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INDOOR AIR QUALITY IN PUBLIC BUILDINGS

VOLUME II

By

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ABSTRACT

The objectives of this research project were to monitor air in and around public access buildings for a broad range of organic and inorganic compounds; to measure emission rates of chemicals from building materials as part of a chamber study; and to examine the relationships between chemicals, building materials, human activities, and air exchange rates.

Activities associated with the field monitoring phase of the program included sampling and analysis for volatile organics, nitrosamines, pesticides/PCBs, particulate mass, polynuclear aromatic hydrocarbons (PNAs), metals, formaldehyde, radon, carbon monoxide (CO), nitrogen dioxide (NO_2) and asbestos. Sampling was performed in six buildings: a new hospital, office, and nursing home and an existing office, office/school, and nursing home. The new buildings were monitored immediately after construction and again one or two times after occupancy. At each building, sampling was performed at three indoor locations and a single outdoor location.

For the volatile organics, very high total levels of target organics (>1 μg/L) were measured in indoor air samples immediately after construction. These levels decreased dramatically with time (>50 ng/L) to the point where the outgassing of volatile organics from new building materials no longer appeared to be a significant source of indoor pollution. Aliphatic and aromatic hydrocarbons accounted for the majority of volatile organics found in the new buildings. For the occupied offices and hospital, halogenated organics were a significant contribution to the indoor air contamination level. There appeared to be no definite trend for the oxygenated compounds although they were detected most often in the office building.

Generally, indoor levels of nitrosamines, pesticides/PCBs, PNAs, metals, formaldehyde, asbestos, and radon were low. CO and NO_2 were

monitored only at the existing office with no general trends noted in the data.

In areas where there was no smoking, indoor concentrations for both inhalable (coarse) and respirable (fine) particulate mass were lower than outdoor concentrations. In smoking areas, small changes in inhalable particulate were observed, whereas, large changes in respirable particulate were noted.

The emission study was performed in two phases. During the first phase, preliminary headspace experiments were performed to give a fast, relatively inexpensive evaluation of emissions for all 31 materials tested. In the second phase nine materials were evaluated using controlled chamber experiments. Generally, the solvent-based materials showed the highest emission rates followed by the plastic and rubber materials, and carpeting. Building materials such as wall board, ceiling tile, and cement block showed few volatile organic emissions. Data from the chamber tests verified these trends. Measured emission rates compared well with field monitoring data and previous chamber studies.

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SECTION 1

INTRODUCTION

An assessment of human exposure to indoor air contaminants and the relationship of this exposure to adverse health effects has become an active area of study over the past several years. Research efforts have been directed toward evaluating emissions from indoor sources (1-6), physically and chemically characterizing indoor pollutants (4, 7-10), modeling indoor pollution exposure (11-13), and applying methods of pollutant mitigation (14,15). The presence of indoor air contaminants and exposure is of most concern to persons spending from 70 to 90% of their time indoors (4). Further, the quality of indoor air is becoming increasingly problematical as measures to conserve energy, such as reducing ventilation rates, are instituted in buildings.

Previous research efforts related to indoor air quality have concentrated on several criteria pollutants (CO, NO_2, particulates) and several uniquely indoor pollutants (radon, formaldehyde, asbestos) in private residences (16). Large numbers of hazardous air pollutants or noncriteria compounds (solvents, pesticides, PCBs, polynuclear aromatic compounds) that may exist in buildings where large numbers of people spend much of their time (schools, office buildings, nursing homes, and hospitals) have not been investigated comprehensively. Only limited data are available on pollutant emission rates from building materials, furnishings, or maintenance supplies. This monitoring and analysis effort was undertaken to answer some of these questions.

The objectives of this research were to monitor air in and around public access buildings for a broad range of organic and inorganic compounds; to measure emission rates of chemicals from building materials as part of a chamber study; and to examine the relationships between chemicals, building materials, and human activities.

SECTION 2

SUMMARY AND CONCLUSIONS

Air was monitored in and around a variety of public buildings where occupants spend much of their time indoors. Then, in conjunction with the monitoring effort, emission rates of chemicals from building materials used in one of those same buildings were measured. Results of the emission testing were compared to the field monitoring data and reported activities within the buildings in an attempt to relate potential sources with measured pollutant levels.

Chemicals measured included volatile organics, nitrosamines, pesticides/PCBs, particulate mass, polynuclear aromatic hydrocarbons (PNAs), metals, formaldehyde, radon, carbon monoxide, nitrogen dioxide and asbestos. Six buildings were sampled: a new hospital, office, and nursing home and an older office, office/school and nursing home. The new buildings were monitored immediately (1-4 weeks) after construction and again one or two times after occupancy. At each building, sampling was performed at three indoor locations and a single outdoor location.

VOLATILE ORGANICS

Each sample for volatile organics was collected in triplicate using different air volumes (10, 15, and 20 L). Quantitation analysis was then performed for thirty (30) target compounds and the mean and % relative standard deviation (% RSD) for each target were calculated for all of the triplicate colocated samples. The mean concentration values were used for all statistical analyses. Precision of the monitoring technique was evaluated using the data for % RSD.

For the initial statistical analysis, the percentage of air samples that had concentrations reported above the quantifiable limit was calculated for each target volatile. This statistic is referred to as percent

detected and was calculated for indoor and outdoor samples collected during each field monitoring trip. Based on percent detected data each target chemical was placed in one of four categories depending upon frequency of occurrence. Most of the ubiquitous volatile organics were aromatic hydrocarbons such as benzene, the xylenes, ethylbenzene, and some of the trimethylbenzenes; 1,1,1-trichloroethane was also ubiquitous. Frequently-occurring target compounds detected more often indoors included the remainder of the aromatic hydrocarbons, all of the target aliphatic compounds, the two oxygenated compounds and several chlorinated organics. Seven halogenated organics fell into the category "rarely detected".

Mean indoor and outdoor concentrations for target volatiles during each field monitoring trip are given in Tables 1 and 2, respectively. These data are summarized by compound class in Table 3 and show several interesting trends:

1. The new buildings showed very high total levels of volatile organics immediately after construction (trip 1). Levels decreased dramatically during subsequent field monitoring trips. An exception to this trend was the new hospital; however, this building was first monitored eight months after completion and, presumably during this time, the outgassing of volatile organics from new building materials was no longer a significant source of indoor pollution.
2. The major indoor contaminants in the new buildings monitored immediately after construction were the aliphatic organics. For both the new nursing home and the office, target compounds in this class accounted for greater than 60% of the total mass of volatile material quantitated. Levels of the aliphatic hydrocarbons in existing buildings were quite low, while mean outdoor concentrations were below the quantifiable limit in all cases.
3. Although the aromatic hydrocarbons were ubiquitous, they were also found in highest concentrations at the new buildings immediately after construction. As shown in Table 3, the first trip to the new nursing home and the new office were the only trips where mean indoor/outdoor concentration ratios were greater than five. Again levels decreased substantially by the second monitoring trip to each of these buildings.

TABLE 1. MEAN INDOOR CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS FOR ALL MONITORING TRIPS

Compound	Mean Indoor Concentration (ng/L)									
	Martinsburg, WV			Fairfax, VA		Worcester, MA		Washington, DC	Cambridge, MA	Martinsburg, WV
	Hospital (New)[a]			Office (New)[b]		Nursing[c] Home (New)		Office (Old)	Office/ School (Old)	Nursing Home (Old)
	Trip 1 (7/84)	Trip 2 (10/84)	Trip 3 (8/85)	Trip 1 (1/85)	Trip 2 (4/85)	Trip 1 (4/85)	Trip 2 (8/85)	Trip 1 (8/84)	Trip 1 (2/85)	Trip 1 (7/84)
Aromatic Hydrocarbons										
Benzene	1.55	2.13	2.88	2.74	4.95	1.70	2.44	5.61	4.50	3.13
m-Xylene	6.88	3.13	9.91	41.53	15.05	23.80	5.33	27.11	8.72	2.95
o-Xylene	3.05	0.92	3.07	18.40	3.67	8.92	2.07	9.28	3.43	0.99
Styrene	1.00	1.07	1.33	2.52	2.87	2.99	1.27	2.36	1.32	1.19
Ethylbenzene	1.94	1.01	2.88	51.26	5.37	7.90	2.15	10.15	2.69	0.97
Isopropylbenzene	0.31	ND[d]	0.33	3.94	0.67	2.27	0.33	0.79	0.36	ND
n-propylbenzene	ND	ND	ND	5.00	1.13	2.99	0.70	1.22	0.56	ND
m-Ethyltoluene	1.11	0.86	1.48	27.41	5.57	12.38	2.62	6.07	2.62	0.90
o-Ethyltoluene	ND	ND	0.66	8.89	2.08	4.01	0.73	1.60	0.74	ND
1,2,3-Trimethylbenzene	0.63	0.43	0.76	15.10	2.91	5.32	0.72	1.80	1.06	0.79
1,2,4-Trimethlybenzene	1.48	0.98	1.82	73.51	7.27	13.95	2.52	6.28	2.80	0.98
1,3,5-Trimethylbenzene	ND	ND	0.75	16.97	2.75	6.83	0.92	1.83	1.14	ND
Aliphatic Hydrocarbons										
α-Pinene	ND	ND	ND	14.13	24.64	5.19	ND	ND	2.65	ND
n-Decane	3.65	2.73	2.71	436.38	15.24	68.27	3.81	2.26	5.98	1.87
n-Undecane	3.31	1.96	2.34	210.80	33.93	68.51	3.48	2.85	6.77	ND
n-Dodecane	ND	ND	ND	152.69	23.74	31.42	ND	ND	2.23	ND
Chlorinated Hydrocarbons										
1,2-Dichloroethane	2.06	1.49	2.21	ND	4.51	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	4.98	4.50	15.54	12.54	38.85	4.03	1.76	40.98	10.69	3.09
Trichloroethylene	1.05	ND	ND	ND	7.93	2.58	0.57	0.61	10.89	ND
Tetrachloroethylene	ND	ND	1.79	ND	1.64	1.13	0.96	3.97	4.11	0.99
p-Dichlorobenzene	ND	ND	6.61	ND	2.64	2.17	0.62	0.60	ND	ND
Oxygenated Hydrocarbons										
n-Butylacetate	ND	ND	ND	ND	6.34	ND	1.22	2.63	1.48	ND
2-Ethoxyethyl acetate	1.31	ND	ND	ND	2.16	9.58	ND	1.67	ND	ND

[a]Building completed ~34 weeks before first monitoring trip.
[b]Building completed ~1 week before first monitoring trip.
[c]Building completed ~4 weeks before first monitoring trip.
[d]Below the quantifiable limit.

TABLE 2. MEAN OUTDOOR CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS FOR ALL MONITORING TRIPS

Compound	Mean Outdoor Concentration (ng/L)									
	Martinsburg, WV			Fairfax, VA		Worcester, MA		Washington, DC	Cambridge, MA	Martinsburg, WV
	Hospital (New)[a]			Office (New)[b]		Nursing[c] Home (New)		Office (Old)	Office/ School (Old)	Nursing Home (Old)
	Trip 1 (7/84)	Trip 2 (10/84)	Trip 3 (8/85)	Trip 1 (1/85)	Trip 2 (4/85)	Trip 1 (4/85)	Trip 2 (8/85)	Trip 1 (8/84)	Trip 1 (2/85)	Trip 1 (7/84)
Aromatic Hydrocarbons										
Benzene	2.09	2.31	1.42	4.08	3.63	2.06	3.40	6.62	4.85	3.03
m,p-Xylene	1.18	1.03	1.79	3.84	3.11	2.38	4.34	14.64	2.68	1.44
o-Xylene	0.38	ND[d]	0.75	1.37	1.17	0.69	1.76	5.24	1.02	0.53
Styrene	0.62	0.73	0.28	0.56	1.05	0.31	0.84	1.25	0.31	0.64
Ethylbenzene	0.46	0.38	0.74	1.49	0.94	0.71	1.48	4.64	0.89	0.51
Isopropylbenzene	ND	ND	ND	ND	ND	ND	ND	0.46	ND	ND
n-Propylbenzene	ND	ND	ND	ND	ND	ND	ND	1.24	ND	ND
m-Ethyltoluene	ND	ND	0.53	1.56	1.15	0.91	1.78	6.21	1.16	0.44
o-Ethyltoluene	ND	ND	ND	0.43	ND	ND	0.58	1.77	ND	ND
1,2,3-Trimethylbenzene	0.42	0.28	ND	0.54	0.29	0.30	0.49	1.77	0.28	0.77
1,2,4-Trimethlybenzene	0.28	0.32	0.70	2.05	1.22	1.11	1.92	6.99	1.21	0.43
1,3,5-Trimethylbenzene	ND	ND	ND	ND	ND	ND	0.65	2.03	ND	ND
Aliphatic Hydrocarbons										
α-Pinene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Decane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Undecane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Dodecane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorinated Hydrocarbons										
1,2-Dichloroethane	2.58	2.13	1.50	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	1.10	3.18	1.70	1.02	1.88	1.68	1.51	4.98	2.15	1.28
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	0.39	ND
Tetrachloroethylene	ND	ND	ND	ND	1.16	1.07	1.01	3.23	1.14	ND
p-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygenated Hydrocarbons										
n-Butylacetate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Ethoxyethylacetate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

[a]Building completed ~34 weeks before first monitoring trip.
[b]Building completed ~1 week before first monitoring trip.
[c]Building completed ~4 weeks before first monitoring trip.
[d]Below the quantifiable limit.

TABLE 3. CONCENTRATION DATA FOR VOLATILE ORGANICS SUMMARIZED BY COMPOUND CLASS

Time Since Completion (Weeks)	Concentration (ng/L)														
	Aromatic Hydrocarbons			Aliphatic Hydrocarbons			Chlorinated Hydrocarbons			Oxygenated Hydrocarbons			Total		
	Indoor	Outdoor	In/Out Ratio	Indoor	Outdoor	In/Out Ratio	Indoor	Outdoor	In/Out Ratio	Indoor	Outdoor	In/Out Ratio	Indoor	Outdoor	In/Out Ratio
Hospitals															
Hospital (New)															
Trip 1 (7/84) -34	18	5.4	3.3	7.0	ND[a]	-[b]	8.1	3.7	2.2	1.3	ND	-	34	9.1	3.7
Trip 2 (10/84) -48	11	5.1	2.2	4.7	ND	-	6.0	5.3	1.1	ND	ND	-	21	10	2.1
Trip 3 (8/85) -1.5 y	26	6.2	4.2	5.1	ND	-	26	3.2	8.1	ND	ND	-	57	9.4	6.1
Offices															
Office (New)															
Trip 1 (1/85) -1	270	16	17	810	ND	-	13	1.0	13	ND	ND	-	1100	17	65
Trip 2 (4/85) 14	54	13	4.2	98	ND	-	56	3.0	19	8.5	ND	-	220	16	14
Office (Old)															
Trip 1 (8/84) -1 y	74	50	1.5	5.1	ND	-	46	8.1	5.6	4.3	ND	-	130	58	2.2
Office/School (Old)															
Trip 1 (2/85) -2 y	30	12	2.5	18	ND	-	26	3.7	7.0	1.5	ND	-	75	16	4.6
Homes															
Nursing Home (New)															
Trip 1 (4/85) -4	93	8.5	11	173	ND	-	9.9	2.8	3.5	9.6	ND	-	286	11	26
Trip 2 (8/85) -23	22	17	1.3	7.3	ND	-	3.9	2.5	1.6	1.2	ND	-	34	20	1.7
Nursing Home (Old)															
Trip 1 (7/84) -8 y	12	7.8	1.5	1.9	ND	-	4.1	1.3	3.2	ND	ND	-	18	9.1	2.0

[a]Below the quantifiable limit.
[b]Not calculated.

4. Mean indoor concentrations for chlorinated hydrocarbons were highest for the existing office building. Presumably, indoor concentrations resulted from the use of solvent based office materials. Elevated levels of chlorinated hydrocarbons were also found during the third trip to the hospital and the trip to the office/school.
5. There appeared to be no discernible trend for the oxygenated compounds although they were detected most often in the office buildings.

NITROSAMINES

N-Nitrosomorpholine was detected at all indoor locations at the existing office. Mean concentrations ranged from 0.20 to 0.32 ng/m^3. Nitrosamines were not detected in any other samples.

PESTICIDES/PCBs

Only low concentrations ($<$20 ng/m^3) of pesticides and PCBs were found during field monitoring. This is not surprising since these target chemicals had not been applied in the monitored buildings. Two exceptions can be noted here. First, although chlorpyrifos was applied in several buildings, it was not recovered from field controls and could not be quantitated. Second, malathion was sprayed around the outside of the existing nursing home during the third day of monitoring. The outdoors sample collected during this period showed a malathion concentration of 95 ng/m^3. Only trace levels (20 ng/m^3) were detected indoors for the same period.

INHALABLE (IP) AND RESPIRABLE (RP) PARTICULATE MASS

Mean indoor concentrations for inhalable particulate (coarse) mass ranged from 2.7 μg/m^3 at trip 1 to the new hospital to 20.4 μg/m^3 at the second trip to the new hospital. Mean outdoor concentrations for IP ranged from 7.1 to 22.4 μg/m^3. Mean indoor concentrations for respirable particulate (fine) mass ranged from 2.7 to 47.0 μg/m^3. Mean outdoor levels for RP were similar to indoor levels ranging from 8.0 to 33.6 μg/m^3.

In areas where there was no smoking, indoor concentrations were generally lower than outdoor concentrations for both IP and RP. In smoking areas, small increases in IP were observed, whereas large changes in RP were noted.

POLYNUCLEAR AROMATIC HYDROCARBONS (PNAs)

Polynuclear aromatic hydrocarbons were not found in any samples. The detection limit for the method was ~10 ng/m^3 for individual PNAs. Results indicate that much larger samples are required if measurements of PNAs are desired for indoor locations where no specific sources exist such as wood fireplaces or wood stoves.

METALS

Quantitative analysis was performed for nine metals (Al, Cr, Mn, Ni, As, Se, Br, Cd, and Pb) during field monitoring. Percent detected values were calculated for both indoor and outdoor air samples collected during each trip. Results showed that nickel, bromine and lead were detected most frequently, whereas aluminum, selenium, and cadmium were not detected in any samples. Mean concentration levels of detected metals were generally low ($<$50 ng/m^3). A comparison of indoor to outdoor mean concentrations showed higher levels outdoors. Several exceptions were noted to this trend: indoor concentrations for lead were higher than outdoor concentrations at both the new nursing home, trip 2, and the old office/school. Higher indoor concentrations of arsenic were found at the new hospital, trip 3.

FORMALDEHYDE

Measurable concentrations of formaldehyde were found more frequently for indoor compared to outdoor samples. Trip 2 to the new office showed highest indoor concentrations ($>$100 ppb).

RADON

Radon levels at all buildings were low ($<$2 pCi/L). Only one sample, collected at the new office, showed an elevated level at 4.11 pCi/L.

CARBON MONOXIDE AND NITROGEN DIOXIDE

CO and NO_2 were monitored only at the old office. No general trends were noted in the data.

ASBESTOS

Asbestos was detected in only one sample during field monitoring. However, the level found in this sample (84 fibers/m^3) was identical to the level found in one of the field blanks.

AIR EXCHANGE

Average air exchange rates for the monitored buildings were generally in the range 0.3 to 0.6 air changes per h (ACH). The new hospital, trip 1, had the highest exchange rate (0.94 changes/h), while trip 2 to the same building had the lowest (0.14 ACH). Where differences between daytime and nighttime air exchange rates existed, daytime rates were always higher.

EMISSION STUDY

The emission study was performed in two phases. In the first phase, preliminary headspace experiments were performed by placing the material to be tested in a small glass jar and measuring the volatile organics emitted using a dynamic headspace technique. The experiments were specifically designed to give a fast, relatively inexpensive evaluation of emissions from a large variety (31) of building materials. During the second phase of the study, nine materials with significant volatile emissions were evaluated using more detailed chamber testing.

All emission testing was performed on materials used in the construction of a new single-story office building in Fairfax, Virginia. Most of the 22 solid building materials tested were subsamples of the actual materials used in construction. The remaining solid materials, plus the nine solvent-based materials, were purchased from the manufacturer. Manufacturing lots were matched where feasible.

Tables 4 and 5 list both the materials tested and a summary of results for the headspace experiments.

Generally, the solvent-based materials showed the highest emission rates followed by the plastic and rubber materials, and carpeting. Building materials such as wall board, ceiling tile, and cement block showed few volatile organic emissions. Data from the chamber tests verified these trends.

Results of field monitoring compared well with the results of both the headspace and chamber experiments. For example, the aromatic hydrocarbons that have the highest indoor air concentrations (ethylbenzene, m-ethyltoluene. and 1.2,4-trimethylbenzene) generally show highest emission rates

TABLE 4. SUMMARY OF EMISSION RESULTS

Sample[a]	Emission Rate ($\mu g/m^2$ h)			
	Aliphatic and Oxygenated Aliphatic Hydrocarbons	Aromatic Hydrocarbons	Halogenated Hydrocarbons	All Target Compounds
Latex caulk	252	380	5.2	637
Latex paint (Glidden)	111	52	86	249
Carpet adhesive	136	98	-[b]	234
Black rubber molding	24	78	0.88	103
Small diameter telephone cable	33	26	1.4	60
Vinyl cove molding	31	14	0.62	46
Linoleum tile	6.0	35	4.0	45
Large diameter telephone cable	14	20	4.3	38
Carpet	27	9.4	-	36
Vinyl edge molding	18	12	0.41	30
Particle board	27	1.1	0.14	28
Polystyrene foam insulation	0.19	20	1.4	22
Tar paper	3.2	3.1	-	6.3
Primer/adhesive	3.6	2.5	-	6.1
Latex paint (Bruning)	-	3.2	-	3.2
Water repellant mineral board	1.1	0.43	-	1.5
Cement block	-	0.39	0.15	0.54
PVC pipe	-	0.53	-	0.53
Duct insulation	0.13	0.15	-	0.28
Treated metal roofing	-	0.19	0.06	0.25
Urethane sealant	-	0.13	-	0.13
Fiberglass insulation	-	0.08	-	0.80
Exterior mineral board	-	0.03	-	0.03
Interior mineral board	-	-	-	-
Ceiling tile	-	-	-	-
Red clay brick	-	-	-	-
Plastic laminate	-	-	-	-
Plastic outlet cover	-	-	-	-
Joint compound	-	-	-	-
Linoleum tile cement	-	-	-	-

[a]Emission rates for cove adhesive not reported; sample was overloaded. It is estimated that cove adhesive is one of the emitters of volatile organics with emissions of target compounds greater than 4700 $\mu g/m^2$.
[b]No detectable emissions.

TABLE 5. VOLATILE ORGANICS FOUND AT HIGH LEVELS IN EMISSION SAMPLES BUT NOT QUANTIFIED

Building Material	Volatile Organics
Interior Exposure	
Carpet	Aromatic hydrocarbons, aliphatic hydrocarbons, cyclohexenylbenzene
Linoleum tile	Aromatic hydrocarbons, aliphatic hydrocarbons, toluene
Vinyl cove molding	Toluene, aliphatic hydrocarbons, aromatic hydrocarbons
Vinyl edge molding	Aromatic hydrocarbons, toluene
Large diameter telephone cable	Pentane, 2-butanone, aliphatic hydrocarbons, aromatic hydrocarbons, toluene, undecanol, 2,6-bisphenol
Small diameter telephone cable	Aliphatic hydrocarbons, aromatic hydrocarbons, 3,3-dimethylbutanone, toluene, dimethylpentene, undecanol, cyclopentane, 2,6-bisphenol
Black rubber molding	1,6-Dichloro-1,5-cyclooctadiene, aliphatic hydrocarbons, aromatic hydrocarbons, phenolic compounds
Particle board	Pentanal, methylpentanal, aliphatic hydrocarbons
Plastic outlet cover	Unidentified component
Interior mineral board	No major emissions
Ceiling tile	No major emissions
Plastic laminante	No major emissions
Building Shell	
Tar paper	Naphthalene
Duct insulation	Trimethylhexene, aliphatic hydrocarbons
Polystyrene foam insulation	2-Butene-1-ol, pentane, 1,2-dimethylcyclopropane, benzonitrile, benzaldehyde
Exterior mineral board	Dioctylphthalate
Water repellant mineral board	2-Ethylhexanol, nonanal
PVC pipe	Diethylphthalate, trimethylhexene, aliphatic hydrocarbons, aromatic hydrocarbons

(continued)

TABLE 5. (continued)

Building Material	Volatile Organics
Building Shell (continued)	
Treated metal roofing	No major emissions
Cement block	No major emissions
Red clay brick	No major emissions
Fiberglass insulation	No major emissions
Solvent-Based Materials	
Cove adhesive	Toluene, octane, aliphatic hydrocarbons
Carpet adhesive	Aliphatic hydrocarbons, aromatic hydrocarbons
Latex caulk	Aliphatic hydrocarbons, aromatic hydrocarbons
Linoleum tile cement	Aliphatic hydrocarbons, trichlorotrifluoromethane
Latex paint (Bruning)	Unidentified component
Latex paint (Glidden)	Aliphatic hydrocarbons, octanone, nonanone
Urethane insulant	Toluene, trimethylhexene
Primer/adhesive	Aliphatic hydrocarbons
Joint compound	No major emissions

from all of the building materials. High emission rates for the n-alkanes were found for many of the interior materials including the carpet, linoleum tile, all of the plastic materials and the solvent materials such as adhesives, paint, and caulk. All of these materials could contribute to the high indoor air concentrations of n-alkanes found in the office. Particle board was probably the major contributor of α-pinene. Finally, at the time monitoring was being performed, vinyl cove molding and cove adhesive were being applied throughout the building. It is likely these materials were major contributors to 1,1,1-trichloroethane, ethylbenzene, and the xylenes found in the air samples.

SECTION 3

RECOMMENDATIONS

As a result of this Indoor Air Study, several recommendations can be made about the design and implementation of future studies. Recommendations on sampling and analysis have also been included.

1. This study was intended to serve as a broad survey for monitoring a variety of organic and inorganic chemicals in public access buildings. Of necessity, this study monitored several different building types with diverse environments within a building. It is recommended that for future studies, hypotheses be formulated, (i.e., levels of organic pollutants are high in rooms containing office equipment), then the buildings and locations in the building, pollutants, and monitoring strategies selected to test these hypotheses.
2. Since results for volatile organics demonstrated both a large number and high concentrations of volatile organic compounds present in the indoor environment, future study should be designed to also demonstrate health effects directly resulting from indoor air pollution. Methodology for evaluating health effects of complex mixtures of organic compounds should be developed and tested.
3. Results of this study demonstrated that in many cases indoor pollution resulted from activity patterns and product use. Therefore, more in-depth and accurate information should be collected on specific activities and potential sources for chemicals. In addition, chamber studies should continue to characterize potential sources of indoor pollutants.
4. Simple, reliable methods still need to be developed for both integrated and real-time monitoring of the range of indoor pollutants. Methods for low-boiling or polar volatile organics are often

cumbersome or inaccurate. Many of the other methods, including those used for CO and NO_2, are noisy and place a high burden on the building occupants. Other methods, such as those for PNAs and metals, often did not have sufficiently low detection limits for monitoring indoor levels.

5. Mitigation methods should be developed for pollutants that are found at unacceptably high levels.

SECTION 4

SAMPLING AND SAMPLE PREPARATION

INTRODUCTION

The major objective of the field portion of this study was to monitor the air in and around public access buildings for a broad range of organic and inorganic compounds. To accomplish this, three building types were studied including offices, hospitals, and nursing homes. For this project, EPA identified six buildings for field monitoring, including at least one building from each category. New buildings were visited after construction and several months after occupancy. Existing buildings were visited only once.

The thirteen groups of chemicals or parameters monitored during this research program are listed in Table 6. Sampling and analytical methods and monitoring requirements are also summarized. For the purposes of sampling and analysis, several of these groups were combined as indicated on the table. Specifically, procedures for the analysis of volatile organics using Tenax GC as a solid sorbent were applied to both Group I and II chemicals. Table 7 outlines the specific sampling requirements for each parameter in each building, including the planned number of locations per building, samples per day, monitoring days per trip, and trips per building. In all facilities, an outdoor location placed directly at the air intake was monitored. The indoor locations were selected on-site to represent a variety of indoor environments. All monitoring employed fixed-site stations. Samples were collected for 12 or 24-hour periods in either the morning or evening. Table 8 lists the buildings monitored, sampling locations within each building, and monitoring dates.

All samples were collected using the protocols described in the Draft Work Plan, Part II: Analytical Protocols (17). In this section, details of sample preparation and collection for each chemical or physical parameter will be given.

TABLE 6. TARGET POLLUTANTS, SAMPLING AND ANALYSIS METHODS

Compound	Sampling; Analytical Method	Monitoring Schedule
Group I (Volatile Organics)		
α-Pinene n-Butylacetate 2-Ethoxyethyl acetate m-Cresol o-Cresol p-Cresol Benzene m-Xylene o-Xylene p-Xylene Ethylbenzene 1,2,3-Trimethylbenzene 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene o-Ethyltoluene m-Ethyltoluene Isopropylbenzene n-Propylbenzene Styrene n-Decane n-Undecane n-Dodecane	Collection on Tenax GC; analysis by GC/MS. Triplicate samples collected using distributed air volumes.	Six consecutive 12 hour samples at three indoor and one outdoor locations.

(continued)

TABLE 6. (continued)

Compound	Sampling; Analytical Method	Monitoring Schedule
Group II (Halogenated Volatile Organics)		
1,2-Dichloroethane 1,1,1-Trichloroethane Trichloroethylene Tetrachloroethylene 1,1,2,2-Tetrachloroethane Carbon tetrachloride α-Epichlorohydrin Bromodichloromethane Chlorobenzene m-Dichlorobenzene o-Dichlorobenzene p-Dichlorobenzene	Collection on Tenax GC; analysis by GC/MS.	Six consecutive 12 hour samples at three indoor and one outdoor locations.
Group III (Nitrosamines)		
Dimethylnitrosamine Nitrosomorpholine	Collection on Thermosorb/N sorbent; analysis by GC with Thermo Energy Analyzer (TEA).	Six consecutive 12 hour samples at three indoor and one outdoor locations.
Group IV (Miscellaneous Volatiles)		
Ethylene oxide Acrylonitrile 2-Propanone 2-Butanone n-Propanol n-Butanol Vinyl chloride Acrolein Chloroform Vinylidene chloride Phenol	Collection on charcoal cartridges; analysis by GC/FID or GC/ECD.	Six consecutive 12 hour samples at three indoor and one outdoor locations.

(continued)

TABLE 6. (continued)

Compound	Sampling; Analytical Method	Monitoring Schedule
Group V (Pesticides and PCBs)		
tech.-Chlordane PCBs Dichlorvos Ronnel Chlorpyrifos Diazinon Malathion α, β, and γ-Hexachlorocyclohexane (BHCs)	Collection on polyurethane foam; analysis by GC/ECD and GC/FPD.	Six consecutive 12 hour samples at three indoor and one outdoor locations.
Group VI (Metals)		
Cadmium Bromine Lead Manganese Arsenic Chromium Nickel Aluminum	Collection on 0.3 μm filters; analysis by PIXE.	Three consecutive 24 hour samples at two indoor and one outdoor locations.
Group VII (Particulate Mass and Polynuclear Aromatics)		
Particulate mass	Collection of <3 μm and 3-15 μm particulate matter on filters; analysis by weighing.	Three consecutive 24 hour samples at two indoor and one outdoor locations.

(continued)

TABLE 6. (continued)

Compound	Sampling; Analytical Method	Monitoring Schedule
Quinoline/Isoquinoline Benzo(a)pyrene Benzo(a)anthracene Benzo(k)fluoranthene Chrysene Fluoranthene Pyrene	Collection on filters; extract screening by UV; analysis by GC/FID or GC/PID	
Group VIII		
Formaldehyde	Collection on molecular sieve; analysis by colorimetry.	Three consecutive 24 hour samples at three indoor and one outdoor locations.
Group IX		
Radon	Exposure of Track-Etch passive monitors; analysis by microscopy.	One 3-month sample at two indoor locations.
Group X		
Air exchange	Release of tracer gas; collection of air samples in syringes; quantitation of SF_6 in air samples using GC/ECD.	Continuous measurement for 72 hours at three indoor locations.
Group XI		
CO	Electrochemical ambient air personal monitor.	Continuous measurement for 72 hours at three indoor and one outdoor locations.

(continued)

TABLE 6. (continued)

Compound	Sampling; Analytical Method	Monitoring Schedule
Group XII		
NO_2	Chemiluminescent ambient air analyzer.	Continuous measurement for 72 hours at three indoor and one outdoor locations.
Group XIII		
Asbestos	Sampling on Nucleopore filters; analysis by transmission electron microscopy.	One 72 hour sample at two indoor locations.

TABLE 7. SAMPLING REQUIREMENTS FOR FIELD MONITORING

Chemical Group	Facility	No. Location/Bldg.	No. Samples/Day	No. Days	No. of Monitoring Visits
I and II (Volatile Organics and Halogenated Volatile Organics)	Office (new)	4	2[a]	3	2
	Office (old)	4	2[a]	3	1
	School (old)	4	2[a]	3	1
	Hospital (new)	4	2[a]	3	3
	Nursing Home (new)	4	2[a]	3	2
	Nursing Home (old)	4	2[a]	3	1
III (Nitrosamines)	Office (new)	4	2	3	2
	Office (old)	4	2	3	1
	School (old)	4	2	3	1
	Hospital (new)	4	2	3	3
	Nursing Home (new)	4	2	3	2
	Nursing Home (old)	4	2	3	1
IV (Miscellaneous Volatiles)	Office (new)	4	4[b]	3	1
	Office (old)	4	4[b]	3	1
	School (old)	4	4[b]	3	1
	Hospital (new)	4	4[b]	3	2
	Nursing Home (new)	4	4[b]	3	1
	Nursing Home (old)	4	4[b]	3	1
V (Pesticides and PCBs)	Office (new)	4	2	3	2
	Office (old)	4	2	3	1
	School (old)	4	2	3	1
	Hospital (new)	4	2	3	3
	Nursing Home (new)	4	2	3	2
	Nursing Home (old)	4	2	3	1

(continued)

TABLE 7. (continued)

Chemical Group	Facility	No. Location/Bldg.	No. Samples/Day	No. Days	No. of Monitoring Visits
VI (Metals)	Office (new)	3	1	3	2
	Office (old)	3	1	3	1
	School (old)	3	1	3	1
	Hospital (new)	3	1	3	3
	Nursing Home (new)	3	1	3	2
	Nursing Home (old)	3	1	3	1
VII (Particulate Mass and PNAs)	Office (new)	3	1	3	2
	Office (old)	3	1	3	1
	School (old)	3	1	3	1
	Hospital (new)	3	1	3	3
	Nursing Home (new)	3	1	3	2
	Nursing Home (old)	3	1	3	1
VIII (Formaldehyde)	Office (new)	4	1	3	2
	Office (old)	4	1	3	1
	School (old)	4	1	3	1
	Hospital (new)	4	1	3	3
	Nursing Home (new)	4	1	3	2
	Nursing Home (old)	4	1	3	1
IX (Radon)	Office (new)	2	c	1	2
	Office (old)	2	c	1	1
	School (old)	2	c	1	1
	Hospital (new)	2	c	1	3
	Nursing Home (new)	2	c	1	2
	Nursing Home (old)	2	c	1	1

(continued)

TABLE 7. (continued)

Chemical Group	Facility	No. Location/Bldg.	No. Samples/Day	No. Days	No. of Monitoring Visits
X (Air Exchange)	Office (new)	3	2[d]	3	2
	Office (old)	3	2[d]	3	1
	School (old)	3	2[d]	3	1
	Hospital (new)	3	2[d]	3	3
	Nursing Home (new)	3	2[d]	3	2
	Nursing Home (old)	3	2[d]	3	1
XI (CO)	Office (new)	4	C[e]	3	f
	Office (old)	4	C	3	1
XII (NO_2)	Office (old)	4	C	3	1
XIII (Asbestos)	Office (new)	2	1/3[g]	3	2
	Office (old)	2	1/3	3	1
	School (old)	2	1/3	3	1
	Hospital (new)	2	1/3	3	3
	Nursing Home (new)	2	1/3	3	1
	Nursing Home (old)	2	1/3	3	2

[a] Each sample collected in triplicate using distributed air volumes.

[b] One cartridge will be used for sampling and analysis of acrylonitrile; one cartridge will be used for the remaining target compounds.

[c] One sample collected over a 3-month period.

[d] Number of releases per day; six syringe samples will be collected per release.

[e] Continuous data collection.

[f] Performed during first visit only.

[g] One sample collected over a 3-day period.

TABLE 8. MONITORING MATRIX

Building	Trip	Sampling Location	Monitoring Started	Monitoring Completed
Office (new)	1	Office - R4 Office - R1 Office - R7 Outdoors, ground	1/25/85 at 7 pm	1/28/85 at 7 pm
	2	Office - R2 (2 smokers) Office - R1 (1 smoker) Office - R7 (no smokers) Outdoors, ground	4/23/85 at 7 am	4/26/85 at 7 am
Office (old)	1	3rd-floor hallway 5th-floor hallway 8th-floor hallway Roof	8/1/84 at 8 am	8/4/84 at 8 am
Office/School (old)	1	1st-floor renovated office 2nd-floor unoccupied office 3rd-floor occupied office Outdoors, ground	2/25/85 at 7 pm	2/28/85 at 7 pm
Hospital (new)	1	Visitors' lounge Nurses' station Patients' room Outdoors, roof	7/23/84 at 7 pm	7/26/84 at 7 pm
	2	Visitors' lounge Nurses' station Patients' room Outdoors, roof	10/25/84 at 7:30 pm	10/28/84 at 7:30 pm
	3	Visitors' lounge Nurses' station Patients' room Outdoors, roof	8/12/85 at 7 pm	8/15/85 at 7 pm
Nursing Home (new)	1	Day room Nurses' station Patients' room Outdoors, balcony	4/1/85 at 7 pm	4/4/85 at 7 pm
	2	Day room Nurses' station Patients' room Outdoors, balcony	8/6/85 at 7 pm	8/9/85 at 7 pm
Nursing Home (old)	1	TV lounge Unoccupied apartment Occupied apartment Outdoors, ground	7/27/84 at 5 pm	7/30/84 at 5 pm

SAMPLING METHODS

Sampling Unit

Description--

To implement the above sampling design, a minimum of eleven air samples had to be collected at each location during each time period. On past research projects, samples of this type were collected by pulling air through the sorbent or filter using individual sampling pumps. For this project, we designed a compact sampling unit with a single vacuum pump capable of simultaneously collecting up to sixteen different samples at fixed measurable flow rates.

The sampling unit was intended to overcome several problems associated with individual pumps. First, the number of individual pumps needed would be very large. Second, the logistics of individually measuring flow rates for more than eleven pumps at four locations during each sampling period would greatly increase the workload in the field and would require additional personnel. Third, when working in buildings such as offices or hospitals, the area made available for the sampling equipment is often small. Hence, a single compact unit that could replace a large number of individual sampling pumps offered more flexibility in selecting monitoring locations. Finally, the use of a single unit would significantly decrease the noise at each monitoring location.

The compact sampling unit consisted of two 12 x 8 x 11 inch metal boxes with eight flow meters. A Thomas double-diaphragm vacuum pump was housed in a separate, vented metal box. A single vacuum line entered each box and was split through a manifold into seven flow meters. The flow rate for each cartridge was controlled by a needle valve and was read directly from the calibrated flow meter. Each flow meter was individually calibrated prior to the beginning of a sampling trip. In addition, a single vacuum line that supplied a DuPont P2500 constant flow sampler in series with a flow meter was installed in each box to collect metal and asbestos samples. The use of a constant flow sampler was required for these samples since the 0.3 μm Nucleopore filters could easily become embedded with particulate to give a significant increase in back pressure, and hence, drop in flow.

Table 9 summarizes information on the samples collected with the compact sampler and the flow rates used.

TABLE 9. SAMPLES COLLECTED WITH COMPACT SAMPLING UNIT

Sample	Flow Rate (mL/min)
Volatile and Halogenated Volatile Organics	30 20 15
Nitrosamines	200
Miscellaneous Volatiles (Acrylonitrile)	25 25
Pesticides/PCBs	1300
Metals	1000
Formaldehyde	30
Asbestos	2000

Validation--

Once the sampling units were constructed, several validation experiments were performed to show that

- the back pressure caused by several sorbent cartridges attached to the sampling unit would not cause fluctuations in flow rate or calibration of the flow meters, and that
- the flow meters were accurate and reproducible.

In the first experiment, the effect of a sampling cartridge on flow rate was evaluated. For testing, an empty glass cartridge (1 x 30 cm) was connected to one of the sampling ports, the rotometer was set to 22 and the flow rate measured. The empty cartridge was then replaced with a similar cartridge containing 10 g of molecular sieve, the sorbent for formaldehyde collection. The rotometer was again set to 22 and the flow rate measured. During testing, the flow rate through the molecular sieve did not change compared to an equal size, but empty cartridge.

During a second experiment, precision of the flow meters was evaluated by measuring the variability in flow rates over a 14-hour period. For each measurement, the rotometer was adjusted to 20 and triplicate flow measurements were taken using a bubble flow meter. No sampling cartridge was used during the measurements. Results showed no variability in flow rate.

Prior to field monitoring, all rotometers on each unit were calibrated using Tylan mass flow meters. During the first field monitoring trip, a quality assurance check of the rotometers' calibration was performed while in the field. Table 10 compares the sample flow as indicated on the rotometers versus the flow as measured with a bubble flow meter. Both measurements were taken with the sample cartridges installed.

Volatile Organics

Collection Method--

Each sample for volatile organics was collected in triplicate using distributed air volumes. Volatile organic compounds were collected from air samples by passing the air through a glass sampling cartridge (10 x 1.5 cm I.D.) containing 6 cm of 40/60 mesh Tenax. Flow rates were adjusted to approximately 15, 20, and 30 mL/min. This gave sample volumes of 10, 15, and 20 L of air for each of the six 12-hour collection periods.

TABLE 10. QUALITY ASSURANCE FLOW CHECK:
ROTOMETER SETTING VS. BUBBLE FLOW METER

Rotometer Value (mL/min)	Bubble Flow Meter (mL/min)
23.0	24.2
29.0	28.8
25.0	25.0
24.0	27.5
25.0	26.7
25.0	25.9
25.0	26.5
24.0	25.0
25.0	26.3
200	200
190	200
200	193
190	194
190	193
190	176

Sample sizes were selected so that the "breakthrough volume" for any of the target compounds would not be exceeded for the low volume (10 L) sample. Table 11 gives "breakthrough volumes" for each target volatile (18-20). The "breakthrough volume" is defined as that point at which 50% of a discrete sample introduced into the cartridge is lost. Chloroform was not collected using Tenax GC because of its low "breakthrough volume" (9 L at 70°F). Rather, it was treated as a miscellaneous volatile.

Preparation of Sampling Materials--

Tenax GC used during previous field monitoring studies was recycled for use on this project. Prior to use, the Tenax GC was extracted in a Soxhlet apparatus for 24 h first with methanol, then with n-pentane. After extraction, the Tenax GC was dried under a nitrogen atmosphere for 24 h, and then in a vacuum oven at 100°C for 24 h at 28 inches of water. The Tenax was sieved to provide a 40/60 particle size range then packed into glass sampling cartridges. After packing, each cartridge was desorbed at 270°C with a purified helium purge for 5 h.

