16
Dust Pump(d)	1	57	57	NA	NA
	2	57	50	NA	NA
	3	57	60	NA	NA
	4	57	56	NA	NA
	5	57	61	NA	NA
	6	57	57	NA	NA
	7	57	57	NA	NA
	8	57	58	NA	NA
	9	57	60	NA	NA
	10	57	57	NA	NA
	11	57	58	NA	NA
	12	NA	NA	NA	NA
	13(b)	57	56	NA	NA
	14(c)	NA	NA	NA	NA

Notes:
(a) Readings given in inches of mercury. Data include initial/final readings for each canister custodian (field and lab).
(b) Field duplicate of location 5.
(c) Trip blank.
(d) Flow rate values for dust pumps are original rotameter readings and have not been converted to ml/min.

TABLE 2
SUMMARY OF VOLATILE TARGET COMPOUND
LIST ANALYTES DETECTED DURING NOVEMBER 5 - 6, 1990

Analyte	Location	Concentration (ppbv)	Detection Limit (ppbv)
Trichlorofluoromethane (Freon 11)	1	21	1
	4	8.0	
	5	7.2	
	7	68	
	8	2.9	
	9	78	
	10	10	
	11	15	
1,1,2-Trichloro-1,2,2-trifluoromethane (Freon 113)	1	5.9	2
1,1,1-Trichloroethane	9	3.0	2
2-Butanone (MEK)	10	19	3
Toluene	9	23	3
	10	6.4	

Note: See laboratory report in Appendix A for listing of compounds which were not detected and their respective detection limits.

TABLE 3

TOTAL DUST MEASUREMENTS DURING NOVEMBER 5-6, 1990

Location		Pump Period (minutes)	ug dust collected	Sample volume (m^3) [c]	Dust Conc (ug/m^3) [d]
	1	477	ND [a]	.9676	ND
	2	478	ND	.9697	ND
	3	480	20	.9737	0.02
	4	465	ND	.9433	ND
	5	404	170	.8196	139
	6	465	50	.9433	53.0
	7	475	ND	.9636	ND
	8	1321 [b]	20	2.6798	7.46
	9	480	260	.9737	267
	10	469	60	.9514	63.0 [e]
	11	480	ND	.9737	ND
	13 [f]	470	70	.9534	73.4
Field Blank	14	0	100	0	NA[g]
Matrix Spike	15	0	ND	0	NA
Matrix Spike	16	0	20	0	NA
Method Blank	20	0	ND	0	NA

Notes

a. ND - Not detected, detection limit= 10 ug for ug dust collected, and 10 ug/m^3 for dust concetration.

b. Sampler ran continuously

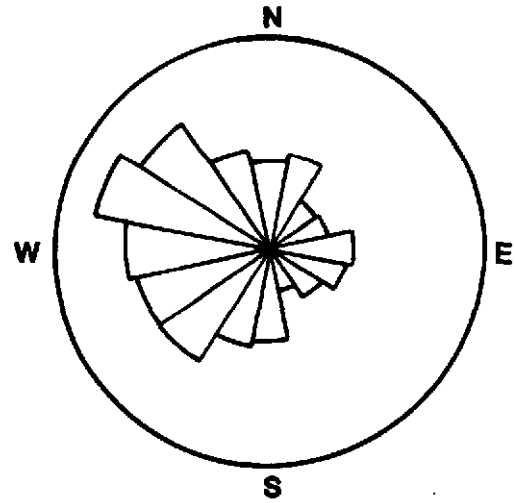
c. Calculation: $\frac{\text{Minutes X Flow rate (2028.6)}}{10^6\ ml/m^3}$

d. Calculation: $\frac{\text{ug of dust collected}}{\text{Vol sampled } (m^3)}$ = Dust Conc. (ug/m^3)

e. Chromium =0.35 ug/m^3

f. Field duplicate of location 5.

g. NA=Not Applicable.



WIND ROSE DIAGRAM
BOSTON, MA

⊗ ODOR SOURCE AREA

●1 SAMPLE LOCATION

—— APPROXIMATE SITE BOUNDARY

0.2 0 0.2 0.4
scale miles

JOB NO. 893-6255	SCALE AS SHOWN	AIR SAMPLE LOCATIONS	
DRAWN LAS	DATE 07/06/90		
CHECKED RMG	DWG. NO. MA01-096		
Golder Associates		INDUSTRI-PLEX SITE REMEDIAL TRUST	FIGURE 1

152976

APPENDIX A

LABORATORY REPORTS

ENSECO - AIR TOXICS LABORATORY REPORT

Enseco
A Corning Company

Enseco - Air Toxics Laboratory
9537 Telstar Avenue, Suite 118 • El Monte, CA 91731
(818) 442-8400 • FAX: (818) 442-3758

November 30, 1990

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

ANALYSIS NO.: A9031101-001/014
ANALYSES: Sulfur Compounds (CARB 16), Methane (SCAQMD Method 25.2), Volatile Organics by GCMS - EPA TO14
DATE SAMPLED: 24 hour composite samples taken on 11/06/90
DATE SAMPLE REC'D: 11/07/90

PROJECT: INDUSTRIPLEX

Enclosed with this letter is the report on the chemical and physical analyses on the samples from ANALYSIS NO: A9031101-001/014 as shown above.

The samples were received by Enseco - Air Toxics Laboratory, intact and and with the chain-of-custody record attached.

Please note that ND means not detected at the detection limit expressed.

Marita M. Lorenzo
REVIEWED

APPROVED

The Report Cover Letter is an integral part of this report.
This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibited.

Enseco – Air Toxics Laboratory
9537 Telstar Avenue, Suite 118 • El Monte, CA 91731
(818) 442-8400 • FAX: (818) 442-3758

Enseco
A Corning Company

LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

ANALYSIS NO.: A9031101-001/007
ANALYSES: Sulfur Compounds (CARB 16)
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: GC401-9011081

Sulfur Compounds

Sample Identification	Results ppm (vol/vol) Hydrogen Sulfide	Methyl Mercaptan	Dimethyl Sulfide	Dimethyl Disulfide
1P/A-1/001/000/3/3/6 A-069	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1P/A-1/002/000/3/3/6 A-071	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1P/A-1/003/000/3/3/6 A-095	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1P/A-1/004/000/3/3/6 A-067	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1P/A-1/005/000/3/3/6 A-068	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1P/A-1/006/000/3/3/6 A-074	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1P/A-1/007/000/3/3/6 A-077	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)

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Enseco – Air Toxics Laboratory
9537 Telstar Avenue, Suite 118 • El Monte, CA 91731
(818) 442-8400 • FAX: (818) 442-3758

Enseco
A Corning Company

LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

ANALYSIS NO.: A9031101-008/013
ANALYSES: Sulfur Compounds (CARB 16)
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: GC401-9011081

Sulfur Compounds

Sample Identification	Results ppm (vol/vol) Hydrogen Sulfide	Methyl Mercaptan	Dimethyl Sulfide	Dimethyl Disulfide
1P/A-1/008/000/3/3/6 A-078	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1P/A-1/009/000/3/3/6 A-072	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1P/A-1/010/000/3/3/6 A-073	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1P/A-1/011/000/3/3/6 A-079	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1P/A-1/013/000/3/3/6 A-075	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1P/A-1/014/000/3/3/6 A-096	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)

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A Corning Company

LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

ANALYSIS NO.: A9031101
ANALYSES: Sulfur Compounds (CARB 16)
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: GC401-9011081

QC SUMMARY
Sulfur Compounds

Compounds	Laboratory Control Sample % Recovery	Duplicate Control Sample % Recovery	RPD
Hydrogen Sulfide	95	89	7
Methyl Mercaptan	99	99	0
Dimethyl Sulfide	103	104	1
Limit	80 - 115	80 - 115	20

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Enseco
A Corning Company

Sulfur Compound Stability Study

A 15L Summa passivated stainless steel canister was spiked with a measured volume of a standard gas mixture (Scott Specialty Gas) containing four sulfur compounds (H_2S, methyl mercaptan, dimethyl sulfide, and dimethyl disulfide). A known volume of hydrocarbon free air was added to the canister to simulate an ambient air matrix. The canister used for this study was identical to those used for the Industriplex project sampled 11/06/90 at 13 sample locations and identified by Enseco analysis #A9031101-001/013. (The canisters were manufactured by the same supplier, and were from the same lot).

The spiked canister was analyzed on 11/05/90. The canister was sent to the Industriplex site on 11/05/90. The canister was sent back to the laboratory on 11/06/90 and received by Enseco Air Toxics Laboratory on 11/07/90. The spiked canister was analyzed on 11/09/90. The results are summarized below:

	Concentration (ppmv)			
Date	Hydrogen Sulfide	Methyl Mercaptan	Dimethyl Sulfide	Dimethyl Disulfide
*11/05/90	1.1	1.2.	1.1	1.1
11/05/90	0.85	0.78	1.1	1.4
11/09/90	0.22	0.45	1.2	1.3

* Preparation date and theoretical concentration of spiked canister.

The Report Cover Letter is an integral part of this report.
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(818) 442-8400 • FAX: (818) 442-3758

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A Corning Company

LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

ANALYSIS NO.: A9031101-001/011
ANALYSES: Methane (SCAQMD Method 25.2)
DATE SAMPLED: 24 hour composite samples taken from 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/12/90
SAMPLE TYPE: Air
QC BATCH NO.: GC101-9011081

METHANE

SAMPLE IDENTIFICATION	SAMPLING TIME 11/06/90 (Composite)	RESULTS ppm (vol/vol)
1P/A-1/001/000/3/3/6 A-069	1200	ND(8)
1P/A-1/002/000/3/3/6 A-071	1130	ND(8)
1P/A-1/003/000/3/3/6 A-095	1320	ND(8)
1P/A-1/004/000/3/3/6 A-067	1240	ND(8)
1P/A-1/005/000/3/3/6 A-068	1155	ND(8)
1P/A-1/006/000/3/3/6 A-074	1500	ND(8)
1P/A-1/007/000/3/3/6 A-077	1500	ND(8)
1P/A-1/008/000/3/3/6 A-078	1420	ND(8)
1P/A-1/009/000/3/3/6 A-072	1535	ND(8)
1P/A-1/010/000/3/3/6 A-073	1255	ND(8)
1P/A-1/011/000/3/3/6 A-079	1335	ND(8)

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LABORATORY REPORT

GOLDER ASSOCIATES
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Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

ANALYSIS NO.: A903110101-013/015
ANALYSES: Methane (SCAQMD Method 25.2)
DATE SAMPLED: 24 hour composite samples taken from 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/13/90
SAMPLE TYPE: Air
QC BATCH NO.: GC101-9011081

METHANE

SAMPLE IDENTIFICATION	SAMPLING TIME 11/06/90 (Composite)	RESULTS ppm (vol/vol)
1P/A-1/013/000/3/3/6 A-075	1155	ND(8)
1P/A-1/014/000/3/3/6 A-096	1530	ND(8)
1P/A-1/015/000/3/3/6 A-076	1500	ND(8)

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

ANALYSIS NO.: A9031101
ANALYSES: Methane (SCAQMD 25.2)
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/12/90, 11/13/90
SAMPLE TYPE: Air
QC BATCH NO.: GC101-9011081

QC SUMMARY
Methane

Compounds	Laboratory Control Sample % Recovery	Duplicate Control Sample % Recovery	RPD
Methane	96	95	1
Limit	80 - 120	80 - 120	20

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/001/000/3/3/6
A-069

ANALYSIS NO.: A9031101-001
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	21	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	5.9	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

cont...

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/001/000/3/3/6
A-069

ANALYSIS NO.: A9031101-001
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	ND	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/002/000/3/3/6
A-071

ANALYSIS NO.: A9031101-002
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	ND	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

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LABORATORY REPORT

GOLDER ASSOCIATES
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Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/002/000/3/3/6
A-071

ANALYSIS NO.: A9031101-002
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	ND	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/003/000/3/3/6
A-095

ANALYSIS NO.: A9031101-003
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	ND	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

cont...

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/003/000/3/3/6
A-095

ANALYSIS NO.: A9031101-003
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	ND	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/004/000/3/3/6
A-067

ANALYSIS NO.: A9031101-004
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	8.0	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

cont...

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GOLDER ASSOCIATES
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Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/004/000/3/3/6
A-067

ANALYSIS NO.: A9031101-004
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	ND	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/005/000/3/3/6
A-068

ANALYSIS NO.: A9031101-005
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	7.2	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

cont...

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/005/000/3/3/6
A-068

ANALYSIS NO.: A9031101-005
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	ND	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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(818) 442-8400 • FAX: (818) 442-3758

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A Corning Company

LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/006/000/3/3/6
A-074

ANALYSIS NO.: A9031101-006
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	ND	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

cont...

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Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/006/000/3/3/6
A-074

ANALYSIS NO.: A9031101-006
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	ND	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/007/000/3/3/6
A-077

ANALYSIS NO.: A9031101-007
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/09/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011091

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	68	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

cont...

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/007/000/3/3/6
A-077

ANALYSIS NO.: A9031101-007
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/09/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011091

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	ND	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/008/000/3/3/6
A-078

ANALYSIS NO.: A9031101-008
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/09/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011091

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	2.9	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

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Sample ID: 1P/A-1/008/000/3/3/6
A-078

ANALYSIS NO.: A9031101-008
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/09/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011091

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	ND	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/009/000/3/3/6
A-072

ANALYSIS NO.: A9031101-009
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	78	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	3.0	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

cont...

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Sample ID: 1P/A-1/009/000/3/3/6
A-072

ANALYSIS NO.: A9031101-009
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	23	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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LABORATORY REPORT

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20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/010/000/3/3/6
A-073

ANALYSIS NO.: A9031101-010
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/09/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011091

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	10	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	19	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

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LABORATORY REPORT

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Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/010/000/3/3/6
A-073

ANALYSIS NO.: A9031101-010
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/09/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011091

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	6.4	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/011/000/3/3/6
A-079

ANALYSIS NO.: A9031101-011
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	15	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/011/000/3/3/6
A-079

ANALYSIS NO.: A9031101-011
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	ND	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/013/000/3/3/6
A-075

ANALYSIS NO.: A9031101-012
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	ND	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

cont...

The Report Cover Letter is an integral part of this report.
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A Corning Company

LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/013/000/3/3/6
A-075

ANALYSIS NO.: A9031101-012
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	ND	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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This report is submitted for the exclusive

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/014/000/3/3/6
A-096

ANALYSIS NO.: A9031101-013
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/09/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011091

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Dichlorodifluoromethane----------Freon 12----	ND	2
Chloromethane	ND	2.5
1,2,-Dichloro-1,1,2,2-Tetrafluoroethane--Freon 114---	ND	2
Vinyl Chloride	ND	2.5
Bromomethane----------	ND	3
Chloroethane	ND	5
Trichlorofluoromethane----------Freon 11----	ND	1
cis-1,2-Dichloroethene	ND	2
Carbon Disulfide----------	ND	10
1,1,2-Trichloro-1,2,2-Trifluoroethane Freon 113	ND	2
Acetone----------	ND	10
Methylene Chloride	ND	4
trans-1,2-Dichloroethene----------	ND	4
1,1-Dichloroethane	ND	2.5
Vinyl Acetate----------	ND	2.5
1,1-Dichloroethene	ND	2
2-Butanone----------	ND	3
Chloroform	ND	2
1,1,1,-Trichloroethane----------	ND	2
Carbon Tetrachloride	ND	2
Benzene----------	ND	3
1,2-Dichloroethane	ND	2
Trichloroethene----------	ND	2.5
1,2-Dichloropropane	ND	8
Bromodichloromethane----------	ND	2
cis-1,3-Dichloropropene	ND	3
4-Methyl-2-Pentanone----------	ND	3

cont...

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

Sample ID: 1P/A-1/014/000/3/3/6
A-096

ANALYSIS NO.: A9031101-013
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/09/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011091

Volatile Organics by GCMS - EPA T014

Parameter	Results ppb(v/v)	Detection Limit
Toluene	ND	3
trans-1,3-Dichloropropene	ND	3
1,1,2-Trichloroethane	ND	3
Tetrachloroethene	ND	3
2-Hexanone	ND	5
Dibromochloromethane	ND	3
1,2-Dibromoethane	ND	2
Chlorobenzene	ND	2.5
Ethylbenzene	ND	2.5
Total Xylenes	ND	5
Styrene	ND	7
Bromoform	ND	2
1,1,2,2-Tetrachloroethane	ND	4
Benzyl Chloride	ND	2
4-Ethyl Toluene	ND	4
1,3,5-Trimethylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	5
1,2,4-Trichlorobenzene	ND	7
Hexachlorobutadiene	ND	5

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

ANALYSIS NO.: A9031101
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/08/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011081

QC SUMMARY
Volatile Organics by GCMS
EPA TO14

Compounds	Laboratory Control Sample % Recovery	Duplicate Control Sample % Recovery	RPD
Methylene Chloride	106	105	1
1,1 Dichloroethene	107	107	1
Trichloroethene	102	102	1
Toluene	100	100	0
1,1,2,2-Tetrachlorethane	100	104	4
Limits	80 - 115	80 - 115	20

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LABORATORY REPORT

GOLDER ASSOCIATES
20000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
ATTN: MR. BOB GLAZIER

ANALYSIS NO.: A9031101
ANALYSES: Volatile Organics by GCMS - EPA T014
DATE SAMPLED: 11/06/90
DATE SAMPLE REC'D: 11/07/90
DATE ANALYZED: 11/09/90
SAMPLE TYPE: Air
QC BATCH NO.: MS201-9011091

QC SUMMARY
Volatile Organics by GCMS
EPA TO14

Compounds	Laboratory Control Sample % Recovery	Duplicate Control Sample % Recovery	RPD
Methylene Chloride	97	105	8
1,1 Dichloroethene	100	105	5
Trichloroethene	106	105	1
Toluene	112	112	1
1,1,2,2-Tetrachlorethane	112	115	3
Limits	80 - 115	80 - 115	20

A9031101-013

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Enseco

Canister Chain of Custody and
Field Data Record
(Grab Samples)

Client Golder

Page 1 of 1

Canister Serial # A-096

Date Cleaned 10/11/90

1) Initial vacuum check of canister	30 inches of Hg vacuum	Date 11-2-90	Initials [illegible]
2) Field vacuum check before sampling	30 inches of Hg vacuum	Date 11-5-90	Initials RMG
3) Final vacuum/pressure after sampling	30 inches of Hg vacuum	Date 11-6-90	Initials RMG
4) Final vacuum/pressure after receipt by lab	0.2psia = 30 inches of Hg vacuum	Date 11-8-90	Initials [illegible]

Relinquished By:	Received by:	Date / Time
[illegible]	Fed-Ex	11/2/90 5pm
Fed-Ex	Robert M Glazier	11/5/90 0930
Robert M Glazier	Fed-Ex	11/6/90 1730
Fed Ex	[illegible]	11/7/90 9:30 AM

Note: Numbers 1 & 4 are completed by Enseco Lab personnel

CDFR1

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Sulfur Spike A9031101-014

Enseco

Canister Chain of Custody and Field Data Record (Grab Samples)

Client Golder Assoc.