Twenty-four hours after the final desorption step, 10% of the Tenax GC cartridges were analyzed by thermal desorption/GC/FID to determine background contamination. If the background contamination exceeded specified limits, the entire batch of cartridges was redesorbed and tested for contamination again. Only when cleanliness criteria were met could the cartridges be used for field sampling. Standard operating procedures were used for preparation of Tenax for field sampling.

Preparation of Quality Control Supplies--

Sets of quality control (QC) samples each consisting of one blank and one spiked control were prepared for each field monitoring trip. The spiked controls were loaded using a flask evaporation system as shown in Figure 1 (21). An aliquot (1 μL) of the standard solution prepared in methanol was injected through the septum of the heated loading tube (250°C). The vaporized components were swept onto the Tenax GC cartridge with purified He at a rate of 60 mL/min for 15 min (total He 0.9 L). Because of the low breakthrough volume for methanol (0.8 L at 70°C), the majority of it passes through the cartridge. Compounds and the amount loaded on each cartridge are shown in Table 12.

TABLE 11. TENAX GC BREAKTHROUGH VOLUMES FOR TARGET COMPOUNDS[a]

Compound	BP (°C)	Breakthrough (L)					
		50°F	60°F	70°F	80°F	90°F	100°F
Benzene		108	77	54	38	27	19
Xylene[b]	106	>500	>350	>250	>175	>125	>90
Ethylbenzene	135	1,393	984	693	487	344	243
1,3,5-Trimethylbenzene[b]	163	>1,200	>900	>650	>450	>350	>250
Styrene[b]	145	>1,200	>900	>650	>450	>350	>250
n-Decane[b]	174	>300	>200	>150	>100	>75	>50
n-Undecane[b]	196	>300	>200	>150	>100	>75	>50
n-Dodecane[b]	215	>300	>200	>150	>100	>75	>50
1,2-Dichloroethane	83	49	36	27	20	15	11
1,1,1-Trichloroethane	75	23	18	15	12	9	7
Trichloroethylene	87	90	67	50	38	28	21
Tetrachloroethylene	121	361	267	196	144	106	78
1,1,2,2-Tetrachloroethane	146	477	353	262	199	147	112
Carbon tetrachloride	77	41	29	20	14	10	8
Chlorobenzene	132	899	653	473	344	249	187
o-Dichlorobenzene	181	1,531	1,153	867	656	494	372
α-Pinene[b]	155	>300	>200	>150	>100	>75	>50
α-Epichlorohydrin	116	200	144	104	74	54	39
Cresol	202	>2,000	>1,500	>1,100	>800	>550	>400
2-Ethoxyethyl acetate	156	>170	>110	>75	>50	>32	>22

[a]Based on 1.5 I.D. × 6.0 cm cartridge.

[b]Data not available; value based on breakthrough value of lower homologs, or similar compound.

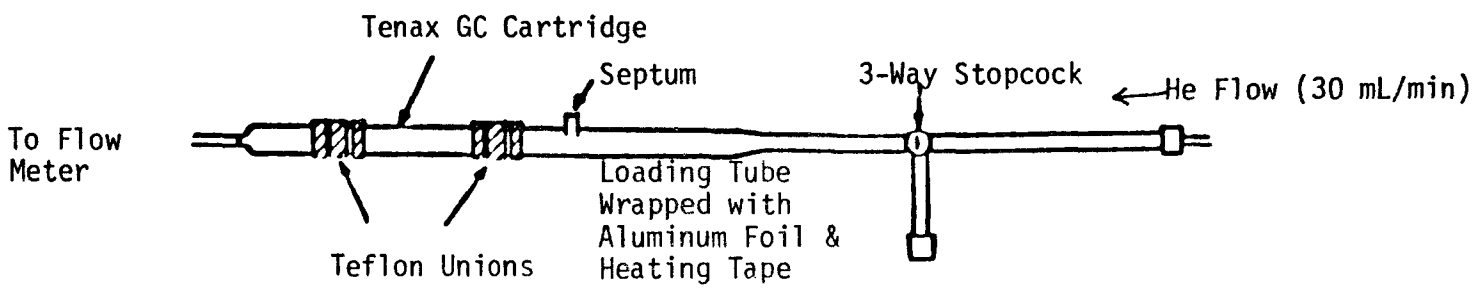


Figure 1. Schematic of vaporization unit for loading organics dissolved in methanol onto Tenax GC cartridges.

TABLE 12. CONTROLS FOR VOLATILE ORGANICS

Compounds	Quantity Loaded (ng/cartridge)
1,2-Dichloroethane	60
1,1,1-Trichloroethane	54
Benzene	42
Carbon tetrachloride	62
Bromodichloromethane	60
Trichloroethylene	58
α-Epichlorohydrin	104
n-Butylacetate	140
Tetrachloroethylene	124
Chlorobenzene	58
Ethyl benzene	42
m-Xylene	34
Styrene	36
2-Ethoxyethyl acetate	156
o-Xylene	60
1,1,2,2-Tetrachloroethane	62
α-Pinene	58
1,3,5-Trimethylbenzene	104
1,2,4-Trimethyl benzene	40
m-Dichlorobenzene	62
n-Decane	58
o-Cresol	62
m-Cresol	124
n-Undecane	60
n-Dodecane	60
Isopropylbenzene	20
n-Propylbenzene	80
m-Ethyltoluene	58
p-Dichlorobenzene	80
o-Dichlorobenzene	40

The number of QC samples scheduled and exposed for each trip is shown in Table 13.

Nitrosamines

Collection Method--

Nitrosamines in air samples were collected by passing air through a glass sampling cartridge containing Thermosorb/N (ThermoElectron Corporation). Flow rates were adjusted to approximately 100 mL/min. This gave a sample volume of 72 L for each of the six 12-hour collection periods.

Studies performed with this sorbent (22) have shown that breakthrough volumes are greater than 100 L for both dimethylnitrosamine and nitrosomorpholine. In addition, it has been demonstrated that the collection technique using Thermosorb/N is free from artifactual nitrosamine formation.

Preparation of Sampling Materials--

Sampling cartridges were used directly as supplied from the ThermoElectron Corporation.

Preparation of Quality Control Samples--

Sets of QC samples each consisting of one blank and one spiked control were prepared. Controls were loaded by directly injecting 1 μL of a standard nitrosamine solution into the inlet side of the sampling cartridge. Standard solutions were obtained from the ThermoElectron Corporation. Each spiked control contained 97 ng of dimethylnitrosamine and 110 ng of nitrosomorpholine.

The number of QC samples scheduled and exposed for each trip is shown in Table 13.

Miscellaneous Volatiles

Collection Method--

Miscellaneous volatiles including ethylene oxide, vinyl chloride, vinylidene chloride, chloroform, acrolein, n-propanol, n-butanol, 2-propanone, 2-butanone and phenol were collected by passing air through a 150 mg charcoal sampling tube (Lot 120, SKC, Inc.) using approved NIOSH procedures (23). Flow rates were adjusted to ~25 mL/min to give a total

TABLE 13. SCHEDULE OF CONTROL/BLANK EXPOSURE[a]

Parameter	Building	Trip	Lab Control/Blank Sets		Field Control/Blank Sets		Duplicates	
			Scheduled	Exposed	Scheduled	Exposed	Scheduled	Exposed
Volatile Organics	Hospital (new)	1	3	3	5	5	-[b]	-
		2	3	3	5	5	-	-
		3	3	3	8	8	-	-
	Nursing Home (old)	1	3	0	4	4	-	-
	Office (old)	1	3	3	5	4	-	-
	Office (new)	1	5	5	8	8	-	-
		2	4	4	8	8	-	-
	School (old)	1	4	4	8	8	-	-
	Nursing Home (new)	1	4	4	8	8	-	-
		2	4	4	8	8	-	-
Pesticides/PCB's	Hospital (new)	1	3	2	3	3	2	2
		2	3	3	4	4	2	2
		3	4	4	4	4	2	2
	Nursing Home (old)	1	3	0	3	2[c]	2	2
	Office (old)	1	3	0	3	3	2	2
	Office (new)	1	4	4	4	4	2	2
		2	4	4	4	4	2	2
	School (old)	1	3	3	4	4	2	2
	Nursing Home (new)	1	3	3	4	4	2	2
		2	4	4	4	4	2	2
Formaldehyde	Hospital (new)	1	3	3	4	4	1	1
		2	5	5	4	0	1	1
		3	0	0	6	6	1	1
	Nursing Home (old)	1	3	0	4	4	1	1
	Office (old)	1	3	3	4	4	1	1
	Office (new)	1	6	6	4	4	1	1
		2	6	6	6	6	1	1
	School (old)	1	4	4	6	6	1	1
	Nursing Home (new)	1	6	6	6	6	1	1
		2	0	0	6	6	1	1
Miscellaneous Volatiles/ Acrylonitrile	Hospital (new)	1	3	3	4	4	4	4
		2	3	3	4	4	4	4
		3	0	0	0	0	0	0
	Nursing Home (old)	1	3	3	4	4	4	4
	Office (old)	1	3	3	4	4	4	4
	Office (new)	1	3	3	4	4	4	4
		2	0	0	0	0	0	0
	School (old)	1	3	3	4	4	4	4
	Nursing Home (new)	1	0	0	0	0	0	0

(continued)

TABLE 13. (continued)

Parameter	Building	Trip	Lab Control/Blank Sets		Field Control/Blank Sets		Duplicates	
			Scheduled	Exposed	Scheduled	Exposed	Scheduled	Exposed
Nitrosamines	Hospital (new)	1	3	3	4	4	2	2
		2	3	3	4	4	2	2
		3	0	0	4	4	2	2
	Nursing Home (new)	1	0	0	4	4	2	2
	Office (old)	1	0	0	4	4	2	2
	Office (new)	1	4	4	4	4	2	2
		2	2	2	4	4	2	2
	School (old)	1	2	2	4	4	2	2
	Nursing Home (new)	1	0	0	4	4	2	2
		2	0	0	4	2	2	2
Metals[d]	Hospital (new)	1	3	3	4	1	1	
		2	3	3	4	4	1	1
		3	2	2	4	4	1	1
	Nursing Home (old)	1	0	0	4	4	1	1
	Office (old)	1	3	3	4	4	1	1
	Office (new)	1	3	3	4	4	1	1
		2	3	3	4	4	1	1
	School (old)	1	3	3	4	4	1	1
	Nursing Home (new)	1	3	3	4	4	1	1
		2	2	2	4	4	1	1
Respirable Particulates/ Polynuclear Aromatics[d]	Hospital (new)	1	0	0	4	4	1	1
		2	3	3	4	4	1	1
		3	3	3	3	3	1	1
	Nursing Home (old)	1	3	3	4	4	1	1
	Office (old)	1	3	3	4	4	1	1
	Office (new)	1	4	4	4	2[e]	1	1
		2	3	3	4	4	1	1
	School (old)	1	2	2	4	4	1	1
	Nursing Home (old)	1	4	4	4	4	1	1
		2	3	3	4	4	1	1
Asbestos[d]	Hospital (new)	1	0	0	0	0	0	0
		2	0	0	0	0	0	0
		3	0	0	0	0	0	0
	Nursing Home (old)	1	1	1	1	1	0	0
	Office (old)	1	0	0	1	1	0	0
	Office (new)	1	0	0	1	1	0	0
		2	0	0	1	1	0	0
	School (old)	1	0	0	1	1	0	1
	Nursing Home (old)	1	1	1	1	1	0	0
		2	0	0	1	1	0	0

(continued)

TABLE 13. (concluded)

Parameter	Building	Trip	Lab Control/Blank Sets		Field Control/Blank Sets		Duplicates	
			Scheduled	Exposed	Scheduled	Exposed	Scheduled	Exposed
Radon[d]	Hospital (new)	1	1	1	1	1	1	1
		2	0	0	0	0	0	0
		3	0	0	0	0	0	0
	Nursing Home (old)	1	0	0	0	0	1	1
	Office (old)	1	0	0	0	0	1	1
	Office (new)	1	0	0	1	1	1	1
		2	0	0	0	0	0	0
	School (old)	1	0	0	1	1	1	1
	Nursing Home (old)	1	1	0	1	1	1	1
		2	0	0	0	0	0	0
Air Exchange	Hospital (new)	1	0	0	0	0	12	12
		2	0	0	0	0	12	12
		3	0	0	0	0	12	12
	Nursing Home (old)	1	0	0	0	0	12	12
	Office (old)	1	0	0	0	0	12	12
	Office (new)	1	0	0	0	0	12	12
		2	0	0	0	0	12	12
	School (old)	1	0	0	0	0	12	12
	Nursing Home (old)	1	0	0	0	0	12	12
		2	0	0	0	0	12	12

[a]Lab control/blank sets were analyzed only if problems were encountered with the field control/blank set.

[b]All samples collected in triplicate.

[c]Insufficient number of plugs to prepare 3 sets of FC/FBs.

[d]Blanks only.

[e]Due to insufficient number of filters, only 2 FBs were exposed.

sample volume of 18 L of air for each of the six 12-hour collection periods.

Acrylonitrile was collected using a separate 150 mg charcoal tube in an identical manner. A separate tube for acrylonitrile was required to accommodate different desorption conditions. After sampling, the solid sorbents were stored at -20°C prior to analysis.

Preparation of Sampling Materials--

Sampling cartridges were used directly as supplied from SKC, Inc.

Preparation of Quality Control Samples--

Sets of QC samples each consisting of one blank and one spiked control were prepared. The spiked controls were prepared by loading known amounts of the analytes onto newly-opened charcoal sampling tubes. The blanks were simply tubes to be opened at the appropriate time (in the field at the time of sampling for field blanks and in the lab at the time of analysis for the lab blanks).

Compounds normally in the liquid state were loaded onto the tubes using the flash evaporation technique described previously. Gaseous compounds were loaded onto the tubes using the same apparatus except a known quantity of gas at a known concentration was injected using a gas-tight syringe. The loaded tubes were capped and stored in a freezer after loading was completed.

The analytes were divided into two groups for QC sample preparation: the gases (vinyl chloride and ethylene oxide), and the liquids (acrylonitrile, vinylidene chloride, chloroform, 2-propanone, 2-butanone, n-propanol, n-butanolphenol and acrolein). First, vinyl chloride was loaded onto a set of tubes. Next, a mixture of the liquids exclusive of acrylonitrile was loaded onto a set of tubes. Finally, acrylonitrile in CS_2 was loaded onto an independent set of tubes. Since a reliable source of ethylene oxide could not be found, QC samples containing this material were not prepared. The quantities loaded (Table 14) were 20 to 100 times the estimated detection limits.

The number of QC samples scheduled and exposed for each trip is shown in Table 13.

TABLE 14. CONTROLS FOR MISCELLANEOUS VOLATILES COMPOUNDS

Analyte	Quantity Loaded (μg/cartridge)
Vinyl chloride	2.01
Acrylonitrile	0.399
Vinylidene chloride	2.43
Chloroform	2.99
2-Propanone	317
2-Butanone	322
n-Propanol	322
n-Butanol	324
Acrolein	336

Pesticides and PCBs

Collection Method--

Pesticides/PCBs were collected from air samples by passing the air through a glass sampling cartridge containing a 22 mm x 7.6 cm cylindrical polyurethane foam (PUF) plug. Flow rates were adjusted to ~1.3 L/min. This gave sample volumes of 936 L for each 12-hour sampling period. Research performed by Lewis et al. (24,25) has demonstrated that collection efficiency for all of the target pesticides/PCBs, except Dichlorvos, should be greater than 84%. Collection efficiency for Dichlorvos should be 72 $\pm$ 13%. Since breakthrough from the PUF is the major cause of loss for this pesticide, larger sampling volumes were not used. Immediately after collection, the PUF plugs were removed from the glass sampling cartridges and sealed in glass jars with Teflon-lined screw caps. The glass jars were placed in air-tight, uncoated paint cans for storage in the field.

Preparation of Sampling Materials--

Polyurethane foam (PUF) plugs for the collection of pesticides and PCBs were prepared from open-cell polyurethane foam, density 0.022 g/cm (Olympia Products, Greensboro, NC). Sheets of PUF were cut into 22 mm x 7.6 cm cylinders with a 7/8" arch punch and jig. The plugs were Soxhlet-extracted for 24 hours in acetone followed by a 24-hour extraction in hexane. During Soxhlet extraction, the Soxhlet reservoir was wrapped with aluminum foil to prevent photodecomposition of the foam. After extraction the plugs were dried in a vacuum oven at ambient temperature. Once dry the plugs were placed in 8-dram glass vials, capped, and stored in uncoated, aluminum paint cans until sampling.

Preparation of Quality Control Samples--

Sets of QC samples each consisting of one blank and one spiked control were prepared. Controls were loaded by directly injecting 1 μL of a standard pesticide/PCB solution prepared in hexane into the PUF plugs. Aroclor 1254 served as the PCB standard. Spiked controls were fortified with target pesticides/PCBs at the levels listed in Table 15.

The number of QC samples scheduled and exposed for each trip is shown in Table 13.

TABLE 15. CONTROLS FOR PESTICIDES/PCBs

Compound	Quantity Loaded (ng/PUF)
Aroclor 1254	250
tech.-Chlordane	167
Chlorpyrifos	1670
Ronnel	1810
Dichlorvos	2240
Diazinon	2260
Malathion	1830
α-BHC	22
β-BHC	17.3
γ-BHC	18.8

Inhalable and Respirable Particulates and Polynuclear Aromatic Hydrocarbons (PNAs)

Collection Method--

A National Bureau of Standards (NBS) Portable Ambient Particulate Sampler was used to collect inhalable or coarse (3-15 μm) and respirable or fine ($\lesssim$3 μm) particulates and PNAs in air samples. This sampler employed two filters in series to collect the particulates. An 8.0 μm Nucleopore filter was used for coarse particle collection, a 3 μm Ghia Zeflour Teflon fiber filter for fine particle collection. During sampling, flow rates were adjusted to ~6 L/min for a total sample volume of 8.6 m^3 for each 24-hour sampling period. After collection, filters assemblies were capped. Samples were stored at room temperature wrapped in aluminum foil.

The NBS sampler was designed by the National Bureau of Standards for EPA/RTP and supplied to RTI by EPA. Details of the design, testing, and operation of this sampler are contained in the NBS project report, which is available from NTIS as document number NBSIR 82-2861 (26).

This sampler provided several advantages for indoor air sampling over the more common dichotomous sampler. Most importantly, it was a small, compact, quiet sampler which is preferable for sampling indoor environments without interrupting normal activities.

Preparation of Sampling Materials--

Seven National Bureau of Standards (NBS) Portable Ambient Particulate Samplers were obtained from the EPA. The units were modified allowing them to operate on an external DC power supply rather than on the NiCd batteries specified.

All filters used during sampling were allowed to equilibrate at 70 $\pm$ 2°F and 50 $\pm$ 2% relative humidity ($\pm$2°C) for 24 hours. The filters were then weighed using a Mettler Balance with certified accuracy to 0.001 μg. All filters were exposed to an ionizing source immediately prior to weighing to reduce static charge and improve reproducibility of filter weights. Weighed filters were then assembled into two-stage filter holders.

Preparation of Quality Control Samples----

Single filter assemblies containing both the inhalable and respirable particulate filters were prepared as blank samples. The number of QC samples scheduled and exposed for each trip is shown in Table 13.

Metals

Collection Method--

Air was sampled using a DuPont P2500 monitoring pump at a flow rate of approximately 1 L/min. For a 24-hour collection period, this provided a total sample volume of 1.4 m^3. Ambient air particulate from the sampled air was collected on aerosol-grade, 0.3 μm Nucleopore polycarbonate filters. After collection, the filters were carefully removed from the holders and placed upright in a 35 mm plastic petri dish for storage and transportation.

Preparation of Sampling Materials--

Aerosol-grade, polycarbonate filters were used as supplied by the Nucleopore Corporation.

Preparation of Quality Control Samples--

Unexposed filters placed in clean 4-cm plastic petri dishes served as blank samples. No spiked control samples were prepared. The number of QC samples scheduled and exposed for each trip is shown in Table 13.

Formaldehyde

Collection Method--

Formaldehyde was collected from air samples by passing the air through a 9 mm I.D. x 30 cm glass tube containing 10 g of pretreated molecular sieve powder. Flow rates were adjusted to ~30 mL/min to provide a 60 L sample for each 24-hour period. Exposed sieve material was emptied from the glass holder and stored in sealed glass bottles at room temperature until analysis.

Preparation of Sampling Material--

To prepare sample cartridges, molecular sieve (~1 kg) was washed in deionized water to remove fines. It was next filtered under a vacuum through Whatman #2 filter paper and dried for 24 hours in a vacuum oven at 180°C. Once dried, 10 gram aliquots were transferred to 20 mL serum bottles and baked in an oven at 200°C for 20 minutes. The bottles were removed and sealed while hot with sleeve-type rubber stoppers. The sieve was shipped to the field in these bottles. Immediately prior to sampling the bottle was opened, the sieve transferred to an empty glass cartridge and the cartridge attached to the sampling unit.

Preparation of Quality Control Samples--

Sets of QC samples each consisting of one blank and one spiked control were prepared for each field monitoring trip.

Spiked controls were fortified with formaldehyde using a flash evaporation system. For spiking, 10 g of prepared molecular sieve was transferred from the 20 mL serum bottle into a 1 cm x 30 cm borosilicate glass tube. The tube was placed into a fitting on the flash evaporator system and the He carrier gas flow was adjusted to 60 mL/min. A 2.5 μL injection of an aqueous formaldehyde solution was injected into the flash evaporator system and loaded onto the molecular sieve for two minutes. Throughout the study controls were spiked at levels ranging from 3.5 to 21 μg per cartridge.

The number of QC samples scheduled and exposed for each trip is shown in Table 13.

Validation of the Formaldehyde Protocol--

An experiment was performed to verify that formaldehyde in a sample would not "breakthrough" the molecular sieve cartridge under field conditions. During testing, spiked and unspiked molecular sieve cartridges were prepared. Three spiked cartridges were each placed in series with unspiked backup cartridges. The cartridges were then placed onto a sampling unit and air was pulled through the cartridges at 30 mL/min for 24 hours (20°C, 50 $\pm$ 5% RH). Each cartridge was analyzed for formaldehyde as described in Section 6. Triplicate spiked and unspiked cartridges maintained with no air flow were analyzed at the same time. Formaldehyde did not appear on the backup cartridge indicating that breakthrough had not

occurred. Average recoveries of 56 and 58% were achieved for spiked exposed and unexposed cartridges, respectively, indicating no loss of formaldehyde due to exposure and hence no significant breakthrough.

Radon

Collection Method--

Air was sampled for radon using Track-Etch^R SF integrating passive radon monitors (Terradex Corporation). The monitors were placed on the ceilings or upper door facings within the areas sampled. The monitors were exposed for three months. They were then taken down, resealed in their aluminum envelopes, and returned to the Terradex Corporation for analysis.

Preparation of Sampling Materials--

Radon monitors were used directly as provided by the Terradex Corporation.

Preparation of QC Sets--

Unexposed monitors served as field and laboratory blanks. The number of QC samples scheduled and exposed for each trip is shown in Table 13.

Air Exchange Measurements

Collection Method--

Air exchange measurements were conducted using sulfur hexafluoride (SF_6) as a tracer gas. Air samples were collected at discrete intervals following release of the tracer into the building air supply duct(s).

Approximately 3 L of SF_6 for each 10^6 ft^3 of building volume was injected in the air supply system. A 0.5 to 1 hour delay between release and sample collection allowed for distribution of the tracer into building compartments. Sampling was performed using programmable syringe samplers (Manufacturer Model DSI-12) that automatically collected 30 mL of air at preselected time intervals. Samples were collected at 1, 3, 5, 7, 9 and 11 hours after tracer release.

After collection, syringes were sealed and stored at room temperature until analysis.

Preparation of Sampling Materials--

The DSI sequential syringe samplers were inspected and repaired if necessary prior to each trip. The samplers were used as specified by the manufacturer.

Sulfur hexafluoride was purchased in a gas cylinder from MG Scientific Gases. The gas was checked for purity by GC/ECD analysis. No contaminants were detected.

Preparation of Quality Control Samples--

No controls or blanks were prepared.

Carbon Monoxide

Collection Method--

Concentrations of carbon monoxide (CO) were monitored using a Bendix Infrared CO analyzer. This analyzer was calibrated using compressed gas cylinders at 0, 2, 5, 10, 20 and 30 ppm CO.

After installation at a sampling location, the analyzer was allowed to warm up for 1 hour and then calibrated using the compressed gas cylinders. Calibration gas from the cylinders was delivered to a manifold where the analyzer sampled. The calibration manifold was used to ensure atmospheric pressure that would simulate an ambient air sample. Multipoint calibrations were conducted at the beginning of the monitoring period. Zero and span tests were conducted daily to ensure that the multipoint calibration remained accurate.

Data was copied on strip chart recorders. The multipoint calibrations were then used to generate a calibration equation. The calibration equation was a linear relationship in the form $y=M(x)+b$, where $y=[CO]$, M=slope, x=recorder response and b=intercept. Data was reduced to hourly averages and tabulated on coding forms for computer entry.

Preparation of Sampling Materials--

The Bendix CO monitors were provided by EPA (RTP). Before the start of monitoring, the analyzers were tested for proper operation, including linearity.

Calibration gas was received and certified by RTI Ambient Air Audit Center (AAAC) prior to use. Zero air was also certified by the laboratory.

Preparation of Quality Control Samples--

No QC samples were prepared.

Nitrogen Dioxide

Collection Method--

Nitrogen dioxide was measured in the air using Bendix continuous chemiluminescent monitors. After installation at a sampling location, the analyzers were allowed to warm up (4 to 6 hours) and then calibrated using the gas-phase titration method. This was performed by simultaneously calibrating the NO and NO_x channels and then calibrating the NO_2 channel. The NO and NO_x calibration is conducted by dilution of the compressed gas nitric oxide cylinder. The NO_2 channel is calibrated by adding ozone to the highest NO-NO_x calibration point. Ozone reacting with NO produces NO_2, which is equal to the change in analyzer NO response. The efficiency of the catalytic converter is based upon the analyzer's NO_x response during the production of NO_2.

Multipoint calibrations were conducted at the beginning of the monitoring period. Zero and span tests were conducted daily to ensure that the analyzers multipoint calibration remained accurate. All data were recorded on strip chart recorders.

Preparation of Sampling Materials--

Bendix NO_x analyzers were obtained from EPA/RTP. Leeds and Northrup strip chart recorders were also obtained from EPA/RTP. The calibration system used was RTI's Gas-Phase Titration assembly consisting of a nitrogen oxides-free, zero air system; flow controllers to maintain constant and predictable flows; an NBS traceable compressed gas cylinder of nitric oxide and an NBS traceable, soap film, flow meter. This complete gas-phase titration system was verified for proper operation in the RTI Ambient Air Audit Center (AAAC) prior to use. The AAAC was operated with NBS traceable standards and EPA approved procedures. Before the start of monitoring, the analyzers were tested for proper operation, including linearity and converter efficiency.

Preparation of Quality Control Samples--

No QC samples were prepared.

Asbestos

Collection Method--

Samples for asbestos analysis were collected on Nucleopore, polycarbonate filters (37 mm, 0.2 μ) backed with a cellulose ester filter (0.87 μ) to enhance uniformity of particulate collection. These filters were placed in a three-piece plastic, sampling cassette over a cellulose support pad.

At the beginning of each sampling period, the filter cassette was attached to a DuPont P2500 Constant Flow pump and the flow rate adjusted to ~2 L/min. This provided a total sample volume of ~4.6 m^3 over a 72-hour sampling period.

Samples were stored in the cassette holder until analysis.

Preparation of Sampling Materials--

Filters were assembled in cassettes inside a laminar flow laboratory hood equipped with a high efficiency particulate arrestant (HEPA) air filter to prevent contamination with ambient fibrous particles. Cassettes, with filters and support pads in place, were sealed with shrink bands and numbered with an indelible marker.

Preparation of Quality Control Samples--

Unexposed filter cassettes served as field and laboratory blanks. No spiked controls were prepared. The number of QC samples scheduled and exposed for each trip is given in Table 13.

Meteorological Measurements

Collection Method--

Meteorological measurements made at each site consisted of wind speed, wind direction, temperature and relative humidity. These measurements were made using a Meteorology Research Incorporated Metric Mechanical Weather Station. The station was placed atop a 2-meter portable tower, was located in the area of optimum exposure and was oriented with a magnetic compass.

Wind direction was sensed by a ball bearing-mounted, balanced, single blade aluminum vane with nose damping. The wind speed was measured by a

cup anemometer employing three conical aluminum cups. The temperature sensor was a shielded spiral coil bimetal element. All information was recorded on a strip chart recorder housed within the weather station. (See Appendix A for a summary of weather conditions.)

In addition to the meteorological data collected, constant temperature and relative humidity measurements were made at two interior locations using Cole-Palmer Hydrothermographs and a psychrometer. (See Appendix B for a summary of indoor temperature and humidity conditions.)

Preparation of Sampling Materials--

All sampling equipment was tested, repaired and calibrated prior to each sampling trip.

Preparation of Quality Control Samples--

No QC samples were prepared.

SECTION 5

BUILDING SURVEY

OVERVIEW

Data Collection

An important part of this research project was to collect information on ancillary variables that could effect the indoor air quality of the buildings in the field monitoring study. To this end, data on building structure, building material composition, cleaning and maintenance materials in use, heating, ventilating and air conditioning operating parameters, and other related information were collected by Research Triangle Institute (RTI) and the National Institute of Building Sciences (NIBS).

These activities were initiated through preliminary meetings between RTI and EPA project staff to determine what data should be collected. Data collection instruments were drafted and circulated. A meeting attended by RTI, EPA, and NIBS project staff was then held to review the instruments and to determine what information could be collected by RTI and what could more appropriately be provided by NIBS. As a result of that meeting the following items were agreed upon.

1. The three inside and one outside monitoring locations for each building would be selected by EPA and RTI personnel; however, NIBS personnel would review the interior locations selected to check that they are served by the one outside air intake to be monitored.

2. The drawings and specifications for each building to be monitored would be provided to NIBS by EPA/RTP.

3. During the building operation analysis, the NIBS contractor would note readily identifiable materials containing asbestos.

4. It was requested that NIBS provide probable air exchange rates for the spaces to be monitored (based on the information shown on the drawings) and include this information in the building operation analysis.

5. After considerable discussion about the draft building questionnaire, it was agreed that it would be more efficient to obtain much of the needed information from the drawings and specifications for each building and confirm this information at the site as part of the Building Operation Analysis, than to conduct a questionnaire-type survey. As a result, the NIBS representatives agreed to prepare a narrative report for each building providing the following information:

   - size of building,
   - size of monitoring area
   - floor budget
   - mechanical ventilation system design,
   - interior building materials,
   - exterior building materials,
   - general construction,
   - interior finishes.

6. RTI would provide the remaining information using the questionnaire format.

Based on this meeting, a second draft of RTI's survey instruments was prepared and the review process repeated. Based on the final review, four final data collection documents were prepared. These forms are more completely described in subsequent paragraphs.

The next phase of the data collection activity was the identification of the appropriate personnel to be interviewed at the monitoring sites. If personnel were identified prior to the site visit, initial telephone contacts were made to identify the types of data to be collected. These calls were supplemented by contacts from the EPA project staff to facilitate the ease of data acquisition. When the project team arrived on site, data collection began with the final identification of the monitoring locations. This selection was in some cases influenced by data reviewed and interviews conducted during the first hours on-site. Once the locations were selected, equipment was placed, and the formal interview process begun. With one exception, as noted below, all forms were completed at the beginning of the study period for the particular location. The remaining form was used to record data on an ongoing basis and was completed during the start and finish of each individual monitoring period. The remaining sections of this chapter describe the data collection instruments and the data collected using them for each of the six buildings visited as part of this research study.

Data Collection Instruments

Using the iterative review process described previously, four data collection instruments were developed by RTI. These forms were used to collect different data, using various sources, and were completed at varying times throughout the monitoring period. The four forms included the General Area Description, the Building Questionnaire, the Monitor Location Questionnaire, and the General Interview Information form. Each is described in more detail in the following paragraphs.

NIBS provided a written report for each building (except the old office) describing the size, general construction, building materials, interior finishes, and ventilation system. A copy of these reports is given in Appendix C.

General Area Description--

The purpose of this form was to record general data on the area surrounding the building being monitored. The area of interest was an elliptical area of approximately one-half mile radius, with an additional half mile up-wind inclusion. Data descriptive of the area included amounts of open land, water, hills and other impediments to wind flow, and descriptions of the surrounding structures or land on each side of the building. These surrounding areas were described in terms of potential effects on the monitoring site and included data on sources of chemicals, traffic volume, and any unusual occurrences in the immediate past few days. This form was completed once at the beginning of the study period for the particular site.

Building Questionnaire--

This document, also completed once at the beginning of the study period, was used to record data describing the structure containing the individual monitoring locations. The document contained five sections, each with a differing focus. The first section described the general characteristics of the structure, including usage, age and recent renovations, size and volume, building materials, attached garages, and water supply. The second section described the interior of the structure in terms of internal construction characteristics and materials and the heating, ventilation, and air conditioning systems including the normal climate

maintained. The third section focused on building modifications, especially those affecting building tightness. The fourth section listed data on internal maintenance and decor by describing the internal furnishings and use of pesticides and cleaning products. The types of products and the frequency of application were detailed. The final section described any external influences, such as pressure gradients, unusual local events, and any known outdoor air quality information. In addition, data on local meteorology, both micro and macro, were recorded in this section.

Monitor Location Questionnaire--

This form collected information about the specific locations where monitoring devices were placed and was completed repetitively for each day that monitoring was undertaken. Administration of some parts of the Building Questionnaire was also repeated to record data on any major structural improvements or significant modifications that might influence the indoor air quality. The Monitor Location Questionnaire included a general description of the location of the monitors, focusing on the use of the area, as well as its size, insulation, and the presence of products which might affect air quality through the direct introduction of a chemical or through the out-gassing of various products as the materials aged. Products of particular interest included foam insulation, polyurethane, plywood, plastics, carpeting, wall coverings, and pesticides. Data were also collected on the presence and use of gas cooking stoves, gas or kerosene space heaters, free standing stoves or fireplaces, clothes dryers, and humidifiers. Information on air filters or particle scavengers and vacuuming and dusting regimens was collected and supplemented with data on the amounts and frequency of use of household products, including cleaning supplies, aerosol products, and housekeeping products. The final section of this form listed variable data specific to the period being monitored. These data included the dates and times of monitoring, the inside and outside meteorology (temperature, humidity, wind speed and direction, and barometric pressure). Additional information on occupancy levels, smoking status, and the presence of pets or pest strips were collected, as was an indication of the presence of open windows. Specific descriptions of any

unusual products in use in the immediate area were recorded, as were the details of any unusual occurrence during the monitoring period.

General Interview Information--

This form was used to collect information about the data collection process. It identified the persons from whom data were collected and recorded addresses and phone numbers in case recontact became necessary. The form also provided a final place in which to record any unusual circumstances that occurred and might have had any affect on the data collected and its subsequent analysis.

RESULTS

This section describes each of the buildings visited, including specific information about the site in general, the building monitored, and the specific locations of the monitoring instrumentation. The data presented are a summary of the data collected on the various questionnaires described above. This information was supplemented by the data provided by the National Institute of Building Sciences.

Hospital (New)

Trip 1--

General Area Description--This site, monitored during July 1984, was the new hospital building of a Veterans Administration (VA) Hospital and Domiciliary complex located near Martinsburg, West Virginia. The complex was located in a generally rural setting in rolling countryside. Over 60% of the immediate surrounding land was open and undeveloped with no obstructions to wind flow. Adjacent to the building on all sides were parking areas with interspersed grassy lawns. Located in the same site as the hospital were the domiciliary unit, the nursing home, and the original hospital complex, built in the 1940s. Farm land located behind the facility presented the only known suspected source of chemicals in the surrounding area. It was reported that there had been observed aerial spraying, presumably to supplement the normal application of herbicides or pesticides. Traffic flow in the immediate vicinity was limited to local hospital traffic. There were no freeways in the area; the main state highway, with an average traffic flow of 200 cars per hour, was located approximately one-third of a mile from the front of the hospital. At the

site itself, there had been a recent application of 300 gallons of a Malathion mixture sprayed on trees and shrubs around the facility. The application had been so recent that a distinct odor was present.

Building Description--This building was a recently completed structure being prepared for use as a hospital facility in the VA complex. The total building volume was >580,000 square feet. The structure, built in 1983 and 1984, uses water obtained from a private well, treated in a private on-site facility, and stored in an on-site tank. Radiant heaters in stairwells were used to supplement the main heating system, which used only #2 fuel oil. Electric kitchen appliances were supplemented with steam appliances. No secondary sources of air conditioning were present; however, secondary ventilation was supplied by exhaust systems in the kitchen and bathrooms. Heating systems were designed to maintain a 72°F temperature during the winter, and 78°F temperature during the summer, with a standard 60% relative humidity.

Since the building was brand new and unoccupied, there were no internal maintenance changes in the facility. There were no reported unusual occurrences in the building or on-site during the seven days prior to monitoring. The building construction was finished approximately eight months before sampling began, but only the security station and engineering offices had been occupied.

All monitoring locations were on the fifth floor. Figure 2 shows the monitoring area with each location marked.

Monitoring Location #1, Visitors' Lounge--This location was an irregularly-shaped room to be used as a visitors' lounge (Room 5-A-103). Located on the fifth floor, approximately seventy feet above grade, the room's major dimensions were 30 feet by 35 feet, with eight-foot hanging ceilings. There were no opening windows, only one interior door, and ventilation was supplied by three air supplies and two returns rated at 600 cfm and 510 cfm, respectively.

Furnishings included thirty new chairs, each containing a foam cushion, plastic picture covers and light covers with a total surface area of approximately 90-100 square feet. There were also five wooden tables. All walls of the room were painted with the exception of one 200 square foot wall covered with wall paper. The floors were covered with carpeting. The

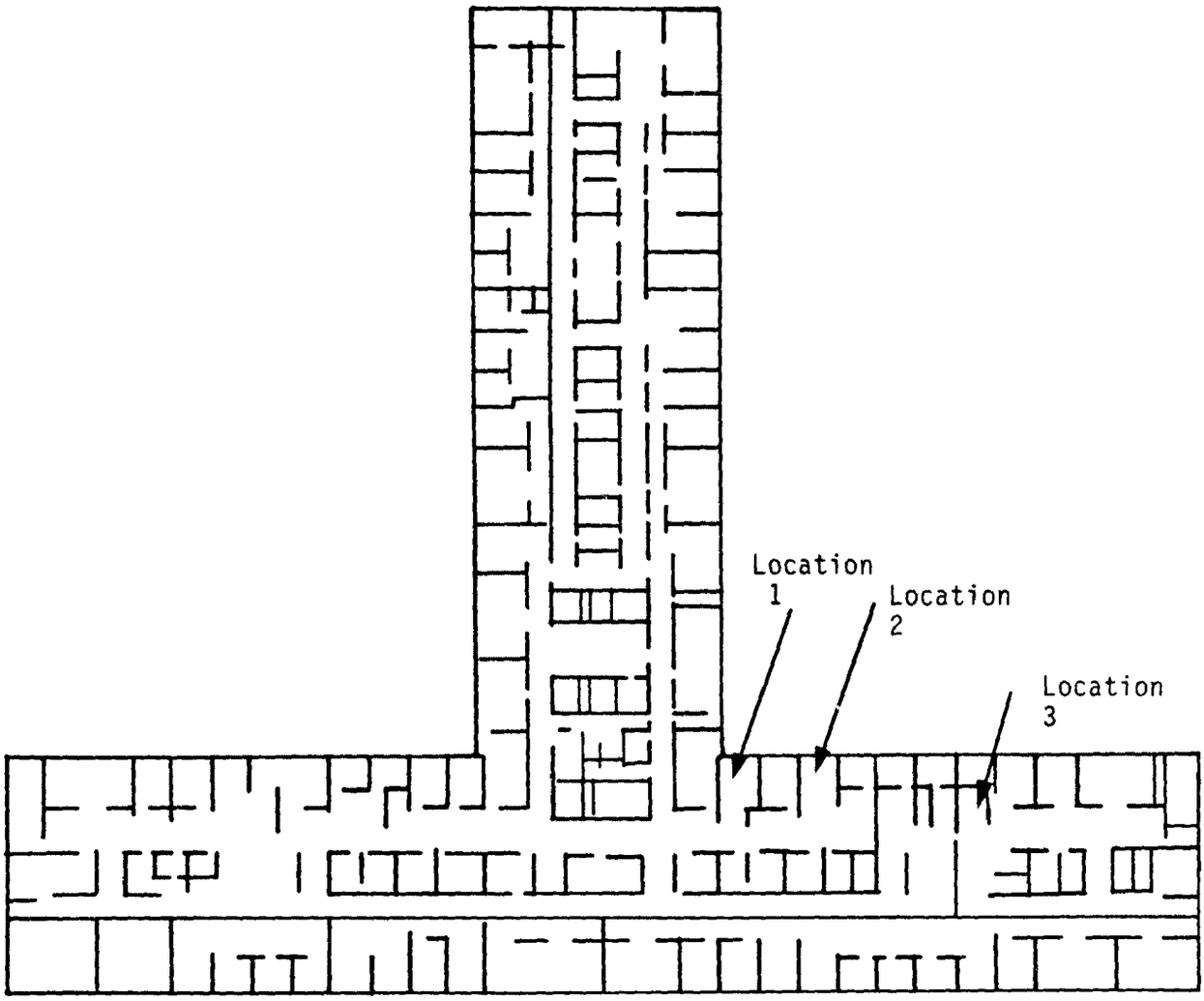


Figure 2. VA Replacement Hospital, Martinsburg, West Virginia.

area had not yet been occupied, no routine maintenance was being done, and no known sources of chemicals were observed or reported.

No smoking was observed during the monitoring period.

Monitoring Location #2 - Nurses' Station--This area was an open area between two corridors and will be used as a nurses' station (Room 5-A-11b). It was approximately 400 square feet in area, under eight-foot ceilings and was located on the fifth floor between two interior corridors. Ventilation was provided by free mixing of air supplied by feeds in both corridors. There were two returns located in the area.

The area contained approximately 2,000 square feet of formica-type counter surface and trim. There were two foam stuffed chairs at the location, as well as four garbage cans. The area also contained a terminal for the air-powered tube transport system and the electrical, patient communication system.

All wall surfaces were painted, and carpeting was present on the floors. The area was not yet occupied, but the bathrooms and hallway floors were cleaned regularly.

No smoking was observed during the monitoring period.

Monitoring Location #3 - Patients' Room--This location was a rectangular room to be used as a two-patient hospital room (Room 5-A-109). Located on the fifth floor, the room encompassed 250 square feet plus 28 square feet in a wash alcove and bathroom. The room contained one openable window and one interior door. Ventilation was provided by one 120 cfm air supply and an exhaust in the bathroom. No smoking was observed during the monitoring period.

Monitoring Location #4 - Roof--This location was on the roof, hospital which was covered with a rubber mat and varying sized rock and gravel. The site was not near any of the exhaust vents or air blowers.

Trip 2--

The second trip to the new hospital took place in October 1984. The primary difference in the sampling site at this time versus the first trip during July was that the hospital was occupied with staff and patients and was fully operational. All sampling locations were identical to those selected for the first trip.

Location #1 was again assigned to Visitors' Lounge 5A. The lounge contained a television which remained on during most of the daytime hours. Patients, particularly smokers, occupied the lounge during each day. No cleaning, housekeeping, or aerosol products were used during the monitoring period. The adjacent stairwell was painted immediately before the start of sample collection with a paint odor still present in the stairwell.

Location #2 was assigned to the nurses' station on the fifth floor. The area was used for paperwork and as a drug dispensation area. Smoking was not observed in the vicinity. "Hi-Torr" disinfectant was used at least once each day when the floors were mopped. No other cleaning or aerosol products were noted.

Location #3 was a room occupied by two patients at the time of sampling. There was no smoking observed in this area. The floors were mopped daily with "Hi-Torr" and LpH (glyolic acid, o-benzyl-p-chlorophenol, p-tertiary amylphenol, and o-phenyl phenol). "Spray Buff", a wooden cabinet cleaner containing n-alkyl dimethyl benzyl ammonium chloride, was used the first day.

Location #4 was assigned to the roof of the hospital. The site was not near any of the exhaust vents or air blowers. No smoking was observed during the monitoring period.

Trip 3--

The third trip to the hospital took place in August 1985. All sampling locations were identical to those selected for the first two trips. The building was fully occupied and operational at the time of sampling.

Location #1, the visitors' lounge, contained a television which remained on during most of the daytime hours. Patients, particularly smokers, occupied the lounge each day. Windex was used each day on the ashtrays and the vinyl chairs. No other cleaning products were observed.

Location #2, the nurses' station, was identical to that described above. Hi-Torr, LpH, Simple Green by Sunshine, and Windex were the cleaning products used daily. No smoking was observed in the area during field monitoring.

Location #3 was an occupied patient's room. Cleaning products were identical to those used at the nurse's station. No smoking was observed.

No unusual activities were noted at the outside location on the roof.

Nursing Home (Old)

General Area Description--

This site was colocated with the VA Hospital described previously.

Building Description--

This building, completed in 1980, was designed for use as a long-term, controlled living situation. Four interconnected units provided apartment settings with common areas. The total building volume was ~20,250 square feet. There have been no modifications since construction. Water was supplied from the same private system used by the hospital. There were no secondary heating or cooling systems in place. Cooking was provided by electricity and steam. Secondary ventilation was provided by exhausts. Temperatures were set for 72°F in the winter and 78°F in the summer; the humidity was not controlled. There had been no interior maintenance or decor changes, and no sources of chemicals were observed or reported inside. Malathion was sprayed on the plants outside during the sampling period.

Figure 3 gives a diagram of the monitoring area with all locations marked.

Monitoring Location #1 - Unoccupied Apartment--

This site was an unoccupied one-person apartment, containing a single room plus a bathroom (Room A-105). The room contained 120 square feet under eight-foot ceilings, with a 36 square foot bathroom. The apartment was on an exterior wall, and was about three feet above grade.

The room contained one window, one door to the hallway, and ventilation was provided by one 60 cfm air supply. Furnishings included two wood and foam cushion chairs (four years old), a bed, dresser, desk, table and accessories. Walls were painted and there was no carpet present. The area was cleaned and dusted on a weekly basis. No sources of chemicals were noted or reported. No smoking was observed during the monitoring period.

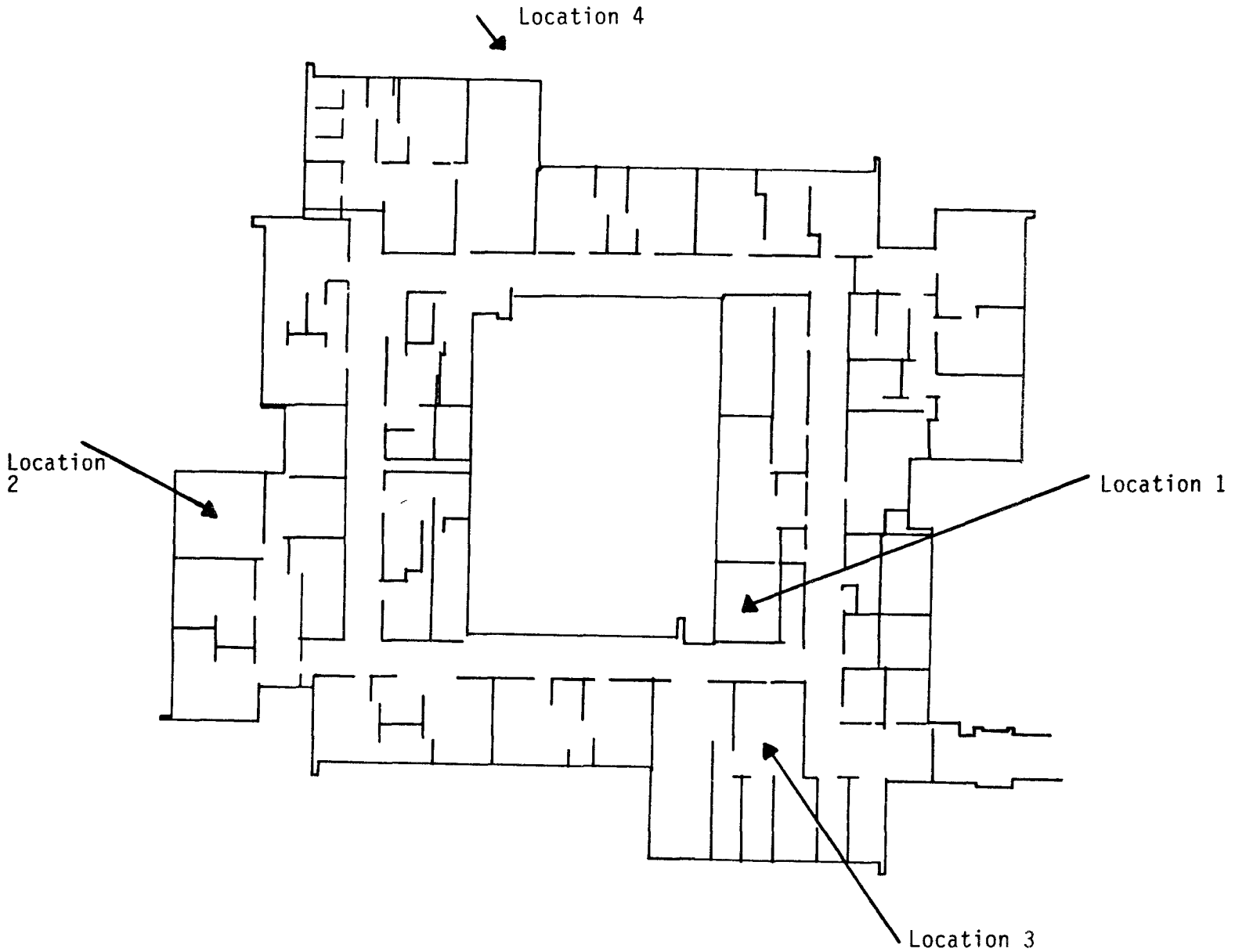


Figure 3. Domicillary Unit A; VA Hospital, Martinsburg, West Virginia.

Monitoring Location #2 - TV Lounge--

This location was a common space used as a TV lounge (Room A-C2). Open on two sides to the corridors, it contained approximately 550 square feet under eight-foot ceilings. Ventilation was supplied by one air supply and mixing with air from halls.

Furnishings included a four year old, sectional sofa with foam cushions. There was also a TV set and two plastic plants. One wall was painted, while the other was covered with 120 square feet of wall paper. Approximately 225 square feet of the floor was carpeted. The area was vacuumed and dusted daily. The area was heavily used. No sources of chemicals were observed or reported. Heavy smoking was observed in this area throughout the monitoring period.

Monitoring Location #3 - Occupied Apartment--

This location was an occupied two-person apartment, with the monitors placed in the living room (Room A-121). The area monitored contained 256 square feet under eight-foot ceilings. There were two windows present, as well as one door to the hallway. Ventilation was provided by one 150 cfm supply, one 150 cfm exhaust, and a kitchen exhaust.

Furnishings included a sofa, a chair, stool with foam padding, a TV and stand, a bookcase, a table and chair set, two side tables, a wooden cart, and four plastic plant holders. All furnishings were approximately four years old. There were assorted appliances and furnishings throughout the area. All kitchen appliances were electric.

Three walls were painted, while the fourth was papered over 108 square feet. The floors were covered with four throw rugs, with an area of 30 square feet. The area was cleaned and dusted weekly. No sources of chemicals were seen or reported. Both occupants were smokers with light smoking observed throughout the monitoring period.

Monitoring Location #4 - Outdoors--

Exterior monitors were placed on a grassy side of the building near an air intake. Other than the Malathion spraying, no other occurrences were reported to indicate possible chemical exposure. No smoking was observed throughout the monitoring period.

Office (Old)

General Area Description--

This building was an office building located at 301 4th Street, S.W. in Washington, DC, in the middle of an urban office building section. There was no open land in the immediate vicinity, with the exception of a railroad right-of-way located to the south of the building. Air flow in the area was uneven due to the presence of large office buildings. Traffic flows in the area were generally heavy, especially on 4th Street, a major thoroughfare. Traffic flows were estimated to be 750 vehicles per hour at peak. Side streets carried an estimated 300 to 500 vehicles per hour.

Building Description--

This building, constructed in 1983, was an eight-story, commercial, office building located in a dense area of large, commercial structures. The building used the municipal water supply, and the only supplementary air systems were bathroom exhausts and special air conditioning in a small computer facility. Temperatures in the building were maintained at 74°F in the winter and 78°F in the summer, but the air handling systems were turned completely off from 7:00 pm to 7:00 am. The humidity was not controlled. No major interior maintenance or decor changes had been made. There had been some interior painting, using water-based paints. There had also been minor renovations of small areas and some movement of material. Daily cleaning involved the use of an ammonia and water solution as needed to supplement dusting and vacuuming. Pesticides were applied where needed on a monthly basis with the last applications being two weeks prior to monitoring.

Monitoring Location #1 - 3rd Floor

This location was approximately 250 square feet in area providing access to four elevators. The alcove was separated from the other parts of the building by swinging glass doors to the hallways. These doors were kept open during the day and shut and locked at night. Ventilation was provided to the elevator alcove through the doors from the building hallways, with the outlet above the hanging ceiling. Air velocity past the sampling station was very high during the day and nonexistent at night. Human traffic was very heavy during the daytime. There were no furnishings

in the area. The floor was covered with carpet. The carpet extended completely up the walls. A hanging tile ceiling was present. The area was vacuumed daily. No other sources of chemicals were observed or reported. The amount of smoking which took place in this area is unknown.

Monitoring Location #2 - 5th Floor Hallway--

This area was a 150 square foot hallway on the fifth floor. There were four doors leading to rooms located near the monitoring equipment. These doors were generally kept open during the monitoring period. No other air supply was present. A return to the common plenum was present. The only item located in the area was a dry chemical fire extinguisher mounted on the wall. Walls were covered with water-based paint. The floor was carpeted and was vacuumed daily. No other sources of chemicals were observed or reported. The amount of smoking which took place in this area is unknown.

Monitoring Location #3 - 8th Floor Hallway--

This area was a 360 square foot wide walkway outside a conference room and near an elevator lobby. Air was supplied from other areas and returned to the common plenum. The only furniture in the area was a temporary room divider placed in front of the monitoring equipment. It contained fabric and foam in a metal frame. Walls were covered with water-based paint, and the floors were covered with two year old carpet, which was vacuumed daily. No sources of chemicals were observed or reported. The amount of smoking which took place in this area is unknown.

Monitoring Location #4 - Roof--

Monitors were located under an overhang on the east side of the roof. They were at a major air intake enclosure exposed to the ambient conditions. No smoking was observed in this area.

Office (New)

Trip 1--

General Area Description--The office building was a newly constructed one-story building. The building was immediately bounded on the east, west, and south by one-story office buildings of like construction. The building was bounded on the north by an approximately 200 car parking lot. Within one-half mile to the east were two-, three-, and four-story office

buildings. To the south were several two-story apartments and a building materials and home improvement store. Within one-eighth mile to the west was an open, grassy area and a six-story office building. Across Waples Mill Road to the northwest and Pender Drive to the north were two three-story office buildings.

Within a one-half mile radius, there were no bodies of water or streams, no dilapidated or demolished buildings, and no structures that would obstruct the normal flow of air, and there were no point sources observed in the area or reported by the builder. There were scattered trees in the area. An estimated 50 percent of the land was open, with the remainder in pavement and buildings.

Roads within the half-mile radius included Routes 236 to the south and 50 to the west, both of which are four-lane divided highways with very heavy traffic. Approximately one mile to the east was US 66, a major expressway that connects points west out of Washington. There were other roads, like Waples Mill and Pender Roads, plus side streets that served the office complexes in the area. Peak traffic times were presumed to be morning and evening rush hours.

Building Description--The building had been under construction for approximately one year. The approximate size of the building was 32,000 square feet. The source of water was public, coming from the Potomac River. Electricity was the only fuel source in the building. The only type of secondary sources of heating (central heat pumps are the main source) were two 18' x 20' Fasco electric wall heaters mounted at two entrances on the northeast side of the building. Secondary ventilation sources included Penn Zyphyr ventilation fans in bathroom ceilings and a roof-vented exhaust system for a Jenn Air Grille. Temperature settings on the cool/heating thermostats were set at 70°F. Summer thermostat settings were unknown.

On the date of the building visit, the bathroom facilities and stainless steel water fountains had been cleaned with Ajax Cleaner, 3M Stainless Steel Cleaner, Crown Ammonia, and Masury Concentrated Ammonia. The interior and exterior of the building had not been treated with any pesticide. A blueprint of the entire building is shown in Figure 4.

A diagram of the monitoring area is given in Figure 5 with each location marked.

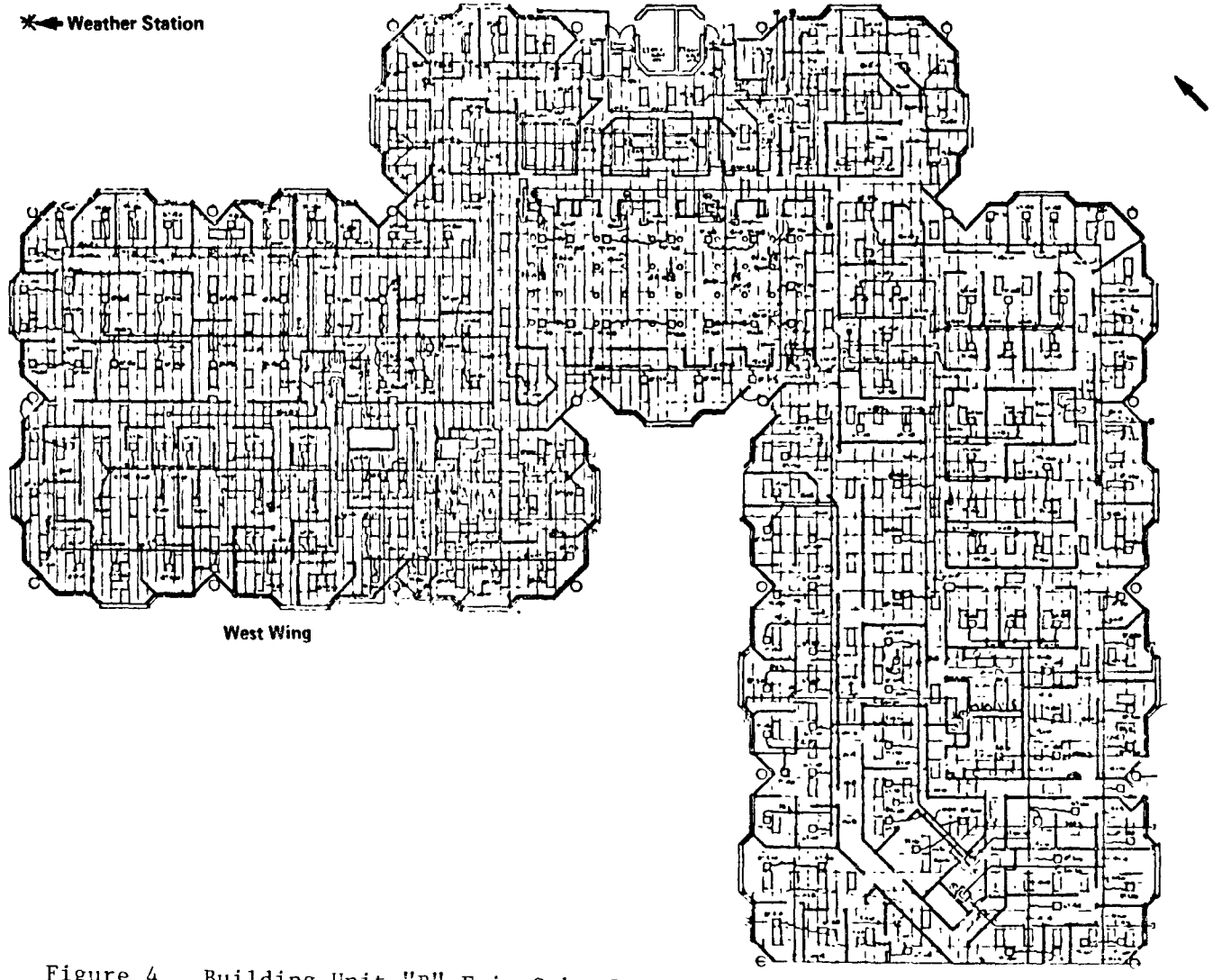


Figure 4. Building Unit "B" Fair Oaks Corporate Center: Fairfax, Virginia.

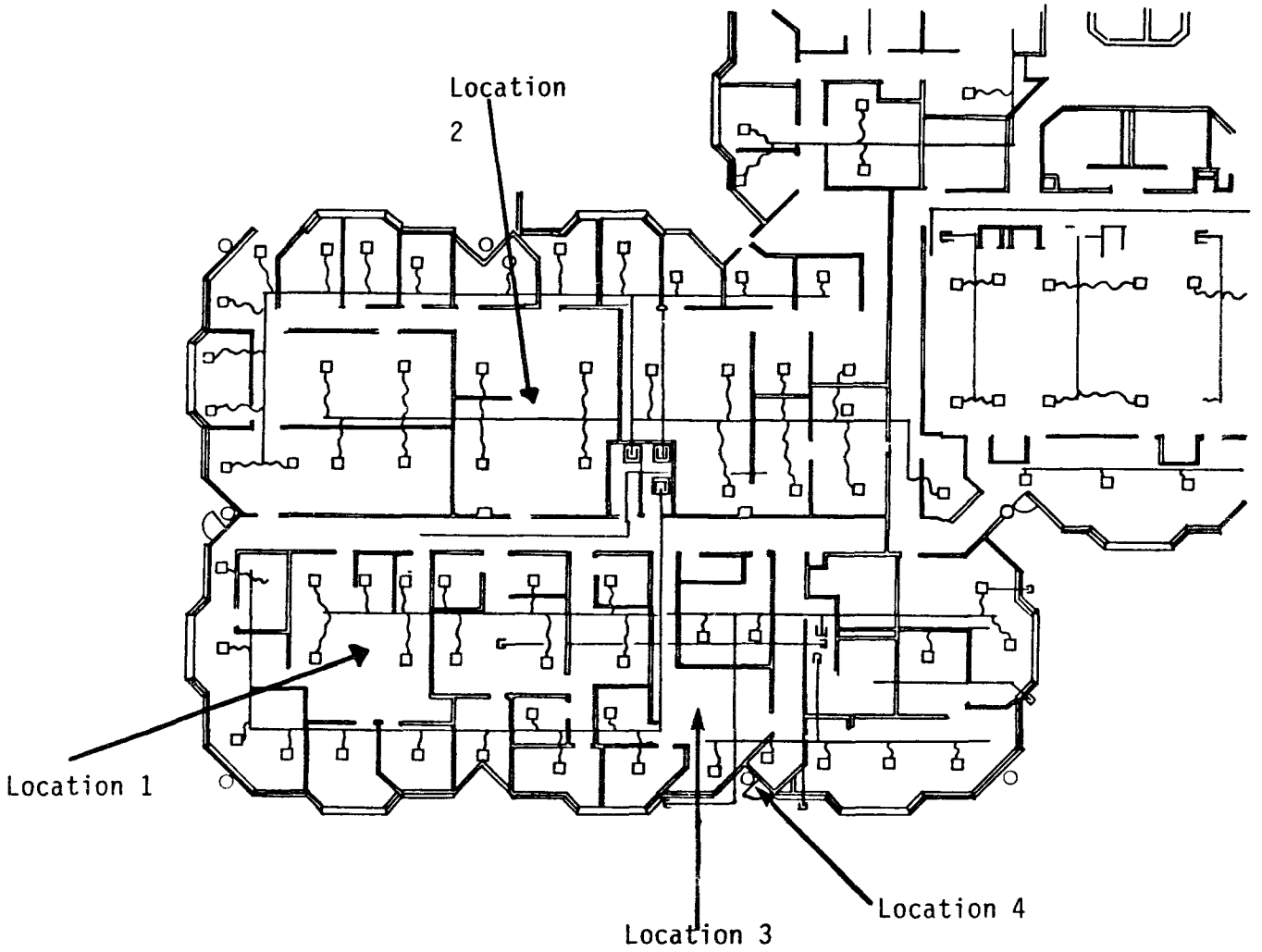


Figure 5. West-Wing, building B: Sampling locations.

Monitoring Location #1 - Office R-4--Monitoring location #1 was an interior location near the northwest corner of the building. The location had 9 foot ceilings and was approximately 544 square feet. It was an L-shaped room with four office doorways opening into it and a main doorway with no door. There were no windows or other penetrations of the walls.

The HVAC system was a heat pump with an air handler and stationary components.

There were no foam insulation products, polyurethane, or asbestos products in the room. The wall construction was dry wall with paint. The only plastic material used was an estimated 33 square feet of cove base molding affixed to the dry wall. The molding was a thermoplastic vinyl affixed with a resin-base mastic containing methyl alcohol. No rock or soil-based building material was used. The room contained one piece of furniture, a new desk with a metal base and 1 inch laminated top of approximately 15 square feet of surface area. No equipment was in the room.

The carpeting was new, and there was 544 square feet of covered area. The carpet was vacuumed every weekday.

During the three-day monitoring period, there were no aerosols or housekeeping products used at the location. No pet collars, pest strips, or tobacco smoke were observed. No windows were opened. Monitoring began in the evening of the day that mastic was used to affix cove base molding to gypsum wall board. Mineral spirits were used to remove old mastic from wall surfaces. On the next day, mastic was used to affix cove base molding in nearby rooms. Mineral spirits were used to remove and clean mastic. No activities were observed on the third monitoring day.

Monitoring Location #2 - Office, R-1--Monitoring location #2 was an interior location. The room was rectangular with 31' x 26' dimensions or 806 square feet. The ceiling height was 9 feet. The room had two office doors opening to the room and two doorways (without doors) opening onto hallways. The room had a floor-to-ceiling partition extending 9 feet into the room from the center of a side wall.

There was an estimated 44 square feet of cove base molding in the room.

Carpeting and cove base molding were of the same type described for monitoring location #1. There was no furniture in the room. The room was vacuumed every weekday.

During the three-day monitoring period, there were no aerosols or housekeeping products used at the location. No pet collars, pest strips, or tobacco smoke were observed. No windows were opened. The evening monitoring began, mastic was used to affix cove base molding to gypsum wall board in nearby rooms. Mineral spirits were used in nearby rooms to remove old mastic from wall surfaces. Three persons occupied the room during the day (amount of time not specified). On the next day, mastic containing methyl alcohol was used to affix cove base molding in nearby rooms during the daytime. Mineral spirits were used to remove and clean mastic. No activities were observed on the third monitoring day.

Monitoring Location #3 - Office, R-7--Monitoring location #3 was an interior location. The room was basically 11' x 16' with an additional irregularly shaped area. The carpet area was estimated at 284 square feet. The room had two doors to offices, one door into a hallway, and one doorway (with no door) opening into a hallway.

There were an estimated 18 square feet of cove base molding in the room.

Carpeting and cove base molding were of the same type described for monitoring location #1. There was no furniture in the room. The room was vacuumed every weekday.

During the three-day monitoring period, there were no aerosol products used at the location. Immediately prior to monitoring, a nearby bathroom was cleaned with housekeeping products. No pet collars, pest strips, or tobacco smoke were observed. No windows were opened. Monitoring began in the evening. During that day, a nearby bathroom was cleaned and stripped. Particle board was cut across the hall from the monitoring location during the day. The next day, mastic was used to affix cove base molding in the monitoring room during the daytime. Mineral spirits were used to remove and clean the mastic. During the third monitoring day, cove base molding was removed and replaced across the hall from the monitoring location. Mineral spirits were used across the hall to clean and remove old mastic.

The cleaning products specified below were used to clean the bathroom near this monitoring location. Each product was used once a day. Five gallons of Masury-Columbia Super Stripper (concentrated ammonia) was used to clean 800 square feet of the bathroom (on January 25 only). Two ounces of Ajax Cleanser were used to clean 20 square feet of surface area. Two

ounces of 3M Stainless Steel Cleaner were used to clean 10 square feet of surface area. Eight ounces of Crown Ammonia (dilute ammonia) were used to clean 30 square feet of surface area.

Monitoring Location #4 - Outdoors--Monitoring location #4 was an exterior location at the building entrance on the southwest side of the building.

During the three-day monitoring period, no pet collars, pest strips, or tobacco smoke were observed. During the first monitoring day, construction work was underway in the adjacent building. Windows were washed nearby during the day. No activities were observed during the second monitoring day. A strong smell of wood smoke was noted at night. During the third day, wood smoke was again noted at night.

Trip 2--

The second trip to the new office took place in April 1985. The primary difference in the sampling site at this time was that the building was fully occupied during the 72-hour monitoring period. All sampling locations were identical to those selected for the first trip.

Location #1 (Office R-4) was a general office area occupied during the day by three to four workers, including two smokers. Moderate smoking was observed during the monitoring period. Use of cleaning, housekeeping, or aerosol products was not observed during the monitoring period.

Location #2 (Office, R-1) was a general office occupied by five to six workers, including one smoker. Light smoking was observed during the monitoring period. Three typewriters and one computer were used during the day. Use of cleaning or aerosol products was not observed.

Location #3 (Office, R-7) was an office occupied during the day by two to three office workers. No smoking was observed during the monitoring period. This office was immediately adjacent to a copier room, which contained three mimeograph machines with ink. These machines were used daily. The use of cleaning or aerosol products was not observed.

Location #4 was assigned to an area just outside of the side exit door.

Although construction on the building itself was complete, both landscaping and paving occurred during the sampling period. Asphalt patching and paving of the parking lot adjacent to the west wing of Building "B" took place throughout the 72-hour sampling period. The installation of the

irrigation system and planting of trees also occurred during the 72-hour sampling period. No smoking was observed during the monitoring period.

Office/School (Old)

General Area Description--

The Belfer Center, JFK School of Government, Harvard University is a combination lecture auditorium, conference center, faculty office building, and computer facility. Food services were provided on the ground floor level. The five-story building was bounded on the east by university dorms and the Elliot House, on the northeast by a three-story parking garage (under construction) and assorted residential/commercial buildings (shops and restaurants on the lower floors and dwellings above), on the northwest side by a court yard and new, ten-story hotel, and on the southwest side by an open field, just beyond which were Memorial Drive and the Charles River.

The only body of water within one-half mile radius was the Charles River, located approximately one-quarter mile from the Belfer Center. The area within a one-half mile radius was a mixture of university buildings, commercial shops and restaurants, and residential housing (usually on the upper floors of buildings), with very few open areas or fields.

The buildings on the northwest, northeast, and east sides probably constrict, though not severely, the flow of air in and around the Belfer Center. The east side entrance to the Belfer Center was at street level, while the northwest entrance was at ground level, or one level below Kennedy and Elliot Streets. This might be of interest because the air intake to the HVAC was located near the ground level entrance. Given the below-street-level location of the intake and the presence of other building obstructions, including the Belfer Center itself with its shape, the air intake area was not in an area of generally unrestricted airflow.

There were very few trees in the area, with most of them located along both sides of the Charles River. An estimated 90% of the land area was in buildings and pavement; the remainder consisted of a few open areas and the Charles River itself. The building manager was not aware of any point sources for the chemicals being studied, but suggested that nearby Mount Auburn Hospital might be considered one.

Roads within the half-mile radius included Kennedy Drive in front of and to the east of the Belfer Center, Elliot Street on the northeast side

of the Center, and Memorial and Storrow Drives within one-eighth to a quarter mile to the south. Memorial and Storrow Drives, in particular, carry heavy volumes of traffic into and out of Boston and Cambridge at peak hours (morning and evening rush hours). These two roads, plus Kennedy Drive and Elliot Street, carry a constant stream of local daytime traffic into and out of the nearby university community.

Building Description--

The uses of the building were those described above. Main construction of the building was completed in 1984, and the building was occupied in September, 1984. The estimated size of the building is 42,000 square feet. The sources of water for Cambridge were Stoneybrook Reservoir, located at Lincoln, Massachusetts, and Hamsbrook Reservoir, located at Weston-Waltham, Massachusetts. A third source, Freshpond in Cambridge, was used as a supplementary source, according to the City of Cambridge Water Department. Electricity was the only power source in the building, including that for kitchen use.

The secondary air conditioning units used in offices throughout the building are Nibco-brand air conditioning units. These were water-fed units capable of cooling, heating, and recirculating available room air. Air is pulled into the unit at floor level through a filter located underneath the unit. The units are located on the outside walls of perimeter offices throughout the building. These units conditioned and recirculated available room air, not air from outside the building.

The only secondary ventilation devices known were bathroom and kitchen exhausts, and no technical information about them was obtained. These were roof exhaust devices. The usual building temperature control settings were unknown to the building manager.

On the day of monitoring, equipment installation (February 25, 1985) and painting of the lecture hall walls and hallways outside monitor locations in rooms 125 and 224 was begun. Flat latex paint was used.

The interior of the building was treated with pesticides by Waltham Chemical Company. The food service area was inspected and treated 24 times a year. Other building areas were inspected and treated 12 times a year. The last treatment of all restrooms and the kitchen was on February 7, 1985, between 7:00 and 9:00 am. One gallon of Dursban Lo (Dow Chemical) at

0.5% concentration was applied in a "spot" treatment fashion. This is an emulsifiable insecticide. On January 10, 1985, one gallon of Safrotin (Sandoz Pharmaceuticals) at 0.5% concentration was "spot" applied to all restrooms. Previously used treatments (November and December, 1984) included PCQ anticoagulant rodenticide baits, Talon G baits, and boric acid used as an insecticide. No exterior treatments had been applied to date (since construction and occupancy of the Belfer Center addition).

Figure 5 gives a diagram of the monitoring area with each location marked.

Monitoring Location #1 - 1st Floor Renovated Office--

Monitoring location #1 was an interior location about fifteen feet above Elliot Street on the northeast side of the building. It was a rectangularly-shaped conference room (9' x 12') with an approximately nine foot ceiling and 96 square feet of usable floor space. There was one door entrance opposite a fixed window. There were no other penetrations of the room.

Air supply and conditioning was provided by the building HVAC system and by perimeter Nibco air conditioning units. The HVAC system was supplied with steam and chilled water from a central campus plant. The air handler serving the monitoring locations was designated as SAF-2. Filters for the air handler were throw-away type of woven glass fiber.

There were no foam insulation, polyurethane, or asbestos products in the room. The wall material was gypsum board with latex paint. Plastic in the room consisted of 11 square feet of cove base molding (adhesive not determined). Particle board items included the covering/window seat construction over the perimeter fan coil. There was a round table with nine square feet of surface area and a metal base. Construction of the top was of particle board, plywood, and solid bentwood frame. Two chairs with metal bases and molded plywood backs and seats were in the room.

The carpeting was about one year old. There were 72 square feet of carpet (the floor area of the room was smaller than the general dimensions of the room suggest because the covering/window seat construction over the perimeter fan coil unit reduced usable floor space). The room had not been treated with pesticides.

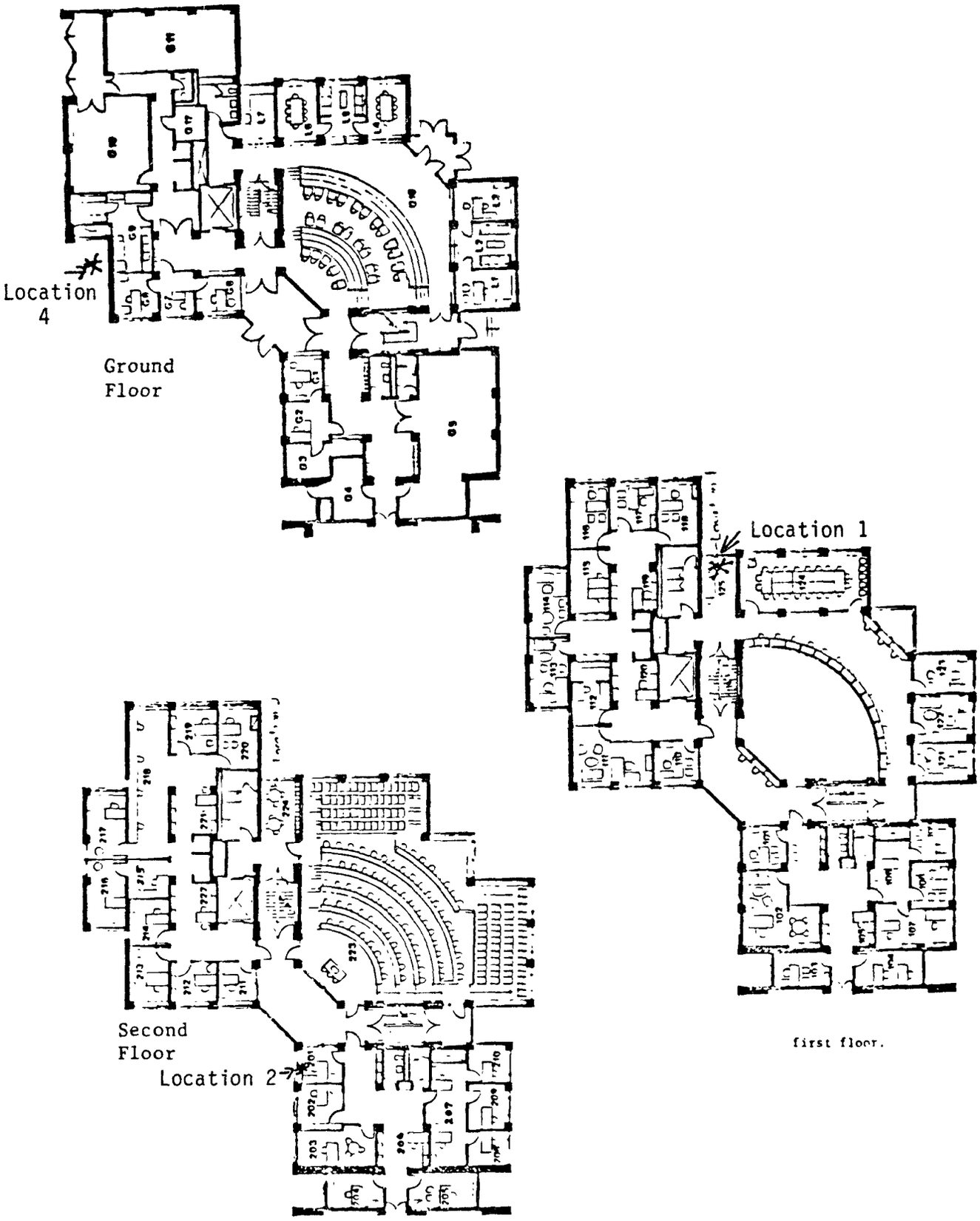
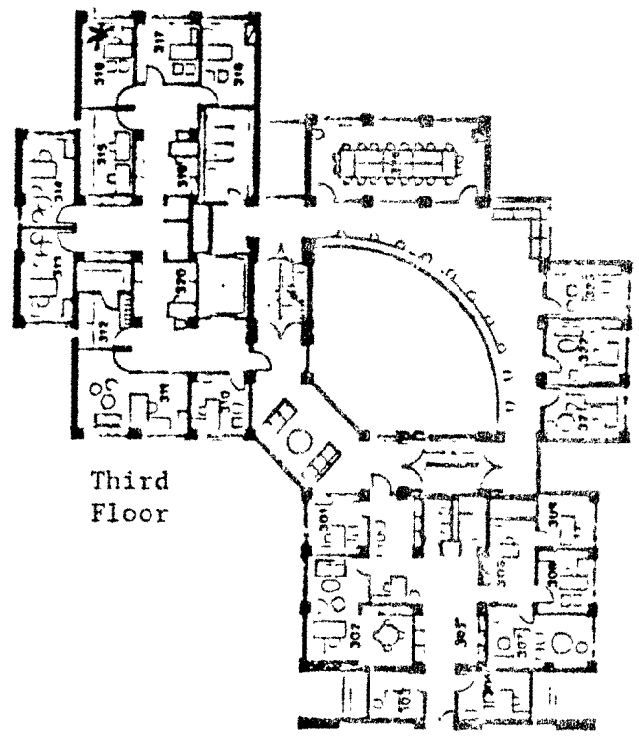
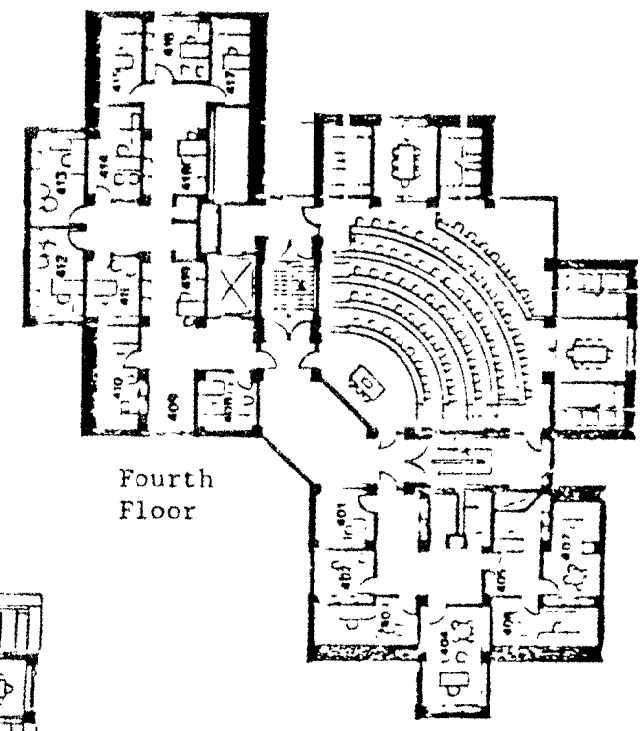


Figure 5. Floor plan of Belfer Center - sampling locations marked as *.





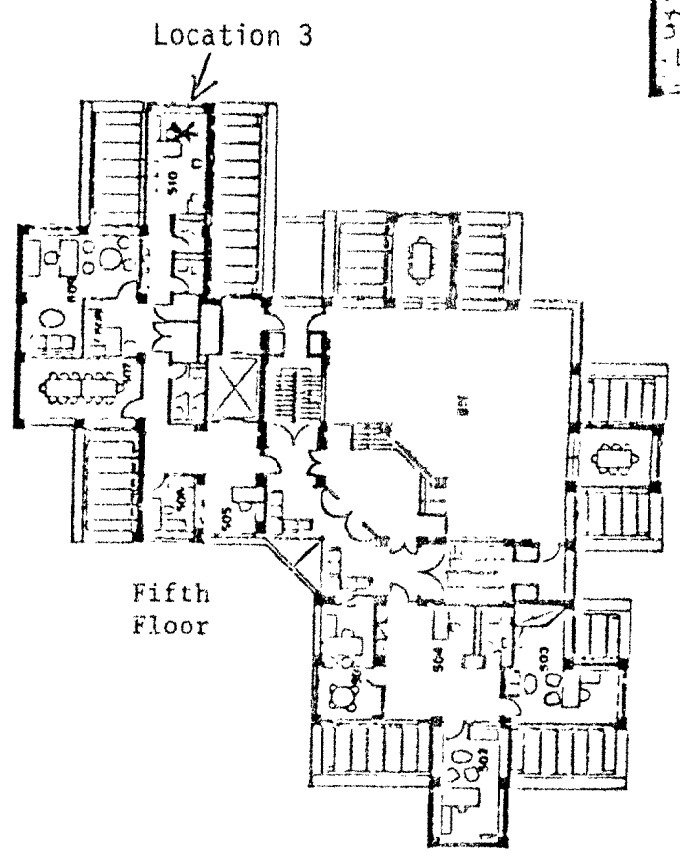


Figure 5. (concluded)

The room was unoccupied. No smoking was observed throughout the monitoring period.

Monitoring Location #2 - 2nd Floor, Unoccupied Office--

Monitoring location #2 was an interior location about 40 feet above Elliot Street on the northeast side of the building. It was a conference room (9' x 12') with an approximate eight and one-half foot ceiling and 96 square feet of usable floor space. There was one door entrance opposite a fixed window. There were no other penetrations of the room.

Air supply and conditioning was not directly provided to the room by the HVAC system. The perimeter coil unit, when used, conditioned and recirculated the available air supply.

There were no foam insulation, polyurethane, or asbestos products in the room. The wall material was gypsum board covered with latex paint. Vinyl plastic in the room consisted of 11 square feet of cove base molding (adhesive not determined). Particle board items included the covering/-window seat construction over the perimeter fan coil. The table in the center of the room was nine square feet, round, with a metal base. Construction of the top was of particle board, plywood, and solid bentwood frame. Eight chairs with metal bases and molded plywood backs and seats were in the room.

The carpeting was about one year old. There were 72 square feet of carpet. The room had not been treated with pesticides.

The room was not occupied. No smoking was observed throughout the monitoring period.

Monitoring Location #3 - 3rd Floor, Occupied Office--

Monitoring location #3 was an interior location about 50 feet above Elliot Street on the northeast side of the building. It was a rectangularly-shaped (8' x 18') faculty office with approximately nine foot ceiling and 120 square feet of usable floor space. There was one door entrance opposite a fixed window that had an operable window section (11" x 60"). The operable window section was used infrequently as a fresh air source. There were no other penetrations of the room.

Air supply and conditioning was not provided by the building HVAC system. Air conditioning and recirculation was provided by the perimeter coil unit.

There were no foam insulation or asbestos products in the room. Polyurethane in the room was in the form of seat cushions on three chairs. The wall material was gypsum board covered with latex paint. Plastic in the room consisted of 17 square feet of cove base molding (adhesive not determined). Particle board items included the covering/window seat construction over the perimeter fan coil.