Page 1 of 1

Canister Serial # A-076

Date Cleaned 10/25/90

1) Initial vacuum check of canister	— inches of Hg vacuum	Date — Initials [illegible]
2) Field vacuum check before sampling	5 inches of Hg vacuum	Date 11-6-90 Initials RMG
3) Final vacuum/pressure after sampling	5 inches of Hg vacuum	Date 11-6-90 Initials RMG
4) Final vacuum/pressure after receipt by lab	— inches of Hg vacuum	Date — Initials [illegible]

Relinquished By:	Received by:	Date / Time
[illegible]	Fed-Ex	11-5-90 4pm
Fed-Ex	Robert M Glazier	11/6/90 0955
Robert M Glazier	Fed-Ex	11/6/90 1730
Fed Ex	[illegible]	11/7/90 9:30 am

Note: Numbers 1 & 4 are completed by Enseco Lab personnel

CDFR1

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A9031101-005

Enseco

Location #5

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder

Canister Serial # A-068 Date Cleaned 10/10/90 VFR Serial# HT-03

Reg Press Check OK 11/2/90 24 HOUR COMPOSITE

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml/sec x 60 sec/1 min = 7.2 ml/min (11-1-90 = 7.3) Date 11-1-90 Initials RK	
2) Initial vacuum check of canister	30 inches of Hg vacuum Date 11/2/90 Initials [illegible]	
3) Field vacuum check before sampling	30 inches of Hg vacuum Date 11/5/90 Initials RMG	
4) Final vacuum/pressure after sampling	12 inches of Hg vacuum Date 11/6/90 Initials RMG	
5) Final vacuum/pressure after receipt by lab	8.9 psia ~~inches of Hg vacuum~~ Date 11/8/90 Initials W	
6) Calibration check of VFR after receipt by lab	/ ml/sec x 60 sec/1 min = 7.3 ml/min Date 11-14-90 Initials RK	

Relinquished By:	Received by:	Date / Time
Jan E Dal	Fed-Ex	11/2/90 5pm
Fed-Ex	Robert M Glazier	11/5/90 0930
Robert M Glazier	Fed-Ex	11/6/90 1730
Fed Ex	Jan E Dal	11/7/90 9:30 am

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

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A9031101-001

Enseco

Location #1

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder

Canister Serial # A-069 Date Cleaned 10/12/90 VFR Serial# HT-04

Reg Press Check OK RH 11/2/90

24 HOUR COMPOSITE

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml/sec x 60 sec/1 min = 7.2 ml/min (11-1-90 = 7.1) Date 11-1-90 Initials DK	
2) Initial vacuum check of canister	30 inches of Hg vacuum Date 11/2/90 Initials DB	
3) Field vacuum check before sampling	30 inches of Hg vacuum Date 11/5/90 Initials RMB	
4) Final vacuum/pressure after sampling	12 inches of Hg vacuum Date 11/6/90 Initials RMB	
5) Final vacuum/pressure after receipt by lab	9.0 psiw = 12 inches of Hg vacuum Date 11-7-90 Initials DK	
6) Calibration check of VFR after receipt by lab	/ ml/sec x 60 sec/1 min = 6.7 ml/min Date 11-7-90 Initials DK	

Relinquished By:	Received by:	Date / Time
Dan E Dal	Fed-Ex	11/2/90 5pm
Fed-Ex	Robert M Blanjer	11/5/90 0830
Robert M Blanjer	Fed-Ex	11/6/90 1730
Fed-Ex	Dan E Dal	11/7/90 9:30 Am

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

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A9031101 — DO NOT ANALYZE

Enseco

Not Used

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder Assoc.

Canister Serial # A-015 070 HT Date Cleaned 10/12/90 VFR Serial# HT-15

Reg Press Check OK HT 11/2/90 24 HOUR COMPOSITE

1) Initial Calibration of VFR (vacuum flow regulator)	___ ml / sec x 60 sec / 1 min = 7.2 ml/min (11-2-90 = 7.2)	Date 11-3-90 Initials DK
2) Initial vacuum check of canister	30 inches of Hg vacuum	Date 11/2/90 Initials [illegible]
3) Field vacuum check before sampling	30 inches of Hg vacuum	Date 11/5/90 Initials RMG
4) Final vacuum/pressure after sampling	30 inches of Hg vacuum	Date 11/6/90 Initials RMG
5) Final vacuum/pressure after receipt by lab	___ inches of Hg vacuum	Date ___ Initials ___
6) Calibration check of VFR after receipt by lab	___ ml / sec x 60 sec / 1 min = 6.7 ml/min	Date 11-7-90 Initials DK

Relinquished By:	Received by:	Date / Time
[illegible]	Fed-Ex	11-2-90 5pm
Fed Ex	Robert M Glazier	11-5-90 0930
Robert M Glazier	Fed-Ex	11-6-90 1730
Fed-Ex	[illegible]	11-7-90 9:30 A

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

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A9031101-002

Enseco

Location #2

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder

Canister Serial # A071 Date Cleaned 10/9/90 VFR Serial# HT-09

Reg Press Check ok 11/2/90 24 HOUR COMPOSITE

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml/sec x 60 sec/1 min = 7.2 ml/min (11-1-90 = 7.3) Date 11-1-90 Initials DK	
2) Initial vacuum check of canister	30 inches of Hg vacuum Date 11/2/90 Initials JD	
3) Field vacuum check before sampling	30 inches of Hg vacuum Date 11/5/90 Initials RMG	
4) Final vacuum/pressure after sampling	15 inches of Hg vacuum Date 11/6/90 Initials RMG	
5) Final vacuum/pressure after receipt by lab	7.7 ~~inches of Hg vacuum~~ PSIA Date 11/08/90 Initials C.C.	
6) Calibration check of VFR after receipt by lab	/ ml/sec x 60 sec/1 min = 6.9 ml/min Date 11-14-90 Initials DK	

Relinquished By:	Received by:	Date / Time
Jan C Ole	Fed-Ex	11/2/90 5pm
Fed-Ex	Robert M Blanjie	11/5/90 0930
Robert M Blanjie	Fed-Ex	11/6/90 1730
FED-Ex	Jan C Ole	11/7/90 9:30 Am

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

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A9031101-009

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Location #9

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder

Page 5 of 13

Canister Serial # A-072 Date Cleaned 10/9/90 VFR Serial# HT-10

Reg. press check OK lff 11/2/90 (IL) 24 HOUR COMPOSITE

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml/sec x 60 sec/1 min = 7.2 ml/min (11-1-90 = 7.3) Date 11-1-90 Initials DK	
2) Initial vacuum check of canister	30 inches of Hg vacuum Date 11/2/90 Initials DA	
3) Field vacuum check before sampling	30 inches of Hg vacuum Date 11/5/90 Initials RMG	
4) Final vacuum/pressure after sampling	14 inches of Hg vacuum Date 11/6/90 Initials RMG	
5) Final vacuum/pressure after receipt by lab	9" inches of Hg vacuum Date 11/6/90 Initials W	
6) Calibration check of VFR after receipt by lab	/ ml/sec x 60 sec/1 min = 7.5 ml/min Date 11-14-90 Initials DK	

Relinquished By:	Received by:	Date / Time
Jan E Dal	Fed-Ex	11/2/90 5pm
Fed-Ex	Robert M Glanzer	11/5/90 0930
Robert M Glanzer	Fed-Ex	11/6/90 1730
Fed-Ex	Jan E. Dal	11/7/90 9:30am

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

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A9031101-010

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Location #10

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder Assoc.

Canister Serial # A-073 Date Cleaned 10/25/90 VFR Serial# HT-23

Reg Press Check OK 11/2/90 24 HOUR COMPOSITE

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml/sec x 60 sec/1 min = 7.3 ml/min (11-2-90 = 7.3) Date 11-2-90 Initials DK	
2) Initial vacuum check of canister	30 inches of Hg vacuum Date 11-2-90 Initials VA	
3) Field vacuum check before sampling	30 inches of Hg vacuum Date 11/5/90 Initials RMG	
4) Final vacuum/pressure after sampling	17 inches of Hg vacuum Date 11/6/90 Initials RMG	
5) Final vacuum/pressure after receipt by lab	8.2 ~~inches of Hg vacuum~~ psia Date 11/08/90 Initials CC	
6) Calibration check of VFR after receipt by lab	/ ml/sec x 60 sec/1 min = 6.9 ml/min Date 11-14-90 Initials DK	

Relinquished By:	Received by:	Date / Time
[illegible]	Fed-Ex	11-2-90 5pm
Fed-Ex	Robert M Hanger	11/5/90 0930
Robert M Hanger	Fed-Ex	11/6/90 1730
Fed Ex	[illegible]	11/7/90 9:30 AM

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

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A9031101-006

Enseco

Location #6

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder

Canister Serial # A-074 Date Cleaned 10/11/90 VFR Serial# HT-14

Reg Press Check OK 11/2/90 24 HOUR COMPOSITE

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml/sec x 60 sec/1 min = 7.1 ml/min (11-1-90 = 7.1) Date 11-1-90 Initials DK	
2) Initial vacuum check of canister	30 inches of Hg vacuum Date 11/2/90 Initials DA	
3) Field vacuum check before sampling	30 inches of Hg vacuum Date 11/5/90 Initials RMG	
4) Final vacuum/pressure after sampling	15 inches of Hg vacuum Date 11/6/90 Initials RMG	
5) Final vacuum/pressure after receipt by lab	7.5 psia ~~inches of Hg~~ vacuum Date 11/8/90 Initials W	
6) Calibration check of VFR after receipt by lab	/ ml/sec x 60 sec/1 min = 7.1 ml/min Date 11-14-90 Initials DK	

Relinquished By:	Received by:	Date / Time
Dan E Dal	Fed-Ex	11/2/90 5pm
Fed-Ex	Robert M Glazier	11/5/90 0930
Robert M Glazier	Fed-Ex	11/6/90 1730
Fed Ex	Dan E Dal	11/7/90 9:30 AM