Furniture included

- a metal desk, one year old, with 12 square feet of surface area;
- one metal file cabinet, one year old, 52" x 18" x 30";
- desk, one year old, made of particle board and plywood, with a total surface area of 19 square feet;
- one chair with wood frame, metal base, and a fabric covered urethane foam cushion;
- one chair with metal frame with fabric covered urethane foam cushion;
- one chair with 73% urethane foam and 72% polyester fiber covered cushion and back. Each of these pieces of furniture was approximately one year old.

The room also contained a Digital VT101 terminal with a Ven-Tel communications unit attached.

The carpeting was about one year old. There were 144 square feet of carpet. The room had not been treated with pesticides. This office was occupied by two persons. No smoking was observed throughout the monitoring period.

Monitoring Location #4 - Outdoors--

Monitoring location #4 was at an exterior location at ground level on the northwest side of the building. It was located approximately halfway between the loading dock/dumpster area and the northwest entrance to the building. It was also positioned only a few feet from the air intake to the HVAC system. No smoking was observed during the monitoring period.

Nursing Home (New)

Trip 1--

General Area Description--The St. Francis Home for the Elderly located in Worcester, Massachusetts, consisted of two structures - the original building, constructed in the 1920s or 1930s, and the new addition, where the indoor air monitoring was performed. Both the old and new structures faced south. The new structure was immediately bounded on the south by the old structure. The new structure was connected to the old structure by an above-the-ground enclosed walkway. Both structures together occupied a block of land that was bounded on four sides by streets.

The new structure was bounded on its west, north, and east sides by two-story residential homes. However, approximately one-half mile to the west, just beyond the residential homes, was an area of warehouses, light manufacturing plants, and numerous auto paint and body shops. Within one-half mile to the north was an open field about the size of a baseball field. There were no bodies of water within a one-half mile radius.

The area was hilly, and the new structure, while not the highest point was higher than most of the town. Because of its location on the side of a hill, surrounding structures generally did not restrict the normal flow of wind around the building. There were few trees within a one-half mile radius. No condemned or demolished structures were observed in the surrounding area. Because the new building was in the midst of a residential area, neighborhood streets networked the area.

The major traffic artery in the area, located about three-quarters of a mile to the south-southwest, was Interstate 290.

Building Description--As indicated, the building under study was a residential home for the elderly (approximate size - 13,940 square feet). Construction was begun in March 1984, with excavation actually begun in December 1983. Completion of the building was expected in May 1984. The new building was unoccupied at the time of the first monitoring visit.

There were three floors that were designed for residential living. The first floor at the east end of the building was at ground level. The terrain underneath the building slopes so that the west end of the building was approximately 25 feet above ground level. The area underneath the building was a covered parking area.

Sources of water for the building were Kettlebrook Reservoir Numbers 1, 2, and 3, located at Paxton and Lester, Massachusetts. An additional source was Coes Reservoir located to the southwest of Worcester.

The primary sources of heating for the building was hot water circulated through baseboard units and forced warm air, both supplied from a plant in the original building. Oil was the primary heating fuel and gas was the secondary fuel. There was no air conditioning system. Secondary exhausts included bathroom exhausts. There was no kitchen in the new building and thus no secondary exhausts as usually found in a kitchen.

The temperature settings were expected to remain at 75 degrees both day and night. There was no humidity control.

While the building was under construction, no attempt was made to routinely clean the interior. However, approximately three weeks prior to the monitoring visit, the first floor was given a general cleaning. It was dusted and the walls were wiped with a general purpose sanitizing cleaner called ServiceMaster III. Its formulation included: octyl-decyl-dimethyl ammonium chloride, 1.75%; dioctyl-dimethyl-C12, 40%; C16, 10%; dimethyl benzyl ammonium chloride, 2.33%.

Figure 6 gives a diagram of the moitoring area with each location marked.

Monitoring Location #1 - Day Room--Monitoring location #1 was an interior location intended for use as a day room. It was located on the third floor, approximately 45 feet above street level, at the southwest corner of the building. It was a 24' x 12' rectangle with a 9' ceiling. There was one door entrance, which opened onto the main corridor. There were no ceiling or floor penetrations. There were four windows, each 6 feet in length, that could be opened for ventilation. Since the building was unoccupied, it was not known what percent of the time they would be used for ventilation. They were closed at the time of the monitoring. All weatherstripping on the windows was new.

There was no air conditioning system in the building. The forced warm air heating outlets were located in the main corridor ceiling outside the day room.

There were nine seats (chairs and love seat) in the room. The seat backs and seat cushions were estimated at 96 square feet of surface area. Each seat back and cushion contained urethane foam mixed with a resin

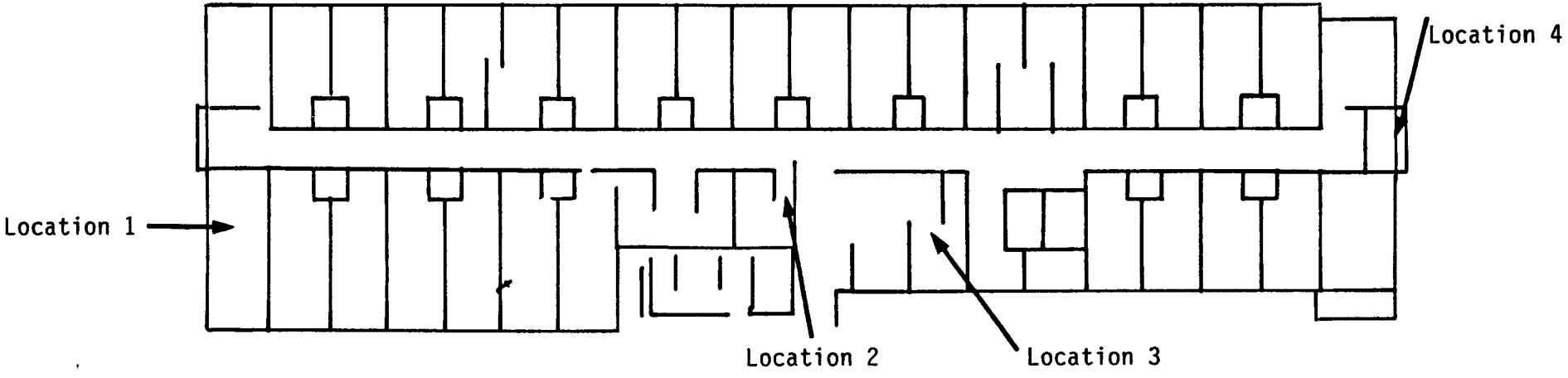


Figure 6. Third floor sampling locations in the nursing home.

treated polyester fiber. There were no asbestos or particle board items in the room. Vinyl products in the room included 28 square feet of vinyl cove base molding and 288 square feet of vinyl flooring. The vinyl corlon flooring was the Brigantine (Forbo Smaragd) series by Armstrong. The 216 square feet of wall covering on the east wall of the day room was vinyl.

The adhesives and preparation materials used to affix the wall paper and flooring included Sherwin Williams Promar latex wall primer containing vinyl acrylic resin, pigments, silicates, and water. The flooring adhesive was Armstrong Vinyl S89 Tile Adhesive containing petroleum naptha. Other products included HB Fuller Cove Base Adhesive 714 (petroleum distillates) and HB Fuller Floor Covering Adhesive 733 (petroleum distillates).

There was no carpeting in the room. No pesticides had been applied in the building. There was no gas stove, gas or kerosene space heater, free-standing fireplace, clothes dryer, humidifier, or filters or particle scavengers in the room. No smoking was observed during the monitoring period.

The room was not vacuumed or dusted regularly. The last time it was dusted was approximately three weeks prior to installation of the air monitoring equipment.

Monitoring Location #2 - Nurses' Station--Monitoring location #2 was an interior location. It was intended as a nurses' station and was located in the middle of the third floor corridor. It was a rectangular work area, approximately 13' x 7', that opened on two sides onto the main corridor. A counter top work surface encloses the nurses' station, except for a walk-through opening that permitted access inside. The ceiling was 9 feet.

The other 13' side of the station was penetrated by a single door that opened into a small workroom. The wall also contained four electrical panels, with 34, 40, 24, and 18 circuit breakers. There was also a monitoring and control for the heating unit panel on the wall. The remaining 50 square feet of wall surface in the station was covered with vinyl wall covering.

Other electrical equipment included a 96 button Dukane telephone center made of metal and plastic, approximately 12" x 20" x 4".

There was approximately 10 square feet of cove base molding and 91 square feet of vinyl floor covering in the station area. Adhesives similar to those used in the day room were used to affix the cove base molding.

Wall cabinets and an L-shaped desk top area with eight drawers underneath were made of particle board and plywood. The drawers were 5" deep x 24" x 24". The new wall cabinets measured 9" deep x 30" high x 76" long. The desk top area was 12' x 24" or approximately 24 square feet of veneered surface area. Urethane finish was applied to the wall cabinet.

No smoking was observed during the monitoring period.

Monitoring Location #3 - Patients' Room--Monitoring location #3 is a single occupant room. The room, including bath, is a 24' x 12' rectangle. The enclosed bath is 7' x 11', leaving an L-shaped bedroom of 211 square feet of floor area. The room was approximately 25 feet above street level. There was one window in the room on the south side wall of the building. Weatherstripping around the window was original (new). One door penetration went into the bath and the other into the main corridor. There were no penetrations of the floor or ceiling.

Vinyl products included 25 square feet of cove base molding, 211 square feet of vinyl flooring in the main room, and 77 square feet of vinyl flooring in the bath.

Particle board items in the room included a stand-alone wardrobe and two small dressers. The stand-alone wardrobe was 2' wide x 2' deep x 6' high. It was made of veneer-covered particle board. The two small dressers had veneer-covered particle board tops. One dresser top was 18" x 30" and the other was 24" x 17".

Other pieces of furniture in the room included a metal frame bed with head and foot boards made of veneered particle board, one metal trash can, one wood frame chair with a vinyl-covered seat back and cushion, and a 27" x 37" cork bulletin board. Electrical equipment in the room included a fluorescent lighting fixture on the wall above the head board.

The 137 square foot west wall of the room was covered with a vinyl wall covering. There was no carpeting in the room.

No smoking was observed during the monitoring period.

Monitoring Location #4 - Outdoors--Monitoring location #4 was an exterior site. It was located on a third floor balcony at the east end of the building. The balcony was sheltered on three sides and above and was open on the fourth side. It was located approximately 25 feet above the ground. No smoking was observed during the monitoring period.

Trip 2--

The second trip to the new nursing home took place in August 1985. The primary difference in the sampling site at that time was that the home was occupied with staff and patients and was fully operational. Monitoring locations were identical to those used during the first trip except for monitoring location #3.

Location #1 was assigned to the west day room. The use of aerosol products and smoking were not observed. Johnson Multi Furniture Polish and ServiceMaster Sanimaster III floor cleaner were used daily. RTU Wallglide vinyl cleaner, ServiceMaster RTU Glassclene, ServiceMaster Odor-Go and ServiceMaster Scrub and Shine were used occasionally.

Location #2 was assigned to the nurses' station. No smoking was observed in this area. The cleaning products listed above were also used at this location.

Location #3 was an unoccupied two-patient room located directly across the hallway from the room previously sampled during Trip 1. No smoking was observed in this area. The cleaning products listed above were also used at this location.

Location #4 was assigned to an outside area directly below the last air intake for the third floor. This area was located on a balcony at the east end of a central hallway. A sliding glass door opened onto the balcony. In this location the air samples could contain chemicals exiting from this building. No smoking was observed during the monitoring period.

Since the building did not have central air conditioning, windows and doors were left open during the 72-hour sampling period.

SECTION 6

SAMPLE ANALYSIS

All samples collected during field monitoring (Section 4) were analyzed using the protocols described in the Draft Work Plan, Part II: Analytical Protocols (17). In this section, details of sample analysis are given for each parameter including analytical method, quality control results, limits of detection, and quantitation method.

VOLATILE ORGANICS

Analytical Method

Gas chromatographic/mass spectrometry (GC/MS) analysis of volatile organic compounds was performed using a combined liquid injection/thermal desorption unit designed and fabricated at RTI. This unit was designed to allow calibration of the mass spectrometer by splitless/split liquid injection with analysis of field samples collected on Tenax GC cartridges by thermal desorption.

In the thermal desorption mode, recovery of volatile organics was accomplished by heating the Tenax cartridge to 270°C and purging with helium into a liquid nitrogen cooled, nickel capillary trap (18,19,20,27). The vapors were then introduced into a high resolution fused silica chromatographic column for component separation (19,20). Identification and quantification of the constituents in the sample were performed using electron impact mass spectrometry by measuring the intensity of the extracted ion current profile (19,21,28). GC/MS conditions used during sample analysis are given in Table 16.

Thirty-four target volatile organic chemicals were quantitated in each sample. Immediately prior to GC/MS analysis, each Tenax cartridge was loaded with bromopentafluorobenzene (212 ng) to serve as an external quantitation standard. Quantitation of GC/MS results for the target volatiles was accomplished using response factors (RF). RF values for each target

TABLE 16. CONDITIONS FOR VOLATILE ORGANIC ANALYSIS

Liquid Injection	
Carrier gas:	Helium
Carrier flow	2 mL/min
Septum sweep:	1 mL/min
Injection conditions:	30 sec splitless, then 10:1 split
Injector temperature:	270°C
Column:	60 m wide-bore DB-1 fused silica, 1 μ film thickness
GC program:	Initial temperature 30°C, then 4°C/min to 230°C
Thermal Desorption	
Carrier gas:	Helium
Carrier flow:	2 mL/min
Desorption time:	8 min
Purge flow:	17-19 mL/min
Purge temperature:	270°C
Column:	60 m wide-bore DB-1 fused silica, 1 μ film thickness
GC program:	30°C (5 min) to 240°C at 4°C/min
MS Conditions (Finnigan 3300)	
Scan range:	m/z 35→350
Scan cycle, automatic	1.9 sec/cycle
Filament current	0.5 mA
Electron multiplier	1600 volts
Hold time	0.1 sec

chemical were generated by analyzing five 1 μL injections of a calibration solution (Table 17) over a 3-day period. For each injection, response factors relative to the external standard, bromopentafluorobenzene, were calculated as:

$$RF_T = \frac{A_T \cdot ng_{ES}}{A_{ES} \cdot ng_T}$$

where

ng_T = the ng of target volatile injected;
A_T = the peak area of the target compound;
ng_{ES} = the ng of external standard injected;
A_{ES} = the peak area of the external standard; and
RF_T = the response factor for the target compound.

Average response factors and standard deviations were calculated for each target volatile.

During each day of sample analysis, two additional liquid injections of the calibration standard were analyzed. If the RF values calculated for these injections fell within ±2 S.D. of the average response factor, then the GC/MS system was considered in control and the average RF values were then used to quantitate targets on sample cartridges as:

$$ng_T = \frac{A_T \cdot ng_{ES}}{A_{ES} \cdot RF}$$

Quality Control Results

Sets of quality control samples were prepared for each sampling trip. Each set contained an unspiked cartridge to serve as a blank and a spiked cartridge (~50-100 ng/compound), which served as a control. All field controls and blanks were analyzed. Laboratory QC samples were processed only if poor results were obtained from the field QC samples. Percent recovery was calculated as:

$$\% \text{ Recovery} = \frac{ng_C - ng_B}{ng_{spiked}} \times 100\%$$

where ng_C is the average amount of target compound found on spiked controls; ng_B is the average amount of target compound found on blank

TABLE 17. CALIBRATION SOLUTION FOR GC/MS ANALYSIS OF VOLATILE ORGANICS

Compound	Concentration (ng/μL) in Methanol
Benzene	42
α-Epichlorohydrin	104
Ethylbenzene	42
1,2-Dichloroethane	60
1,1,1-Trichloroethane	54
Trichloroethylene	58
Tetrachloroethylene	124
1,1,2,2-Tetrachloroethane	62
Carbon tetrachloride	64
Chlorobenzene	58
m-Dichlorobenzene	62
α-Pinene	58
n-Butyl acetate	140
2-Ethoxyethyl acetate	156
o-Cresol	62
m-Cresol	124
o-Xylene	60
m-Xylene	34
n-Propylbenzene	80
Isopropylbenzene	20
m-Ethyltoluene	58
1,2,4-Trimethylbenzene	40
1,3,5-Trimethylbenzene	104
Styrene	36
n-Decane	60
n-Undecane	60
n-Dodecane	60
Bromodichloromethane	60
o-Dichlorobenzene	40
p-Dichlorobenzene	80
Hexafluorobenzene	240
Octafluorotoluene	194
Bromopentafluorobenzene[a]	212

[a]External standard.

samples; ng_{spiked} is the amount of target compound spiked onto controls. Results of QC analysis are given in Tables 18 and 19.

Data show generally acceptable recoveries for field controls. An exception is the high recoveries (232%) achieved for n-dodecane for trip 1 to the new office building and trip 3 to the new hospital. Recoveries for the polar compounds such as o-, m-, and p-cresol, 2-ethoxyethyl acetate, and n-butyl acetate were low and sporadic. Analysis of field blanks showed little contamination of cartridges.

Limits of Detection

Limits of detection (LOD) and quantifiable limits (QL) for the GC/MS system were determined for each target compound based on response factor data generated at several concentrations using the six solutions described in Table 20. During this evaluation, five injections of each solution were analyzed over a 3-day period using the conditions described in Table 16. Response factors (RF) were then calculated for each target as described above.

Mean response factors and % RSDs calculated for each solution are listed in Table 21. Two important observations can be made from these data. First, the precision for response factors generated for most target volatiles at any single mass injected is good with % relative standard deviations less than 10%. 1,2-Dichloroethane is an exception. It is the earliest eluting compound, gives a poor chromatographic peak shape, and apparently is not reproducibly transferred to the GC column during injection of liquid standards. Second, response factors tend to decrease as the mass injected decreases. This trend is probably caused by adsorptive losses in the GC/MS system during analysis. Where this happens, we have assumed that at some low mass injected, the calculated response factor would be so low compared to the response factor generated at higher injected mass that accurate quantitation would no longer be possible. The injected mass where this occurs has been defined as the QL.

Practically, the QL for each target was estimated using the data in Table 21. Starting with results from analyses of the two most concentrated standards (Solutions I and II), mean response factors and % RSD were calculated. The same calculations were then performed using the three most

TABLE 18. LEVELS OF TARGET VOLATILES ON BLANK SAMPLES

Compound	ng/Cartridge									
	Hospital (New)			Nursing Home (Old)	Office (Old)	Office (New)		Office/ School (New)	Nursing Home (New)	
	1[a] n=3	2 n=5	3 n=4	1 n=3	1 n=5	1 n=5	2 n=4	1 n=4	1 n=4	2 n=4
Aromatic Hydrocarbons										
Benzene	14±3	23± 6	5±4	23±10	21±10	4±2	9±2	36±18	3±1	14± 7
Ethylbenzene	-	-	-	-	-	-	-	-	-	-
m-Xylene	-	-	-	-	-	-	-	-	-	-
Styrene	8±5	5±2	-	-	4±3	-	35±23	-	-	3±2
o-Xylene	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	-	-	-	-	-	-	-	-	-	-
m-Ethyltoluene	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-
Aliphatic Hydrocarbons										
α-Pinene	-	-	-	-	-	-	-	-	-	-
n-Decane	-	-	5±7	5±6	-	-	-	-	-	-
n-Undecane	-	-	-	-	-	-	-	-	-	-
n-Dodecane	-	-	-	-	-	-	-	-	-	-
Chlorinated Hydrocarbons										
1,2-Dichloroethane	-[b]	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	6±1	11±11	4±3	7±9	-	-	-	-	6±3	-
Carbon tetrachloride	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	4±6	-	-	-	-	-	-	-	-
Epichlorohydrin	-	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-
m-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-
p-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-
o-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-
Oxygenated Hydrocarbons										
1-Butylacetate	-	-	-	-	-	-	-	-	-	-
2-Ethoxyethylacetate	-	-	-	-	-	-	-	-	-	-
o-Cresol	-	-	-	-	-	-	-	-	-	-
m-Cresol	-	-	-	-	-	-	32±16	-	-	57±16

[a]Trip number.
[b]Not detected.

TABLE 19. RECOVERIES OF TARGET VOLATILES FROM CONTROL SAMPLES

Compound	% Recovery ± S.D.									
	Hospital (New)			Nursing Home (Old)	Office (Old)	Office (New)		Office/ School (New)	Nursing Home (New)	
	1[a] n=3	2 n=2	3 n=4	1 n=2	1 n=5	1 n=5	2 n=8	1 n=8	1 n=7	2 n=8
Aromatic Hydrocarbons										
Benzene	126±33	50±5	94±16	93±16	87±15	98±22	95±26	169±19	68±23	91±48
Ethylbenzene	72±14	90±19	118±21	96±10	101±14	124±25	91±13	99±8	89±7	142±24
m-Xylene	-[b]	-	128±21	-	-	103±6	94±25	101±14	93±32	136±19
Styrene	96±68	109±17	134±24	90±15	112±9	81±36	90±19	98±13	91±31	140±20
o-Xylene	81±	92±16	127±23	91±16	109±7	95±15	89±24	99±14	87±19	131±18
Isopropylbenzene	-	-	108±21	-	-	93±15	88±10	89±7	82±6	119±18
n-Propylbenzene	-	-	108±21	-	-	96±19	86±7	85±8	82±6	114±13
m-Ethyltoluene	-	-	133±42	-	-	93±17	88±9	90±6	82±6	121±12
1,3,5-Trimethylbenzene	-	-	116±27	-	-	103±12	85±6	82±8	82±8	120±13
1,2,4-Trimethylbenzene	80±6	85±7.5	121±27	96±15	115±11	113±17	93±8	98±5	86±8	120±22
Aliphatic Hydrocarbons										
α-Pinene	53±11	50±19	87±14	71±26	55±9	66±23	91±16	55±12	104±15	120±23
n-Decane	82±5	75±17	158±40	103±14	79±10	117±7	88±16	80±15	101±10	129±21
n-Undecane	86±6	57±13	155±29	100±23	71±8	148±73	90±14	80±15	95±18	129±14
n-Dodecane	82±3	49±13	174±45	101±17	61±7	232±118	101±10	83±5	102±15	135±17
Chlorinated Hydrocarbons										
1,2-Dichloroethane	106±7	69±12	94±18	125±25	96±11	113±13	109±	99±13	116±26	88±22
1,1,1-Trichloroethane	88±10	44±7	83±10	110±43	79±11	96±9	81±14	93±21	72±17	83±15
Carbon tetrachloride	85±10	40±6	71±24	106±22	74±11	81±19	78±14	68±23	54±10	100±44
Bromodichloromethane	81±13	73±13	125±32	108±33	100±3	89±19	99±14	112±8	77±18	78±43
Trichloroethylene	97±8	88±19	108±26	96±14	107±14	133±16	94±19	116±16	73±20	150±46
Epichlorohydrin	70±24	106±13	105±15	78±63	152±16	74±12	149±17	107±16	110±37	93±32
Tetrachloroethylene	84±1.5	75±14	139±35	104±3.5	89±11	93±8	98±9	95±14	97±14	120±14
Chlorobenzene	79±10	97±19	138±33	98±8	112±11	97±12	106±11	111±15	105±9	142±15
1,1,2,2-Tetrachloroethane	82±8	53±21	122±21	94±23	90±13	75±16	107±14	81±13	96±4	108±34
m-Dichlorobenzene	83±2	113±10	138±32	105±9	97±13	134±12	120±7	110±8	103±17	135±18
p-Dichlorobenzene	-	-	133±31	-	-	126±6	109±8	103±9	98±19	135±17
o-Dichlorobenzene	-	-	134±27	-	-	140±6	113±7	108±5	101±19	125±19
Oxygenated Hydrocarbons										
n-Butylacetate	80±15	77±9	140±53	76±20	168±163	83±7	106±14	117±17	85±12	112±16
2-Ethoxyethylacetate	57±20	66±31	221±77	62±1	102±29	114±66	132±25	88±19	99±5	107±18
o-Cresol	-	-	ND	-	-	71±32	163±17	80±16	103±10	129±15
m-Cresol	70±17	43±6	ND	86±0	69±23	50±29	184±31	93±20	101±21	92±22

[a]Trip number.
[b]Not tested.

TABLE 20. VOLATILE STANDARDS FOR LOD DETERMINATIONS

Compound	Concentration (ng/μL)					
	I	II	III	IV	V	VI
Benzene	210	105	42	21	10	5.0
α-Epichlorohydrin	520	260	104	52	26	13
Ethylbenzene	208	104	42	21	10	5.0
1,2-Dichloroethane	302	151	60	30	15	7.5
1,1,1-Trichloroethane	268	134	54	27	13	6.5
Trichloroethylene	294	147	58	29	15	7.5
Tetrachloroethylene	616	308	124	62	31	16
1,1,2,2-Tetrachloroethane	314	157	62	31	16	8.0
Carbon Tetrachloride	318	159	62	32	16	8.0
Chlorobenzene	288	144	58	29	14	7.0
m-Dichlorobenzene	310	155	62	31	16	8.0
α-Pinene	292	146	58	29	15	7.5
n-Butyl acetate	704	352	140	70	35	18
2-Ethoxyethyl acetate	784	392	156	78	39	20
o-Cresol	314	157	62	31	16	8.0
m-Cresol	620	310	124	62	31	16
o-Xylene	304	152	60	30	15	7.5
m-Xylene	174	87	34	17	9	4.5
n-Propylbenzene	396	198	80	40	20	10
Isopropylbenzene	104	52	20	10	5	2.5
m-Ethyltoluene	294	147	58	29	15	7.5
1,2,4-Trimethylbenzene	196	98	40	20	10	5.0
1,3,5-Trimethylbenzene	518	259	104	52	26	13
Styrene	182	91	36	18	9	4.5
n-Decane	292	146	58	29	15	7.5
n-Undecane	296	148	60	30	15	7.5
n-Dodecane	300	150	60	30	15	7.5
Bromodichloromethane	298	149	60	30	15	7.5
o-Dichlorobenzene	196	98	40	20	10	5.0
p-Dichlorobenzene	400	200	80	40	20	10
Hexafluorobenzene	240	240	240	240	240	240
Octafluorotoluene	194	194	194	194	194	194
Bromopentafluorobenzene	212	212	212	212	212	212

TABLE 21. MEAN RESPONSE FACTORS GENERATED FOR STANDARD SOLUTIONS

Compound	Response Factors (% RSD)				
	Solutions I&II (100 - 500 ng injected)	Solution III (40 - 80 ng injected)	Solution IV (20 - 40 ng injected)	Solution V (~15 ng injected)	Solution VI (5-10 ng injected)
1,2-dichloroethane	0.19 (28)	0.14 (41)	0.14 (29)	0.14 (10)	0.074 (24)
1,1,1-trichloroethane	0.58 (11)	0.60 (6.2)	0.50 (5.3)	0.42 (11)	0.35 (17)
benzene	3.04 (9.3)	3.2 (4.7)	2.9 (6.3)	3.0 (9.0)	2.9 (7.8)
carbon tetrachloride	0.60 (11)	0.63 (5.9)	0.50 (7.7)	0.40 (12)	0.35 (13)
bromodichloromethane	0.89 (5.2)	0.81 (2.3)	0.71 (5.2)	0.61 (6.7)	0.51 (4.5)
trichloroethylene	1.1 (6.4)	1.1 (4.0)	1.04 (5.9)	0.90 (8.1)	0.79 (7.5)
α-epichlorohydrin	0.16 (13)	0.13 (0.6)	0.088 (4.0)	0.066 (7.5)	--[a] -- [a]
n-butyl acetate	0.77 (2.6)	0.69 (0.8)	0.63 (2.7)	0.62 (2.1)	0.55 (2.4)
tetrachloroethylene	0.84 (6.4)	0.85 (4.1)	0.81 (5.1)	0.78 (6.5)	0.70 (6.0)
chlorobenzene	0.85 (5.3)	0.77 (1.6)	0.75 (1.3)	0.70 (5.5)	0.57 (1.6)
ethylbenzene	1.33 (2.6)	1.3 (2.1)	1.2 (1.9)	1.2 (5.5)	1.1 (3.5)
m-xylene	1.6 (2.1)	1.6 (1.8)	1.6 (1.5)	1.4 (5.2)	1.2 (2.4)
styrene	2.9 (1.9)	2.6 (1.6)	2.5 (0.4)	2.4 (4.3)	2.1 (1.5)
2-ethoxyethyl acetate	0.62 (4.5)	0.53 (3.9)	0.47 (9.4)	0.45 (5.0)	0.37 (7.5)
o-xylene	1.6 (1.5)	1.6 (1.8)	1.5 (1.6)	1.4 (2.5)	1.3 (1.2)
1,1,2,2-tetrachloroethane	0.13 (5.5)	0.10 (6.2)	0.10 (9.9)	0.068 (7.1)	0.039 (8.9)
isopropylbenzene	0.75 (2.8)	0.70 (3.0)	0.63 (1.9)	0.52 (6.4)	0.38 (2.7)
α-pinene	0.17 (4.5)	0.15 (3.9)	0.13 (3)	0.09 (10)	0.068 (9.6)
n-propylbenzene	1.28 (2.6)	1.2 (1.4)	1.2 (0.8)	1.1 (4.5)	0.95 (1.3)

(continued)

TABLE 21. (continued)

Compound	Response Factors (% RSD)				
	Solutions I&II (100 - 500 ng injected)	Solution III (40 - 80 ng injected)	Solution IV (20 - 40 ng injected)	Solution V (~15 ng injected)	Solution VI (5-10 ng injected)
m-ethyltoluene	1.30 (2.3)	1.2 (2.8)	1.2 (1.1)	1.11 (4.3)	0.96 (0.6)
1,3,5-trimethylbenzene	1.8 (1.1)	1.7 (1.5)	1.7 (1.1)	1.6 (4.4)	1.4 (2.2)
1,2,4-trimethylbenzene	1.7 (2.3)	1.5 (1.4)	1.48 (3.4)	1.3 (5.3)	1.2 (1.5)
m-dichlorobenzene	2.4 (7.4)	2.3 (3.6)	2.2 (7.8)	2.0 (3.1)	1.8 (2.8)
n-decane	0.16 (6.6)	0.14 (4.3)	0.13 (8.6)	0.085 (9.9)	0.065 (5.5)
p-dichlorobenzene	2.4 (4.3)	2.1 (7.4)	2.3 (5.6)	2.2 (4.3)	1.9 (4.3)
o-dichlorobenzene	2.2 (2.9)	2.0 (3.0)	2.0 (3.6)	1.8 (5.2)	1.6 (3.1)
o-cresol	1.6 (5.1)	1.4 (3.4)	1.3 (8.3)	1.1 (4.9)	0.89 (5.0)
m-cresol	1.9 (8.7)	1.6 (3.8)	1.5 (9.5)	1.4 (5.3)	1.1 (5.8)
n-undecane	0.16 (5.1)	0.14 (5.6)	0.12 (9.8)	0.082 (12)	0.062 (15)
n-dodecane	0.15 (7.3)	0.12 (4.6)	0.10 (7.3)	0.065 (7.1)	0.041 (12)

[a]Not detected.

concentrated standards (Solutions I, II, and III), the four most concentrated standards (Solutions I, II, III, and IV), the five most concentrated standards (Solutions I, II, III, IV, and V), and finally all six standards. These calculations are summarized in Table 22.

Generally, as the RFs from the less concentrated standards are added for calculation, the % RSDs of the calculated response factors increased. When the inclusion of a response factor from one of the low concentration standards caused the % RSD of a target volatile to exceed 20%, then the injected mass from that standard was defined as the quantifiable limit. For example, for epichlorohydrin, the % RSD of the mean response factors becomes greater than 20% when the response factors from Solution IV (52 ng injected) are included in the data base, and therefore, the quantifiable limit is 52 ng. For the n-alkanes the % RSD becomes greater than 20% when RFs from Solution V (15 ng injected) are included in the calculations so the quantifiable limits would be defined as 15 ng. For the compounds that exhibit acceptable % RSDs throughout the concentration range studied, the quantifiable limit was arbitrarily set at 50% of the mass injected using Solution VI, the lowest concentration standard. Because of poor chromatographic behavior during liquid injections, the LOD for 1,2-dichloroethane was calculated using a different approach. Here the LOD was defined as the lowest standard concentration where a greater than 25% decrease in RF was observed compared to the other standard. The limit of detection was defined as one-fourth the QL. The QL values in Table 23 are reported as both ng/cartridge and ng/L in air assuming sample volumes of 10, 15, and 20 liters.

Sample Analysis

Throughout this project, all samples collected for volatile organics were collected, analyzed, and processed in triplicate using distributed air volumes during sample collection. As described previously, output from the GC/MS analysis was ng of target per cartridge. This mass (ng_T) was then corrected for background by subtracting mean values for each target found on field blanks (ng_B) from the same trip. No correction was made for recoveries calculated from field controls. Concentrations were then calculated using the total sample volume (V) as:

$$ng/L = \frac{ng_T - ng_B}{V\ (L)}$$

TABLE 22. RESPONSE FACTOR CALCULATIONS

Compound	Mean Response Factors (% RSD)				
	Solutions I, II	Solutions I, II, III	Solutions I, II, III, IV	Solutions I, II, III, IV, V	Solutions I, II, III, IV, V, VI
1,2-dichloroethane	0.19 (27)	0.18 (33)	0.17 (34)	0.16 (32)	0.15 (39)
1,1,1-trichloroethane	0.58 (11)	0.59 (10)	0.56 (12)	0.53 (16)	0.50 (22)
benzene	3.0 (9.3)	3.1 (8.2)	3.1 (8.3)	3.0 (8.3)	3.0 (8.3)
carbon tetrachloride	0.63 (11)	0.61 (9.3)	0.58 (12)	0.54 (18)	0.51 (23)
bromodichloromethane	0.89 (5.2)	0.86 (6.4)	0.83 (9.8)	0.78 (15)	0.74 (20)
trichloroethylene	1.1 (6.4)	1.1 (6.4)	1.1 (6.2)	0.9 (9.1)	0.99 (13)
α-epichlorohydrin	0.16 (13)	0.15 (13)	0.13 (23)	0.12 (33)	ND[b]
n-butyl acetate	0.77 (2.6)	0.67 (5.7)	0.71 (8.4)	0.70 (9.3)	0.67 (12)
tetrachloroethylene	0.84 (6.4)	0.84 (5.6)	0.84 (5.5)	0.83 (6.1)	0.80 (8.6)
chlorobenzene	0.85 (5.3)	0.83 (6.4)	0.81 (7.2)	0.79 (8.6)	0.75 (14)
ethylbenzene	1.3 (2.6)	1.3 (3.6)	1.3 (4.9)	1.3 (5.6)	1.2 (8.4)
m-xylene	1.6 (2.1)	1.6 (2.0)	1.6 (2.9)	1.6 (7.0)	1.5 (11)
styrene	2.9 (1.9)	2.8 (4.7)	2.7 (5.7)	2.7 (7.6)	2.6 (11)
2-ethoxyethyl acetate	0.62 (4.5)	0.59 (8.1)	0.56 (12)	0.54 (14)	0.51 (19)
o-xylene	1.6 (1.5)	1.6 (1.9)	1.6 (2.5)	1.5 (5)	1.5 (14)
1,1,2,2-tetrachloroethane	0.13 (5.5)	0.12 (14)	0.12 (16)	0.11 (25)	0.10 (37)
isopropylbenzene	0.75 (2.8)	0.73 (4.5)	0.71 (8)	0.67 (14)	0.62 (22)
α-pinene	0.17 (4.5)	0.16 (7.2)	0.16 (12)	0.14 (22)	0.13 (31)
n-propylbenzene	1.2 (2.6)	1.2 (4.3)	1.2 (4.9)	1.2 (6.6)	1.2 (10)

(continued)

TABLE 22. (continued)

Compound	Mean Response Factors (% RSD)				
	Solutions I, II	Solutions I, II, III	Solutions I, II, III, IV	Solutions I, II, III, IV, V	Solutions I, II, III, IV, V, VI
m-ethyltoluene	1.3 (2.3)	1.3 (3.9)	1.3 (4.2)	1.2 (6.4)	1.2 (11)
1,3,5-trimethylbenzene	1.8 (1.1)	1.8 (3.0)	1.8 (3.4)	1.7 (5.3)	1.7 (8.4)
1,2,4-trimethylbenzene	1.7 (2.3)	1.6 (5.3)	1.6 (6.0)	1.5 (8.7)	1.5 (13)
m-dichlorobenzene	2.4 (7.4)	2.3 (6.6)	2.3 (7.1)	2.2 (9.2)	2.2 (11)
n-decane	0.16 (5.6)	0.15 (7.8)	0.15 (11.7)	0.14 (22)	1.2 (31)
p-dichlorobenzene	2.4 (4.3)	2.3 (7.4)	2.3 (6.9)	2.3 (6.5)	2.2 (9)
o-dichlorobenzene	2.2 (2.9)	2.1 (5.5)	2.1 (5.5)	2.0 (7.1)	2.0 (12)
o-cresol		1.5 (14)	1.5 (15)	1.4 (18)	1.3 (23)
m-cresol	1.9 (8.7)	1.8 (12)	1.7 (14)	1.7 (16)	1.6 (21)
n-undecane	0.16 (5.1)	0.16 (8.8)	0.14 (16)	0.13 (25)	0.12 (34)
n-dodecane	0.15 (7.3)	0.14 (13)	1.3 (18)	0.11 (28)	0.11 (52)

[a]See Table 20 for solution concentrations.

[b]Not detected.

TABLE 23 . QUANTIFIABLE LIMITS (QL) FOR VOLATILE ORGANIC TARGET COMPOUNDS

Compound	ng/Cartridge	Quantifiable Limit ng/L (10,15,20 L)
1,2-dichloroethane	7.5	0.75, 0.50, 0.38
1,1,1-trichloroethane	6.5	0.65, 0.43, 0.33
benzene	2.5	0.25, 0.17, 0.13
carbon tetrachloride	8.0	0.80, 0.53, 0.40
bromodichloromethane	3.8	0.38, 0.25, 0.19
trichloroethylene	3.8	0.38, 0.25, 0.19
α-epichlorohydrin	52	5.2, 3.5, 2.6
n-butyl acetate	9.0	0.90, 0.60, 0.45
tetrachloroethylene	8.0	0.80, 0.53, 0.40
chlorobenzene	3.5	0.35, 0.23, 0.18
ethylbenzene	2.5	0.25, 0.17, 0.13
m-xylene	2.3	0.23, 0.15, 0.12
styrene	2.3	0.23, 0.15, 0.12
2-ethoxyethyl acetate	10	1.0, 0.67, 0.50
o-xylene	3.8	0.38, 0.25, 0.19
1,1,2,2-tetrachloroethane	16	1.6, 1.0, 0.80
isopropylbenzene	2.5	0.25, 0.17 0.13
α-pinene	15	1.5, 1.0, 0.75
n-propylbenzene	5.0	0.50, 0.33, 0.25
m-ethyltoluene	3.8	0.38, 0.25, 0.19
1,3,5-trimethylbenzene	6.5	0.65, 0.43, 0.33
1,2,4-trimethylbenzene	2.5	0.25, 0.17, 0.13
m-dichlorobenzene	4.0	0.40, 0.27, 0.20
n-decane	15	1.5, 1.0, 0.75
p-dichlorobenzene	5.0	0.50, 0.33, 0.25
o-dichlorobenzene	2.5	0.25, 0.17, 0.13
o-cresol	8.0	0.80, 0.53, 0.40
m-cresol	16	1.6, 1.1, 0.80
n-undecane	15	1.5, 1.0, 0.75
n-dodecane	15	1.5, 1.0, 0.75

[a]LOD = QL/4.

These calculations were performed using a computer program. The program also calculated the mean and percent relative standard deviation (%RSD) for all colocated samples. If the %RSD was greater than 30 percent, then the identity and peak area of target compounds were verified from the original data files. Generally, %RSDs were less than 20%. Poor precision (RSD = 20%) was found under certain conditions.

1. If targets were found at variable levels on field blanks, as for benzene and styrene;

2. If the targets were present at levels below the limits of detection; and

3. If the targets were polar compounds, such as the cresols or n-butyl acetate.

NITROSAMINES

Analytical Method

Cartridges collected for nitrosamine analysis were sent to Thermedics (Waltham, MA) for analysis. A solvent backflushing technique was used to elute the samples, which were then analyzed using a gas chromatograph interfaced with a TEA™ detector and confirmed by HPLC TEA analysis (22,28).

Analysis was performed for n-dimethylnitrosamine, n-diethylnitrosamine, n-dipropylnitrosamine, n-dibutylnitrosamine, n-nitrosopiperdine, n-nitrosopyrrolidine, n-nitrosomorpholine.

QC Results

Sets of quality control samples were prepared for each sampling trip. Each set contained an unspiked cartridge to serve as a blank and a cartridge spiked with n-nitrosomorpholine and/or n-dimethylnitrosamine or n-dipropylnitrosamine to serve as a control. Field control and blanks were analyzed with field samples. Percent recovery for spiked controls was calculated as:

$$\% \text{ Recovery} = \frac{ng_{FC} - ng_{FB}}{ng_{spiked}} \times 100\%$$

where ng_{FC} is the average amount of target compound found on field controls; ng_{FB} is the average amount of target compound found on field blanks, and ng_{spiked} is the amount of target compound spiked onto field controls. Results of QC analysis are given in Table 24.

TABLE 24. QC RESULTS[a] FOR NITROSAMINE SAMPLES

SITE	TRIP	SAMPLE	n-DIMETHYL-NITROSAMINE (%)	n-DIETHYL-NITROSAMINE (%)	n-DIPROPYL-NITROSAMINE (%)	n-DIBUTYL-NITROSAMINE (%)	n-NITROSO-PIPERIDINE (%)	n-NITROSO-PYRROLIDINE (%)	n-NITROSO-MORPOLINE (%)
HOSPITAL, NEW	1	BLANK 1	ND[b]	ND	ND	ND	ND	ND	ND
	1	CONTROL 1	NS[c]	NS	65.1	NS	NS	NS	70.6
	2	BLANK 1	ND	ND	ND	ND	ND	ND	ND
	2	CONTROL 2	ND	ND	67.0	ND	ND	ND	74.3
HOME, OLD	1	BLANK 1	ND	ND	ND	ND	ND	ND	ND
	1	CONTROL 1	NS	NS	70.8	NS	NS	NS	75.2
OFFICE, OLD	1	BLANK 1	ND	ND	ND	ND	ND	ND	ND
	1	BLANK 2	ND	ND	ND	ND	ND	ND	ND
	1	BLANK 3	ND	ND	ND	ND	ND	ND	ND
	1	BLANK 4	ND	ND	ND	ND	ND	ND	ND
	1	CONTROL 1	NS	NS	64.2	NS	NS	NS	67.0
	1	CONTROL 2	77.3	NS	70.8	NS	NS	NS	67.9
	1	CONTROL 3	72.2	NS	66.0	NS	NS	NS	54.1
	1	CONTROL 4	74.2	NS	73.6	NS	NS	NS	64.2
OFFICE, NEW	1	BLANK 1	ND	ND	ND	ND	ND	ND	ND
	1	CONTROL 1	78.4	NS	73.6	NS	NS	NS	70.6
	2	BLANK 1	ND	ND	ND	ND	ND	ND	ND
	2	BLANK 2	ND	ND	ND	ND	ND	ND	ND
	2	CONTROL 1	82.5	NS	NS	NS	NS	NS	85.5
	2	CONTROL 2	103.1	NS	NS	NS	NS	NS	71.8
SCHOOL, NEW	1	BLANK 2	ND	ND	ND	ND	ND	ND	ND
	1	CONTROL 2	NS	NS	NS	NS	NS	NS	52.7
HOME, NEW	1	BLANK 1	ND	ND	ND	ND	ND	ND	ND
	1	CONTROL 1	74.2	NS	NS	NS	NS	NS	42.7
	2	CONTROL 2	66.0	NS	NS	NS	NS	NS	50.9

[a]Control reported as percent recovery, blanks reported as ng/cartridge.