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

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A9031101-012

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Location #13

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder

Canister Serial # A-075 Date Cleaned 10/11/90 VFR Serial# HT-17

Reg Press Check OK 11/2/90 24 HOUR COMPOSITE

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml / sec x 60 sec / 1 min = 7.3 ml/min (11-1-90 = 7.3) Date 11-1-90 Initials DK	
2) Initial vacuum check of canister	30 inches of Hg vacuum Date 11/2/90 Initials DD	
3) Field vacuum check before sampling	30 inches of Hg vacuum Date 11/5/90 Initials RMG	
4) Final vacuum/pressure after sampling	16 inches of Hg vacuum Date 11/6/90 Initials RMG	
5) Final vacuum/pressure after receipt by lab	7.4 psia ~~inches of~~ Hg vacuum Date 11/8/90 Initials W	
6) Calibration check of VFR after receipt by lab	/ ml / sec x 60 sec / 1 min = 6.8 ml/min Date 11-14-90 Initials DK	

Relinquished By:	Received by:	Date / Time
Dan C Dell	Fed Ex	11/2/90 5pm
Fed-Ex	Robert M Glazier	11/5/90 0930
Robert M Glazier	Fed-Ex	11/6/90 1730
Fed Ex	Dan C Dell	11/7/90 9:30 AM

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

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A9031101-007

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Location #7

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder

Canister Serial # A-077 Date Cleaned 10/25/90 VFR Serial# HT-18

Reg Press Check OK 11/2/90 24 Hour Composite

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml/sec x 60 sec/1 min = 7.5 ml/min; 11-1-90 = 7.4; Date 11-1-90 Initials SK	
2) Initial vacuum check of canister	30 inches of Hg vacuum; Date 11/2/90 Initials [illegible]	
3) Field vacuum check before sampling	30 inches of Hg vacuum; Date 11/5/90 Initials RMG	
4) Final vacuum/pressure after sampling	14.5 inches of Hg vacuum; Date 11/6/90 Initials RMG	
5) Final vacuum/pressure after receipt by lab	7.3 ~~inches of Hg vacuum~~ PSIA; Date 11/08/90 Initials CC	
6) Calibration check of VFR after receipt by lab	/ ml/sec x 60 sec/1 min = 5.7 ml/min; Date 11-14-90 Initials SK	

Relinquished By:	Received by:	Date / Time
[illegible]	Fed-Ex	11/2/90 5pm
Fed-Ex	Robert M Glazier	11/5/90 0930
Robert M Glazier	Fed-Ex	11/6/90 1730
Fed-Ex	[illegible]	11/7/90 9:30 AM

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

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A9031101-008

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Location #8

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder

Page 10 of 13

Canister Serial # A-078 Date Cleaned 10/9/90 VFR Serial# HT-19

Reg Press Check OK 11/2/90

24 HOUR COMPOSITE

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml/sec x 60 sec/1 min = 7.3 ml/min (11-1-90 = 7.5) Date 11-1-90 Initials JK	
2) Initial vacuum check of canister	30 inches of Hg vacuum Date 11/2/90 Initials [illegible]	
3) Field vacuum check before sampling	30 inches of Hg vacuum Date 11/5/90 Initials RMG	
4) Final vacuum/pressure after sampling	16 inches of Hg vacuum Date 11/6/90 Initials RMG	
5) Final vacuum/pressure after receipt by lab	7.8 psia = 14 inches of Hg vacuum Date 11-8-90 Initials JK	
6) Calibration check of VFR after receipt by lab	/ ml/sec x 60 sec/1 min = 7.0 ml/min Date 11-14-90 Initials JK	

Relinquished By:	Received by:	Date / Time
Jan E Dal	Fed-Ex	11/2/90 6pm
Fed-Ex	Robert M Glenzier	11/5/90 0930
Robert M Glenzier	Fed-Ex	11/6/90 1730
Fed Ex	Jan E Dal	11/7/90 9:30 AM

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

CFDR

Enseco, Inc. - Air Toxics Laboratory
9537 Telstar Avenue, Suite 118 • El Monte, CA 91731
(818) 442-8400 • FAX: (818) 442-3758

A9031101-011

Enseco

Location #11

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder

Page 11 of 13

Canister Serial # A-079 Date Cleaned 10/12/90 VFR Serial# HT-20

Reg Press Check OK 11/2/90

24 HOUR COMPOSITE

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml/sec x 60 sec/1 min = 7.2 ml/min (11-1-90: 7.2) Date 11-1-90 Initials DK	
2) Initial vacuum check of canister	30 inches of Hg vacuum Date 11-2-90 Initials	
3) Field vacuum check before sampling	30 inches of Hg vacuum Date 11/5/90 Initials RMG	
4) Final vacuum/pressure after sampling	16 inches of Hg vacuum Date 11/6/90 Initials RMG	
5) Final vacuum/pressure after receipt by lab	8.4 psia ~~inches of Hg vacuum~~ Date 11/8/90 Initials W	
6) Calibration check of VFR after receipt by lab	/ ml/sec x 60 sec/1 min = 7.3 ml/min Date 11-14-90 Initials DK	

Relinquished By:	Received by:	Date / Time
Dan E Dal	Fed-Ex	11/2/90 5pm
Fed-Ex	Robert M Blazier	11/5/90 0930
Robert M Blazier	Fed-Ex	11/6/90 1730
Fed Ex	Dan E Dal	11/7/90 7:30 AM

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

CFDR

Enseco, Inc. - Air Toxics Laboratory
9537 Telstar Avenue, Suite 118 • El Monte, CA 91731
(818) 442-8400 • FAX: (818) 442-3758

A9031101-003

Enseco

Location #3

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Golder

Canister Serial # A-095 Date Cleaned 10/10/90 VFR Serial# HT-21

Reg Press Check OK 11/2/90 24 Hour Composite

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml/sec x 60 sec/1 min = 7.3 ml/min; 11-1-90: 7.2; Date 11-1-90 Initials DK	
2) Initial vacuum check of canister	30 inches of Hg vacuum; Date 11-2-90 Initials [illegible]	
3) Field vacuum check before sampling	30 inches of Hg vacuum; Date 11/5/90 Initials RMG	
4) Final vacuum/pressure after sampling	17.5 inches of Hg vacuum; Date 11/6/90 Initials RMG	
5) Final vacuum/pressure after receipt by lab	7.0 ~~inches of Hg~~ psi vacuum; Date 11/08/90 Initials CC	
6) Calibration check of VFR after receipt by lab	/ ml/sec x 60 sec/1 min = 6.7 ml/min; Date 11-14-90 Initials DK	

Relinquished By:	Received by:	Date / Time
[illegible]	Fed-Ex	11/2/90 5pm
Fed-Ex	Robert M Glazier	11/5/90 0930
Robert M Glazier	Fed-Ex	11/6/90 1730
Fed-Ex	[illegible]	11/7/90 9:30 AM

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

CFDR

Enseco, Inc. - Air Toxics Laboratory
9537 Telstar Avenue, Suite 118 • El Monte, CA 91731
(818) 442-8400 • FAX: (818) 442-3758

A9031101-004

Enseco

Location #4

Canister Chain of Custody and Field Data Record (Composite Samples)

Client Goldor

Canister Serial # A-067 Date Cleaned 10/10/90 VFR Serial# HT-24

Reg Press Check OK 11/2/90 24 HOUR COMPOSITE

1) Initial Calibration of VFR (vacuum flow regulator)	/ ml/sec x 60 sec/1 min = 7.2 ml/min; 11-1-90 = 7.3; Date 11-1-90 Initials DK	
2) Initial vacuum check of canister	30 ~~H-Z-40~~ inches of Hg vacuum; Date 11-2-90 Initials [illegible]	
3) Field vacuum check before sampling	30 inches of Hg vacuum; Date 11/5/90 Initials RMG	
4) Final vacuum/pressure after sampling	15.5 inches of Hg vacuum; Date 11/6/90 Initials RMG	
5) Final vacuum/pressure after receipt by lab	7.5 ~~inches of Hg~~ psia vacuum; Date 11/08/90 Initials CC	
6) Calibration check of VFR after receipt by lab	/ ml/sec x 60 sec/1 min = 8.0 ml/min; Date 11-14-90 Initials DK	

Relinquished By:	Received by:	Date / Time
Dan E Dal	Fed-Ex	11/2/90 5pm
Fed-Ex	Robert M Glazier	11/5/90 0930
Robert M Glazier	Fed-EX	11/6/90 1730
Fed-Ex	Dan E Dal	11/7/90 9:30

Note: Numbers 1,2,5,6 are completed by Enseco Lab personnel

CFDR

Enseco, Inc. - Air Toxics Laboratory
9537 Telstar Avenue, Suite 118 • El Monte, CA 91731
(818) 442-8400 • FAX: (818) 442-3758

Enseco
A CORNING Company

☐ [redacted] coln W[redacted] len Gr[redacted] 92641[redacted] 898-5[redacted]
☐ 2810 Bunsen Ave., Unit A Ventura, CA 93003, (805) 650-0546
☐ 2325 Skyway Dr., Unit K, Santa Maria, CA 93455, (805) 922-2776
☒ 9537 Telstar Ave., Unit 118, El Monte, CA 91731, (818) 442-8400
☐ Mobile Labs, (800) ENSECO-8

CHAIN OF CUSTODY RECORD

Date 11-6-90 Page 1 of 2

Lab Number A903110 1-001/014

CLIENT: Golder Associates

ADDRESS: 20,000 Horizon Way, Suite 500, Mt Laurel, NJ, 08054

PROJECT NAME: Industri-Plex

CONTRACT / PURCHASE ORDER / QUOTE #: ?