[b]Not detected.

[c]Not spiked.

Data shows acceptable recoveries for field controls with no contamination of field blanks.

Limits of Detection

Limits of detection were reported by Thermedics as shown in Table 25. The quantifiable limit was considered the same as the LOD.

Sample Analysis

The analysis strategy for nitrosamines involved a sample screen prior to analyzing all samples. That is, one sample for each trip from each location was analyzed first. For each location, samples with the highest probability of containing nitrosamines (i.e., time periods where smoking had occurred) were selected. If either dimethylnitrosamine or n-nitrosmorpholine were detected, then all samples from that trip were analyzed. If neither nitrosamine was detected, then no further samples from that trip were analyzed.

Output from GC/TEA analysis was ng of nitrosamine per cartridge. This mass (ng_n) was then corrected for background by subtracting mean values for each target (ng_B) found on field blanks from the same trip. No correction was made for recoveries calculated from field controls. Concentrations were then calculated using the total sample volume (V) as:

$$ng/L = \frac{ng_n - ng_B}{V\ (L)}$$

MISCELLANEOUS VOLATILES

Analytical Methods

Ethylene oxide and other trace organics including acrylonitrile, vinyl chloride, vinylidene chloride, chloroform, acrolein, n-propanol, n-butanol, propanone, 2-butanone, and phenol were collected on 150 mg charcoal tubes (SKC Lot 107 charcoal) using approved NIOSH methods. In the proposed analytical method, each charcoal tube is broken and the front and back sections of the charcoal transferred to a glass vial and solvent desorbed using 0.5 mL carbon disulfide (CS_2). A mixture of CS_2 and 2 percent acetone was proposed for desorbing acrylonitrile. After desorption, extracts are analyzed by gas chromatography with a flame ionization detection. A nitrogen phosphorous (NPD) or an electron capture detector (ECD) was proposed for more sensitive detection of nitrogen and halogen containing targets.

TABLE 25. LIMITS OF DETECTION (LOD) FOR NITROSAMINE ANALYSIS

Compound	LOD ng/cartridge	LOD ng/L
n-Dimethylnitrosamine	5	0.07
n-Diethylnitrosamine	8	0.11
n-Dipropylnitrosamine	8	0.11
n-Dibutylnitrosamine	8	0.11
n-Nitrosopiperdine	8	0.11
n-Nitrospyrroline	8	0.11
n-Nitrosmorpholine	10	0.14

Method validation experiments, along with analysis of control samples, demonstrated significant problems in applying these methods to the analysis of low levels of organic compounds in air. The most serious problems included

1. low recovery (<30%) of miscellaneous volatiles when spiked at levels less than 200 μg/cartridge,
2. problems with solvent interferences during chromatographic analysis of low levels (<25 ng/μL) of acetone, acrolein, ethylene oxide and vinylidene chloride, and
3. poor collection efficiency of ethylene oxide using 150 mg charcoal tubes.

Because of these problems and after consultation with the EPA Project Officer, analyses of miscellaneous volatiles was not performed on any field samples.

PESTICIDES/PCBs

Analytical Method

Recovery of target pesticides/PCBs from polyurethane foam (PUF) was accomplished by a 14 h Soxhlet extraction of the PUF with 150 mL of 5% ethyl ether in hexane. The hexane was concentrated to 1 mL by Kuderna-Danish evaporation followed by nitrogen blowdown.

Prior to GC analysis, three external standards (dichloronaphthalene, ~20 ng; tetrachloronaphthalene, ~200 ng; and octachloronaphthalene, ~80 ng) were added to each sample. All samples were analyzed by GC/ECD using the conditions described in Table 26. Chromatograms of standard solutions of the target pesticides/PCBs are given in Figures 7 and 8. Each pesticide in the PUF extracts was quantitated using a response factor (RF) generated relative to the external standard, dichloronaphthalene. Twelve peaks were used to quantitate tech.-chlordane. RF values were generated by analyzing standard solutions (Table 27) prepared in hexane containing known concentrations of each target and the external standard. For the target pesticide, the RF was calculated as:

$$RF = \frac{pg_p \cdot A_{ES}}{A_p \cdot pg_{ES}}$$

TABLE 26. CHROMATOGRAPHIC CONDITIONS FOR PESTICIDE/PCB ANALYSIS

Parameter	Settings, Etc.
Column, analytical Inner diameter Film thickness	30 M DB-5 fused silica capillary 0.32 mm 0.25 μ
N_2 carrier flow	1.4 mL/min
Split ratio	18:1
Splitless	60 sec.
Temperature Program Final hold	100-260°C @ 2°C/min 15 minutes
Injector temperature	270°C
Detector temperature	300°C
Detector type	Variable pulse frequency ^{63}Ni ECD
Makeup gas	N_2 @ 25 mL/min
Injection volume	1.0 μL

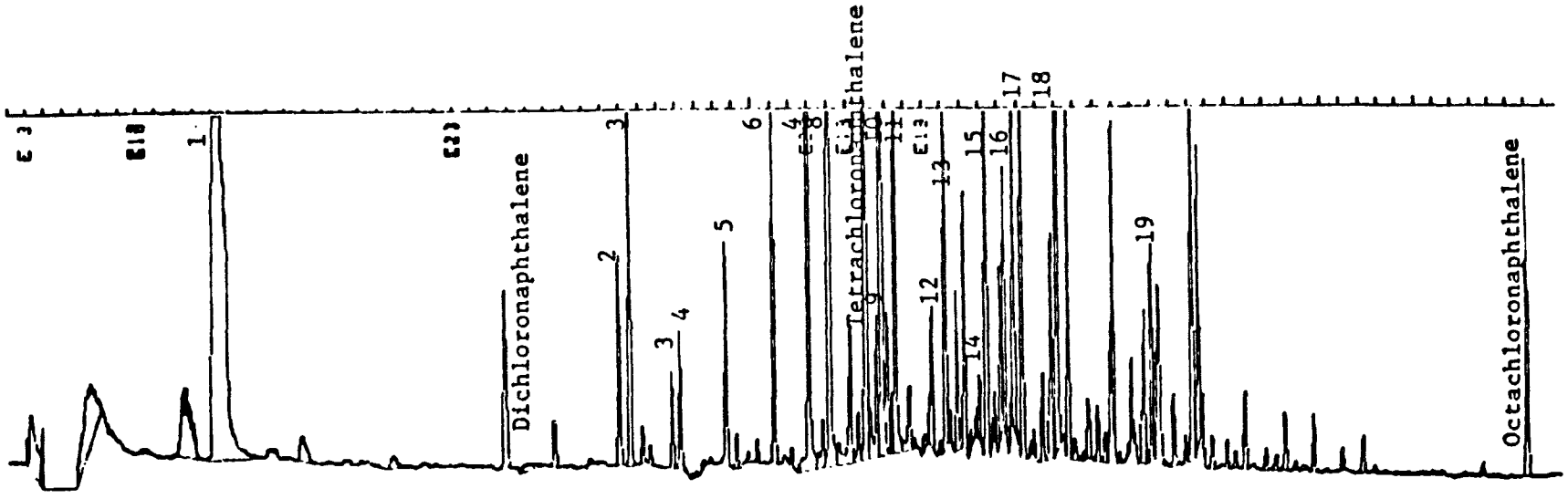


Figure 7. Chromatogram of pesticide standard analyzed by GC/ECD.

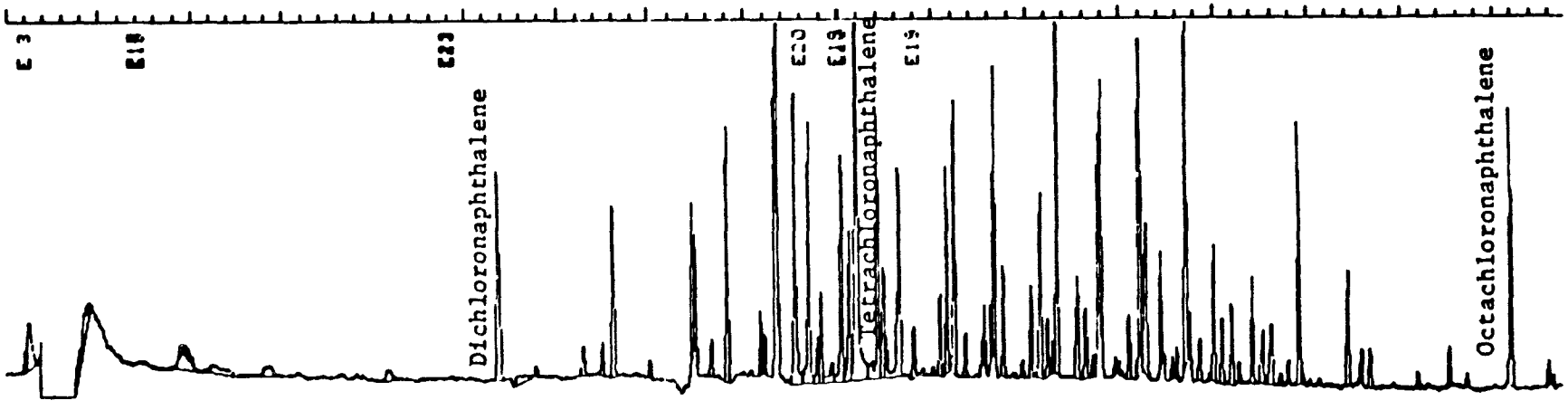


Figure 8. Chromatogram of PCB "Tripart Mixture" analyzed by GC/ECD.

TABLE 27. STANDARD SOLUTIONS FOR CALIBRATING GC/ECD

Compound	Concentration (pg/μL in hexane)
Pesticide Solution	
Dichlorvos	448
α-BHC	2.68
β-BHC	3.82
γ-BHC	1.87
Diazinon	176
tech.-Chlordane	139
Ronnel	36.3
Malathion	681
Chlorpyrifos	33.5
Aroclor 1254	250
Dichloronaphthalene[a]	200
Tetrachloronaphthalene[a]	20.0
Octachloronaphthalene[a]	80.0
Tripart Solution	
Aroclor 1016	250
Aroclor 1254	200
Aroclor 1260	100
Dichloronaphthalene[a]	200
Tetrachloronaphthalene[a]	20.0
Octachloronaphthalene[a]	80.0

[a]External standards.

where A_p and A_{ES} are the peak areas measured for the pesticide and external standard, respectively and pg_p and pg_{ES} are the pg of the pesticide and external standard injected onto the GC column. For tech.-chlordane, it was assumed that each peak in the GC pattern resulted from an equal amount of tech.-chlordane. Since there were 12 peaks for quantitation, the relative response factor for any individual peak (RF_i) was calculated as:

$$RF_i = \frac{pg_{TC}/\ 12 \bullet A_{ES}}{A_i \bullet pg_{ES}}$$

where A_i is the area of response of peak i and pg_{TC} is the pg of technical chlordane injected into the GC column.

Individual PCB isomers were quantitated using RFs generated at RTI on a previous contract (29). Individual PCB isomers were identified by retention times relative to the external standards and by pattern comparison to chromatograms of a standard solution containing a mixture of Aroclors 1016, 1254, and 1260.

Prior to analysis of PUF extracts, RF factors were calculated from five injections of standard and average RF determined as given in Table 28. Each day samples were analyzed, the calibration standards were analyzed and the ratio of the RF from the daily injection vs. the average RF were calculated. Response factors were considered in control if the ratio was between 0.75 and 1.25. The average response factor was then used to quantitate pesticides injected for analyses using the equation:

$$pg_p = \frac{RF \bullet A_p \bullet pg_{ES}}{A_{ES}}$$

where A_p and A_{ES} are the peak areas measured for the pesticide and external standard, respectively, and pg_p and pg_{ES} are the pg of the pesticide and external standard injected onto the GC column. If the RF was not in control, the daily RF was used for quantitation.

Detector linearity was demonstrated for all compounds by analyzing single injections of the six solutions given in Table 29. Estimated linear range for each pesticide/PCB is given in Table 30. The upper range was estimated based on response factor data generated during the analysis of calibration standards.

TABLE 28. CALCULATED AVERAGE RESPONSE FACTORS FOR TARGET PESTICIDES/PCBs

Compound	Response Factor (%RSD)
Dichlorvos	1.0 (4.3)
α-BHC	0.055 (2.3)
β-BHC	0.22 (6.0)
γ-BHC	0.064 (7.2)
Diazinon	3.5 (2.0)
TC 1[a]	0.18 (5.0)
TC 2[a] (Heptachlor)	0.11 (4.0)
Ronnel	0.14 (3.9)
TC 3[a]	0.24 (3.2)
Malathion	1.6 (6.3)
Chlorpyrifos	0.32 (8.3)
TC 5[a]	0.25 (29)
TC 6[a]	0.31 (6.7)
TC 7[a]	0.23 (3.7)
TC 8[a]	0.18 (2.3)
TC 9[a]	0.21 (12)
TC 10[a] (t-Nonachlor)	0.17 (3.1)
TC 11[a]	0.20 (31)
TC 12[a]	0.18 (7.0)

[a]Individual isomers of tech.-Chlordane.

TABLE 29. SOLUTIONS USED FOR TESTING INSTRUMENT LINEARITY

Compound	Concentration (pg/μL)					
	I	II	III	IV	V	VI
Pesticides						
Dichlorvos	179	89.6	35.8	17.9	8.96	4.48
α-BHC	2.68	1.34	0.536	.268	.134	.067
β-BHC	3.82	1.91	0.764	.382	.191	0.955
γ-BHC	1.87	.936	0.374	.187	.094	.0468
Diazinon	175	87.8	35.1	17.6	8.80	4.40
Ronnel	72.6	36.3	14.2	7.26	3.63	1.82
Malathion	65.8	32.9	13.2	6.58	3.29	1.65
Chlorpyrifos	67.0	33.5	13.4	6.70	3.35	1.68
tech.-Chlordane	139	69.5	27.8	13.9	6.95	3.48
Dichloronaphthalene[a]	200	200	200	200	200	200
Tetrachloronaphthalene[a]	20.0	20.0	20.0	20.0	20.0	20.0
Octachloronaphthalene[a]	80.0	80.0	80.0	80.0	80.0	80.0
PCBs						
Aroclor 1016	100	50.0	25.0	12.5	5.00	
Aroclor 1254	80.0	40.0	20.0	10.0	4.00	
Aroclor 1260	40.0	20.0	10.0	5.0	2.00	
Dichloronaphthalene[a]	200	200	200	200	200	
Tetrachloronaphthalene[a]	20.0	20.0	20.0	20.0	20.0	
Octachloronaphthalene[a]	80.0	80.0	80.0	80.0	80.0	

[a]External standard.

TABLE 30. ESTIMATED LINEAR RANGE FOR TARGET PESTICIDES/PCBs

Compound	Estimated Linear Range[a] (pg/μL)
Dichlorvos	9.0-450
α-BHC	0.070-14
β-BHC	0.76-19
γ-BHC	0.090-9.4
Diazinon	18-180
Ronnel	1.8-68
Malathion	3.3-680
Chlorpyrifos	1.7-170
tech.-Chlordane	3.5-140
PCBs	11-500

[a]The lower end of the range is equal to method LOD in ng/m^3 if a 1 μL injection of a 1 mL extract from a 1 m^3 sample is analyzed.

QC Results

Quality control samples were prepared and analyzed along with field samples for each monitoring trip. A method control was also processed with each set of samples. Method controls were spiked immediately prior to extraction at the same levels as the field control. Percent recovery for control samples was calculated as:

$$\% \text{ Recovery} = \frac{ng_c}{\text{ng spiked}} \times 100\%$$

where ng_c is the average amount of target pesticide found on control samples and ng spiked is the amount of target spiked onto that sample. Results of the analysis of QC samples are given in Tables 31 and 32.

Dichlorvos was not detected on field controls, but gave good recoveries (>70%) for method controls, suggesting that degradation probably occurred during storage. Recoveries for Malathion were generally low ~40-50%. All other compounds gave acceptable recoveries.

Field blanks were generally clean with little background contamination.

Limits of Detection/Quantitation

Estimated instrumental quantitation limits (QL) were calculated from the data base generated for relative response factor determinations and were defined as the number of pg injected onto the GC column and which would give 100,000 area counts during analysis. The calculation for QL is:

$$QL = \frac{pg_p \times 100{,}000}{A_p}$$

where pg_p is the amount of pesticide injected and A_p is the GC/ECD area response resulting from analysis of standard solutions at 100 mV sensitivity. For tech.-chlordane the QL was calculated as the amount of tech.-chlordane injected and which would give an average area response of 100,000 counts for each peak. For PCBs, the QL was estimated as the amount of tripart solution injected on column and which gave an area response of 25,000 counts for 33% of the PCB isomers.

TABLE 31. RECOVERY OF PESTICIDES/PCBs FROM FIELD CONTROLS

	% Recovery									
	Hospital (new)			Nursing Home (old)	Office (old)	Office (new)		Office/ School (old)	Nursing Home (new)	
Compound	1[a]	2	3	1	1	1	2	1	1	2
Dichlorvos	ND[b]	ND	ND	ND	ND	ND	ND	15	ND	11
α-BHC	84	86	93	84	136	83	88	88	82	87
β-BHC	85	100	103	108	115	111	99	93	96	121
γ-BHC	92	88	84	76	111	88	97	96	94	I
Diazinon	83	67	71	49	33	70	47	91	39	124
Ronnel	56	71	63	95	24	56	63	106	63	23
Malathion	33	42	62	53	7	42	48	68	61	57
Chlorpyrifos	72	78	80	98	41	76	66	98	65	76
PCBs	93	74	98	95	105	93	81	95	92	85
tech.-Chlordane	95	86	94	94	95	91	83	97	88	88

[a]Sampling trip.
[b]Not detected.

TABLE 32. LEVELS OF PESTICIDES/PCBs FOUND ON FIELD BLANKS

	Concentration (pg/mL)										
	Hospital (new)			Nursing Home (old)	Office (old)	Office (new)		Office/ School (old)		Nursing Home (new)	
Compound	1[a]	2	3	1	1	1	2	1	1	1	2
Dichlorvos	ND[b]	ND	ND	ND	ND	ND	ND	ND	NC	SL[c]	ND
a-BHC	T[d]	N	ND	T	T	ND	ND	T	NC	SL	ND
b-BHC	ND	ND	ND	ND	ND	ND	16	ND	NC	SL	7.8
g-BHC	ND	ND	ND	ND	ND	ND	ND	ND	NC	SL	ND
Diazinon	48	ND	ND	NI[e]	ND	NI	ND	ND	NC	SL	ND
Ronnel	ND	ND	ND	2.0	T	ND	ND	ND	NC	SL	ND
Malathion	ND	ND	ND	ND	ND	ND	ND	ND	NC	SL	ND
Chlorpyrifos	2.9	ND	ND	12	T	ND	T	ND	NC	SL	ND
PCBs	ND	ND	ND	T	ND	T	ND	ND	NC	SL	T
tech.-Chlordane	T	T	T	ND	ND	ND	T	ND	NC	SL	T

[a]Sampling sites.
[b]Not detected.
[c]Sample highly contaminated by the autosampler during injection, therefore, accurate concentrations are not available.
[d]Detected at a concentration above the LOD, but below the quantitation limit.
[e]Compound could not be quantitated due to a negative interference in the sample chromatogram.

All of these QLs were above the lower limit of linear range except for Ronnel. In this case the QL was defined by the linear range. The instrumental detection limit was defined as one-fourth the QL. Instrument detection parameter are listed in Table 33.

Sample Analysis

For all trips, a sample screening was performed. This screening consisted of processing one sample from each location for each trip. If pesticides were not detected at elevated levels during screening, then no further samples were analyzed.

As described previously, output from GC/ECD analysis was pg of target injected. This was converted to pg per sample as:

$$pg_{sample} = \frac{pg_T \times V_e}{V_i}$$

where:

pg_T = pg of target injected,

V_e = total volume of the extract in μL, usually 1000,

V_i = volume of extract injected in μL, usually 1.

This mass was then corrected for background by subtracting mean values for each target as determined from field blanks (pg_B) from the same trip. No correction was made for recoveries calculated from field controls. Concentrations were then calculated using the total sample volume (V) as:

$$pg/m^3 = \frac{pg_T - pg_B}{V\ (m^3)}$$

INHALABLE AND RESPIRABLE PARTICULATES

Analytical Method

Filters used for sampling inhalable (coarse) and respirable (fine) particulates were weighed before and after exposure using a Mettler Balance (Serial Number 650272) with certified accuracy to 0.001 mg. Filters were equilibrated at 70 ± °C and 50±2% relative humidity before weighing. All filters were exposed to an ionizing source immediately prior to weighing to reduce static charge and improve reproducibility of filter weights. Results of filters weights were reported to the nearest μg.

TABLE 33. INSTRUMENTAL DETECTION PARAMETERS FOR THE ANALYSIS OF PESTICIDES/PCBs IN AIR SAMPLES

Compound	QL[a] (pg/μL)	LOD[a] (pg/μL)
Dichlorvos	28	7.0
α-BHC	0.76	0.19
β-BHC	2.8	0.70
γ-BHC	0.83	0.22
Diazinon	48	12
Heptachlor	1.2	0.30
Ronnel	3.6	0.90
Malathion	20	4.9
Chlorpyrifos	4.0	1.0
Oxychlordane	2.2	0.55
t-Nonachlor	1.9	0.47
tech.-Chlordane	32	8.0
PCBs	15	3.8

[a]Equal to method detection parameter in ng/m^3 if a 1 μL injection of a 1 mL extract from a 1 m^3 sample is analyzed.

QC Results

Unexposed filters were set aside to serve as field and laboratory blanks for each sampling trip. Blanks were weighed before and after sampling at the same time as field samples. No control samples were available. Data for blank samples are given in Table 34.

Limits of Detection

The method detection and quantitation limit were calculated as

Method LOD = $\bar{x} \pm 1$ S.D.

Method QL = $\bar{x} \pm 2$ S.D.

where $\bar{x}$ is the average mass found on the filter blank. Method detection parameters are listed in Table 35.

Sample Analysis

Particulate concentration (P) in all samples was calculated as

$$P\ (\mu g/m^3) = \frac{FW_{AE} - FW_{BE} - FB}{\text{volume of air sampled } (m^3)}$$

where

FW_{BE} is the filter weight before exposure,

FW_{AE} is the filter weight after exposure,

FB is the average amount of particulate found on blank filters.

POLYNUCLEAR AROMATIC HYDROCARBONS (PNAs)

Analytical Method

After the respirable and inhalable particulate filters were weighed, the two filters from each sample were placed together into a 20 mL scintillation vial. Samples were extracted by adding approximately 20 mL of methylene chloride to the scintillation vials and sonicating for thirty minutes. All operations were performed under yellow light to prevent photodegradation of PNAs.

To perform screening analysis, sample extracts were transferred to screw-cap centrifuge tubes and the volume reduced to approximately 0.1 mL by nitrogen blowdown. Each concentrated extract was quantitatively transferred to a Sep-Pak™ silica cartridge. The methylene chloride on the cartridge was evaporated with N_2. The Sep-Pak was then eluted with 10 mL of hexane. The eluant was concentrated to 0.5 mL. These extracts were

TABLE 34. RESULTS OF INHALABLE AND RESPIRABLE PARTICULATE FIELD BLANK ANALYSIS

Trip	Final Weight Difference (μg)	
	Inhalable (Coarse)	Respirable (Fine)
Hospital (New)		
Trip 1	5 ± 3	3 ± 10
Trip 2	25 ± 20	45 ± 13
Trip 3	6 ± 2	15 ± 4
Nursing Home (Old)		
Trip 1	-11 ± 37	9 ± 4
Office (Old)		
Trip 1	4 ± 9	13 ± 16
Office (New)		
Trip 1	14 ± 15	48 ± 8
Trip 2	25 ± 7	34 ± 3
Office/School (New)		
Trip 1	25 ± 4	39 ± 9
Nursing Home (New)		
Trip 1	24 ± 1	58 ± 8
Trip 2	9 ± 13	1 ± 10

TABLE 35. METHOD DETECTION PARAMETERS FOR INHALABLE AND RESPIRABLE PARTICULATE SAMPLES

Trip	LOD (μg)		QL (μg)	
	Inhalable (Coarse)	Respirable (Fine)	Inhalable (Coarse)	Respirable (Fine)
Hospital (New)				
Trip 1	8	13	11	23
Trip 2	45	58	65	71
Trip 3	8	19	10	23
Nursing Home (Old)				
Trip 1	26	13	63	17
Office (Old)				
Trip 1	13	29	22	45
Office (New)				
Trip 1	29	56	44	64
Trip 2	32	37	39	40
Office/School (New)				
Trip 1	29	48	33	57
Nursing Home (New)				
Trip 1	25	66	26	74
Trip 2	22	11	35	12

then screened for PNAs by monitoring fluorescence with a black light. Since none of the sample extracts gave positive results using the fluorescence screening technique, no further analyses were performed.

Method Validation

Recovery of PNAs using the above sample concentration/fractionation procedure was verified by spiking a Sep-Pak cartridge with 100 μL of a methylene chloride solution containing 100 μg of each target PNA.

The cartridge was eluted with 10 mL of hexane. The eluant was concentrated and analyzed by GC/FID using a 30 m wide bore DB-5 capillary column. Recoveries were calculated relative to a standard representing 100%. Recoveries ranged from 88 to 95%, except for benzo[a]pyrene which was not quantitated due to poor chromatographic peak shape.

Limit of Detection

The limit of detection for the fluorescence screening procedure was estimated by preparing the standard solutions shown in Table 36. Each solution was inspected under black light. All solutions gave visible fluorescence except the fifth dilution. Based on these results, the total concentration of PNAs in the fourth dilution (800 pg/μL) was selected as the LOD.

Sample Analysis

All collected samples were extracted and screened as described above. No samples were quantitated by GC/FID since all extracts gave negative screening results.

METALS

Analytical Method

Filters collected for metals determinations were sent to Florida State University for analysis by proton induced X-ray emission (PIXE) spectrometry. Analysis was performed for aluminum, arsenic, bromine, cadmium, chromium, manganese, nickel, lead, and selenium.

QC Results

Unexposed filters served as field and laboratory blanks. Field blanks were [illegible] along with field samples. Results of QC analysis are given in Table 37.

TABLE 36. PNA SOLUTIONS USED TO ESTIMATE METHOD LOD

Compound	Concentration (ng/μL in CH_2Cl)				
	First Dilution	Second Dilution	Third Dilution	Fourth Dilution	Fifth Dilution
Benzo(a)pyrene	102	10.2	1.02	0.102	0.0102
Benzo(a)anthracene	97	9.7	0.97	0.097	0.0097
Benzo(k)fluoranthene	100	10.0	1.00	0.100	0.0100
Pyrene	100	10.0	1.00	0.100	0.0100
Fluoranthene	96	9.6	0.96	0.096	0.0096
Chrysene	104	10.4	1.04	0.104	0.0104
Quinoline	98	9.8	0.98	0.098	0.0098
Isoquinoline	99	9.9	0.99	0.099	0.0099

TABLE 37. AMOUNTS OF METALS DETECTED ON FIELD BLANKS

Elements	Amount (ng/filter) Mean ± S.D.				
	Hospital (New)[a] Trip 1	Office (Old)[b] Trip 1	Screen 1[c]	Screen 2[d]	Screen 3[e]
Al	ND[f]	ND	ND	ND	ND
Cr	95 ± 48	74 ± 5	69 ± 17	72 ± 30	113 ± 34
Mn	ND	ND	ND	ND	ND
Ni	6.0 ± .91	4.9 ± .23	8.4 ± 5.2	4.4 ± 2.2	4.6 ± 0.43
As	ND	ND	ND	ND	ND
Se	ND	ND	ND	ND	ND
Br	21 ± 4.9	23 ± 2.2	ND	15 ± 7.9	9.0 1.5
Cd	ND	ND	256 ± 68	ND	ND
Pb	ND	ND	ND	ND	ND

[a]Includes FB-2 and FB-3 from the hospital.
[b]Includes FB-2 and FB-3 from the office.
[c]Includes one field blank each from the new hospital, trip 1; the old home, trip 1; and the old office, trip 1.
[d]Includes one field blank each from the new hospital, trip 2; the new office, trip 1, the old office/school, trip 1; and the new nursing home, trip 1.
[e]Includes two field blanks each from the new hospital, trip 3 and the new nursing home, trip 2.
[f]ND - not detected.

Limits of Detection

For the metals that were detected on the field blanks, the method detection limit and quantitation limit were calculated as:

Method LOD = 1 S.D.

Method QL = 2 S.D.

where S.D. is the standard deviation of the average amount of the metal levels found on the filter blank. For metals that were not detected on field blanks, the method detection parameters are equal to the instrumental detection parameters. Here, the instrumental LOD is equal to the amount on the filter that can be measured with a precision of ±50%. Instrumental QL was defined as the amount on the filter that can be measured with a precision of ±25%. Precision data was provided by Florida State University. Method detection parameters are listed in Table 38 for the nine target metals.

Sample Analysis

For all trips, a sample screening was performed as described for the nitrosamines. If metals were detected during screening, then all samples from that trip were analyzed.

Results of PIXE gave ng/filter for each metal. This mass was then corrected for background by subtracting mean values for each metal found on field blanks from the same batch. Concentrations were then calculated using the sample volume as:

Concentration (ng/m^3) = (ng/filter sample - ng/blank) x volume (m^3)

FORMALDEHYDE

Analytical Method

Formaldehyde was recovered from molecular sieve samples by adding one mL of deionized water to a vial containing the sieve and then equilibrating for five minutes. The sieve was then poured into a 1.0 cm glass chromatography column. Deionized water was added to each column to completely saturate the sieve. After ten minutes, 25 mL of deionized water was eluted through the column at a rate of approximately 3 mL/min. The 25 mL eluate was filtered through Whatman No. 2 filter paper and collected in a Teflon--lined screw cap vial. The solution was reacted with 2.5 mL of acidified

TABLE 38. METHOD LOD AND QL FOR METALS

Site	Trip	Amount (ng/Filter)								
		Al	Cr	Mn	Ni	As	Se	Br	Cd	Pb
Hospital (New)	1									
LOD		250	48	6.0	0.91	10	6.0	4.9	85	18
QL		550	96	15	1.8	25	20	9.8	170	45
LOD	2	250	30	0.0	2.2	10	6.0	7.9	85	18
QL		550	60	15	4.4	25	20	16	170	45
LOD	3	250	34	4.0	0.43	4.0	1.0	1.5	13	8
QL		550	68	7.0	0.86	9.0	2.4	3.0	30	20
Office (New)	1									
LOD		250	30	6.0	2.2	10	6.0	7.9	85	18
QL		550	60	15	4.4	25	20	16	17.0	45
LOD	2	Not analyzed								
QL		Not analyzed								
Nursing Home (New)	1									
LOD		250	30	6.0	2.2	10	60	7.9	85	18
QL		550	60	15	4.4	25	20	16	170	45
LOD	2	250	34	4.0	0.43	4.0	1.0	1.5	13	8
QL		550	68	7.0	0.86	9.0	2.4	3.0	30	20
School/Office (Old)	1									
LOD		250	30	6.0	2.2	10	6.0	7.9	85	18
QL		550	60	20	4.4	25	20	16	170	45
School (Old)	1									
LOD		250	37	6.0	2.0	10	6.0	7.9	85	18
QL		550	60	15	4.4	25	20	16	170	45
Nursing Home (Old)	1									
LOD		250	17	6.0	5.2	10	6.0	7.5	68	18
QL		550	34	15	10.4	25	20	15	136	50

pararosaniline reagent (0.16 g pararosaniline + 20 mL HCl diluted to 100 mL with deionized water) with mixing for ~5 minutes. A 250 μL aliquot of sodium sulfate (0.1% in water) was added and the color allowed to develop at 25°C for 75 minutes.

The solution was immediately transferred to a cuvette and the absorbance or optical density measured at 570 nm using a Beckman, DU-2 spectrophotometer. Samples were read against deionized water.

Because desorption efficiency and background contamination from the sieve appeared to vary from batch to batch, quantitation of field samples was performed using a calibration curve generated from field blanks and field controls spiked in duplicate at four different concentrations ranging from 3.25 to 18.5 μg. Amount of formaldehyde on each sieve sample was then calculated from the calibration curve as

$$[HCHO]_{(\mu g/sieve)} = \frac{O.D. - Y_{intercept}}{Slope}$$

where O.D. is the optical density for a given sample. Table 39 characterizes the calibration curves used for sample analysis.

Limits of Detection

Method detection limits (LOD) in μg/sieve were calculated from the results of field blank measurements as

$$LOD = \bar{x} + 1\ S.D.$$

where $\bar{x}$ is the average amount of formaldehyde found on field blanks and S.D. is the calculated standard deviation of the measurement. Method quantitation limits (QL) were calculated as

$$QL = \bar{x} + 2\ S.D.$$

Amount of formaldehyde found on field blanks plus LODs and QLs for each field trip are given in Table 40.

Sample Analysis

All collected samples were analyzed. Results of the parosaniline analysis gave μg of formaldehyde per sieve ($\mu g/_S$) corrected for recovery from field controls and background on field blanks.

Since the volume of air taken for each sample was known, formaldehyde concentration in ppb in air was calculated as

TABLE 39. CHARACTERISTICS OF FORMALDEHYDE CONCENTRATION CURVE

Trip	Slope	$Y_{intercept}$	r (correlation coefficient)
Hospital (New)			
Trip 1	0.65	15	0.997
Trip 2	0.67	12	0.980
Trip 3	0.35	4.8	0.938
	0.35	6.6	0.981
Home (Old)			
Trip 1	0.68	8.9	0.889
Office (Old)			
Trip 1	0.58	10	0.996
Office (New)			
Trip 1	0.73	14	0.844
Trip 2	0.59	4.2	0.995
	0.73	3.8	0.996
Office/School (New)			
Trip 1	0.44	19	0.995
	0.15	15	0.864
Home (New)			
Trip 1	0.44	5.7	0.892
	0.16	8.0	0.859
Trip 2	0.36	9.2	0.677

TABLE 40. RESULTS OF FIELD BLANKS AND METHOD DETECTION LIMITS (LOD) AND QUANTITATION LIMITS (QL) FOR FORMALDEHYDE ANALYSIS

Site	Concentration (μg/sieve)			
	$\bar{X}_B$ [a]	S.D.[b]	LOD	QL
Hospital (New)				
Trip 1	0.0	28	28	56
Trip 2	0.0	39	39	78
Trip 3				
Office (New)				
Trip 1	0	9.5	9.5	19
Trip 2	0.5	16	17	32
Nursing Home (New)				
Trip 1	NC[c]	NC	NC	NC
Trip 2	23	138	161	299
Office (Old)				
Trip 1	0	31	31	61
School				
Trip 1	0	38	38	76
Nursing Home				
Trip 1	5.6	2.0	7.6	9.6

[a]Mean of blank samples.
[b]Standard deviation of blank samples.
[c]Not calculated; poor recoveries in control samples.

$$[HCHO]_{ppb} = \frac{\mu g_s / 1.22\ m^3/kg}{\text{sample volume } (m^3)}$$

where 1.22 m^3/kg is the factor used to convert m^3 of air into kg weight assuming 50% relative humidity at standard temperature and pressure conditions.

Problems

The procedure used for the collection and analysis of formaldehyde in air samples was adopted from a procedure used successfully at RTI on a previous contract (30). The original procedure used granular molecular sieve to sample 30-70 L of air over a 15 to 30 minute period. The modified method used powdered molecular sieve to allow sampling at lower flow rates over the 24 hour period required by this contract.

The use of the powered molecular sieve produced several problems not encountered previously:

a. Formaldehyde recovery from the sieve was variable,
b. background contamination of the sieve was often high and variable, and
c. fines from the sieve produced during rinsing interfered with analysis.

This method was used because other methods applicable to a 24 hour sampling period were not available at the time field monitoring was initiated. Because of the problem encountered during analysis, results should be viewed with caution.

RADON

Analytical Method

The exposed Track-Etch^R monitors were analyzed by the Terradex Corporation using a microscopic technique. Alpha-particles bombard the plastic and cause radiation damage tracks, which are subsequently detected by caustic etching and counting at 500X under a microscope. The number of tracks counted per unit area is proportional to the average exposure rate and the exposure time. Results are reported in (pCi/L)-month with a detection limit of 1 (pCi/L)-month.

QC Results

Five unexposed Track-Etch monitors were analyzed by the Terradex Corporation to serve as quality control samples. Four of these samples had been transported to the field with the sample. These have been designated as field blanks. A single monitor was stored in the laboratory and designated as a lab blank. Results of these analyses are given in Table 41.

AIR EXCHANGE

Analytical Method

Air samples that had been collected and stored in plastic syringes were analyzed by GC/ECD to quantitate sulfur hexafluoride (SF_6) concentrations. Conditions for GC analysis are given in Table 42.

Whenever samples were analyzed, a calibration curve was first generated to confirm instrumental linearity using SF_6 concentrations ranging from 200 ppt to 100 ppb. Each day of analysis, a standard prepared at 100 ppb was analyzed to demonstrate instrument stability. If the instrument response for SF_6 had changed by greater than 15%, a new calibration curve to verify linearity was generated. SF_6 in samples was quantitated using manually measured peak heights. All of the samples collected from one site during a single sampling period (one SF_6 release) were analyzed as a group to minimize errors due to changes in instrumental response. This method was previously validated and used at RTI (4).

Limits of Detection

The limit of detection for SF_6 in air samples was ~200 ppt.

QC Results

No QC samples were prepared or analyzed during exchange rate determination.

Sample Analyses

All samples collected for each field monitoring trip were analyzed. The GC/ECD analysis of air samples gave chromatographic peak heights for air sampled at a specific time after SF_6 release into the building. Air exchange rates (ACH) at each sampling location are calculated as:

TABLE 41. ANALYSIS OF BLANK TRACK-ETCH MONITORS FOR RADON

Site	Trip	Sample	Radon (pCi/L)[a]
Office, Old	1	Field Blank	0.44
Office, New	2	Field Blank	<0.40
	2	Lab Blank	0.73
Office/School, New	1	Field Blank	0.58
Home, New	1	Field Blank	0.80

[a]Exposure ranged from 80 and 120 days.

TABLE 42. GC/ECD OPERATING CONDITIONS FOR QUANTITATIVE ANALYSIS OF SF_6

Parameter	Specification
Column	2.50 m x 2.1 mm I.D. stainless steel Chromosorb 102, 80/100 mesh
Nitrogen carrier flow	20.0 mL/min
Temperatures:	
Valve/sample loop	unheated
Injector	80°C
Column	50°C (isothermal)
Detector	75°C
Sample loop	1.00 mL volume, stainless steel
Make-up gas	None
Detector type	Variable current Sc ^3H ECD
Pulse width	4 μS @ 40 v
Pulse interval	1000 μS

$$ACH = \frac{1}{t} \ln (C_i/C_o)$$

where C_i is the tracer concentration at time, t, and C_o is the initial trace concentration. Since only the relative concentration of SF_6 (C_i/C_o) is required and since the SF_6 concentration is directly proportional to peak height, the air exchange rate in units of air changes/hr can be calculated as:

$$ACH = \frac{1}{t} \ln (P_i/P_o)$$

where P_i is the chromatographic peak height of SF_6 at time t and P_o is the initial peak height of SF_6.

A computer program was written to calculate exchange rates from peak height and sampling time information.

ASBESTOS

Analytical Method

Analysis of asbestos collected on filter cassettes was performed by Energy Technology Consultants (ETC) using transmission electron microscopy (TEM) at 20,000 X magnification. The procedure described in "Electron Microscope Measurement of Airborne Asbestos Concentration - A Provisional Methodology Manual" (EPA-600/2-77-178) was used for all analyses. Results were reported as fibers/filter.

QC Results

Five unexposed filter cassettes were analyzed by ETC to serve as quality control samples. All of these cassettes had been transported to the field with actual field samples. Results of QC analyses are given in Table 43.

Limit of Detection

The analytical detection limit as reported by ETC was 0.6×10^3 fibers/filter.

Sample Analysis

Sample screening was performed for each field monitoring trip. TEM analysis gave fibers per filter (A_F). This count was then corrected for

TABLE 43. ANALYSIS OF BLANKS FOR ASBESTOS

Site	Trip	Sample	Asbestos Count (fibers/cm^2)
Home, Old	1	Field Blank	ND[a]
Office, New	1	Field Blank	ND
	2	Field Blank	ND
School, New	1	Field Blank	1.2×10^3[b]
Home, New	1	Field Blank	ND

[a]Not detected.
[b]Estimated range (0-4.2) x 10^3 fibers/cm^2.

background by subtracting field blank values (A_B) from the same trip. Concentrations were then calculated using the total sample volume (V) as

$$\text{Fibers/m}^3 = \frac{A_F - A_B}{V \text{ in m}^3}$$

SECTION 7
RESULTS

VOLATILE ORGANICS

Several types of statistical analyses were performed on the data for volatile organics collected during field monitoring. Initially, the percentage of air samples that had concentrations reported above the quantifiable limits for each of the target volatiles was calculated. This statistic is referred to as percent detected and was calculated for indoor and outdoor air samples collected during each field monitoring trip. No further analysis was performed on the seven organics that had low percent detected values (less than 10% at either indoor or outdoor monitoring locations). For the remaining compounds, the data were tabulated for all monitoring locations with means and standard deviations calculated. Summary statistics including mean, median, and maximum concentrations were estimated for indoor and outdoor sample locations from each trip. Daytime and nighttime means were also estimated for indoor samples. Indoor/outdoor and day/night concentration ratios were then calculated. Differences between indoor and outdoor concentrations, daytime and nighttime concentrations and concentrations at different indoor locations were evaluated statistically. Comparisons of mean concentrations were made between buildings and sampling trips.

Prior to statistical analysis, several manipulations were performed. First, because m-, o-, and p-cresols gave poor and variable recoveries from calibration standards and control samples, they were excluded from the database. Second, because of the difficulty of maintaining sufficient GC resolution between m- and p-xylene, the quantitative values for these compounds were added to give one total value for m-,p-xylene. Third, the mean and percent relative standard deviation for each volatile organic were calculated for all of the triplicate colocated samples. A printout of

these data for each sample is included in Appendix D. The mean concentration values were then used for all calculations. Where the %RSD for colocated samples was greater than 30%, it has been noted. Fourth, concentration values below the quantifiable limit (QL) were used as reported. Finally, because the triplicate colocated samples were collected using different sample volumes, quantifiable limits were calculated for the smallest sample volume.