PROJECT MANAGER: Elizabeth Auda

PHONE NUMBER: 609-273-1110

SITE CONTACT: Bob Glazier or Cindy Yates 617-938-1553

ANALYSES

Sample No. / Identification	Date	Time	Lab Sample Number	SAMPLE TYPE LIQ.	AIR	SOLID	No. of Containers	Target Compd List VOC	H_2S / mercaptans	methane					Sample Condition/ REMARKS
IP/A-1/001/000/3/3/6	11-6-90	1200	A-069		X		1	X	X	X					-001
IP/A-1/002/000/3/3/6	11-6-90	1130	A-071		X		1	X	X	X					-002
IP/A-1/003/000/3/3/6	11-6-90	1320	A-095		X		1	X	X	X					-003
IP/A-1/004/000/3/3/6	11-6-90	1240	A-067		X		1	X	X	X					-004
IP/A-1/005/000/3/3/6	11-6-90	1155	A-068		X		1	X	X	X					-005
IP/A-1/006/000/3/3/6	11-6-90	1500	A-074		X		1	X	X	X					-006
IP/A-1/007/000/3/3/6	11-6-90	1500	A-077		X		1	X	X	X					-007
IP/A-1/008/000/3/3/6	11-6-90	1420	A-078		X		1	X	X	X					-008
IP/A-1/009/000/3/3/6	11-6-90	1535	A-072		X		1	X	X	X					-009
~~IP/A-1/00~~ IP/A-1/010/000/3/3/6	11-6-90	1255	A-073		X		1	X	X	X					-010

SAMPLERS: (Signature) Robert M Glazier

Received by: (Signature) — Date 11-6-90 Time 1730

Relinquished by: (Signature) — Received by: (Signature) — Date — Time

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Enseco Terms and Conditions, unless a contract or purchase order has been executed and is cited above.

Relinquished by: (Signature) Fed-Ex → Received for Laboratory by: [signature]

Date	Time	Received for Laboratory by:	Date RECEIVED	Time	Date ACCEPTED	Time
			11-7-90	9:30 AM		

Method of Shipment: Federal Express Airbill Number 8717191954

Special Instructions: try to run within 72 hours, run spike sample and trip blank last

COC Seals 03489 thru 03493

SAMPLE DISPOSITION:
1. Storage time requested: — days
(Samples will be stored for 30 days without additional charges; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: Y (N)
(Enseco will dispose of unreturned samples at no extra charge. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

DISTRIBUTION: White with report, Yellow to Enseco, Pink to Courier, Gold to Sample Control

Enseco
A CORNING Company

☐ 7440 Lincoln Way, Garden Grove, CA 92641, (714) 898-6370
☐ 2810 Bunsen Ave., Unit A Ventura, CA 93003, (805) 650-0546
☐ 2325 Skyway Dr., Unit K, Santa Maria, CA 93455, (805) 922-2776
☒ 9537 Telstar Ave., Unit 118, El Monte, CA 91731, (818) 442-8400
☐ Mobile Labs, (800) ENSECO-8

CHAIN OF CUSTODY RECORD

Date 11-6-90 Page 2 of 2

Lab Number A9031101-001/014 (con't)

CLIENT Golder Associates

ADDRESS 20,000 Horizon Way, Suite 500, Mt Laurel, NJ 08054

PROJECT NAME Industri-Plex

CONTRACT / PURCHASE ORDER / QUOTE # ?

PROJECT MANAGER Elizabeth Auda

PHONE NUMBER 609-273-1110

SITE CONTACT Bob Glazier or Cindy Yates 617-938-1553

ANALYSES

Sample No. / Identification	Date	Time	Lab Sample Number	SAMPLE TYPE LIQ.	AIR	SOLID	No. of Containers	Target Cmpd List VOCs	H_2S/mercaptans	methane					Sample Condition/ REMARKS
1P/A-1/011/000/3/3/6	11-6-90	1335	A-079		X		1	X	X	X					-011
1P/A-1/013/000/3/3/6	11-6-90	1155	A-075		X		1	X	X	X					-012
1P/A-1/014/000/3/3/6	11-6-90	1530	A-096		X		1	X	X	X					trip blank -013
1P/A-1/015/000/3/3/6	11-6-90	1500	A-076		X		1	X	X	X					spike sample -014
					Run NO VOC's For sulfur Spike as per E. Auda &										
									B Glazier 11/8/90						
N/A	—	—	A-070												not used, do not analyze

SAMPLERS: (Signature) Robert M Glazier

Relinquished by: (Signature)

Received by: (Signature) — Date 11-6-90 Time 1730

Received by: (Signature) — Date — Time

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Enseco Terms and Conditions, unless a contract or purchase order has been executed and is cited above.

Relinquished by: (Signature) Fed-Ex → Received for Laboratory by: [signature]

Date	Time	Received for Laboratory by:	Date RECEIVED	Time	Date ACCEPTED	Time
			11-7-90	9:30 AM		

Method of Shipment: Federal Express Airbill Number 8717191954, 8717191976

Special Instructions: try to run within 72 hours, run spike sample and trip blank last; COC Seals 03489 thru 03493

SAMPLE DISPOSITION:
1. Storage time requested: — days
(Samples will be stored for 30 days without additional charges; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: Y (N)
(Enseco will dispose of unreturned samples at no extra charge. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

DISTRIBUTION: White with report, Yellow to Enseco, Pink to Courier, Gold to Sample Control

RADIAN CORPORATION LABORATORY REPORT

DUST SAMPLE LOCATION NUMBER AS GIVEN
IN RADIAN CORPORATION LABORATORY REPORT

SAMPLE LOCATION NO.	DUST CASSETTE SAMPLE IDENTIFICATION NUMBER
1	#03-21
2	03-22
3	03-23
4	03-24
5	03-25
6	03-26
7	03-27
8	03-28
9	03-29
10	03-30
11	03-31
13 (field duplicate)	03-33
14 (field blank)	03-32
15 (spike)	03-34, 03-35

RADIAN
CORPORATION

Radian Work Order P0-11-026

Analytical Report
12/07/90

Golder Associates, Inc.

Golder Associates, Inc.
Golder Associates, Inc.
20000 Horizon Way, Suite 500
MT Laurel, NJ 08054
Bob Glazier

Customer Work Identification Industri-Plex
Purchase Order Number -

Contents:

1 Analytical Data Summary
2 Sample History
3 Comments Summary
4 Notes and Definitions

Radian Analytical Services
900 Perimeter Park
Morrisville, NC 27560

919-481-0212

Client Services Coordinator: JSGIBSON

Certified by:

RADIAN CORPORATION

Analytical Data Summary

Golder Associates, Inc.
Radian Work Order: P0-11-026

Method:ICP 25 element scan (1)
List:ICP List - Industri Plex

Sample ID:	#03-21	#03-22	#03-23	#03-24
Factor:	0.00001	0.00001	0.00001	0.00001
Results in:	total mg	total mg	total mg	total mg
	01A	02A	03A	04A
Matrix:	filter	filter	filter	filter

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	ND	0.0008	ND	0.0008	ND	0.0008	ND	0.0008
Chromium	ND	0.0001	ND	0.0001	ND	0.0001	ND	0.0001
Lead	ND	0.0010	ND	0.0010	ND	0.0010	ND	0.0010

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

RADIAN CORPORATION

Analytical Data Summary

Golder Associates, Inc.
Radian Work Order: P0-11-026

Method:ICP 25 element scan (1)
List:ICP List - Industri Plex

Sample ID:	#03-25	#03-26	#03-27	#03-28
Factor:	0.00001	0.00001	0.00001	0.00001
Results in:	total mg	total mg	total mg	total mg
	05A	06A	07A	08A
Matrix:	filter	filter	filter	filter

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	ND	0.0008	ND	0.0008	ND	0.0008	ND	0.0008
Chromium	ND	0.0001	ND	0.0001	ND	0.0001	ND	0.0001
Lead	ND	0.0010	ND	0.0010	ND	0.0010	ND	0.0010

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

RADIAN CORPORATION

Analytical Data Summary

Golder Associates, Inc.
Radian Work Order: P0-11-026

Method:ICP 25 element scan (1)
List:ICP List - Industri Plex

Sample ID:	#03-29	#03-30	#03-31	#03-33
Factor:	0.00001	0.00001	0.00001	0.00001
Results in:	total mg	total mg	total mg	total mg
	09A	10A	11A	12A
Matrix:	filter	filter	filter	filter

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	ND	0.0008	ND	0.0008	ND	0.0008	ND	0.0008
Chromium	ND	0.0001	0.00035 @	0.0001	ND	0.0001	ND	0.0001
Lead	ND	0.0010	ND	0.0010	ND	0.0010	ND	0.0010

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

RADIAN CORPORATION

Analytical Data Summary

Golder Associates, Inc.
Radian Work Order: P0-11-026

Method:ICP 25 element scan (1)
List:ICP List - Industri Plex

Sample ID:	#03-32 (FIELD BLANK)	#03-34 (MATRIX SPIKE)	#03-35 (MATRIX SPIKE DUP)	METHOD BLANK
Factor:	0.00001	0	0	0.00001
Results in:	total mg	% rec	% rec	total mg
	13A	14A	15A	20A
Matrix:	filter	filter	filter	filter

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	ND	0.0008	85.2		78.6		ND	0.0008
Chromium	ND	0.0001	87.2		81.5		ND	0.0001
Lead	ND	0.0010	17.0		19.6		ND	0.0010

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

RADIAN CORPORATION

Analytical Data Summary

Golder Associates, Inc.
Radian Work Order: P0-11-026

Method/Analyte	Sample Identifications		
	#03-21	#03-22	#03-23
	01	02	03
Matrix	AIR	AIR	AIR

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
NIOSH Method 0500						
Total Dust	ND	total mg 0.010	ND	total mg 0.010	.02 @	total mg 0.010

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Golder Associates, Inc.
Radian Work Order: P0-11-026

Method/Analyte	Sample Identifications		
	#03-24	#03-25	#03-26
	04	05	06
Matrix	AIR	AIR	AIR
	Result / Det. Limit	Result / Det. Limit	Result / Det. Limit
NIOSH Method 0500			
Total Dust	ND / total mg 0.010	.17 / total mg 0.010	.05 / total mg 0.010

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Golder Associates, Inc.
Radian Work Order: PO-11-026

Method/Analyte	Sample Identifications					
	#03-27		#03-28		#03-29	
	07		08		09	
Matrix	AIR		AIR		AIR	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
NIOSH Method 0500						
Total Dust	ND	total mg 0.010	.02 @	total mg 0.010	.26	total mg 0.010

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Golder Associates, Inc.
Radian Work Order: P0-11-026

Method/Analyte	Sample Identifications					
	#03-30		#03-31		#03-33	
	10		11		12	
Matrix	AIR		AIR		AIR	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
NIOSH Method 0500 Total Dust	.06	total mg 0.010	ND	total mg 0.010	.07	total mg 0.010

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Golder Associates, Inc.
Radian Work Order: P0-11-026

Method/Analyte	Sample Identifications		
	#03-32 (FIELD BLANK)	#03-34 (MATRIX SPIKE)	#03-35 (MATRIX SPIKE DUP)
	13	14	15
Matrix	AIR	AIR	AIR
	Result / Det. Limit	Result / Det. Limit	Result / Det. Limit
NIOSH Method 0500 Total Dust	.10 total mg 0.010	ND total mg 0.010	.02 @ total mg 0.010

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Golder Associates, Inc.
Radian Work Order: PO-11-026

Method/Analyte	Sample Identifications		
	METHOD BLANK		
	20		
Matrix	AIR		
	Result Det. Limit		
NIOSH Method 0500 Total Dust	ND total mg 0.010		

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Sample History

Golder Associates, Inc.
Radian Work Order: P0-11-026

Sample Identifications and Dates

Sample ID	#03-21	#03-22	#03-23	#03-24	#03-25	#03-26
Date Sampled	11/06/90	11/06/90	11/06/90	11/06/90	11/06/90	11/06/90
Date Received	11/07/90	11/07/90	11/07/90	11/07/90	11/07/90	11/07/90
Matrix	filter	filter	filter	filter	filter	filter
	01	02	03	04	05	06
NIOSH Method 0500						
Prepared	11/12/90	11/12/90	11/12/90	11/12/90	11/12/90	11/12/90
Analyzed	11/13/90	11/13/90	11/13/90	11/13/90	11/13/90	11/13/90
Analyst	LKK	LKK	LKK	LKK	LKK	LKK
File ID						
Blank ID						
Instrument	MH20T	MH20T	MH20T	MH20T	MH20T	MH20T
Report as	received	received	received	received	received	received
ICP 25 element scan						
Prepared	11/19/90	11/19/90	11/19/90	11/19/90	11/19/90	11/19/90
Analyzed	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90
Analyst	JDL	JDL	JDL	JDL	JDL	JDL
File ID	1102601	1102602	1102603	1102604	1102605	1102606
Blank ID	1102620	1102620	1102620	1102620	1102620	1102620
Instrument	ICP#1	ICP#1	ICP#1	ICP#1	ICP#1	ICP#1
Report as	received	received	received	received	received	received

RADIAN CORPORATION

Sample History

Golder Associates, Inc.
Radian Work Order: PO-11-026

Sample Identifications and Dates

Sample ID	#03-27	#03-28	#03-29	#03-30	#03-31	#03-33
Date Sampled	11/06/90	11/06/90	11/06/90	11/06/90	11/06/90	11/06/90
Date Received	11/07/90	11/07/90	11/07/90	11/07/90	11/07/90	11/07/90
Matrix	filter	filter	filter	filter	filter	filter
	07	08	09	10	11	12
NIOSH Method 0500						
Prepared	11/12/90	11/12/90	11/12/90	11/12/90	11/12/90	11/12/90
Analyzed	11/13/90	11/13/90	11/13/90	11/13/90	11/13/90	11/13/90
Analyst	LKK	LKK	LKK	LKK	LKK	LKK
File ID						
Blank ID						
Instrument	MH20T	MH20T	MH20T	MH20T	MH20T	MH20T
Report as	received	received	received	received	received	received
ICP 25 element scan						
Prepared	11/19/90	11/19/90	11/19/90	11/19/90	11/19/90	11/19/90
Analyzed	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90	11/28/90
Analyst	JDL	JDL	JDL	JDL	JDL	JDL
File ID	1102607	1102608	1102609	1102610	1102611	1102612
Blank ID	1102620	1102620	1102620	1102620	1102620	1102620
Instrument	ICP#1	ICP#1	ICP#1	ICP#1	ICP#1	ICP#1
Report as	received	received	received	received	received	received

RADIAN CORPORATION

Sample History

Golder Associates, Inc.
Radian Work Order: P0-11-026

Sample Identifications and Dates

Sample ID	#03-32 (FIELD BLANK)	#03-34 (MATRIX SPIKE)	#03-35 (MATRIX SPIKE DUP)	METHOD BLANK
Date Sampled	11/06/90	11/06/90	11/06/90	
Date Received	11/07/90	11/07/90	11/07/90	11/07/90
Matrix	filter	filter	filter	filter
	13	14	15	20
NIOSH Method 0500				
Prepared	11/12/90	11/12/90	11/12/90	11/12/90
Analyzed	11/13/90	11/13/90	11/13/90	11/13/90
Analyst	LKK	LKK	LKK	LKK
File ID				
Blank ID				
Instrument	MH20T	MH20T	MH20T	MH20T
Report as	received	received	received	received
ICP 25 element scan				
Prepared	11/19/90	11/19/90	11/19/90	11/19/90
Analyzed	11/28/90	11/28/90	11/28/90	11/28/90
Analyst	JDL	JDL	JDL	JDL
File ID	1102613	1102614	1102615	1102620
Blank ID	1102620	1102620	1102620	
Instrument	ICP#1	ICP#1	ICP#1	ICP#1
Report as	received	received	received	received

RADIAN
CORPORATION

Appendix A

Comments, Notes and Definitions

Golder Associates, Inc.
Radian Work Order: P0-11-026

General Comments
The Chromium and Lead values have been blank corrected.

The matrix spike recoveries for lead are possibly low due to the fusing of lead to the grassware during the ashing steps.

Golder Associates, Inc.
Radian Work Order: PO-11-026

B ALL METHODS EXCEPT CLP
The results which are less than five times the method specified detection limit.
EXPLANATION
Uncertainty of the analysis will increase as the method detection limit is approached. These results should be considered approximate.

ND ALL METHODS EXCEPT CLP
This flag is used to denote analytes which are not detected at or above the specified detection limit.
EXPLANATION
The value to the right of the < symbol is the method specified detection limit for the analyte.

TERMS USED IN THIS REPORT:

Analyte - A chemical for which a sample is to be analyzed. The analysis will meet EPA method and QC specifications.

Compound - See Analyte.

Detection Limit - The method specified detection limit, which is the lower limit of quantitation specified by EPA for a method. Radian staff regularly assess their laboratories' method detection limits to verify that they meet or are lower than those specified by EPA. Detection limits which are higher than method limits are based on experimental values at the 99% confidence level. The detection limits for EPA CLP (Contract Laboratory Program) methods are CRQLs (contract required quantitation limits) for organics and CRDLs (contract required detection limits) for inorganics. Note, the detection limit may vary from that specified by EPA based on sample size, dilution or cleanup. (Refer to factor, below)

EPA Method - The EPA specified method used to perform an analysis. EPA has specified standard methods for analysis of environmental samples. Radian will perform its analyses and accompanying QC tests in conformance with EPA methods unless otherwise specified.

Factor - Default method detection limits are based on analysis of clean water samples. A factor is required to calculate sample specific detection limits based on alternate matrices (soil or water), reporting units, use of cleanup procedures, or dilution of extracts/digestates. For example, extraction or digestion of 10 grams of soil in contrast to 1 liter of water will result in a factor of 100.

Matrix - The sample material. Generally, it will be soil, water, air, oil, or solid waste.

Radian Work Order - The unique Radian identification code assigned to the samples reported in the analytical summary.

Units -	ug/L	micrograms per liter (parts per billion);liquids/water
	ug/kg	micrograms per kilogram (parts per billion); soils/solids
	ug/M3	micrograms per cubic meter; air samples
	mg/L	milligrams per liter (parts per million);liquids/water
	mg/kg	milligrams per kilogram (parts per million);soils/solids
	%	percent; usually used for percent recovery of QC standards
	uS/cm	conductance unit; microSiemens/centimeter
	mL/hr	milliliters per hour; rate of settlement of matter in water
	NTU	turbidity unit; nephelometric turbidity unit
	CU	color unit; equal to 1 mg/L of chloroplatinate salt

APPENDIX B

DUST PUMP FIELD CALIBRATION
AND
SAMPLING DOCUMENTATION

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 1 SAMPLER NAME: Rob Glazier

LOCATION DESCRIPTION [Address]: west of New England Resins & Pigments, NW of site

DATE STARTED: 11/5/90 TIME STARTED: 1218

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1215

PUMP SERIAL NO.: 516376 RECORDED TARE OF FILTER: —

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 57

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: x YES ____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: 1440
3. PUMP PERIOD [Total time - min.]: 480

WEATHER: Monday: cloudy, wind from E/NE, ~40°F
Tuesday: heavy rain until 8AM, then clear, ~50°F, strong wind from W/NW

OBSERVATIONS: Noticed slight H_2S odor at start of sampling
pump still operating properly at finish 1437

C:FPFDFORM

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 2 SAMPLER NAME: Bob Glazier

LOCATION DESCRIPTION [Address]: north of East Hide Pile

DATE STARTED: 11/5/90 TIME STARTED: 1124

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1122

PUMP SERIAL NO.: 516542 RECORDED TARE OF FILTER: –

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 50

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: x YES ____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: 1440
3. PUMP PERIOD [Total time - min.]: 480