Percent Detected

Table 44 lists percent detected values calculated for indoor and outdoor monitoring locations at each sampling site for all 30 target volatiles. After inspecting these data, each volatile organic was placed into one of four categories (Table 45) depending upon frequency of occurrence. Table 45 demonstrates that most of the "ubiquitous" volatile organics were aromatic hydrocarbons such as benzene, the xylenes, ethylbenzene and some of the trimethylbenzenes. The only other volatile categorized as ubiquitous was 1,1,1-trichloroethane. "Frequently-occurring" target compounds detected more often indoors than outdoors included the remainder of the aromatic hydrocarbons, all of the target aliphatic compounds, the two oxygenated compounds, and several chlorinated organics. Three compounds, tetrachloroethylene, o-ethyltoluene, and 1,2-dichloroethane, were frequently detected, but showed no trend in indoor versus outdoor samples. The only chemicals that fell into the category "rarely detected" were halogenated organics. The seven chemicals in this latter category, including α-epichlorohydrin, chlorobenzene, carbon tetrachloride, bromodichloromethane, 1,1,2,2-tetrachloroethane, o-dichlorobenzene, and m-dichlorobenzene, were dropped from all further analyses.

Concentration Data

New Hospital--

Trip 1. Concentration data for volatile organics measured during the first trip to the new hospital (July 1984) are given in Tables 46 to 49. Concentrations are reported for each location by time period. Concentrations averages and standard deviations for the entire 3-day period are also given. It is interesting to note that the high levels of 1,2-dichloroethane measured during the first night decrease to nondetectable levels by

TABLE 44. VOLATILES PERCENT DETECTED VALUES FOR EACH FIELD MONITORING SITE[a]

	% Detected											
	Indoors						Outdoors					
Compound	Hospital (New)	Nursing Home (New)	Nursing Home (Old)	Office (New)	Office (Old)	Office/ School (Old)	Hospital (New)	Nursing Home (New)	Nursing Home (Old)	Office (New)	Office (Old)	Office/ School (Old)
α-Epichlorohydrin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
α-Pinene	0.00	52.78	0.00	97.22	0.00	93.75	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Bromodichloromethane	0.00	0.00	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carbon tetrachloride	0.00	11.11	11.11	0.00	0.00	0.00	12.50	16.67	20.00	8.33	0.00	0.00
Chlorobenzene	0.00	0.00	0.00	19.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethylbenzene	100.00	100.00	100.00	100.00	100.00	100.00	87.50	100.00	60.00	100.00	100.00	100.00
Isopropylbenzene	51.92	77.78	0.00	100.00	100.00	75.00	0.00	8.33	0.00	8.33	83.33	0.00
m-Dichlorobenzene	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m-Ethyltoluene	98.08	100.00	100.00	100.00	100.00	100.00	37.50	100.00	40.00	91.67	100.00	100.00
m,p-Xylene	100.00	100.00	100.00	100.00	100.00	100.00	93.75	100.00	80.00	100.00	100.00	100.00
n-Butylacetate	5.77	38.89	11.11	61.11	88.89	81.25	12.50	0.00	0.00	0.00	16.67	0.00
n-Decane	65.38	91.67	72.22	100.00	9.44	100.00	0.00	0.00	0.00	8.33	16.67	0.00
n-Dodecane	5.77	52.78	5.56	100.00	16.67	68.75	0.00	0.00	0.00	0.00	0.00	0.00
n-Propylbenzene	5.77	83.33	0.00	100.00	94.44	56.25	0.00	16.67	0.00	8.33	100.00	0.00
n-Undecane	80.77	88.89	33.33	100.00	100.00	100.00	0.00	0.00	0.00	0.00	16.67	0.00
p-Dichlorobenzene	30.77	75.00	0.00	50.00	77.78	0.00	0.00	8.33	0.00	0.00	16.67	0.00
Styrene	100.00	100.00	100.00	100.00	100.00	100.00	93.75	58.33	100.00	100.00	100.00	83.33
Tetrachloroethylene	34.62	61.11	72.22	50.00	94.44	87.50	0.00	58.33	0.00	25.00	100.00	83.33
Trichloroethylene	38.46	77.78	11.11	61.11	88.89	100.00	0.00	41.67	0.00	0.00	0.00	66.67
o-Dichlorobenzene	3.85	2.78	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
o-Ethyltoluene	40.38	94.44	5.56	100.00	100.00	10.00	0.00	41.67	20.00	33.33	100.00	33.33
o-Xylene	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	60.00	91.67	100.00	100.00
1,1,1-Trichloroethane	100.00	100.00	100.00	100.00	100.00	100.00	100.00	91.67	100.00	75.00	100.00	100.00
1,1,2,2-Tetrachloroethane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2-Dichloroethane	48.08	8.33	0.00	44.44	0.00	0.00	43.75	8.33	0.00	0.00	0.00	0.00
1,2,3-Trimethylbenzene	98.08	100.00	100.00	100.00	100.00	100.00	56.25	75.00	100.00	75.00	100.00	83.33
1,2,4-Trimethylbenzene	100.00	100.00	100 00	100.00	100.00	100.00	62.50	100.00	40.00	100.00	100.00	100.00
1,3,5-Trimethylbenzene	21.15	83.33	0.00	100.00	100.00	87.50	0.00	16.67	0.00	16.67	100.00	0.00
2-Ethoxyethyl acetate	23.08	52.78	0.00	52.78	55.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00

[a]Data from all trips combined.

TABLE 45. TARGET VOLATILES CATEGORIZED BY DETECTION FREQUENCY

Ubiquitous	Frequently - Higher Indoors	Frequently - No Trend	Rarely
Benzene	α-Pinene	Tetrachloroethylene	α-Epichlorohydrin
Ethylbenzene	Isopropylbenzene	o-Ethyltoluene	Bromodichloromethane
m,p-Xylene	n-Butylacetate	1,2-Dichloroethane	Carbon Tetrachloride
Styrene	n-Decane		Chlorobenzene
o-Xylene	n-Dodecane		m-Dichlorobenzene
1,1,1-Trichloroethane	n-Undecane		o-Dichlorobenzene
1,2,3-Trimethylbenzene	p-Dichlorobenzene		1,1,2,2-Tetrachloroethane
1,2,4-Trimethylbenzene	Trichloroethylene		
m-Ethyltoluene	1,3,5-Trimethylbenzene		
	2-Ethoxyethyl acetate		
	n-Propylbenzene		

TABLE 46. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW) , TRIP 1, VISITORS' LOUNGE

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	0.93b	1.18b	2.11b	1.58	1.49	1.55	1.47	0.40
m,p-Xylene	0.23	7.76	12.72	5.95	7.13	5.69	8.03	7.88	2.55
o-Xylene	0.38	3.63	5.59	2.71	3.29	2.49	3.62	3.56	1.10
Styrene	0.23	0.59b	1.04b	1.04	0.80b	0.63	0.79	0.82	0.19
Ethylbenzene	0.25	1.73	3.14	1.78	2.03	1.62	2.49	2.13	0.58
Isopropylbenzene	0.25	ND[c]	0.36	0.25	0.31	ND	0.33	0.29	0.06
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--[d]
m-Ethyltoluene	0.38	0.58	0.77	0.69	0.91	0.90	1.31	0.86	0.25
o-Ethyltoluene	0.38	ND	ND	ND	ND	ND	0.42	ND	--
1,2,3-Trimethylbenzene	0.25	0.44	0.50	0.48	0.60	0.56	0.79	0.56	0.13
1,2,4-Trimethlybenzene	0.25	0.83	1.05	1.00	1.34	1.30	1.90	1.24	0.38
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	2.09	2.67	2.31	4.16	3.43	7.02	3.61	1.84
n-Undecane	1.50	2.79	3.14	2.76b	3.45	3.27	4.88	3.38	0.78
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	10.10	2.42	ND	ND	ND	ND	2.16	4.00
1,1,1-Trichloroethane	0.65	4.75	3.77	4.54	6.16	5.05	3.94	4.70	0.86
Trichloroethylene	0.38	0.52	0.58	0.69	0.56	0.55	0.51	0.57	0.06
Tetrachloroethylene	0.80	ND	ND	ND	ND	ND	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	2.76	2.57	2.14	1.46	ND	1.72	1.78	1.00

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 47. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW) , TRIP 1, NURSES' STATION

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	1.31b	1.21b	2.43	1.45	1.57	2.08b	1.68	0.48
m,p-Xylene	0.23	6.04	7.32	4.66	5.23	4.97	6.78	5.83	1.06
o-Xylene	0.38	2.66	3.32	2.02	2.31	2.10	2.93	2.56	0.51
Styrene	0.23	0.91b	1.06	0.60	0.97b	0.93b	1.33b	0.97	0.24
Ethylbenzene	0.25	1.63	1.95	1.38	1.65	1.47	2.49	1.76	0.41
Isopropylbenzene	0.25	0.26	0.28	ND	0.28	0.25	0.39	0.28	0.06
n-Propylbenzene	0.50	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
m-Ethyltoluene	0.38	0.79	0.98	0.78	1.01	1.04	1.82	1.07	0.38
o-Ethyltoluene	0.38	ND	ND	ND	ND	ND	0.57	ND	--
1,2,3-Trimethylbenzene	0.25	0.52	0.65	0.52	0.56	0.56	1.07	0.65	0.21
1,2,4-Trimethlybenzene	0.25	1.07	1.20	1.04	1.40	1.39	2.54	1.44	0.56
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	0.70	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	1.78	2.55	1.71	3.82	2.90	8.73	3.58	2.64
n-Undecane	1.50	2.70	2.79	1.87	2.85	2.85	5.08	3.02	1.08
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	10.32	1.94	ND	ND	ND	ND	2.10	4.10
1,1,1-Trichloroethane	0.65	5.42	4.15	5.97	6.33	5.86	5.90	5.61	0.77
Trichloroethylene	0.38	0.89	0.89	1.13	0.86	0.89	1.25	0.99	0.16
Tetrachloroethylene	0.80	ND	ND	ND	ND	ND	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	1.93	1.79	ND	ND	ND	1.45	1.01	0.36

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 48. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW), TRIP 1, PATIENTS' ROOM

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	1.44	0.81	2.27b	1.31	1.32	1.82	1.50	0.50
m,p-Xylene	0.23	7.63	8.87	6.21	5.78	5.28	7.72	6.92	1.37
o-Xylene	0.38	3.45	3.63b	2.75	2.65	2.32	3.37	3.03	0.53
Styrene	0.23	0.93b	0.99	2.32b	0.96	0.95b	1.23	1.23	0.55
Ethylbenzene	0.25	2.02	1.96	1.84	1.71	1.48	2.58	1.93	0.37
Isopropylbenzene	0.25	0.38	0.34	0.35	0.36	0.32	0.50	0.38	0.06
n-Propylbenzene	0.50	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
m-Ethyltoluene	0.38	1.15	1.19	1.22	1.51	1.17	2.14	1.40	0.39
o-Ethyltoluene	0.38	ND	ND	ND	0.41	ND	0.65	0.40	0.13
1,2,3-Trimethylbenzene	0.25	0.62	0.58	0.59	0.71	0.58	1.06	0.69	0.19
1,2,4-Trimethlybenzene	0.25	1.44	1.47	1.57	1.87	1.35	2.84	1.76	0.56
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	0.79	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	2.18	2.41	2.17	4.38	2.75	8.36	3.76	2.39
n-Undecane	1.50	2.86	2.58	2.80	3.56	4.33b	4.93	3.51	0.95
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	9.08	2.04	ND	ND	ND	ND	1.91	3.60
1,1,1-Trichloroethane	0.65	4.82	3.11	4.56	6.29b	4.16	4.87	4.64	1.04
Trichloroethylene	0.38	1.63	1.47	1.97b	1.41	1.20	1.88b	1.59	0.29
Tetrachloroethylene	0.80	ND	ND	ND	ND	ND	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	2.73b	1.77b	ND	1.46b	ND	ND	1.15	1.07

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 49. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW), TRIP 1, OUTDOORS

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	1.04	2.23b	2.94b	2.37b	1.85	2.12b	2.09	0.63
m,p-Xylene	0.23	2.88	0.67	0.60	0.29	1.69	0.92	1.18	0.96
o-Xylene	0.38	0.83	ND[c]	ND	ND	0.54	ND	0.38	0.26
Styrene	0.23	0.35b	0.83	0.52b	0.49	0.95b	0.59b	0.62	0.23
Ethylbenzene	0.25	0.94	0.28	0.29	ND	0.65	0.45	0.46	0.29
Isopropylbenzene	0.25	ND	ND	ND	ND	ND	ND	ND	--[d]
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	ND	ND	ND	ND	0.50	ND	ND	--
o-Ethyltoluene	0.38	ND	ND	ND	ND	ND	ND	ND	--
1,2,3-Trimethylbenzene	0.25	0.26b	0.75b	0.28	0.46b	0.28	0.49	0.42	0.19
1,2,4-Trimethlybenzene	0.25	ND	ND	ND	ND	0.54b	0.32	0.28	0.14
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Undecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	14.28	0.96	ND	ND	ND	ND	2.58	5.74
1,1,1-Trichloroethane	0.65	0.92	1.06	1.16b	0.65b	1.42	1.41	1.10	0.30
Trichloroethylene	0.38	ND	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	ND	ND	ND	ND	ND	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL.
[d] Not calculated

the second night at all three indoor and the outdoor sampling locations. The source of this contamination is unknown, although it appears to be a result of an outdoor pollutant.

The average concentration values from each of the preceding four tables are summarized in Table 50. Comparisons of average concentrations at each indoor location indicate a generally uniform distribution of volatile organics throughout the monitoring area with few significant differences between monitoring locations. Overall significant differences in reported concentrations between the three indoor locations was determined by an F-test in analysis of variance. If the associated p-value was significant at the 0.05 level, then paired comparisons between sampling locations were analyzed using Bonferroni's correction (α = 0.05/3 = 0.017) to ensure an overall α of 0.05. As indicated in Table 50, only isopropylbenzene, ethyltoluene, and trichloroethylene showed differences in indoor concentrations between the three monitoring sites. For all three compounds, highest concentrations were in the patients' room; lowest concentrations in the visitors' lounge.

Table 51 gives summary statistics calculated for this first trip to the new hospital. Mean, median, and maximum concentrations were determined. These statistics are given for indoor and outdoor samples separately. Indoor/outdoor ratios for the mean, median, and maximum concentrations have also been calculated. Results generally show only small differences between mean and median concentrations indicating that the data are not skewed toward either high or low concentration values. m,p-Xylene (6.88 ng/L), 1,1,1-trichloroethane (4.98 ng/L), and n-decane (3.65 ng/L) showed highest mean indoor concentrations. 1,2-Dichloroethane (2.58 ng/L) gave highest mean outdoor concentration. A two sample t-test performed using the mean concentration values showed significant differences (0.05 level) between indoor and outdoor concentrations for benzene, m,p-xylene, o-xylene, styrene, ethylbenzene, isopropylbenzene, m-ethyltoluene, 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2-ethoxyethyl acetate, 1,1,1-trichloroethane, and trichloroethylene. Only benzene had higher measured concentrations outdoors. m,p-Xylene (5.83) and o-xylene (8.03) showed the highest indoor/outdoor concentration ratios.

TABLE 50. AVERAGE CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW), TRIP - 1

Compound	QL[a]	Average Concentration (ng/L)							
		Visitors' Lounge		Nurses' Station		Patients' Room		Outdoors	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	1.47	0.40	1.68	0.48	1.50	0.50	2.09	0.63
m,p-Xylene	0.23	7.88	2.55	5.83	1.06	6.92	1.37	1.18	0.96
o-Xylene	0.38	3.56	1.10	2.56	0.51	3.03	0.53	0.38	0.26
Styrene	0.23	0.82	0.19	0.97	0.24	1.23	0.55	0.62	0.23
Ethylbenzene	0.25	2.13	0.58	1.76	0.41	1.93	0.37	0.46	0.29
Isopropylbenzene (2,3)[b]	0.25	0.29	0.06	0.28	0.06	0.38	0.06	ND	--
n-Propylbenzene	0.50	ND[c]	--[d]	ND	--	ND	--	ND	--
m-Ethyltoluene (1,3)	0.38	0.86	0.25	1.07	0.38	1.40	0.39	ND	--
o-Ethyltoluene	0.38	ND	--	ND	--	0.40	0.13	ND	--
1,2,3-Trimethylbenzene	0.25	0.56	0.13	0.65	0.21	0.69	0.19	0.42	0.19
1,2,4-Trimethlybenzene	0.25	1.24	0.38	1.44	0.56	1.76	0.56	0.28	0.14
1,3,5-Trimethylbenzene	0.65	ND	--	ND	--	ND	--	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	--	ND	--	ND	--	ND	--
n-Decane	1.50	3.61	1.84	3.58	2.64	3.76	2.39	ND	--
n-Undecane	1.50	3.38	0.78	3.02	1.08	3.51	0.95	ND	--
n-Dodecane	1.50	ND	--	ND	--	ND	--	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	2.16	4.00	2.10	4.10	1.91	3.60	2.58	5.74
1,1,1-Trichloroethane	0.65	4.70	0.86	5.61	0.77	4.64	1.04	1.10	0.30
Trichloroethylene (1,2;2,3;1,3)	0.38	0.57	0.06	0.99	0.16	1.59	0.29	ND	--
Tetrachloroethylene	0.80	ND	--	ND	--	ND	--	ND	--
p-Dichlorobenzene	0.50	ND	--	ND	--	ND	--	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	--	ND	--	ND	--	ND	--
2-Ethoxyethyl acetate	1.00	1.78	1.00	1.01	0.86	1.15	1.07	ND	--

[a] Quantifiable limit.
[b] Significant difference (0.05 level) found between concentration pairs
1 = Visitors' Lounge
2 = Nurses' Station
3 = Patients' Room.
[c] Below the QL.
[d] Not calculated.

TABLE 51. SUMMARY STATISTICS - HOSPITAL (NEW), TRIP 1

Compound	QL[a]	Concentration (ng/L) Mean Indoor	Mean Outdoor	Median Indoor	Median Outdoor	Max Indoor	Max Outdoor	Ratio Mean (In/Out)	Median (In/Out)	Max (In/Out)
Aromatic Hydrocarbons										
Benzene[b]	0.25	1.55	2.09	1.47	2.17	2.43	2.94	0.74	0.68	0.83
m,p-Xylene[b]	0.23	6.88	1.18	6.49	0.79	12.72	2.88	5.83	8.17	4.42
o-Xylene[b]	0.38	3.05	0.38	2.84	ND[c]	5.59	0.83	8.03	--[d]	6.73
Styrene[b]	0.23	1.00	0.62	0.95	0.55	2.32	0.95	1.61	1.72	2.44
Ethylbenzene[b]	0.25	1.94	0.46	1.81	0.37	3.14	0.94	4.22	4.89	3.34
Isopropylbenzene[b]	0.25	0.31	ND	0.31	ND	0.50	ND	--	--	--
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	--	--	--
m-Ethyltoluene[b]	0.38	1.11	ND	1.02	ND	2.14	0.50	--	--	4.28
o-Ethyltoluene	0.38	ND	ND	ND	ND	0.65	ND	--	--	--
1,2,3-Trimethylbenzene[b]	0.25	0.63	0.42	0.58	0.37	1.07	0.75	1.50	1.57	1.43
1,2,4-Trimethlybenzene[b]	0.25	1.48	0.28	1.37	ND	2.84	0.54	5.29	--	5.26
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	0.79	ND	--	--	--
Aliphatic Hydrocarbons										
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	--	--	--
n-Decane[b]	1.50	3.65	ND	2.71	ND	8.73	ND	--	--	--
n-Undecane[b]	1.50	3.31	ND	2.85	ND	5.08	ND	--	--	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	--	--	--
Chlorinated Hydrocarbons										
1,2-Dichloroethane	0.75	2.06	ND	2.58	ND	10.32	14.28	--	--	0.72
1,1,1-Trichloroethane[b]	0.65	4.98	1.10	4.84	1.11	6.33	1.42	4.53	4.36	4.46
Trichloroethylene[b]	0.38	1.05	ND	0.89	ND	1.97	ND	--	--	--
Tetrachloroethylene	0.80	ND	ND	ND	ND	ND	ND	--	--	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	--	--	--
Oxygenated Hydrocarbons										
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	--	--	--
2-Ethoxyethyl acetate[b]	1.00	1.31	ND	1.46	ND	2.76	ND	--	--	--

[a] Quantifiable limit.
[b] Significant difference between indoor and outdoor mean concentrations at the 0.05 level.
[c] Below the QL.
[d] Not calculated.

Table 52 gives mean daytime and nighttime concentrations calculated for the indoor locations only. Day/night concentration ratios have been calculated and are included in the table. A two sample t-test performed using the mean concentration values showed significant differences (0.05 level) between daytime and nighttime concentrations for isopropylbenzene, m- and o-ethyltoluene, 1,2,3-trimethylbenzene, n-decane, tetrachloroethylene, and p-dichlorobenzene. In each of these cases, daytime concentrations were higher. For n-decane, indoor concentrations were twice as high during the daytime monitoring periods.

Trip 2. Concentration data for Trip 2 to the new hospital (October 1984) similar to that reported for Trip 1 are given in Tables 53 to 59.

Tables 53 to 56 give measured concentrations of volatile organics for each location by time period. Mean concentrations and standard deviations are also included. The day before sampling started, the stairwell adjacent to the visitors' lounge had been painted. A paint odor was still present in the stairwell during monitoring. This activity could be responsible for the elevated levels of n-decane, n-undecane, m-xylene, m-ethyltoluene, and 1,2,4-trimethylbenzene measured during the first evening at all indoor sampling sites. In contrast, indoor concentrations of 1,1,1-trichloroethane tended to maximize during day 1. A suspected source for this contaminant could not be identified. As with Trip 1, high levels of 1,2-dichloroethane were detected at all indoor and outdoor sampling locations during isolated time periods. During this trip, potential sources for the pollutant were investigated, but could not be found.

Average concentration values and standard deviations calculated for each monitoring location are summarized in Table 57. A two sample F-test comparing average concentrations at each indoor location showed a uniform distribution with no significant differences between monitoring locations.

Table 58 gives summary statistics for this second trip to the hospital. Results generally show small differences between mean and median indoor concentrations indicating that the data are generally not skewed toward either high or low concentration values. 1,1,1-Trichloroethane (4.50 ng/L), m,p-xylene (3.13 ng/L), n-decane (2.73 ng/L) had highest mean indoor concentrations. 1,1,1-Trichloroethane (3.18 ng/L) had highest mean outdoor concentrations. These observations were the same as for the first monitoring trip. Mean concentration values showed significant differences at

TABLE 52. INDOOR DAY/NIGHT CONCENTRATIONS AND CONCENTRATION RATIO - HOSPITAL (NEW), TRIP 1

Compound	QL[a]	Mean Concentration (ng/L) Day	Night	Day/Night Ratio
Aromatic Hydrocarbons				
Benzene	0.25	1.44	1.65	0.87
m,p-Xylene	0.23	7.73	6.02	1.28
o-Xylene	0.38	3.41	2.68	1.27
Styrene	0.23	1.02	0.99	1.03
Ethylbenzene	0.25	2.22	1.66	1.34
Isopropylbenzene[b]	0.25	0.35	0.28	1.25
n-Propylbenzene	0.50	ND[c]	ND	--[d]
m-Ethyltoluene[b]	0.38	1.29	0.92	1.40
o-Ethyltoluene[b]	0.38	0.39	ND	--
1,2,3-Trimethylbenzene[b]	0.25	0.72	0.54	1.33
1,2,4-Trimethylbenzene[b]	0.25	1.73	1.22	1.42
1,3,5-Trimethylbenzene	0.65	ND	ND	--
Aliphatic Hydrocarbons				
α-Pinene	1.50	ND	ND	--
n-Decane[b]	1.50	4.90	2.40	2.04
n-Undecane	1.50	3.70	2.91	1.27
n-Dodecane	1.50	ND	ND	--
Chlorinated Hydrocarbons				
1,2-Dichloroethane	0.75	0.77	3.35	0.23
1,1,1-Trichloroethane	0.65	4.95	5.01	0.99
Trichloroethylene	0.38	1.05	1.05	1.00
Tetrachloroethylene	0.80	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	--
Oxygenated Hydrocarbons				
n-Butylacetate	0.90	ND	ND	--
2-Ethoxyethyl acetate	1.00	1.36	1.26	1.08

[a]Quantifiable limit.
[b]Significant difference between daytime and nighttime mean concentration at the 0.05 level.
[c]Below the QL.
[d]Not calculated.

TABLE 53. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW), TPIP 2, VISITORS' LOUNGE

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.65b	2.55	1.77	2.39	2.07	2.85	2.38	0.40
m,p-Xylene	0.23	5.41	5.16b	3.39	1.62b	1.83	2.99	3.40	1.61
o-Xylene	0.38	1.13	1.41b	1.17	0.53b	0.61	0.88	0.96	0.34
Styrene	0.23	1.56b	1.22	0.78b	1.18b	1.10b	1.42b	1.21	0.27
Ethylbenzene	0.25	1.71b	1.76b	1.06	0.52b	0.57	0.90	1.09	0.54
Isopropylbenzene	0.25	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	1.53	1.23b	1.02	0.50b	0.55	0.80	0.94	0.40
o-Ethyltoluene	0.38	0.43	ND	ND	ND	ND	ND	ND	--
1,2,3-Trimethylbenzene	0.25	0.62b	0.54	0.45	0.36b	0.37	0.48	0.47	0.10
1,2,4-Trimethlybenzene	0.25	1.65	1.34	1.12	0.50b	0.61	0.75	1.00	0.45
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	7.50	3.39	2.54	ND	1.84	ND	2.99	2.35
n-Undecane	1.50	4.41	2.82	2.49	ND	1.98	1.79	2.46	1.10
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	8.36	ND	0.88	ND	1.76	3.25
1,1,1-Trichloroethane	0.65	5.04	7.70	8.59	1.82b	2.34	3.25	4.79	2.83
Trichloroethylene	0.38	ND	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.30	ND	0.98b	ND	ND	ND	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL.
[d] Not calculated.

TABLE 54. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW), TRIP 2, NURSES' STATION

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.65	1.65	3.11b	2.66b	1.68b	1.69b	2.24	0.64
m,p-Xylene	0.23	5.88	3.94	2.45	2.18	1.25	1.70	2.90	1.72
o-Xylene	0.38	1.26	1.20	0.83	0.83	0.46	0.62	0.87	0.31
Styrene	0.23	1.35b	0.71	1.66b	1.02b	0.78b	0.70b	1.04	0.39
Ethylbenzene	0.25	1.86	1.41b	0.79	0.69	0.39	0.51	0.94	0.57
Isopropylbenzene	0.25	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	1.60	0.90	0.77	0.54	ND	0.38	0.76	0.46
o-Ethyltoluene	0.38	0.47	ND	ND	ND	ND	ND	ND	--
1,2,3-Trimethylbenzene	0.25	0.64	0.37	0.53	0.41	0.35	ND	0.42	0.14
1,2,4-Trimethlybenzene	0.25	1.84	1.12	0.92	0.67	0.46	0.44	0.91	0.53
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	7.53	2.45b	ND	ND	ND	ND	2.27	2.66
n-Undecane	1.50	4.23b	1.55b	ND	ND	ND	ND	1.52	1.37
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	8.68	ND	0.76	ND	1.82	3.38
1,1,1-Trichloroethane	0.65	4.81	8.24	5.31	4.44	2.36	3.14	4.72	2.04
Trichloroethylene	0.38	0.48	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	0.92	0.91b	ND	ND	ND	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Echoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL.
[d] Not calculated.

TABLE 55. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW) , TRIP 2, PATIENTS' ROOM

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.02	1.29	1.11b	2.19	2.72b	1.29b	1.77	0.64
m,p-Xylene	0.23	6.80b	3.50b	2.73	2.00	1.62	1.84	3.08	1.95
o-Xylene	0.38	1.27b	1.15	0.97	0.93	0.63	0.75	0.95	0.24
Styrene	0.23	0.80	0.73b	0.63b	0.74	1.94b	0.99b	0.97	0.49
Ethylbenzene	0.25	1.95b	1.36	0.84	0.67	0.59b	0.57	1.00	0.55
Isopropylbenzene	0.25	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	1.67b	0.96b	0.85	0.70	0.51	0.61	0.88	0.42
o-Ethyltoluene	0.38	0.48	ND	ND	ND	ND	ND	ND	--
1,2,3-Trimethylbenzene	0.25	0.47	0.39b	0.46	0.37b	0.42b	0.28	0.40	0.07
1,2,4-Trimethlybenzene	0.25	2.00b	1.11b	0.99	0.83	0.59	0.74	1.04	0.50
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	11.00b	2.79b	ND	ND	ND	ND	2.93	4.03
n-Undecane	1.50	5.59b	1.93b	ND	ND	ND	ND	1.89	1.86
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	2.98b	ND	0.96	ND	0.91	1.07
1,1,1-Trichloroethane	0.65	5.12b	6.33	2.89b	1.06	2.53	3.09	4.00	1.48
Trichloroethylene	0.38	0.66b	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	ND	1.02	1.13	ND	ND	ND	0.80	0.23
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL.
[d] Not calculated.

TABLE 56. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW), TRIP 2, OUTDOORS

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	1.70b	2.08	2.05b	3.23b	1.67b	3.14b	2.31	0.70
m,p-Xylene	0.23	1.39	0.91	1.61	0.87b	0.57b	0.83b	1.03	0.39
o-Xylene	0.38	0.45	ND[c]	0.56	ND	ND	ND	ND	--[d]
Styrene	0.23	0.36b	0.44b	0.47b	1.87b	0.51b	0.75	0.73	0.57
Ethylbenzene	0.25	0.47	0.34	0.54	0.38b	ND	0.35	0.38	0.11
Isopropylbenzene	0.25	ND	ND	ND	ND	ND	ND	ND	--
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	0.43	ND	0.46	ND	ND	ND	ND	--
o-Ethyltoluene	0.38	ND	ND	ND	ND	ND	ND	ND	--
1,2,3-Trimethylbenzene	0.25	ND	ND	0.36b	0.43b	ND	0.28b	0.28	0.11
1,2,4-Trimethlybenzene	0.25	0.44	0.30	0.58	0.31b	ND	ND	0.32	0.17
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Undecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	1.26	9.51	ND	1.06	ND	2.13	3.64
1,1,1-Trichloroethane	0.65	3.72b	2.95	6.01	1.75b	1.62	3.01	3.18	1.60
Trichloroethylene	0.38	ND	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	ND	ND	ND	ND	ND	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	1.09b	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a]Quantifiable limit.
[b]RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 57. AVERAGE CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW), TPIP 2

Compound	QL[a]	Average Concentration (ng/L)							
		Visitors' Lounge		Nurses' Station		Patients' Room		Outdoors	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.38	0.40	2.24	0.64	1.77	0.64	2.31	0.70
m,p-Xylene	0.23	3.40	1.61	2.90	1.72	3.08	1.95	1.03	0.39
o-Xylene	0.38	0.96	0.34	0.87	0.31	0.95	0.24	ND[b]	--[c]
Styrene	0.23	1.21	0.27	1.04	0.39	0.97	0.49	0.73	0.57
Ethylbenzene	0.25	1.09	0.54	0.94	0.57	1.00	0.55	0.38	0.11
Isopropylbenzene	0.25	ND	--	ND	--	ND	--	ND	--
n-Propylbenzene	0.50	ND	--	ND	--	ND	--	ND	--
m-Ethyltoluene	0.38	0.94	0.40	0.76	0.46	0.88	0.42	ND	--
o-Ethyltoluene	0.38	ND	--	ND	--	ND	--	ND	--
1,2,3-Trimethylbenzene	0.25	0.47	0.10	0.42	0.14	0.40	0.07	0.28	0.11
1,2,4-Trimethlybenzene	0.25	1.00	0.45	0.91	0.53	1.04	0.50	0.32	0.17
1,3,5-Trimethylbenzene	0.65	ND	--	ND	--	ND	--	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	--	ND	--	ND	--	ND	--
n-Decane	1.50	2.99	2.35	2.27	2.66	2.93	4.03	ND	--
n-Undecane	1.50	2.46	1.10	1.52	1.37	1.39	1.86	ND	--
n-Dodecane	1.50	ND	--	ND	--	ND	--	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	1.76	3.25	1.82	3.38	0.91	1.07	2.13	3.64
1,1,1-Trichloroethane	0.65	4.79	2.83	4.72	2.04	4.00	1.48	3.18	1.60
Trichloroethylene	0.38	ND	--	ND	--	ND	--	ND	--
Tetrachloroethylene	0.80	ND	--	ND	--	0.80	0.23	ND	--
p-Dichlorobenzene	0.50	ND	--	ND	--	ND	--	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	--	ND	--	ND	--	ND	--
2-Ethoxyethyl acetate	1.00	ND	--	ND	--	ND	--	ND	--

[a] Quantifiable limit.
[b] Below the QL.
[c] Not calculated.

TABLE 58. SUMMARY STATISTICS - HOSPITAL (NEW) , TRIP 2

Compound	QL[a]	Concentration (ng/L) Mean Indoor	Mean Outdoor	Median Indoor	Median Outdoor	Max Indoor	Max Outdoor	Ratio Mean (In/Out)	Median (In/Out)	Max (In/Out)
Aromatic Hydrocarbons										
Benzene	0.25	2.13	2.31	2.13	2.06	3.11	3.23	0.92	1.03	0.96
m,p-Xylene[b]	0.23	3.13	1.03	2.59	0.89	6.80	1.61	3.04	2.91	4.22
o-Xylene[b]	0.38	0.92	ND[c]	0.90	ND	1.41	0.56	>2[d]	>2	2.52
Styrene	0.23	1.07	0.73	1.00	0.49	1.94	1.87	1.47	2.05	1.04
Ethylbenzene	0.25	1.01	0.38	0.81	0.36	1.95	0.54	2.66	2.23	3.61
Isopropylbenzene	0.25	ND	ND	ND	ND	ND	ND	--	--	--
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	--	--	--
m-Ethyltoluene[b]	0.38	0.86	ND	0.78	ND	1.67	0.46	>2	>2	3.63
o-Ethyltoluene	0.38	ND	ND	ND	ND	0.48	ND	--	--	--
1,2,3-Trimethylbenzene[b]	0.25	0.43	0.28	0.41	0.26	0.64	0.43	1.54	1.60	1.49
1,2,4-Trimethlybenzene[b]	0.25	0.98	0.32	0.87	0.30	2.00	0.58	3.06	2.87	3.45
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	--	--	--
Aliphatic Hydrocarbons										
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	--	--	--
n-Decane[b]	1.50	2.73	ND	ND	ND	11.00	ND	>1	--	>1
n-Undecane[b]	1.50	1.96	ND	ND	ND	5.59	ND	--	--	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	--	--	--
Chlorinated Hydrocarbons										
1,2-Dichloroethane	0.75	1.49	2.13	ND	0.82	8.68	9.51	0.70	--	0.91
1,1,1-Trichloroethane	0.65	4.50	3.18	4.25	2.98	8.59	6.01	1.42	1.43	1.43
Trichloroethylene	0.38	ND	ND	ND	ND	0.66	ND	--	--	--
Tetrachloroethylene	0.80	ND	ND	ND	ND	1.13	ND	--	--	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	--	--	--
Oxygenated Hydrocarbons										
n-Butylacetate	0.90	ND	ND	ND	ND	ND	1.09	--	--	<1
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	--	--	--

[a]Quantifiable limit.
[b]Significant difference between indoor and outdoor mean concentrations at the 0.05 level.
[c]Below the QL.
[d]Not calculated.

the 0.05 level between indoor and outdoor concentrations for the xylenes, m-ethyltoluene, 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, n-decane, and n-undecane. For each chemical, concentrations were higher indoors. m,p-Xylene (3.04) and 1,2,4-trimethylbenzene (3.06) showed the highest mean indoor/outdoor concentration ratios.

Table 59 gives mean daytime and nighttime concentrations calculated for the indoor locations. A significant difference at the 0.05 level was found between daytime and nighttime samples only for 1,2,3-trimethylbenzene. Mean concentrations were higher for nighttime samples. This is a result of the high nighttime concentrations found on the first day, presumably coming from painting activities noted the previous day.

Trip 3. Concentration data for Trip 3 (August 1985) to the new hospital are reported in Tables 60 to 66.

Measured concentrations for each location by time period are listed in Tables 60 to 63. The hospital was fully occupied and operational at the time of sampling. No unusual sources of volatile organics (i.e., painting) were observed during this visit. Again, high levels of 1,2-dichloroethane were detected at all indoor and outdoor sampling locations during isolated time periods. And again, no potential sources for the chemical were found.

Average concentration values plus standard deviations for each monitoring location are given in Table 64. As with trip 2, comparisons of average concentrations at each indoor location show a uniform distribution of volatile organics with no significant difference at the 0.05 level between monitoring locations. Average concentrations of several organics such as 1,1,1-trichloroethane, benzene, and n-decane appear to be higher in the visitors' lounge. This is a monitoring artifact primarily due to high levels of the compounds measured in the visitors' lounge during the third day of monitoring. Data from the other locations are missing from this time period and, hence, that time period was not used when testing for concentration differences between sampling locations.

Summary statistics for the third trip to the new hospital are given in Table 65. With the exception of indoor concentrations of 1,1,1-trichloroethane, there were only small differences between the mean and median concentration values. Highest mean indoor concentrations were reported for 1,1,1-trichloroethane (15.5 ng/L), p-dichlorobenzene (6.61 ng/L), m,p-xylene (9.91 ng/L), o-xylene (3.07 ng/L), and ethylbenzene (2.88 ng/L).

TABLE 59. INDOOR DAY/NIGHT CONCENTRATIONS AND CONCENTRATION RATIO - HOSPITAL (NEW), TRIP 2

Compound	QL[a]	Mean Concentration (ng/L) Day	Mean Concentration (ng/L) Night	Day/Night Ratio
Aromatic Hydrocarbons				
Benzene	0.25	2.06	2.20	0.94
m,p-Xylene	0.23	2.77	3.48	0.80
o-Xylene	0.38	0.92	0.93	0.99
Styrene	0.23	0.97	1.18	0.82
Ethylbenzene	0.25	0.93	1.08	0.86
Isopropylbenzene	0.25	ND	ND[b]	--[c]
n-Propylbenzene	0.50	ND	ND	--
m-Ethyltoluene	0.38	0.74	0.98	0.76
o-Ethyltoluene	0.38	ND	ND	--
1,2,3-Trimethylbenzene[d]	0.25	0.38	0.48	0.79
1,2,4-Trimethylbenzene	0.25	0.83	1.13	0.73
1,3,5-Trimethylbenzene	0.65	ND	ND	--
Aliphatic Hydrocarbons				
α-Pinene	1.50	ND	ND	--
n-Decane	1.50	1.63	3.82	0.43
n-Undecane	1.50	ND	2.47	--
n-Dodecane	1.50	ND	ND	--
Chlorinated Hydrocarbons				
1,2-Dichloroethane	0.75	ND	2.51	--
1,1,1-Trichloroethane	0.65	4.67	4.33	1.08
Trichloroethylene	0.38	ND	ND	--
Tetrachloroethylene	0.80	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	--
Oxygenated Hydrocarbons				
n-Butylacetate	0.90	ND	ND	--
2-Ethoxyethl acetate	1.00	ND	ND	--

[a]Quantifiable limit.
[b]Below the QL.
[c]Not calculated.
[d]Significant difference between daytime and nighttime mean concentration at the 0.05 level.

TABLE 60. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW), TRIP 3, VISITORS' LOUNGE

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	3.03	7.15	0.93	4.94	1.93	9.75	4.62	3.35
m,p-Xylene	0.23	19.99	8.81	5.90	14.71	5.21	8.34	10.49	5.73
o-Xylene	0.38	4.20	2.81	2.12	5.02	1.92	2.61	3.11	1.23
Styrene	0.23	1.17	2.37	1.25	3.42	1.17	1.67	1.84	0.90
Ethylbenzene	0.25	5.73	2.67	1.68	5.01	1.40	1.93	3.07	1.84
Isopropylbenzene	0.25	ND[b]	0.30	0.29	0.59	0.30	ND	0.32	0.14
n-Propylbenzene	0.50	ND	ND	ND	0.68	ND	ND	ND	--[c]
m-Ethyltoluene	0.38	1.16	1.78	1.14	3.00	1.47	2.27	1.80	0.72
o-Ethyltoluene	0.38	0.38	0.52	0.49	1.30[d]	0.68	1.55	0.82	0.48
1,2,3-Trimethylbenzene	0.25	0.46	0.67	0.75	1.67	0.71	1.88	1.02	0.59
1,2,4-Trimethlybenzene	0.25	1.58	1.83	1.18	2.70	1.55	3.58	2.07	0.90
1,3,5-Trimethylbenzene	0.65	0.68	ND	0.87[d]	0.74	1.31	1.54	0.93	0.41
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	ND	ND	ND	3.43[d]	3.56	13.37	4.05	4.69
n-Undecane	1.50	1.39	1.70	2.15	2.41[d]	3.00b	5.90	2.84	1.57
n-Dodecane	1.50	ND	ND	ND	ND	ND	1.65	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	0.81	2.32	1.44[d]	3.94	6.08	2.43	2.24
1,1,1-Trichloroethane	0.65	3.61	15.07	2.71	23.16	5.09	88.17	22.97	32.92
Trichloroethylene	0.33	ND	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	0.81	ND	0.90	2.53	1.10	3.55	1.58	1.19
p-Dichlorobenzene	0.50	3.44	2.74	6.32	7.41	5.10b	12.77	6.30	3.62
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	0.93	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] Below the QL.
[c] Not calculated.
[d] % PSD > 20%.