WEATHER: Monday: cloudy, wind from E/NE, ~40°F
Tuesday: heavy rain until 8AM, then clear, ~50°F, strong wind from W/NW

OBSERVATIONS: pump running continuously, reads "sample running 0074"

C:FPFDFORM

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 3 SAMPLER NAME: Bob Glazier

LOCATION DESCRIPTION [Address]: Northside in Reading

DATE STARTED: 11/5/90 TIME STARTED: 1321

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1321

PUMP SERIAL NO.: 516524 RECORDED TARE OF FILTER: —

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 60

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: X YES ____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: 1440
3. PUMP PERIOD [Total time - min.]: 480

WEATHER: Monday: cloudy, wind from E/NE, ~40°F
Tuesday: heavy rain until 8AM, then clear, ~50°F, strong wind from W/NW

OBSERVATIONS: pump still functioning properly at finish, 1440

C:FPFDFORM

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 4 SAMPLER NAME: Bob Gkziet

LOCATION DESCRIPTION [Address]: NW corner of site

DATE STARTED: 11/5/90 TIME STARTED: 1240

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1225

PUMP SERIAL NO.: 516393 (*) RECORDED TARE OF FILTER: —

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 56

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: X YES ____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: 1440
3. PUMP PERIOD [Total time - min.]: 480

WEATHER: Monday: cloudy, wind from E/NE, ~40°F
Tuesday: heavy rain until 8AM, then clear, ~50°F, strong wind from W/NW

OBSERVATIONS: noticed occasional vanilla smell at start of sampling
pump still operating properly

(*) This pump normally used at Location #12

C:FPFDFORM

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 5 SAMPLER NAME: Rob Glazier

LOCATION DESCRIPTION [Address]: just east of East Hide Ale

DATE STARTED: 11/5/90 TIME STARTED: 1155

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1145

PUMP SERIAL NO.: 516529 RECORDED TARE OF FILTER: —

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 61

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: × YES _____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: 1440
3. PUMP PERIOD [Total time - min.]: 480

WEATHER: Monday: cloudy, wind from E/NE, ~40°F
Tuesday: heavy rain until 8AM, then clear, ~50°F, strong wind from W/NW

OBSERVATIONS: noticed occassional "burst" of strong H_2S odor
pump shut down at pump period = 1212

C:FPFDFORM

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 6 SAMPLER NAME: Bob Glazier

LOCATION DESCRIPTION [Address]: middle of site at end of Commerce Way extension

DATE STARTED: 11/5/90 TIME STARTED: 1459

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1444

PUMP SERIAL NO.: 516385 RECORDED TARE OF FILTER: —

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 57

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: x YES ____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: 1440
3. PUMP PERIOD [Total time - min.]: 480

WEATHER: Monday: cloudy, wind from E/NE, ~40°F
Tuesday: heavy rain until 8AM, then clear, ~50°F, strong wind from W/NW

OBSERVATIONS: pump still functioning properly at end of sampling 1424

C:FPFDFORM

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 7 SAMPLER NAME: Bob Glazier

LOCATION DESCRIPTION [Address]: NE corner of site adjacent I-93

DATE STARTED: 11/5/90 TIME STARTED: 1509

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1504

PUMP SERIAL NO.: 516389 RECORDED TARE OF FILTER: —

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 57

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: X YES ____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: 1440
3. PUMP PERIOD [Total time - min.]: 480

WEATHER: Monday: Cloudy, wind from E/NE, ~40°F
Tuesday: heavy rain until 8AM, then clear, ~50°F, strong wind from W/NW

OBSERVATIONS: pump still operating properly at end of sampling 1398

C:FPFDFORM

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 8 SAMPLER NAME: Bob Cluzier

LOCATION DESCRIPTION [Address]: at end of Atlantic Avenue (on-site)

DATE STARTED: 11/5/90 TIME STARTED: 1421

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1415

PUMP SERIAL NO.: 516388 RECORDED TARE OF FILTER: —

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 58

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: ✓ YES ____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: ~~1440~~ 1320 min.
3. PUMP PERIOD [Total time - min.]: ~~480~~ 480 min

WEATHER: Monday: cloudy, wind from E/NE, ~40°F
Tuesday: heavy rain until 8AM, then clear, ~50°F, strong wind from W/NW

OBSERVATIONS: couldn't program pump. It is doing continuous sampling.
pump shut down at "1321" due to low battery

C:FPFDFORM

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 9 SAMPLER NAME: Bob Glazier

LOCATION DESCRIPTION [Address]: Mary Barron's School, Reading

DATE STARTED: 11/5/90 TIME STARTED: 1535

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1535

PUMP SERIAL NO.: 516510 RECORDED TARE OF FILTER: N/A

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 60

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: x YES ____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: 1440
3. PUMP PERIOD [Total time - min.]: 480

WEATHER: Monday: cloudy, wind from E/NE, ~40°F
Tuesday: heavy rain until 8AM, then clear, ~50°F, strong wind from W/NW

OBSERVATIONS: pump operating properly at end of sampling, 1440

C:FPFDFORM

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 10 SAMPLER NAME: Bob Glazier

LOCATION DESCRIPTION [Address]: Woburn Sewer Gator SW of site

DATE STARTED: 11/5/90 TIME STARTED: 1256

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1245

PUMP SERIAL NO.: ~~5163~~ RMG 516628 RECORDED TARE OF FILTER: —

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 57

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: X YES ____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: 1440
3. PUMP PERIOD [Total time - min.]: 480

WEATHER: Monday: cloudy, wind from E/NE, ~40°F
Tuesday: heavy rain until 8AM, then clear, ~50°F, strong wind from W/NW

OBSERVATIONS: pump still operating properly at finish. 1427

C:FPFDFORM

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 11 SAMPLER NAME: Bob Glazier

LOCATION DESCRIPTION [Address]: Woburn Post Office, SE of site

DATE STARTED: 11/5/90 TIME STARTED: 1335

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1335

PUMP SERIAL NO.: 516395 RECORDED TARE OF FILTER: –

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 58

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: x YES ____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: 1440
3. PUMP PERIOD [Total time - min.]: 480

WEATHER: Monday: cloudy, wind from E/NE, ~40°F
Tuesday: heavy rain until 8AM, then clear, ~50°F, strong wind from W/NW

OBSERVATIONS: pump still operating properly at end of sampling 1440

C:FPFDFORM

PRE-DESIGN INVESTIGATION
INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

FLOW PUMP FIELD DATA FORM

PROJECT NO.: 893-6255

LOCATION NO.: 13 SAMPLER NAME: Bob Glazier

LOCATION DESCRIPTION [Address]: just East of East Hide Pile

DATE STARTED: 11/5/90 TIME STARTED: 1155

DATE COMPLETED: 11/6/90 TIME COMPLETED: 1145

PUMP SERIAL NO.: 516369 RECORDED TARE OF FILTER: —

INITIAL ROTAMETER READING: 57

FINAL ROTAMETER READING: 56

REQUIRED FLOW RATE (ml/min): 2000

INTERMITTENT PUMPING REQUIRED: ✓ YES _____ NO

PUMP PROGRAMMING:

1. DELAYED START [Time started - min.]: 0
2. SAMPLE PERIOD [Total time - min.]: 1440
3. PUMP PERIOD [Total time - min.]: 480

WEATHER: Monday: cloudy, wind from E/NE ~40°F
Tuesday: heavy rain until 8 AM, then clear, ~50°F, strong wind

OBSERVATIONS: noticed occasional strong "bursts" of H_2S from W/NW
pump operating properly, "pump period" = 1430

C:FPFDFORM

APPENDIX C

METEOROLOGICAL DATA

INDUSTRI-PLEX SITE WOBURN, MA
WEATHER STATION DATA 11/05 – 11/06 1990

YEAR	DAY	TIME	AVG WIND SPEED (MPH)	AVG WIND DIR (DEG)	AVG TEMP (DEG F)	AVG REL HUM (%)	AVG PRESS (IN/Hg)
1990	308	0	0.679	178.8	58.85	100.5	30.03
1990	308	15	1.868	207.6	59.49	99.3	30.03
1990	308	30	0.725	105.3	58.98	103.2	30.03
1990	308	45	0.569	171.2	57.93	106.5	30.03
1990	308	100	1.119	91.1	57.55	106.5	30.03
1990	308	115	1.944	81.4	57.11	105.1	30.02
1990	308	130	0.922	98	56.88	96.6	30.02
1990	308	145	1.164	224.4	55.77	93.7	30.02
1990	308	200	1.527	192.4	55.22	95.3	30.02
1990	308	215	1.02	179.9	55.46	96.9	30.02
1990	308	230	2.599	167.4	56.58	97	30.02
1990	308	245	1.478	185	57.09	95.5	30.02
1990	308	300	1.489	166.3	56.12	96.3	30.02
1990	308	315	1.298	185.6	56.17	96.9	30.02
1990	308	330	1.733	159.4	56.05	97.4	30.02
1990	308	345	1.709	153.5	56.27	97.5	30.02
1990	308	400	2.018	179.7	56.05	98.2	30.02
1990	308	415	2.636	170.6	55.63	99.1	30.02
1990	308	430	2.178	188.8	55.85	99.2	30.02
1990	308	445	2.928	162.9	55.26	101.3	30.02
1990	308	500	3.65	170.4	56.91	101.2	30.02
1990	308	515	3.089	165.6	57.32	101.3	30.02
1990	308	530	2.033	155.1	57.14	101.9	30.02
1990	308	545	1.762	139.1	56.76	102.2	30.02
1990	308	600	1.599	149.1	56.28	103.6	30.02
1990	308	615	2.442	157.1	56.75	103.6	30.02
1990	308	630	3.474	163.6	57.79	102	30.02
1990	308	645	3.783	169.8	58.55	100.2	30.02
1990	308	700	3.271	167.2	58.41	99.5	30.02
1990	308	715	2.935	163	58.22	99.8	30.02
1990	308	730	2.321	152.9	57.56	100.5	30.02
1990	308	745	1.946	154.9	57.03	101.6	30.03
1990	308	800	1.291	131.1	57.41	102	30.02
1990	308	815	2.669	160.5	58.36	99.3	30.02
1990	308	830	2.32	168.5	59.61	95.3	30.02
1990	308	845	2.807	188.3	60.48	91.1	30.01
1990	308	900	2.376	192.3	61.88	87.5	30