TABLE 61. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW), TRIP 3, NURSES' STATION

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.11	2.43	0.74	1.61	1.28	NA[b]	1.63	0.67
m,p-Xylene	0.23	19.97	4.52	4.96	10.63	3.94	NA	8.80	6.80
o-Xylene	0.38	4.07	1.70	1.82	4.28	1.48	NA	2.67	1.38
Styrene	0.23	0.76	0.62	0.81	1.38	0.66	NA	0.85	0.31
Ethylbenzene	0.25	5.55	1.33	1.39	3.38	0.95	NA	2.52	1.94
Isopropylbenzene	0.25	ND[c]	ND	0.28	0.49	0.25	NA	0.29	0.12
n-Propylbenzene	0.50	ND	ND	ND	0.53	ND	NA	ND	--[d]
m-Ethyltoluene	0.38	1.04	0.88	0.99	1.84	0.90	NA	1.13	0.40
o-Ethyltoluene	0.38	ND	ND	0.44	0.90	0.48	NA	0.50	0.23
1,2,3-Trimethylbenzene	0.25	0.36	0.29	0.60	0.89	0.38b	NA	0.50	0.25
1,2,4-Trimethlybenzene	0.25	1.46	1.19	1.19	2.17	1.33	NA	1.47	0.41
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	0.88	ND	NA	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	NA	ND	--
n-Decane	1.50	ND	ND	ND	2.98	2.01b	NA	1.56	0.92
n-Undecane	1.50	1.59	ND	1.31[e]	2.55[e]	2.04	NA	1.74	0.67
n-Dodecane	1.50	ND	ND	ND	ND	ND	NA	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	0.92	2.62	1.63	4.40	NA	1.92	1.69
1,1,1-Trichloroethane	0.65	2.38	16.69	3.44	21.70	5.50	NA	10.04	8.60
Trichloroethylene	0.38	ND	ND	ND	ND	ND	NA	ND	--
Tetrachloroethylene	0.80	ND	ND	0.99	2.89	1.21	NA	1.29	0.92
p-Dichlorobenzene	0.50	1.93	2.55	6.48	7.92	12.12	NA	6.62	3.72
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	1.24	ND	NA	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	NA	ND	--

[a] Quantifiable limit.
[b] Samples not analyzed.
[c] Below the QL.
[d] Not calculated.
[e] ; RSD > 30

TABLE 62. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW) , TRIP 3, PATIENTS' ROOM

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.16	2.92	1.12[e]	1.90	2.07	NA[b]	2.03	0.64
m,p-Xylene	0.23	20.01	6.23	7.02	12.70	5.55	NA	10.30	6.12
o-Xylene	0.38	4.49	2.39	2.84	5.14	2.28	NA	3.43	1.30
Styrene	0.23	0.92	1.04	1.24	1.87	0.97	NA	1.21	0.39
Ethylbenzene	0.25	5.79	1.84	1.98	4.22	1.29	NA	3.02	1.91
Isopropylbenzene	0.25	0.25	0.31	0.41	0.62	0.33	NA	0.38	0.14
n-Propylbenzene	0.50	ND[c]	ND	ND	0.64	ND	NA	ND	--[d]
m-Ethyltoluene	0.38	1.31	1.19	1.37	2.11	1.30	NA	1.46	0.37
o-Ethyltoluene	0.38	0.44	0.39	0.55	1.07[e]	0.64	NA	0.62	0.2[illegible]
1,2,3-Trimethylbenzene	0.25	0.47	0.39	0.69	1.19	0.78	NA	0.70	0.31
1,2,4-Trimethlybenzene	0.25	1.72	1.53	1.72	2.57	1.80	NA	1.87	0.40
1,3,5-Trimethylbenzene	0.65	ND	ND	0.80	0.87	0.76	NA	0.73	0.12
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	NA	ND	--
n-Decane	1.50	ND	1.97	ND	3.93	3.21	NA	2.23	1.30
n-Undecane	1.50	1.76	1.54	1.71	3.33	3.29	NA	2.33	0.90
n-Dodecane	1.50	1.59	ND	ND	2.10[e]	ND	NA	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	0.99	3.35	2.12[e]	4.77	NA	2.25	1.89
1,1,1-Trichloroethane	0.65	3.21	21.71	3.94	23.85	7.98	NA	12.14	9.91
Trichloroethylene	0.38	ND	ND	ND	ND	ND	NA	ND	--
Tetrachloroethylene	0.80	1.28	1.21	2.68	4.69	2.82	NA	2.54	1.42
p-Dichlorobenzene	0.50	3.75	2.65	7.47	8.37	12.61	NA	6.97	3.97
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	1.36	ND	NA	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	1.06	ND	NA	ND	--

[a]Quantifiable limit.
[b]Samples not analyzed.
[c]Below the QL.
[d]Not calculated.
[e]% RSD > 30%.

TABLE 63. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW), TRIP 3, OUTDOORS

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.28	1.03b	0.89	1.47	NA[c]	NA	1.42	0.63
m,p-Xylene	0.23	4.58	0.90	ND	1.67	NA	NA	1.79	1.98
o-Xylene	0.38	1.31	0.50b	0.68	0.49	NA	NA	0.75	0.39
Styrene	0.23	0.30b	ND	0.25	0.35	NA	NA	0.28	0.06
Ethylbenzene	0.25	1.42	0.38	0.59	0.57	NA	NA	0.74	0.46
Isopropylbenzene	0.25	ND[d]	ND	ND	ND	NA	NA	ND	--[e]
n-Propylbenzene	0.50	ND	ND	ND	ND	NA	NA	ND	--
m-Ethyltoluene	0.38	1.02	0.47	0.42	ND	NA	NA	0.53	0.34
o-Ethyltoluene	0.38	ND	ND	ND	ND	NA	NA	ND	--
1,2,3-Trimethylbenzene	0.25	ND	ND	ND	ND	NA	NA	ND	--
1,2,4-Trimethlybenzene	0.25	1.39	0.42	0.65	0.35	NA	NA	0.70	0.48
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	NA	NA	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	NA	NA	ND	--
n-Decane	1.50	ND	ND	ND	ND	NA	NA	ND	--
n-Undecane	1.50	ND	ND	ND	ND	NA	NA	ND	--
n-Dodecane	1.50	ND	ND	ND	ND	NA	NA	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	3.73	1.60	NA	NA	1.50	1.62
1,1,1-Trichloroethane	0.65	1.21	0.89b	2.84	1.86	NA	NA	1.70	0.86
Trichloroethylene	0.38	ND	ND	ND	ND	NA	NA	ND	--
Tetrachloroethylene	0.80	ND	ND	ND	ND	NA	NA	ND	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	NA	NA	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	1.06	ND	NA	NA	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	NA	NA	ND	--

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Samples not analyzed.
[d] Below the QL.
[e] Not calculated.

TABLE 64. AVERAGE CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE HOSPITAL (NEW), TRIP 3

Compound	QL[a]	Average Concentration (ng/L)							
		Visitors' Lounge		Nurses' Station		Patients' Room		Outdoors	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	4.62	3.35	1.63	0.67	2.03	0.64	1.42	0.63
m,p-Xylene	0.23	10.49	5.73	8.80	6.80	10.30	6.12	1.79	1.98
o-Xylene	0.38	3.11	1.23	2.67	1.38	3.43	1.30	0.75	0.39
Styrene	0.23	1.84	0.90	0.85	0.31	1.21	0.39	0.28	0.06
Ethylbenzene	0.25	3.07	1.84	2.52	1.94	3.02	1.91	0.74	0.46
Isopropylbenzene	0.25	0.32	0.14	0.29	0.12	0.38	0.14	ND	--
n-Propylbenzene	0.50	ND[b]	--[c]	ND	--	ND	--	ND	--
m-Ethyltoluene	0.38	1.80	0.72	1.13	0.40	1.46	0.37	0.53	0.34
o-Ethyltoluene	0.38	0.82	0.48	0.50	0.23	0.62	0.27	ND	--
1,2,3-Trimethylbenzene	0.25	1.02	0.59	0.50	0.25	0.70	0.31	ND	--
1,2,4-Trimethlybenzene	0.25	2.07	0.90	1.47	0.41	1.87	0.40	0.70	0.48
1,3,5-Trimethylbenzene	0.65	0.93	0.41	ND	--	0.73	0.12	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	--	ND	--	ND	--	ND	--
n-Decane	1.50	4.05	4.69	1.56	0.92	2.23	1.30	ND	--
n-Undecane	1.50	2.84	1.57	1.74	0.67	2.33	0.90	ND	--
n-Dodecane	1.50	ND	--	ND	--	ND	--	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	2.43	2.24	1.92	1.69	2.25	1.89	1.50	1.62
1,1,1-Trichloroethane	0.65	22.97	32.92	10.04	8.60	12.14	9.91	1.70	0.86
Trichloroethylene	0.38	ND	--	ND	--	ND	--	ND	--
Tetrachloroethylene	0.80	1.58	1.19	1.29	0.92	2.54	1.42	ND	--
p-Dichlorobenzene	0.50	6.30	3.62	6.62	3.72	6.97	3.97	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	--	ND	--	ND	--	ND	--
2-Ethoxyethyl acetate	1.00	ND	--	ND	--	ND	--	ND	--

[a] Quantifiable limit.
[b] Below the QL.
[c] Not calculated.

TABLE 65. SUMMARY STATISTICS - HOSPITAL (NEW) , TRIP 3

Compound	QL[a]	Concentration (ng/L) Mean Indoor	Mean Outdoor	Median Indoor	Median Outdoor	Max Indoor	Max Outdoor	Ratio Mean (In/Out)	Median (In/Out)	Max (In/Out)
Aromatic Hydrocarbons										
Benzene[b]	0.25	2.88	1.42	2.09	1.25	9.75	2.28	2.03	1.67	4.28
m,p-Xylene[b]	0.23	9.91	1.79	7.68	1.28	20.01	4.58	5.54	5.98	4.37
o-Xylene[b]	0.38	3.07	0.75	2.71	0.59	5.14	1.31	4.09	4.59	3.92
Styrene[b]	0.23	1.33	0.28	1.17	0.27	3.42	0.35	4.75	4.25	9.77
Ethylbenzene[b]	0.25	2.88	0.74	1.95	0.58	5.79	1.42	3.89	3.37	4.08
Isopropylbenzene[b]	0.25	0.33	ND[c]	0.29	ND	0.62	ND	--[d]	--	--
n-Propylbenzene	0.50	ND	ND	ND	ND	0.68	ND	--	--	--
m-Ethyltoluene[b]	0.38	1.48	0.53	1.30	0.44	3.00	1.02	2.79	2.93	2.94
o-Ethyltoluene[b]	0.38	0.66	ND	0.50	ND	1.55	ND	--	--	--
1,2,3-Trimethylbenzene[b]	0.25	0.76	ND	0.68	ND	1.88	ND	--	--	--
1,2,4-Trimethlybenzene[b]	0.25	1.82	0.70	1.65	0.53	3.58	1.39	2.60	3.08	2.58
1,3,5-Trimethylbenzene[b]	0.65	0.75	ND	0.71	ND	1.54	ND	--	--	--
Aliphatic Hydrocarbons										
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	--	--	--
n-Decane[b]	1.50	2.71	ND	1.69	ND	13.37	ND	--	--	--
n-Undecane[b]	1.50	2.34	ND	1.96	ND	5.90	ND	--	--	--
n-Dodecane	1.50	ND	ND	ND	ND	2.10	ND	--	--	--
Chlorinated Hydrocarbons										
1,2-Dichloroethane	0.75	2.21	1.50	1.87	1.13	6.08	3.73	1.47	1.66	1.63
1,1,1-Trichloroethane[b]	0.65	15.54	1.70	6.74	1.53	88.17	2.84	9.14	4.39	31.05
Trichloroethylene	0.38	ND	ND	ND	ND	ND	ND	--	--	--
Tetrachloroethylene[b]	0.80	1.79	ND	1.21	ND	4.69	ND	--	--	--
p-Dichlorobenzene[b]	0.50	6.61	ND	6.40	ND	12.77	ND	--	--	--
Oxygenated Hydrocarbons										
n-Butylacetate	0.90	ND	ND	ND	ND	1.36	1.06	--	--	1.28
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	1.06	ND	--	--	--

[a]Quantifiable limit.
[b]Significant difference between indoor and outdoor mean concentrations at the 0.05 level.
[c]Below the QL.
[d]Not calculated.

All outdoor concentrations were [illegible] outdoor levels were reported for 1,1,1-trichloroethane (1.2 [illegible]). Using a 2-sample t-test, significant differences [illegible] between indoor and outdoor mean concentrations [illegible] tions except [illegible] tion levels [illegible] indoor/outdoor [illegible]).

Table 66 gives mean [illegible] concentrations measured at the indoor [illegible] 1,1,1-trichloroethane and [illegible]-ethylbenzene showed significantly [illegible] the 0.05 level when tested using a two-sample t-test. Day/night concentration ratios are also given. 1,1,1-Trichloroethane [illegible] day/night ratio (7.05), n-Decane (2.39) and [illegible] also showed elevated day/night concentration ratios. These [illegible] (or smoking) activities performed [illegible].

Comparison Between Trips [illegible] of the organic chemicals at the new hospital [illegible] gives mean indoor and outdoor [illegible] and Table 68, which gives mean [illegible] ratios by trip. This hospital was [illegible] monitoring trip took place nine months [illegible] 1984. At the time of the first monitoring trip, [illegible] occupied. The second monitoring trip in October [illegible] occupancy. The third monitoring trip [illegible] August, 1985.

Indoor air concentrations [illegible] monitoring trip (Table 67) are quite low. They are [illegible] than previously reported for newly constructed buildings. [illegible] the building had been "aging" for nine months [illegible] than expected levels are probably a result of [illegible] time.

With the exception of [illegible] concentrations for trip 2 are even lower than for the [illegible] short occupancy period (~2 weeks), [illegible] did not appear to contribute [illegible].

TABLE 66. INDOOR DAY/NIGHT CONCENTRATIONS AND CONCENTRATION RATIO - HOSPITAL (NEW), TRIP 3

Compound	QL[a]	Mean Concentration (ng/L) Day	Mean Concentration (ng/L) Night	Day/Night Ratio
Aromatic Hydrocarbons				
Benzene	0.25	4.39	1.71	2.57
m,p-Xylene	0.23	9.42	10.28	0.92
o-Xylene	0.38	3.42	2.80	1.22
Styrene	0.23	1.77	0.99	1.79
Ethylbenzene	0.25	2.91	2.86	1.02
Isopropylbenzene	0.25	0.39	0.28	1.39
n-Propylbenzene	0.50	ND[b]	ND	--[c]
m-Ethyltoluene[d]	0.38	1.87	1.19	1.57
o-Ethyltoluene	0.38	0.86	0.50	1.72
1,2,3-Trimethylbenzene	0.25	1.00	0.58	1.72
1,2,4-Trimethylbenzene	0.25	2.22	1.50	1.48
1,3,5-Trimethylbenzene	0.65	0.78	0.73	1.07
Aliphatic Hydrocarbons				
α-Pinene	1.50	ND	ND	--
n-Decane	1.50	4.02	1.68	2.39
n-Undecane	1.50	2.59	2.14	1.21
n-Dodecane	1.50	ND	ND	--
Chlorinated Hydrocarbons				
1,2-Dichloroethane	0.75	2.00	2.38	0.84
1,1,1-Trichloroethane[d]	0.65	30.05	4.26	7.05
Trichloroethylene	0.38	ND	ND	--
Tetrachloroethylene	0.80	2.29	1.40	1.64
p-Dichlorobenzene	0.50	6.34	6.81	0.93
Oxygenated Hydrocarbons				
n-Butylacetate	0.90	ND	ND	--
2-Ethoxyethl acetate	1.00	ND	ND	--

[a]Quantifiable limit.
[b]Below the QL.
[c]Not calculated.
[d]Significant difference between daytime and nighttime mean concentration at the 0.05 level.

TABLE 67. MEAN INDOOR AND OUTDOOR CONCENTRATIONS FOR THE THREE TRIPS TO THE HOSPITAL

	Concentration (ng/L)					
	Trip 1		Trip 2		Trip 3	
Compound	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor
Aromatic Hydrocarbons						
Benzene	1.55	2.09	2.13	2.31	2.88	1.42
m,p-Xylene	6.88	1.18	3.13	1.03	9.91	1.79
o-Xylene	3.05	0.38	0.92	ND	3.07	0.75
Styrene	1.00	0.62	1.07	0.73	1.33	0.28
Ethylbenzene	1.94	0.46	1.01	0.38	2.88	0.74
Isopropylbenzene	0.31	ND[a]	ND	ND	0.33	ND
n-Propylbenzene	ND	ND	ND	ND	ND	ND
m-Ethyltoluene	1.11	ND	0.86	ND	1.48	0.53
o-Ethyltoluene	ND	ND	ND	ND	0.66	ND
1,2,3-Trimethylbenzene	0.63	0.42	0.43	0.28	0.76	ND
1,2,4-Trimethlybenzene	1.48	0.28	0.98	0.32	1.82	0.70
1,3,5-Trimethylbenzene	ND	ND	ND	ND	0.75	ND
Aliphatic Hydrocarbons						
α-Pinene	ND	ND	ND	ND	ND	ND
n-Decane	3.65	ND	2.73	ND	2.71	ND
n-Undecane	3.31	ND	1.96	ND	2.34	ND
n-Dodecane	ND	ND	ND	ND	ND	ND
Chlorinated Hydrocarbons						
1,2-Dichloroethane	2.06	2.58	1.49	2.13	2.21	1.50
1,1,1-Trichloroethane	4.98	1.10	4.50	3.18	15.54	1.70
Trichloroethylene	1.05	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	1.79	ND
p-Dichlorobenzene	ND	ND	ND	ND	6.61	ND
Oxygenated Hydrocarbons						
n-Butylacetate	ND	ND	ND	ND	ND	ND
2-Ethoxyethylacetate	1.31	ND	ND	ND	ND	ND

[a]Below the QL.

TABLE 68. MEAN INDOOR/OUTDOOR CONCENTRATION RATIOS FOR THE THREE TRIPS TO THE HOSPITAL

Compound	Concentration Ratio		
	Trip 1	Trip 2	Trip 3
Aromatic Hydrocarbons			
Benzene	0.74	0.92	2.03
m,p-Xylene	5.83	3.04	5.54
o-Xylene	8.03	∞[a]	4.09
Styrene	1.61	1.47	4.75
Ethylbenzene	4.22	2.66	3.89
Isopropylbenzene	∞	--[b]	--
n-Propylbenzene	--	--	∞
m-Ethyltoluene	∞	∞	2.79
o-Ethyltoluene	--	--	∞
1,2,3-Trimethylbenzene	1.50	1.54	∞
1,2,4-Trimethlybenzene	5.29	3.06	2.60
1,3,5-Trimethylbenzene	--	--	∞
Aliphatic Hydrocarbons			
α-Pinene	--	--	--
n-Decane	∞	∞	∞
n-Undecane	∞	∞	∞
n-Dodecane	--	--	--
Chlorinated Hydrocarbons			
1,2-Dichloroethane	0.80	0.70	1.47
1,1,1-Trichloroethane	4.53	1.42	9.14
Trichloroethylene	∞	--	--
Tetrachloroethylene	--	--	∞
p-Dichlorobenzene	--	--	∞
Oxygenated Hydrocarbons			
n-Butylacetate	--	--	--
2-Ethoxyethyl acetate	∞	--	--

[a]Not calculated, detected in indoor, but not outdoor samples
[b]Not detected in either indoor or outdoor samples.

By the third trip, which took place ten months after occupancy, indoor air concentrations for all compounds except n-decane had increased above those detected for the second trip. Tetrachloroethylene and p-dichlorobenzene were detected for the first time indoors with rather high levels reported for the latter. These increased levels of volatile organics can be attributed directly to activities in the occupied building. These would include both cleaning and general patient care activities. For example, p-dichlorobenzene is probably resulting from bathroom deodorants. Outdoor levels of volatile targets were generally low with little variation over the three monitoring trips.

Results in Table 68 list mean indoor/outdoor concentration ratios for the three trips and show trends similar to those discussed above.

New Office--

Trip 1. Concentration data for volatile organics measured during the first trip to the new office (January 1985) are given in Tables 69 to 72. Concentration averages and standard deviations for the 3-day period are also given. This trip to the office was performed immediately prior to occupancy. Finishing activities including painting, carpeting, wallpapering, etc. had been performed within the 2-week period just prior to monitoring. The generally very high levels of volatile organics found in the building were probably a result of outgassing from the new building materials. This, in fact, was confirmed during the emission study described in Section 8. During day 1 of the monitoring period, cove molding was being removed and reapplied using solvent-based products. This activity is probably responsible for the elevated levels of m,p-xylene, o-xylene, ethylbenzene, 1,2,4-trimethylbenzene and the alkanes measured during that time period. The day immediately prior to monitoring, the bathroom in the monitoring area was being cleaned with industrial-strength cleaners. This may be the source for elevated levels of 1,1,1-trichloroethane, m-ethyltoluene, o-ethyltoluene, 1,2,3-trimethylbenzene, and 1,3,5--trimethylbenzene detected during the first night of monitoring.

TABLE 69. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (NEW), TRIP 1, OFFICE - R4

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	4.84b	2.86b	1.72b	1.65b	3.18	2.00	2.71	1.22
m,p-Xylene	0.23	24.44b	63.56	43.21	42.57b	34.49	34.89	40.53	13.18
o-Xylene	0.38	13.94b	34.76	17.56	18.23b	12.61	12.27	18.23	8.48
Styrene	0.23	2.89b	2.70	2.00b	1.76b	2.12	1.95	2.24	0.45
Ethylbenzene	0.25	19.80b	108.93	63.38	52.29b	39.72	34.29	53.07	31.19
Isopropylbenzene	0.25	4.59b	4.45	3.58	3.27b	3.01	3.03	3.66	0.70
n-Propylbenzene	0.50	5.73b	4.32	4.91	4.84b	4.36	4.23	4.73	0.57
m-Ethyltoluene	0.38	39.44b	30.61	26.65	12.36b	22.25	21.55	25.48	9.17
o-Ethyltoluene	0.38	13.71b	7.92b	8.28	5.19	6.91	7.07	8.18	2.91
1,2,3-Trimethylbenzene	0.25	22.91b	14.01b	11.67	13.14	12.99	12.79	14.59	4.15
1,2,4-Trimethlybenzene	0.25	86.56	108.33b	77.43	52.96b	49.70	57.33b	72.05	22.96
1,3,5-Trimethylbenzene	0.65	29.12b	21.06	12.84	6.07b	11.51	14.81b	15.90	8.10
Aliphatic Hydrocarbons									
α-Pinene	1.50	12.41b	7.86b	16.46	18.99b	18.81	17.22	15.29	4.35
n-Decane	1.50	377.58b	625.19	437.77b	374.48b	381.79	329.69b	421.08	105.74
n-Undecane	1.50	232.13b	273.12	210.46	178.85b	158.82b	203.55	209.49	40.26
n-Dodecane	1.50	172.60b	133.02	141.62	150.66b	139.42	137.67	145.83	14.35
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
1,1,1-Trichloroethane	0.65	60.42b	8.05	3.90b	3.05b	2.96	3.96	13.72	22.95
Trichloroethylene	0.38	0.87b	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	ND	ND	ND	ND	0.81b	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetace	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyechyl acecate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 70. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (NEW), TRIP 1, OFFICE - R1

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	4.90	2.65	1.95	1.71	4.70b	2.21b	3.02	1.41
m,p-Xylene	0.23	28.87	51.77	49.67	36.59	46.71	35.64	41.54	9.14
o-Xylene	0.38	16.09	29.23	20.97	15.71	21.07b	13.93	19.50	5.59
Styrene	0.23	3.57	2.53	2.49	2.51	3.02	2.23	2.73	0.49
Ethylbenzene	0.25	27.11	85.56	67.92	51.23	54.12	35.45	53.56	21.28
Isopropylbenzene	0.25	5.75	4.21	4.39	3.89	4.78	3.82	4.47	0.72
n-Propylbenzene	0.50	5.58b	4.08	5.60	5.12	6.78	4.78	5.32	0.91
m-Ethyltoluene	0.38	43.24	30.92	32.60	21.26b	32.30	24.60	30.82	7.61
o-Ethyltoluene	0.38	10.52b	7.68	12.65	8.95	11.06	8.62	9.91	1.83
1,2,3-Trimethylbenzene	0.25	23.16b	14.51b	17.70	15.93	21.69	15.01	18.00	3.63
1,2,4-Trimethlybenzene	0.25	118.20b	98.10	96.48	33.15	97.71	59.78	92.24	19.45
1,3,5-Trimethylbenzene	0.65	25.89b	19.98	21.43	16.94	20.22	13.86	19.72	4.08
Aliphatic Hydrocarbons									
α-Pinene	1.50	8.77b	6.42b	13.26b	17.97	25.54	17.23	14.87	6.93
n-Decane	1.50	539.39	698.02	656.86	437.93	491.77	314.01b	523.00	141.92
n-Undecane	1.50	154.27b	173.39	289.45	194.20b	325.06b	200.71	222.85	68.33
n-Dodecane	1.50	179.20	138.63	179.13	174.39	220.67	165.77	176.30	26.53
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	1.42	ND[c]	ND	ND	ND	0.96	0.77	0.36
1,1,1-Trichloroethane	0.65	69.55	7.52	5.11	5.53	6.54b	5.70b	16.66	25.93
Trichloroethylene	0.38	1.28	ND	ND	ND	0.63b	ND	0.52	0.40
Tetrachloroethylene	0.80	ND	ND	ND	ND	1.34b	ND	ND	--[d]
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	1.37b	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	1.06	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL
[d] Not calculated

TABLE 71. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (NEW) , TRIP 1, OFFICE - R7

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.57	2.86	1.48	1.45b	4.00b	2.56b	2.49	0.95
m,p-Xylene	0.23	25.28	61.04	45.10	42.81	36.81	44.14	42.53	11.68
o-Xylene	0.38	16.72b	25.41b	17.33	13.13b	13.25	18.93	17.46	4.53
Styrene	0.23	2.80	3.22b	2.13	2.02	2.41	3.02b	2.60	0.49
Ethylbenzene	0.25	10.16	72.59b	64.53	43.67	44.14	47.85	47.16	21.63
Isopropylbenzene	0.25	3.73	4.66b	3.61	3.02	3.55	3.49	3.68	0.54
n-Propylbenzene	0.50	5.50	5.09	4.87	4.41	5.14	4.61	4.94	0.39
m-Ethyltoluene	0.38	30.03	29.92b	25.69	18.38	25.83	25.79	25.94	4.24
o-Ethyltoluene	0.38	9.32	10.81b	8.37	7.07	7.27b	8.59	8.57	1.38
1,2,3-Trimethylbenzene	0.25	15.20	8.76	8.61b	13.70	14.66	15.35	12.71	3.17
1,2,4-Trimethlybenzene	0.25	73.77	75.70b	34.73b	48.23b	40.57b	64.48	56.25	17.47
1,3,5-Trimethylbenzene	0.65	14.09	18.70	16.23	12.86	14.32b	15.46	15.28	2.04
Aliphatic Hydrocarbons									
α-Pinene	1.50	12.62	10.86	16.47	ND	20.19	13.16b	12.24	6.78
n-Decane	1.50	316.87	428.54	275.42b	404.70	277.93	486.95	365.07	87.64
n-Undecane	1.50	230.75	207.85b	173.56	196.47b	233.19	158.54	200.06	30.13
n-Dodecane	1.50	154.75	127.66b	138.15	147.43	106.41b	141.31	135.95	17.09
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
1,1,1-Trichloroechane	0.65	28.23	3.99	2.49	1.95	3.53	3.17	7.23	10.32
Trichloroethylene	0.38	0.61	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	ND	ND	ND	ND	0.86b	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	1.24b	ND	1.03	ND	ND	1.36b	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 72. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (NEW) , TRIP 1, OUTDOORS

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.66	3.36b	2.52	3.83	9.25	2.83	4.08	2.58
m,p-Xylene	0.23	1.15b	1.27	2.31	3.18	11.54	3.56	3.84	3.90
o-Xylene	0.38	0.43b	0.38	0.84	1.05	4.22	1.29	1.37	1.44
Styrene	0.23	0.28b	0.43b	0.38	1.02b	0.94	0.33	0.56	0.33
Ethylbenzene	0.25	0.34	0.48	0.96	1.31	4.44b	1.40	1.49	1.51
Isopropylbenzene	0.25	ND[c]	ND	ND	ND	0.31	ND	ND	--[d]
n-Propylbenzene	0.50	ND	ND	ND	ND	0.84	ND	ND	--
m-Ethyltoluene	0.38	0.48b	ND	1.02	1.31	4.73	1.45	1.56	1.61
o-Ethyltoluene	0.38	ND	ND	ND	0.39	1.23	0.40	0.43	0.41
1,2,3-Trimethylbenzene	0.25	0.33b	0.45b	ND	0.43	1.32	0.48	0.54	0.39
1,2,4-Trimethlybenzene	0.25	0.62b	0.55	1.33	1.68	6.18	1.92	2.05	2.10
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	1.44	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	ND	ND	ND	ND	1.78b	ND	ND	--
n-Undecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	1.31b	0.87b	ND	ND	1.64	1.24	1.02	0.46
Trichloroethylene	0.38	ND	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	ND	ND	ND	ND	1.39	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

The average concentration values for each of the preceding tables are summarized in Table 73. Generally, comparisons of average indoor concentrations using an F-test indicated a uniform distribution throughout, with no significant differences between monitoring locations. 1,2,4-Trimethylbenzene and n-dodecane showed a significant difference at the 0.05 level between mean concentrations found in office R-1 and office R-7. Highest concentrations were found in office R-7. 1,2-ECD was not detected in Office R-7, but in the other two offices.

Table 74 gives summary statistics calculated for the first trip to the new office. Mean, median, and maximum concentrations were determined. These statistics are given for indoor and outdoor samples separately. Indoor/outdoor ratios for the mean, median, and maximum concentrations have also been calculated. With the exception of 1,1,1-trichloroethane, there were only small differences between mean and median concentrations. This indicates that the data were not skewed toward either high or low concentration values. Indoor concentrations for many aliphatic and aromatic hydrocarbons were high (>20 ng/L). Highest indoor concentrations were measured for the n-alkanes (152 to 436 ng/L), 1,2,4-trimethylbenzene (73.5 ng/L), ethylbenzene (51.3 ng/L), and m,p-xylene (41.5 ng/L). The only halogenated target detected indoors was 1,1,1-trichloroethane (12.5 ng/L). Mean outdoor concentrations for all target volatiles were low (<5.0 ng/L) with the highest mean of all volatile organics concentrations reported for benzene (4.08 ng/L). A two sample t-test performed using the mean concentration values showed significant difference at the 0.05 level between indoor and outdoor concentrations for all compounds except benzene. Highest indoor concentrations were found for the n-alkanes, although indoor/outdoor concentration ratios for these compounds could not be calculated since outdoor concentrations were below the quantifiable limits. Highest mean indoor/outdoor concentration ratios were found for 1,2,4-trimethylbenzene (35.86), ethylbenzene (34.40), and 1,2,3-trimethylbenzene (27.96). The highest indoor/outdoor concentration ratio was detected for n-decane (392.15).

Table 75 gives mean daytime and nighttime concentrations calculated for indoor locations only. Day/night concentration ratios were also calculated and are included in the table. Results indicate that there were only small differences between daytime and nighttime indoor concentrations measured

TABLE 73. AVERAGE CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (NEW), TRIP 1

Compound	QL[a]	Average Concentration (ng/L)							
		Office - R-4		Office - R-1		Office - R-7		Outdoors	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.71	1.22	3.02	1.41	2.49	0.95	4.08	2.58
m,p-Xylene	0.23	40.53	13.18	41.54	9.14	42.53	11.68	3.84	3.90
o-Xylene	0.38	18.23	8.48	19.50	5.59	17.46	4.53	1.37	1.44
Styrene	0.23	2.24	0.45	2.73	0.49	2.60	0.49	0.56	0.33
Ethylbenzene	0.25	53.07	31.19	53.56	21.28	47.16	21.63	1.49	1.51
Isopropylbenzene	0.25	3.66	0.70	4.47	0.72	3.68	0.54	ND[b]	--[c]
n-Propylbenzene	0.50	4.73	0.57	5.32	0.91	4.94	0.39	ND	--
m-Ethyltoluene	0.38	25.48	9.17	30.82	7.61	25.94	4.24	1.56	1.61
o-Ethyltoluene	0.38	8.18	2.91	9.91	1.83	8.57	1.38	0.43	0.41
1,2,3-Trimethylbenzene	0.25	14.59	4.15	18.00	3.63	12.71	3.17	0.54	0.39
1,2,4-Trimethlybenzene[d] (2,3)	0.25	72.05	22.96	92.24	19.45	56.25	17.47	2.05	2.10
1,3,5-Trimethylbenzene	0.65	15.90	8.10	19.72	4.08	15.28	2.04	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	15.29	4.35	14.87	6.93	12.24	6.78	ND	--
n-Decane	1.50	421.03	105.74	523.00	141.92	365.07	37.64	ND	--
n-Undecane	1.50	209.49	40.26	222.85	68.33	200.06	30.13	ND	--
n-Dodecane[d] (2,3)	1.50	145.83	14.35	176.30	26.53	135.95	17.09	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane[d] (1,3;2,3)	0.75	ND	--	0.77	0.36	ND	--	ND	--
1,1,1-Trichloroethane	0.65	13.72	22.95	16.66	25.93	7.23	10.32	1.02	0.46
Trichloroethylene	0.38	ND	--	0.52	0.40	ND	--	ND	--
Tetrachloroethylene	0.30	ND	--	ND	--	ND	--	ND	--
p-Dichlorobenzene	0.50	ND	--	ND	--	ND	--	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.30	ND	--	ND	--	ND	--	ND	--
2-Ethoxyethyl acetate	1.00	ND	--	ND	--	ND	--	ND	--

[a] Quantifiable limit.
[b] Below the QL.
[c] Not calculated.
[d] Significant difference (0.05 level) found between concentration pairs
1 = Office - R-4
2 = Office - R-1
3 = Office - R-7

TABLE 74. SUMMARY STATISTICS - OFFICE (NEW) . TRIP 1

[illegible]	[illegible]	Concentration (ng/L)						Ratio		
		Mean		Median		Max		Mean	Median	Max
[illegible]	[illegible]	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	(In/Out)	(In/Out)	(In/Out)
[illegible] hydrocarbons										
[illegible]	[illegible]	[illegible]	4.08	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.63	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] hydrocarbons										
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] Halogenated Hydrocarbons										
[illegible]chloroethane	0.75	ND	ND	ND	[illegible]	[illegible]	ND	[illegible]	[illegible]	[illegible]
[illegible]trichloroethane[b]	0.65	12.54	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]methylene	0.30	ND	ND	ND	[illegible]	[illegible]	ND	[illegible]	[illegible]	[illegible]
[illegible]chloroethylene	0.60	ND	ND	ND	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]chlorobenzene	0.50	ND	ND	ND	[illegible]	[illegible]	ND	[illegible]	[illegible]	[illegible]
Oxygenated Hydrocarbons										
n-Butyl acetate	0.90	ND	ND	ND	[illegible]	[illegible]	ND	--	--	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	[illegible]	[illegible]	ND	--	--	--

[a]Quantifiable limit.
[b]Significant difference between indoor and outdoor mean concentrations at the 0.05 level.
[c]Below the QL.
[d]Not calculated.

TABLE 75. INDOOR DAY/NIGHT CONCENTRATIONS AND CONCENTRATION RATIO - OFFICE (NEW), TRIP 1

Compound	QL[a]	Mean Concentration (ng/L) Day	Night	Day/Night Ratio
Aromatic Hydrocarbons				
Benzene	0.25	2.22	3.26	0.68
m,p-Xylene	0.23	45.89	37.18	1.23
o-Xylene	0.38	20.18	16.62	1.21
Styrene	0.23	2.44	2.60	0.94
Ethylbenzene	0.25	59.10	43.43	1.36
Isopropylbenzene	0.25	3.76	4.11	0.91
n-Propylbenzene[b]	0.50	4.61	5.39	0.86
m-Ethyltoluene[b]	0.38	23.93	30.89	0.77
o-Ethyltoluene	0.38	7.99	9.79	0.82
1,2,3-Trimethylbenzene	0.25	13.69	16.51	0.83
1,2,4-Trimethylbenzene	0.25	72.01	75.02	0.96
1,3,5-Trimethylbenzene	0.65	15.53	18.41	0.84
Aliphatic Hydrocarbons				
α-Pinene	1.50	12.21	16.06	0.76
n-Decane	1.50	455.50	417.26	1.09
n-Undecane	1.50	198.52	223.08	0.89
n-Dodecane	1.50	146.28	159.11	0.92
Chlorinated Hydrocarbons				
1,2-Dichloroethane	0.75	ND[c]	ND	--[d]
1,1,1-Trichloroethane	0.65	4.77	20.30	0.23
Trichloroethylene	0.38	ND	0.49	--
Tetrachloroethylene	0.80	ND	ND	--
p-Dichlorobenzene	0.50	ND	ND	--
Oxygenated Hydrocarbons				
n-Butylacetate	0.90	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	--

[a]Quantifiable limit.
[b]Significant difference between daytime and nighttime mean concentration at the 0.05 level.
[c]Below the QL.
[d]Not calculated.

during this field monitoring trip. Only n-propylbenzene and m-ethyltoluene showed significant differences at the 0.05 level. In both cases, nighttime concentrations were higher.

Trip 2. Concentration data for Trip 2 to the new office (August 1985) similar to that reported for Trip 1 are given in Tables 76 to 79. During the first day of sample collection, a mimeograph machine in the vicinity of the monitoring area was in constant use. This could be the source of elevated levels of benzene, 1,2-dichloroethane, 1,1,1-trichloroethane, trichloroethylene, n-butyl acetate, 2-ethoxyethylacetate, and tetrachloroethylene detected on the first day.

Average concentration values plus standard deviations calculated for each monitoring location are summarized in Table 80. Comparisons of average concentrations at each indoor location using an F-test showed a uniform distribution with no significant differences at the 0.05 level between indoor monitoring locations.

Table 81 gives summary statistics for this second trip to the new office. Where measurable levels were found except for benzene, mean concentration values for indoor samples were significantly (0.05) higher than for outdoor samples. Highest mean indoor concentrations were found for 1,1,1-trichloroethane (38.85 ng/L), m,p-xylene (15.05 ng/L), and the aliphatic hydrocarbons (15.24 to 33.93 ng/L). For this trip to the new office, n-undecane was the alkane with the highest indoor concentration. During the first trip, n-decane had the highest mean concentration. This change in relative concentrations is probably a result of the more volatile alkanes outgassing from building materials at a faster rate. This finding was confirmed during our chamber study (Section 8). Highest mean indoor/-outdoor concentration ratios were found for 1,1,1-trichloroethane (20.66), 1,2,3-trimethylbenzene (10.03), ethylbenzene (5.71), m-ethyltoluene, and m,p-xylene (4.84). Indoor/outdoor concentration ratios for the aliphatic hydrocarbons were not calculated since outdoor levels were below the quantifiable limit.

Table 82 gives mean daytime and nighttime concentrations calculated for indoor locations only. Day/night concentration ratios were also calculated and included in the table. Only n-butylacetate, benzene, trichloroethylene, tetrachloroethylene, and p-dichlorobenzene showed significant differences (0.05 level) between daytime and nighttime mean concentrations.

TABLE 76. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (NEW), TRIP 2, OFFICE - R-4 (SMOKERS)

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	8.04	3.79	5.86	4.07	5.12	4.21	5.18	1.60
m,p-Xylene	0.23	19.79	16.22	16.24	12.40	10.63	13.95	14.87	3.25
o-Xylene	0.38	4.66	3.40	3.50	2.92	2.64	3.24	3.39	0.70
Styrene	0.23	3.60	2.82b	3.15b	2.04	2.37	3.20b	2.86	0.58
Ethylbenzene	0.25	7.57	5.35	5.62	4.33	3.71	5.12	5.28	1.32
Isopropylbenzene	0.25	0.92	0.67	0.74	0.57	0.51	0.65	0.68	0.14
n-Propylbenzene	0.50	1.53	1.17	1.17	0.97	0.87	1.10	1.14	0.23
m-Ethyltoluene	0.38	7.41	5.62	5.74	5.01	4.80	5.31	5.65	0.93
o-Ethyltoluene	0.38	2.73	2.23	2.09	1.82	1.58	1.93	2.06	0.40
1,2,3-Trimethylbenzene	0.25	2.17b	3.01	3.32b	2.51	2.41	2.68	2.68	0.42
1,2,4-Trimethlybenzene	0.25	5.85b	8.28	7.31	6.65	5.75	7.12	6.83	0.96
1,3,5-Trimethylbenzene	0.65	3.65	2.87	2.74	2.50	2.08	2.61	2.74	0.52
Aliphatic Hydrocarbons									
α-Pinene	1.50	40.94	30.29	24.35	19.41	15.49	24.57	25.84	8.95
n-Decane	1.50	20.57	19.74	13.80	13.55	9.41	14.99	15.34	4.19
n-Undecane	1.50	42.01	40.36	33.98	34.33	34.65	37.08	37.07	3.41
n-Dodecane	1.50	27.38	28.64	24.19	22.38	24.41	26.27	25.55	2.31
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	18.13	3.61	1.92b	1.10	ND[c]	ND	4.34	6.85
1,1,1-Trichloroethane	0.65	75.21	56.75	25.96b	15.39	17.23	18.31	34.81	25.10
Trichloroethylene	0.38	15.00b	5.77	10.03	5.47b	4.76b	4.19	7.54	4.20
Tetrachloroethylene	0.80	2.65	1.27	2.76	1.66	0.80	ND	1.63	0.91
p-Dichlorobenzene	0.50	2.73	2.52	3.10	2.39	2.02	2.15	2.49	0.39
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	11.12	6.73	6.76	3.18	10.67	3.23	6.95	3.45
2-Ethoxyethyl acecate	1.00	2.41	1.98b	2.49b	2.70	2.34	2.17b	2.35	0.25

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.

TABLE 77. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (NEW), TRIP 2, OFFICE - R-1 (NONSMOKERS)

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	8.85	3.97	4.75	3.92b	6.02b	3.90	5.24	1.95
m,p-Xylene	0.23	23.22	14.52	15.31	11.55	12.24	15.66	15.42	4.17
o-Xylene	0.38	5.32	3.18	3.50	2.88	3.54b	5.80	4.04	1.21
Styrene	0.23	4.49	2.43b	2.84	2.45b	2.52	2.62	2.89	0.80
Ethylbenzene	0.25	8.99	5.11	5.42	3.89	4.30	6.14	5.64	1.83
Isopropylbenzene	0.25	1.07	0.60	0.68	0.51	0.59	0.77	0.70	0.20
n-Propylbenzene	0.50	1.80	1.08	1.08	0.88	0.95	1.28	1.18	0.33
m-Ethyltoluene	0.38	8.30	5.06	5.67	4.39	4.94	6.29	5.78	1.40
o-Ethyltoluene	0.38	3.12	2.03	2.07	1.67	1.81	2.37	2.18	0.52
1,2,3-Trimethylbenzene	0.25	3.99	2.66	3.09	2.33	2.88	3.58	3.09	0.61
1,2,4-Trimethlybenzene	0.25	10.10	7.39	7.32	6.12	6.79	8.69	7.74	1.44
1,3,5-Trimethylbenzene	0.65	4.26	2.61	2.58	2.19	2.57	3.32	2.92	0.75
Aliphatic Hydrocarbons									
α-Pinene	1.50	44.36	24.91	20.83	15.79	16.20	26.86	24.83	10.56
n-Decane	1.50	22.57	18.78	13.30	12.12	7.63	17.35	15.39	5.38
n-Undecane	1.50	43.36	33.71	33.42	25.27	32.01	34.42	33.70	5.79
n-Dodecane	1.50	31.05	22.98	23.90	17.74	22.83	25.33	23.97	4.31
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	21.91	3.53	1.66	1.16b	0.95	1.14	5.06	8.31
1,1,1-Trichloroethane	0.65	94.37	55.55	24.72	21.00	24.78	24.52	40.82	29.19
Trichloroethylene	0.38	17.86b	6.66b	9.17	4.99b	7.41b	8.10	9.03	4.55
Tetrachloroethylene	0.80	2.92	1.20	2.54	1.47	1.00	ND[c]	1.63	0.90
p-Dichlorobenzene	0.50	3.69	2.36	3.31	2.12	2.39	2.52	2.73	0.62
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	8.75	5.56	5.65b	2.69	5.50	5.32	5.58	1.92
2-Ethoxyethyl acetate	1.00	2.24	1.70	2.30	2.28b	2.07	2.50	2.18	0.27

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.