INDUSTRI-PLEX SITE WOBURN, MA
WEATHER STATION DATA 11/05 – 11/06 1990

YEAR	DAY	TIME	AVG WIND SPEED (MPH)	AVG WIND DIR (DEG)	AVG TEMP (DEG F)	AVG REL HUM (%)	AVG PRESS (IN/Hg)
1990	308	915	2.858	171.6	62.23	98.1	30
1990	308	930	2.523	189.2	63.44	96.9	29.99
1990	308	945	3.376	214.3	64.35	74.8	29.98
1990	308	1000	3.901	235.3	65.46	77.8	29.97
1990	308	1015	5.049	253.5	67.28	73.4	29.96
1990	308	1030	6.618	269	68.06	80.6	29.95
1990	308	1045	6.059	257	68.89	76.6	29.93
1990	308	1100	5.952	259.5	69.69	52.07	29.91
1990	308	1115	5.366	260.5	70.2	51.02	29.9
1990	308	1130	5.589	245	70.1	62.43	29.88
1990	308	1145	6.904	247.6	70	71.6	29.87
1990	308	1200	7.5	247.7	70.2	70.9	29.86
1990	308	1215	6.585	242.9	70.9	70.7	29.85
1990	308	1230	8.43	231.2	71.7	64.16	29.83
1990	308	1245	9.57	233.1	72.5	49.96	29.81
1990	308	1300	10.45	235.5	73.1	43.77	29.8
1990	308	1315	11.71	245	73.2	43.15	29.79
1990	308	1330	11.77	236.4	73.8	42.93	29.78
1990	308	1345	11.51	232.9	74.7	41.6	29.77
1990	308	1400	11.13	235.3	75.6	39.59	29.76
1990	308	1415	12.25	239.7	75.8	36.8	29.76
1990	308	1430	11.76	248.5	75.3	35.83	29.76
1990	308	1445	12.37	239.8	74.8	35.96	29.76
1990	308	1500	10.83	247.8	74.7	36.87	29.76
1990	308	1515	10.44	241.6	74.5	38.4	29.75
1990	308	1530	9.23	247.9	74.8	39.55	29.75
1990	308	1545	11.6	254.8	74.4	37.14	29.76
1990	308	1600	9.68	255	73.8	36.79	29.76
1990	308	1615	7.24	261.4	73.1	52.54	29.75
1990	308	1630	7.94	255.5	72.5	55.63	29.75
1990	308	1645	7.48	257.3	71.7	85.1	29.75
1990	308	1700	6.889	248.1	70.9	86.1	29.76
1990	308	1715	6.915	248.9	70.3	74.1	29.76
1990	308	1730	6.78	253.2	69.67	69.2	29.77
1990	308	1745	8.36	259.6	69.22	75.2	29.77
1990	308	1800	7.1	251.2	68.57	77.1	29.77
1990	308	1815	6.554	255.1	68.04	66.91	29.78

INDUSTRI-PLEX SITE WOBURN, MA
WEATHER STATION DATA 11/05 – 11/06 1990

YEAR	DAY	TIME	AVG WIND SPEED (MPH)	AVG WIND DIR (DEG)	AVG TEMP (DEG F)	AVG REL HUM (%)	AVG PRESS (IN/Hg)
1990	308	1830	6.414	251	67.63	55.5	29.79
1990	308	1845	6.107	248.4	66.94	57.83	29.8
1990	308	1900	5.253	240.6	66.22	68.3	29.8
1990	308	1915	6.746	236.6	66.02	65.6	29.8
1990	308	1930	7.13	240.6	65.84	63.2	29.8
1990	308	1945	5.935	238.9	65.58	64.16	29.8
1990	308	2000	6.524	242.2	65.39	65.09	29.8
1990	308	2015	6.095	239.6	65.03	68.35	29.8
1990	308	2030	6.567	241.8	64.57	66.18	29.8
1990	308	2045	7.58	247.6	64.43	66.16	29.8
1990	308	2100	7.99	248.3	64.29	64.69	29.79
1990	308	2115	6.988	243.4	63.86	58.57	29.79
1990	308	2130	8.52	236.9	63.89	57.76	29.79
1990	308	2145	7.23	237	63.37	59.46	29.79
1990	308	2200	6.544	237.5	63.02	65.95	29.79
1990	308	2215	6.272	245.7	62.53	47.97	29.79
1990	308	2230	7.09	243.9	62.2	48.01	29.79
1990	308	2245	6.768	239.2	61.74	57.26	29.8
1990	308	2300	6.415	240	61.45	63.4	29.8
1990	308	2315	5.758	231.4	61.09	65.13	29.8
1990	308	2330	4.603	216.5	60.18	69.73	29.8
1990	308	2345	3.962	215.9	59.63	70.8	29.81
1990	309	0	2.72	221.1	58.99	51.71	29.81
1990	309	15	3.56	242.5	58.77	64	29.82
1990	309	30	5.825	240.7	59.37	71.3	29.82
1990	309	45	6.182	240.3	59.75	70.2	29.82
1990	309	100	6.476	239.2	59.85	69.82	29.82
1990	309	115	5.544	251.4	59.73	69.58	29.83
1990	309	130	6.388	261.2	59.99	69.38	29.83
1990	309	145	6.855	257.8	60.02	69	29.82
1990	309	200	6.618	261.3	59.79	69.09	29.82
1990	309	215	6.377	265.2	59.51	69.64	29.83
1990	309	230	6.547	263.1	59.11	70.4	29.84
1990	309	245	5.493	275.9	58.59	71.3	29.85
1990	309	300	3.823	287.5	57.66	72.8	29.86
1990	309	315	4.33	341.3	57.26	74.8	29.87
1990	309	330	3.407	350.7	56.93	76.5	29.88

INDUSTRI-PLEX SITE WOBURN, MA
WEATHER STATION DATA 11/05 – 11/06 1990

YEAR	DAY	TIME	AVG WIND SPEED (MPH)	AVG WIND DIR (DEG)	AVG TEMP (DEG F)	AVG REL HUM (%)	AVG PRESS (IN/Hg)
1990	309	345	5.907	1.625	56.65	76.2	29.89
1990	309	400	9.69	11.56	55.35	70.2	29.91
1990	309	415	8.22	9.7	54.4	70.1	29.92
1990	309	430	6.199	0.43	53.63	70.5	29.92
1990	309	445	7.72	3.042	52.74	73.5	29.93
1990	309	500	7.78	6.022	51.76	80.4	29.94
1990	309	515	6.112	7.32	51.07	83.5	29.94
1990	309	530	6.308	10.34	50.64	83.6	29.95
1990	309	545	5.663	359.7	50.17	82.4	29.96
1990	309	600	6.937	4.628	50.01	80.4	29.96
1990	309	615	6.891	356.9	49.63	75.7	29.97
1990	309	630	6.575	355.9	49.37	79.5	29.98
1990	309	645	6.547	2.199	49.12	81.1	29.98
1990	309	700	8.45	6.847	48.93	81.9	29.99
1990	309	715	8.92	3.084	48.8	81.8	29.99
1990	309	730	8.96	358.5	48.43	78.7	30
1990	309	745	8.09	358.3	47.98	72.3	30.02
1990	309	800	7.11	355.2	47.64	72.1	30.02
1990	309	815	8.72	5.543	47.55	71.9	30.03
1990	309	830	8.06	6.677	47.33	71.7	30.04
1990	309	845	8.05	14.04	47.16	71.4	30.05
1990	309	900	8.51	24.3	46.94	71.1	30.05
1990	309	915	7.86	35.77	47.08	70.4	30.05
1990	309	930	7.7	16.8	47.02	69.66	30.06
1990	309	945	8.94	18.55	47.01	68.28	30.06
1990	309	1000	7.46	11.46	46.91	66.77	30.06
1990	309	1015	5.444	14.36	46.87	66.78	30.06
1990	309	1030	4.594	15.08	46.97	66.77	30.06
1990	309	1045	5.108	28.55	47.02	65.85	30.06
1990	309	1100	3.27	37.63	47.54	64.53	30.06
1990	309	1115	5.104	77.9	47.94	65.26	30.06
1990	309	1130	5.526	85.1	48.05	65.97	30.06
1990	309	1145	7.14	91	47.71	66.53	30.05
1990	309	1200	6.841	87.5	47.15	60.23	30.05
1990	309	1215	7.35	95.4	46.47	60.64	30.05
1990	309	1230	6.64	81.2	46.18	61.04	30.06
1990	309	1245	8.04	85.6	45.77	61.63	30.06

INDUSTRI-PLEX SITE WOBURN, MA
WEATHER STATION DATA 11/05 - 11/06 1990

YEAR	DAY	TIME	AVG WIND SPEED (MPH)	AVG WIND DIR (DEG)	AVG TEMP (DEG F)	AVG REL HUM (%)	AVG PRESS (IN/Hg)
1990	309	1300	7.13	82.7	45.37	63.78	30.06
1990	309	1315	7.36	77.9	45.23	72.7	30.06
1990	309	1330	5.672	76.2	45.19	75.6	30.06
1990	309	1345	6.222	79.2	45.14	73.7	30.06