TABLE 78. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (NEW) , TPIP 2, OFFICE - R-7 (NONSMOKERS)

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	7.41	2.83	3.70	5.12	4.12	3.39	4.43	1.65
m,p-Xylene	0.23	20.80	15.72	12.55	13.64	12.10	14.33	14.86	3.19
o-Xylene	0.38	4.54	4.00b	2.83	3.03	2.74	4.29b	3.57	0.80
Styrene	0.23	4.26	2.90	1.98	2.02	3.51b	2.51	2.86	0.89
Ethylbenzene	0.25	7.43	5.59	4.28	4.53	4.36	4.91	5.18	1.20
Isopropylbenzene	0.25	0.91	0.67	0.54	0.58	0.56	0.57	0.64	0.14
n-Propylbenzene	0.50	1.54	1.15	0.90	1.00	0.94	0.91	1.07	0.25
m-Ethyltoluene	0.38	7.53	5.57	4.53	4.81	4.61	4.68	5.29	1.16
o-Ethyltoluene	0.38	2.83	2.23	1.68	1.78	1.71	1.78	2.00	0.45
1,2,3-Trimethylbenzene	0.25	4.35	2.99	2.95	2.43	2.47	2.50	2.95	0.73
1,2,4-Trimethlybenzene	0.25	10.17	8.01	6.21	6.50	6.25	6.33	7.25	1.59
1,3,5-Trimethylbenzene	0.65	3.55	2.87	2.21	2.43	2.26	2.27	2.60	0.53
Aliphatic Hydrocarbons									
α-Pinene	1.50	39.00	28.61	19.21	17.39	15.35	19.98	23.26	8.95
n-Decane	1.50	22.33	19.63	12.55	12.38	10.97	12.13	15.00	4.74
n-Undecane	1.50	39.42	35.24	26.17	24.87	31.66	28.80	31.03	5.57
n-Dodecane	1.50	27.93	24.56	19.13	17.41	22.37	18.88	21.71	4.01
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	17.60	3.37	1.41b	1.16	ND[c]	ND	4.13	6.68
1,1,1-Trichloroethane	0.65	103.48	56.50	23.46	21.70	19.36	21.00	40.92	33.74
Trichloroethylene	0.38	15.65	5.03	9.09	4.40	6.01	3.19	7.23	4.58
Tetrachloroethylene	0.90	2.86	1.24	2.69	1.66	1.04	ND	1.67	0.93
p-Dichlorobenzene	0.50	3.68	2.42	3.33	2.32	2.60	1.92	2.71	0.66
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	12.84	6.35	6.65	3.57	7.04b	2.44	6.48	3.62
2-Ethoxyethyl acetate	1.00	1.92	1.84	1.95	2.44	2.04	1.56	1.96	0.29

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.

TABLE 79. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (NEW) , TRIP 2, OUTDOORS

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	4.88	1.29	3.10	4.56	3.20	4.76	3.63	1.39
m,p-Xylene	0.23	2.33b	0.89	2.91	2.18	2.24	8.13	3.11	2.55
o-Xylene	0.38	0.75	ND	0.96b	0.73	0.85	3.33	1.17	1.08
Styrene	0.23	1.07b	1.05b	0.92	0.34b	1.01b	1.89b	1.05	0.50
Ethylbenzene	0.25	0.93b	0.26	0.77	0.62	0.76	2.29	0.94	0.70
Isopropylbenzene	0.25	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	0.95	0.42	1.14	0.94	0.97	2.50	1.15	0.70
o-Ethyltoluene	0.38	ND	ND	ND	ND	ND	0.70	ND	--
1,2,3-Trimethylbenzene	0.25	0.28	ND	0.30	ND	0.28	0.58	0.29	0.15
1,2,4-Trimethlybenzene	0.25	0.92	0.49	1.18	1.01	1.01	2.73	1.22	0.77
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	0.81	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Undecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	3.66b	ND	0.82	0.91	4.03	1.42	1.88	1.55
Trichloroethylene	0.38	ND	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	2.59	ND	2.94	ND	ND	ND	1.16	1.25
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.30	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL.
[d] Not calculated.

TABLE 80. AVERAGE CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (NEW) , TRIP 2

Compound	Average Concentration (ng/L)								
		Office - R-4 (Smokers)		Office - R-1 (Smokers)		Office - R-7 (Nonsmokers)		Outdoors	
	QL[a]	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	5.18	1.60	5.24	1.95	4.43	1.65	3.63	1.39
m,p-Xylene	0.23	14.87	3.25	15.42	4.17	14.86	3.19	3.11	2.55
o-Xylene	0.38	3.39	0.70	4.04	1.21	3.57	0.80	1.17	1.08
Styrene	0.23	2.86	0.58	2.89	0.80	2.86	0.89	1.05	0.50
Ethylbenzene	0.25	5.28	1.32	5.64	1.83	5.18	1.20	0.94	0.70
Isopropylbenzene	0.25	0.68	0.14	0.70	0.20	0.64	0.14	ND[b]	--[c]
n-Propylbenzene	0.50	1.14	0.23	1.18	0.33	1.07	0.25	ND	--
m-Ethyltoluene	0.38	5.65	0.93	5.78	1.40	5.29	1.16	1.15	0.70
o-Ethyltoluene	0.38	2.06	0.40	2.18	0.52	2.00	0.45	ND	--
1,2,3-Trimethylbenzene	0.25	2.68	0.42	3.09	0.61	2.95	0.73	0.29	0.15
1,2,4-Trimethlybenzene	0.25	6.83	0.96	7.74	1.44	7.25	1.59	1.22	0.77
1,3,5-Trimethylbenzene	0.65	2.74	0.52	2.92	0.75	2.60	0.53	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	25.34	8.95	24.83	10.56	23.26	8.95	ND	--
n-Decane	1.50	15.34	4.19	15.39	5.38	15.00	4.74	ND	--
n-Undecane	1.50	37.07	3.41	33.70	5.79	31.03	5.57	ND	--
n-Dodecane	1.50	25.55	2.31	23.97	4.31	21.71	4.01	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	4.34	6.85	5.06	8.31	4.13	6.68	ND	--
1,1,1-Trichloroethane	0.65	34.81	25.10	40.82	29.19	40.92	33.74	1.88	1.55
Trichloroethylene	0.38	7.54	4.20	9.03	4.55	7.23	4.58	ND	--
Tetrachloroethylene	0.80	1.63	0.91	1.63	0.90	1.67	0.93	1.16	1.25
p-Dichlorobenzene	0.50	2.49	0.39	2.73	0.62	2.71	0.66	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	6.95	3.45	5.58	1.92	6.48	3.62	ND	--
2-Ethoxyethyl acetate	1.00	2.35	0.25	2.13	0.27	1.96	0.29	ND	--

[a]Quantifiable limit.
[b]Below the QL.
[c]Not calculated.

TABLE 81. SUMMARY STATISTICS - OFFICE (NEW), TRIP 2

Compound	QL[a]	Concentration (ng/L) Mean Indoor	Mean Outdoor	Median Indoor	Median Outdoor	Max Indoor	Max Outdoor	Ratio Mean (In/Out)	Median (In/Out)	Max (In/Out)
Aromatic Hydrocarbons										
Benzene	0.25	4.95	3.63	4.16	3.88	8.85	4.88	1.36	1.07	1.81
m,p-Xylene[b]	0.23	15.05	3.11	14.42	2.28	23.22	8.13	4.84	6.31	2.86
o-Xylene[b]	0.38	3.67	1.17	3.45	0.80	5.80	3.33	3.14	4.31	1.74
Styrene[b]	0.23	2.87	1.05	2.72	1.03	4.49	1.89	2.73	2.64	2.38
Ethylbenzene[b]	0.25	5.37	0.94	5.11	0.76	8.99	2.29	5.71	6.69	3.93
Isopropylbenzene[b]	0.25	0.67	ND[c]	0.62	ND	1.07	ND	--[d]	--	--
n-Propylbenzene[b]	0.50	1.13	ND	1.08	ND	1.80	ND	--	--	--
m-Ethyltoluene[b]	0.38	5.57	1.15	5.18	0.96	8.30	2.50	4.84	5.40	3.32
o-Ethyltoluene[b]	0.38	2.08	ND	1.98	ND	3.12	0.70	--	--	4.46
1,2,3-Trimethylbenzene[b]	0.25	2.91	0.29	2.78	0.28	4.35	0.58	10.03	9.93	7.50
1,2,4-Trimethlybenzene[b]	0.25	7.27	1.22	6.95	1.01	10.17	2.73	5.96	6.89	3.73
1,3,5-Trimethylbenzene[b]	0.65	2.75	ND	2.59	ND	4.26	0.81	--	--	5.26
Aliphatic Hydrocarbons										
α-Pinene[b]	1.50	21.61	ND	22.59	ND	44.36	ND	--	--	--
n-Decane[b]	1.50	15.21	ND	13.67	ND	22.57	ND	--	--	--
n-Undecane[b]	1.50	33.93	ND	34.15	ND	43.36	ND	--	--	--
n-Dodecane[b]	1.50	23.74	ND	24.04	ND	31.05	ND	--	--	--
Chlorinated Hydrocarbons										
1,2-Dichloroethane[b]	0.75	4.51	ND	1.28	ND	21.91	ND	--	--	--
1,1,1-Trichloroethane[b]	0.65	39.85	1.88	24.62	1.16	103.48	4.03	20.66	21.13	25.68
Trichloroethylene[b]	0.38	7.93	ND	6.33	ND	17.86	ND	--	--	--
Tetrachloroethylene[b]	0.80	1.64	1.16	1.37	ND	2.92	2.94	1.41	--	0.99
p-Dichlorobenzene[b]	0.50	2.64	ND	2.47	ND	3.69	ND	--	--	--
Oxygenated Hydrocarbons										
n-Butylacetate[b]	0.90	6.34	ND	6.00	ND	12.84	ND	--	--	--
2-Ethoxyethyl acetate[b]	1.00	2.15	ND	2.20	ND	2.70	ND	--	--	--

[a] Quantifiable limit.
[b] Significant difference between indoor and outdoor mean concentrations at the 0.05 level.
[c] Below the QL.
[d] Not calculated.

TABLE 82. INDOOR DAY/NIGHT CONCENTRATIONS AND CONCENTRATION RATIO - OFFICE (NEW), TRIP 2

Compound	QL[a]	Mean Concentration (ng/L) Day	Night	Day/Night Ratio
Aromatic Hydrocarbons				
Benzene[b]	0.25	5.99	3.91	1.53
m,p-Xylene	0.23	15.88	14.22	1.12
o-Xylene	0.38	3.70	3.64	1.02
Styrene	0.23	3.19	2.55	1.25
Ethylbenzene	0.25	5.74	5.00	1.15
Isopropylbenzene	0.25	0.72	0.62	1.16
n-Propylbenzene	0.50	1.20	1.06	1.13
m-Ethyltoluene	0.38	5.95	5.19	1.15
o-Ethyltoluene	0.38	2.18	1.98	1.10
1,2,3-Trimethylbenzene	0.25	3.07	2.74	1.12
1,2,4-Trimethylbenzene	0.25	7.31	7.23	1.01
1,3,5-Trimethylbenzene	0.65	2.88	2.63	1.10
Aliphatic Hydrocarbons				
α-Pinene	1.50	26.19	23.09	1.13
n-Decane	1.50	14.79	15.70	0.94
n-Undecane	1.50	35.19	32.68	1.08
n-Dodecane	1.50	24.80	22.69	1.09
Chlorinated Hydrocarbons				
1,2-Dichloroethane	0.75	7.19	1.83	3.93
1,1,1-Trichloroethane	0.65	45.40	32.30	1.41
Trichloroethylene[b]	0.38	10.55	5.31	1.99
Tetrachloroethylene[b]	0.80	2.14	1.14	1.88
p-Dichlorobenzene[b]	0.50	2.98	2.30	1.30
Oxygenated Hydrocarbons				
n-Butylacetate[b]	0.90	8.33	4.34	1.92
2-Ethoxyethl acetate	1.00	2.20	2.13	1.03

[a]Quantifiable limit.
[b]Significant difference between daytime and nighttime mean concentration at the 0.05 level.

All compounds had higher daytime concentrations except n-decane. As mentioned earlier, these target volatiles were probably emitted at high levels on the first day as a result of mimeographing.

Comparison Between Trips. Data for volatile organic chemicals monitored at the new office are compared between trips in Table 83, which gives mean indoor and outdoor concentrations for both trips, and Table 84, which gives mean indoor/outdoor concentration ratios by trip. The first monitoring trip took place in January 1985, after the building had been completed and before occupancy. Finishing activities, such as painting, wallpapering, carpeting, etc., had been performed within the 2-week period just prior to monitoring. The second monitoring trip took place seven months later in August, 1985. The building was fully occupied and operational at the time.

Indoor air concentrations found during the first monitoring trip were very high. Highest indoor air concentrations were found for the n-alkanes (150-440 ng/L). The levels detected here were similar to levels detected previously in a new, unoccupied office building (30). Elevated indoor concentrations (>15 ng/L) were also detected for m,p-xylene, o-xylene, ethylbenzene, m-ethyltoluene, 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. As noted earlier, these indoor concentrations are probably a result of the high emissions of volatile organics from new building materials. Results of the emission study, along with data from the building survey, suggest that carpet and carpet glue are probably one of the major contributors to the indoor contamination levels.

With the exception of benzene and styrene, indoor air concentrations of the aromatic hydrocarbons and n-alkanes were lower during Trip 2 than Trip 1. The largest decreases in indoor concentrations were seen for the n-alkanes. Not surprisingly, these compounds had the highest indoor concentrations during the first monitoring trip. Lower indoor concentrations during the second trip are most likely a result of lower emissions from building materials, which had aged between the first and second trips. In contrast, indoor concentrations of the chlorinated hydrocarbons, the oxygenated hydrocarbons, and α-pinene increased between the first and second monitoring trip. α-Pinene is generally emitted from wood products, especially particle board. Between the first and second field monitoring trips, all of the office furniture had been moved into the building and would be the most likely source of α-pinene. General office activities,

TABLE 83. MEAN INDOOR AND OUTDOOR CONCENTRATIONS FOR THE TWO TRIPS TO THE NEW OFFICE

Compound	Concentration (ng/L)			
	Trip 1		Trip 2	
	Indoor	Outdoor	Indoor	Outdoor
Aromatic Hydrocarbons				
Benzene	2.74	4.08	4.95	3.63
m,p-Xylene	41.53	3.84	15.05	3.11
o-Xylene	18.40	1.37	3.67	1.17
Styrene	2.52	0.56	2.87	1.05
Ethylbenzene	51.26	1.49	5.37	0.94
Isopropylbenzene	3.94	ND[a]	0.67	ND
n-Propylbenzene	5.00	ND	1.13	ND
m-Ethyltoluene	27.41	1.56	5.57	1.15
o-Ethyltoluene	8.89	0.43	2.08	ND
1,2,3-Trimethylbenzene	15.10	0.54	2.91	0.29
1,2,4-Trimethlybenzene	73.51	2.05	7.27	1.22
1,3,5-Trimethylbenzene	16.97	ND	2.75	ND
Aliphatic Hydrocarbons				
α-Pinene	14.13	ND	24.64	ND
n-Decane	436.38	ND	15.24	ND
n-Undecane	210.80	ND	33.93	ND
n-Dodecane	152.69	ND	23.74	ND
Chlorinated Hydrocarbons				
1,2-Dichloroethane	ND	ND	4.51	ND
1,1,1-Trichloroethane	12.54	1.02	38.85	1.88
Trichloroethylene	ND	ND	7.93	ND
Tetrachloroethylene	ND	ND	1.64	1.16
p-Dichlorobenzene	ND	ND	2.64	ND
Oxygenated Hydrocarbons				
n-Butylacetate	ND	ND	6.34	ND
2-Ethoxyethyl acetate	ND	ND	2.16	ND

[a]Below the QL.

TABLE 84. MEAN INDOOR/OUTDOOR CONCENTRATION RATIOS FOR THE TWO TRIPS TO THE NEW OFFICE

Compound	Concentration Ratio	
	Trip 1	Trip 2
Aromatic Hydrocarbons		
Benzene	0.67	1.36
m,p-Xylene	10.82	4.84
o-Xylene	13.43	3.14
Styrene	4.50	2.73
Ethylbenzene	34.40	5.71
Isopropylbenzene	••[a]	••
n-Propylbenzene	••	••
m-Ethyltoluene	17.57	4.84
o-Ethyltoluene	20.67	••
1,2,3-Trimethylbenzene	27.96	10.03
1,2,4-Trimethlybenzene	35.86	5.96
1,3,5-Trimethylbenzene	••	••
Aliphatic Hydrocarbons		
α-Pinene	••	••
n-Decane	••	••
n-Undecane	••	••
n-Dodecane	••	••
Chlorinated Hydrocarbons		
1,2-Dichloroethane	--[b]	••
1,1,1-Trichloroethane	12.29	20.66
Trichloroethylene	--	••
Tetrachloroethylene	--	1.41
p-Dichlorobenzene	--	••
Oxygenated Hydrocarbons		
n-Butylacetate	--	••
2-Ethoxyethyl acetate	--	••

[a]Not calculated. Detected in indoors, but not outdoor samples.
[b]Not detected in indoor or outdoor samples.

including mimeographing, are probably responsible for higher indoor levels of the chlorinated and oxygenated hydrocarbons. Mean outdoor concentrations remained fairly constant between the two monitoring trips.

Results in Table 84 list mean indoor/outdoor concentration ratios for the two trips and show trends similar to those discussed above.

New Nursing Home--

Trip 1. Concentration data for volatile organics measured during the first trip to the new nursing home (February, 1985) are given in Tables 85 to 88. Concentration averages and standard deviations for the 3-day period are also given. This trip to the home was performed prior to occupancy. Construction and finishing activities (i.e., painting) had been completed approximately six weeks before monitoring. The day prior to monitoring some areas of woodwork were cleaned with mineral spirits and revarnished. Cans of paint and solvent were being stored in offices one story below the monitoring area. The cans were removed after the first monitoring period (night 1).

The high indoor levels of volatile organics were probably a result of outgassing from the new building materials. The levels found here were lower than those found in the new office. This would be expected since most materials in this building had been installed for a longer period of time before monitoring (6 weeks versus 2 weeks). Indoor concentrations for m,p-xylene, o-xylene, styrene, ethylbenzene, 1,2,3-trimethylbenzene, and 1,3,5-trimethylbenzene were highest during the first monitoring period. This could probably be attributed to varnishing activities. Alternately, improperly stored solvents could also have been responsible. New wood products are again the most likely source for α-pinene. The source of 2-ethoxyethylacetate is unknown.

Average concentrations of each target volatile at each monitoring site are summarized in Table 89. Comparisons of average concentrations using a F-test indicated a uniform distribution throughout, with no significant differences between monitoring locations.

Table 90 gives summary statistics calculated for the first trip to the new home. Mean, median, and maximum concentrations were calculated for indoor and outdoor samples separately. Indoor/outdoor ratios for the mean, median, and maximum concentrations are also given. With the exception of

TABLE 85. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (NEW), TRIP 1, DAY ROOM

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.26	2.44b	1.67	1.64	0.98	1.27	1.71	0.56
m,p-Xylene	0.23	47.81	19.31	20.50	19.42	13.48	21.62	23.69	12.15
o-Xylene	0.38	15.77	7.50	8.41	7.17	5.13b	11.41	9.23	3.80
Styrene	0.23	5.79	2.63	2.99	2.34	1.93	1.63	2.89	1.50
Ethylbenzene	0.25	12.43	7.18b	6.82	6.94	4.75	9.58b	7.95	2.68
Isopropylbenzene	0.25	3.19	2.70	1.88	2.41	1.51	3.90	2.60	0.87
n-Propylbenzene	0.50	3.70	3.54	2.21	3.13b	2.09	4.29	3.16	0.87
m-Ethyltoluene	0.38	13.09	15.28	9.68	12.94b	9.45	18.20	13.11	3.34
o-Ethyltoluene	0.38	4.88	4.78	3.15	4.33b	2.73	5.57	4.24	1.09
1,2,3-Trimethylbenzene	0.25	6.70b	5.12b	3.68	4.83	2.99	4.88	4.70	1.28
1,2,4-Trimethlybenzene	0.25	11.03	13.11	11.27	13.44	10.26	16.40	12.59	2.24
1,3,5-Trimethylbenzene	0.65	7.62	7.39	5.42	7.23b	4.61	9.19	6.91	1.65
Aliphatic Hydrocarbons									
α-Pinene	1.50	6.33	5.70b	5.14	5.51	4.00b	3.31	5.00	1.13
n-Decane	1.50	83.08	59.43	50.57	64.84	36.36b	83.81b	63.01	18.53
n-Undecane	1.50	79.60	63.09	61.54	63.37b	37.20b	64.01b	61.47	13.64
n-Dodecane	1.50	31.27	27.56	29.69	27.19b	17.50	28.39	26.93	4.86
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
1,1,1-Trichloroethane	0.65	2.41	2.14	1.25b	1.07	1.86	2.11	1.81	0.53
Trichloroethylene	0.39	3.13	2.21	2.91	2.88	0.70b	0.41b	2.04	1.19
Tetrachloroethylene	0.80	1.70	1.03	1.08	1.41	ND	1.29	1.18	0.38
p-Dichlorobenzene	0.50	2.00	1.46	0.86	1.17	1.00	ND	1.15	0.54
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	12.03b	9.47	9.39	10.55b	7.57b	8.17	4.26

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL.
[d] Not calculated.

TABLE 86. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (NEW), TRIP 1, NURSES' STATION

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	1.71	1.93	1.69	1.51	1.49	1.52	1.64	0.17
m,p-Xylene	0.23	40.41	22.06	23.55b	8.97	22.08b	25.36	23.74	10.04
o-Xylene	0.38	15.33	8.80	8.26b	4.21	7.76b	7.91	8.71	3.63
Styrene	0.23	5.61	3.19b	5.48b	1.38	2.60b	1.47	3.29	1.88
Ethylbenzene	0.25	9.52	6.15	7.50	2.98	6.05	16.73	8.16	4.71
Isopropylbenzene	0.25	2.56b	1.76	2.16	0.86	1.68b	3.11	2.02	0.78
n-Propylbenzene	0.50	4.55	2.56	3.01	1.37	2.09	3.93	2.92	1.18
m-Ethyltoluene	0.38	15.83	11.06	13.28	5.93	9.27	16.00	11.90	3.94
o-Ethyltoluene	0.38	6.66	3.27	3.68	1.93	2.58	4.69	3.80	1.69
1,2,3-Trimethylbenzene	0.25	10.55	6.41	7.63	2.73	2.92	3.29	5.59	3.16
1,2,4-Trimethlybenzene	0.25	15.90	16.02	18.34	8.74	10.64	12.85	13.75	3.64
1,3,5-Trimethylbenzene	0.65	9.54	6.32	8.13	3.51	4.94	7.46	6.65	2.20
Aliphatic Hydrocarbons									
α-Pinene	1.50	7.74	5.32b	9.43	2.27	7.08	2.94	5.80	2.81
n-Decane	1.50	119.61	76.72	97.63	34.39	41.80	55.28b	70.90	33.30
n-Undecane	1.50	106.35	86.78	104.80	37.90	38.88	43.94	69.77	33.14
n-Dodecane	1.50	48.51	38.96	48.08	16.05	22.45	19.82	32.31	14.65
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
1,1,1-Trichloroethane	0.65	2.52	2.18b	2.11	33.74	3.16	2.11	7.64	12.79
Trichloroethylene	0.38	4.16	3.36	5.72	1.79	1.32b	0.81	2.86	1.89
Tetrachloroethylene	0.80	1.31	0.96	1.24	1.11	ND	1.49	1.14	0.27
p-Dichlorobenzene	0.50	4.96	1.96	5.55	1.38	1.49	0.64	2.66	2.06
Oxygenated Hydrocarbons									
n-Butylacetate	0.30	1.12	ND	1.11b	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	18.30b	14.40b	16.44	6.41	15.67b	9.69	13.49	4.52

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 87. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (NEW) , TRIP 1, PATIENTS' ROOM

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	1.53	1.93	1.92b	1.36	1.89	1.77	1.73	0.24
m,p-Xylene	0.23	48.07	21.98	27.70	8.43	19.50	18.21	23.98	13.37
o-Xylene	0.38	18.15	8.98	9.65	3.03	6.89	6.19	8.82	5.14
Styrene	0.23	5.03	3.25	3.57	1.14	2.49	1.25	2.79	1.48
Ethylbenzene	0.25	11.04	6.15	7.26	2.81	7.69	10.70	7.61	3.05
Isopropylbenzene	0.25	4.28	1.81	2.23	0.78	2.01	2.01	2.19	1.15
n-Propylbenzene	0.50	5.26	2.62	3.14	1.20	2.55	2.57	2.89	1.33
m-Ethyltoluene	0.38	21.98	11.37	13.45	5.22	10.31	10.58	12.15	5.53
o-Ethyltoluene	0.38	7.45	3.74	4.52	1.72	3.24	3.28	3.99	1.93
1,2,3-Trimethylbenzene	0.25	11.51	5.95	7.19	2.82	3.67	2.90	5.67	3.36
1,2,4-Trimethlybenzene	0.25	25.50	17.08	18.78	8.47	13.24	10.09	15.53	6.28
1,3,5-Trimethylbenzene	0.65	12.68	5.40b	8.57	3.18	6.09	5.61	6.92	3.30
Aliphatic Hydrocarbons									
α-Pinene	1.50	8.09	4.54	6.97	1.50	6.06	1.57	4.79	2.78
n-Decane	1.50	122.05	74.29	92.73	31.57	56.22	48.50	70.89	32.77
n-Undecane	1.50	112.52	94.23b	103.20	36.20b	53.42	46.22	74.30	32.77
n-Dodecane	1.50	53.54	40.86	46.93	19.02b	28.79	21.00	35.02	14.21
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
1,1,1-Trichloroethane	0.65	2.40	2.11	2.20	4.04b	3.00	2.04	2.63	0.77
Trichloroethylene	0.38	4.34	2.89	5.74	1.17b	2.10	0.77	2.84	1.91
Tetrachloroethylene	0.80	1.10	0.87	1.14	0.89	0.87	1.51	1.06	0.25
p-Dichlorobenzene	0.50	4.40	2.12	5.49	1.48	2.01	0.67	2.70	1.85
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	2.05b	1.48b	0.98b	ND	ND	ND	0.92	0.73
2-Ethoxyethyl acetate	1.00	17.00	13.10	ND	5.09	ND	7.24	7.07	6.91

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL.
[d] Not calculated.

TABLE 88. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (NEW) , TRIP 1, OUTDOORS

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.57	2.55	1.70	1.58	1.56	2.39b	2.06	0.49
m,p-Xylene	0.23	4.12	3.43	1.92	1.54	1.24	2.01	2.38	1.14
o-Xylene	0.38	1.04	0.96	0.64b	0.45	0.43b	0.59	0.69	0.26
Styrene	0.23	1.09b	ND[c]	ND	ND	ND	ND	0.31	0.39
Ethylbenzene	0.25	0.85	1.26	0.77	0.49	0.37b	0.52b	0.71	0.32
Isopropylbenzene	0.25	ND	ND	ND	ND	ND	ND	ND	--[d]
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	1.09	1.28	0.79	0.69	0.49b	1.14	0.91	0.30
o-Ethyltoluene	0.38	ND	ND	ND	ND	ND	ND	ND	--
1,2,3-Trimethylbenzene	0.25	0.30b	0.26	ND	ND	0.59b	0.30b	0.30	0.16
1,2,4-Trimethlybenzene	0.25	1.20	1.45	0.89	0.83b	0.73	1.54	1.11	0.34
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Undecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	1.34	2.36	1.42	1.17	1.52	2.24	1.68	0.50
Trichloroethylene	0.38	0.46	0.71	0.68	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	1.18	1.04	1.43	ND	1.24	0.93	1.07	0.30
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 89. AVERAGE CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (NEW), TRIP 1

		Average Concentration (ng/L)							
		Visitors' Lounge		Nurses' Station		Patients' Room		Outdoors	
Compound	QL[a]	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	1.71	0.56	1.64	0.17	1.73	0.24	2.06	0.49
m,p-Xylene	0.23	23.69	12.15	23.74	10.04	23.98	13.37	2.38	1.14
o-Xylene	0.38	9.23	3.80	8.71	3.63	8.82	5.14	0.69	0.26
Styrene	0.23	2.89	1.50	3.29	1.88	2.79	1.48	0.31	0.39
Ethylbenzene	0.25	7.95	2.68	8.16	4.71	7.61	3.05	0.71	0.32
Isopropylbenzene	0.25	2.60	0.87	2.02	0.78	2.19	1.15	ND[b]	--[c]
n-Propylbenzene	0.50	3.16	0.87	2.92	1.18	2.89	1.33	ND	--
m-Ethyltoluene	0.38	13.11	3.34	11.90	3.94	12.15	5.53	0.91	0.30
o-Ethyltoluene	0.38	4.24	1.09	3.80	1.69	3.99	1.93	ND	--
1,2,3-Trimethylbenzene	0.25	4.70	1.28	5.59	3.16	5.67	3.36	0.30	0.16
1,2,4-Trimethlybenzene	0.25	12.59	2.24	13.75	3.64	15.53	6.28	1.11	0.34
1,3,5-Trimethylbenzene	0.65	6.91	1.65	6.65	2.20	6.92	3.30	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	5.00	1.13	5.80	2.81	4.79	2.78	ND	--
n-Decane	1.50	63.01	18.53	70.90	33.30	70.89	32.77	ND	--
n-Undecane	1.50	61.17	13.64	69.77	33.14	74.30	32.77	ND	--
n-Dodecane	1.50	26.93	4.86	32.31	14.65	35.02	14.21	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	--	ND	--	ND	--	ND	--
1,1,1-Trichloroethane	0.65	1.81	0.53	7.64	12.79	2.63	0.77	1.68	0.50
Trichloroethylene	0.38	2.04	1.19	2.86	1.89	2.84	1.91	ND	--
Tetrachloroethylene	0.80	1.18	0.38	1.14	0.27	1.06	0.25	1.07	0.30
p-Dichlorobenzene	0.50	1.15	0.54	2.66	2.06	2.70	1.85	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.30	ND	--	ND	--	0.92	0.73	ND	--
2-Echoxyethyl acetate	1.00	3.17	4.26	13.49	4.52	7.07	6.91	ND	--

[a]Quantifiable limit.
[b]Below the QL.
[c]Not calculated.

TABLE 90. SUMMARY STATISTICS - HOME (NEW) , TRIP 1

Compound	QL[a]	Concentration (ng/L) Mean Indoor	Mean Outdoor	Median Indoor	Median Outdoor	Max Indoor	Max Outdoor	Ratio Mean (In/Out)	Ratio Median (In/Out)	Ratio Max (In/Out)
Aromatic Hydrocarbons										
Benzene	0.25	1.70	2.06	1.68	2.04	2.44	2.57	0.83	0.82	0.95
m,p-Xylene[b]	0.23	23.80	2.38	21.80	1.96	48.07	4.12	10.00	11.09	11.67
o-Xylene[b]	0.38	8.92	0.69	8.08	0.61	18.15	1.04	12.93	13.15	17.45
Styrene[b]	0.23	2.99	0.31	2.61	ND[c]	5.79	1.09	9.65	--[d]	5.31
Ethylbenzene[b]	0.25	7.90	0.71	7.22	0.64	16.73	1.26	11.13	11.19	13.28
Isopropylbenzene[b]	0.25	2.27	ND	2.08	ND	4.28	ND	--	--	--
n-Propylbenzene[b]	0.50	2.99	ND	2.81	ND	5.26	ND	--	--	--
m-Ethyltoluene[b]	0.38	12.38	0.91	12.15	0.94	21.98	1.28	13.60	12.93	17.17
o-Ethyltoluene[b]	0.38	4.01	ND	3.71	ND	7.45	ND	--	--	--
1,2,3-Trimethylbenzene[b]	0.25	5.32	0.30	4.85	0.28	11.51	0.59	17.73	17.34	19.51
1,2,4-Trimethlybenzene[b]	0.25	13.95	1.11	13.17	1.04	25.50	1.54	12.57	12.61	16.56
1,3,5-Trimethylbenzene[b]	0.65	6.83	ND	6.77	ND	12.68	ND	--	--	--
Aliphatic Hydrocarbons										
α-Pinene[b]	1.50	5.19	ND	5.41	ND	9.43	ND	--	--	--
n-Decane[b]	1.50	68.27	ND	62.13	ND	122.05	ND	--	--	--
n-Undecane[b]	1.50	68.51	ND	63.23	ND	112.52	ND	--	--	--
n-Dodecane[b]	1.50	31.42	ND	28.59	ND	53.54	ND	--	--	--
Chlorinated Hydrocarbons										
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	--	--	--
1,1,1-Trichloroethane	0.65	4.03	1.68	2.16	1.47	33.74	2.36	2.40	1.47	14.30
Trichloroethylene[b]	0.38	2.58	ND	2.54	ND	5.74	0.71	--	--	8.08
Tetrachloroethylene[b]	0.30	1.13	1.07	1.10	1.11	1.70	1.43	1.06	1.00	1.19
p-Dichlorobenzene[b]	0.50	2.17	ND	1.48	ND	5.55	ND	--	--	--
Oxygenated Hydrocarbons										
n-Butylacetate	0.90	ND	ND	ND	ND	2.05	ND	--	--	--
2-Ethoxyethyl acetate[b]	1.00	9.58	ND	9.58	ND	18.30	ND	--	--	--

[a]Quantifiable limit.
[b]Significant difference between indoor and outdoor mean concentrations at the 0.05 level.
[c]Below the QL.
[d]Not calculated.

1,1,1-trichloroethane and p-dichlorobenzene, there were only small differences between mean and median concentrations, indicating that the data were not skewed toward either high or low concentrations. A two-sample t-test performed using mean concentrations showed significant differences at the 0.05 level between indoor and outdoor concentrations for all of the aromatic hydrocarbons except benzene, all of the aliphatic hydrocarbons, trichloroethylene, p-dichlorobenzene, and 2-ethoxyethyl acetate. Highest mean indoor concentrations were found for the n-alkanes (31.42 to 68.51 ng/L), m,p-xylene (23.80 ng/L), 1,2,4-trimethylbenzene (13.95 ng/L), and m-ethyltoluene (12.38 ng/L). Highest mean indoor/outdoor concentration ratios were found for 1,2,3-trimethylbenzene (17.73), o-xylene (12.43), m-ethyltoluene (13.60), and 1,2,4-trimethylbenzene (12.57). Indoor/outdoor concentration ratios could not be calculated for the n-alkanes because outdoor levels were below the quantifiable limit.

Table 91 gives mean daytime and nighttime concentrations calculated for indoor locations only. Day/night concentration ratios were calculated and have also been included. In most cases, concentration differences between daytime and nighttime samples were small. Only m,p-xylene, ethylbenzene, α-pinene, trichloroethylene, and p-dichlorobenzene showed significant differences between daytime and nighttime concentrations. 1,1,1-Trichoroethane showed higher daytime concentrations. Styrene, α-pinene, trichloroethylene, and p-dichlorobenzene showed higher nighttime concentrations.

Trip 2. Concentration data for Trip 2 to the new nursing home (August, 1985), similar to that reported for Trip 1, are given in Tables 92 to 98.

Tables 92 to 95 give measured concentrations of volatile organics for each location by time period. Mean concentrations and standard deviations are also given. Concentrations of all the target volatiles that were above the quantifiable limit increased during day 2. On this day, it began raining and temperatures fell. Windows and doors that were open throughout the building during the previous monitoring periods were closed. Although it was not possible to obtain acceptable air exchange data for the building, one can assume that the air exchange rate decreased dramatically. Under these circumstances, organics emitted from indoor sources would accumulate and indoor concentrations would rise. To consider a second explanation, the area next to the monitoring area was being refurnished. Since different activities were performed each day, there could have been

TABLE 91. INDOOR DAY/NIGHT CONCENTRATIONS AND CONCENTRATION RATIO - NURSING HOME (NEW), TRIP 1

Compound	QL[a]	Mean Concentration (ng/L) Day	Night	Day/Night Ratio
Aromatic Hydrocarbons				
Benzene	0.25	1.71	1.68	1.02
m,p-Xylene[b]	0.23	18.37	29.23	0.63
o-Xylene	0.38	7.24	10.59	0.68
Styrene[b]	0.23	2.03	3.94	0.52
Ethylbenzene	0.25	7.69	8.12	0.95
Isopropylbenzene	0.25	2.15	2.39	0.90
n-Propylbenzene	0.50	2.80	3.18	0.88
m-Ethyltoluene	0.38	11.84	12.93	0.92
o-Ethyltoluene	0.38	3.70	4.32	0.86
1,2,3-Trimethylbenzene	0.25	4.33	6.32	0.69
1,2,4-Trimethylbenzene	0.25	12.91	15.00	0.86
1,3,5-Trimethylbenzene	0.65	6.14	7.51	0.82
Aliphatic Hydrocarbons				
α-Pinene[b]	1.50	3.63	6.76	0.54
n-Decane	1.50	58.76	77.78	0.76
n-Undecane	1.50	59.53	77.50	0.77
n-Dodecane	1.50	26.54	36.31	0.73
Chlorinated Hydrocarbons				
1,2-Dichloroethane	0.75	ND[c]	ND	--[d]
1,1,1-Trichloroethane	0.65	5.73	2.32	2.47
Trichloroethylene	0.38	1.81	3.35	0.54
Tetrachloroethylene	0.80	1.17	1.08	1.08
p-Dichlorobenzene	0.50	1.26	3.08	0.41
Oxygenated Hydrocarbons				
n-Butylacetate	0.90	ND	ND	--
2-Ethoxyethl acetate	1.00	9.44	9.71	0.97

[a]Quantifiable limit.
[b]Significant difference between daytime and nighttime mean concentration at the 0.05 level.
[c]Below the QL.
[d]Not calculated.

TABLE 92. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (NEW) , TRIP 2, DAY ROOM

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	1.70	1.98	0.86	1.81	2.47	5.38b	2.37	1.57
m,p-Xylene	0.23	3.68	3.36	3.62	8.46	9.38	6.65	5.86	2.68
o-Xylene	0.38	1.34	1.34	1.42	3.12	3.66	2.64	2.25	1.02
Styrene	0.23	1.10	0.69	1.18	1.75	2.31	1.58	1.44	0.57
Ethylbenzene	0.25	1.55	0.96	1.80	3.22	4.02	2.72	2.38	1.14
Isopropylbenzene	0.25	ND[c]	ND	0.37	0.58	0.82	0.33	0.41	0.26
n-Propylbenzene	0.50	ND	ND	0.60	1.05	1.34	0.79	0.76	0.39
m-Ethyltoluene	0.38	1.66	1.32	2.25	4.10	5.05	2.71	2.85	1.45
o-Ethyltoluene	0.38	0.43	0.41	0.57	1.05	1.29	0.88	0.77	0.36
1,2,3-Trimethylbenzene	0.25	0.41	0.36	0.49	0.88	1.34	0.87	0.73	0.38
1,2,4-Trimethlybenzene	0.25	1.56	1.44	1.76	3.49	3.90	2.93	2.51	1.07
1,3,5-Trimethylbenzene	0.65	ND	ND	0.80	1.45	1.68	1.12	1.03	0.47
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--[d]
n-Decane	1.50	ND	ND	3.69	7.36	7.33	5.27	4.26	2.91
n-Undecane	1.50	ND	ND	3.02	6.26	5.16	3.72	3.37	2.15
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	1.79	ND	ND	--
1,1,1-Trichloroethane	0.65	0.84	1.16b	0.72	2.44	3.17	1.27	1.60	0.98
Trichloroethylene	0.38	ND	ND	ND	0.99	0.85b	0.50b	0.45	0.40
Tetrachloroethylene	0.80	ND	ND	ND	1.08	2.63	ND	0.94	0.88
p-Dichlorobenzene	0.50	ND	ND	ND	ND	0.54	0.80	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	1.29	3.53	2.63	3.08	1.89	1.37
2-Ethoxyethyl acetate	1.00	ND	ND	ND	1.04	ND	ND	ND	--

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

[illegible] IN THE NURSING HOME [illegible]

	Concentration (ng/L)								
	[illegible]				Day [illegible]				
[illegible] Hydrocarbons									
[illegible]ene	0.25	[illegible]	1.69b	0.82	2.36	[illegible]	[illegible]	[illegible]	[illegible]
m,p-Xylene	0.22	3.67	3.13	2.74	7.62	[illegible]	[illegible]	4.78	[illegible]
o-Xylene	0.38	1.41	1.16	1.00	2.82	[illegible]	3.81	1.82	0.79
Styrene	0.23	1.14	0.64	0.76	1.11	[illegible]	[illegible]	[illegible]	0.23
[illegible]ylbenzene	0.25	[illegible]	1.10b	1.10	2.52	[illegible]	[illegible]	[illegible]	0.64
Isopropylbenzene	[illegible]	ND	ND	ND	0.40	0.38	ND	[illegible]	0.11
[illegible]benzene	0.35	ND	ND	ND	0.85	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]-Methylstoluene	0.38	1.76	1.32	1.30	3.41	[illegible]	[illegible]	[illegible]	0.98
p-Ethylstoluene	0.38	0.47	ND	ND	1.00	[illegible]	[illegible]	[illegible]	0.26
1,2,3-Trimethylbenzene	0.25	0.45	0.27	0.32	1.06	[illegible]	[illegible]	[illegible]	0.30
1,2,4-Trimethylbenzene	0.25	1.71	1.26	1.30	3.75	[illegible]	[illegible]	[illegible]	0.97
1,3,5-Trimethylbenzene	0.65	0.65	ND	ND	1.30	[illegible]	[illegible]	[illegible]	0.32
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--[d]
n-Decane	1.50	2.34	ND	2.17b	5.98	[illegible]	[illegible]	[illegible]	1.77
n-Undecane	1.50	2.80	ND	2.31	7.71	[illegible]	[illegible]	[illegible]	2.23
n-Dodecane	1.50	ND	ND	ND	2.13	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	2.11	ND	ND	--
1,1,1-Trichloroethane	0.65	0.90	1.57	0.83	3.22	[illegible]	1.83	1.91	1.05
Trichloroethylene	0.33	ND	ND	ND	1.35b	[illegible]	1.89b	0.68	0.77
Tetrachloroethylene	0.30	ND	ND	ND	1.54	2.54	ND	0.96	0.90
p-Dichlorobenzene	0.50	0.63	ND	ND	0.81	1.06	1.05	0.72	0.31
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	1.40	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL.
[d] Not calculated.

TABLE 94. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (NEW), TRIP 2, PATIENTS' ROOM (UNOCCUPIED)

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	3.08	1.56b	1.00b	2.61	2.22	5.15b	2.60	1.45
m,p-Xylene	0.23	4.34	2.60	3.08	8.79	8.21	5.37	5.40	2.60
o-Xylene	0.38	1.68	0.90	1.13	3.29	3.47	2.29	2.13	1.08
Styrene	0.23	1.51	0.65	1.01	1.77	1.69	1.77	1.40	0.47
Ethylbenzene	0.25	1.93	0.78	1.37	3.24	4.15	2.25	2.29	1.23
Isopropylbenzene	0.25	0.29	ND[c]	ND	0.52	0.52	0.32	0.34	0.15
n-Propylbenzene	0.50	0.67	ND	0.53	1.14	1.21	0.80	0.79	0.34
m-Ethyltoluene	0.38	2.43	1.25	1.81	4.03	4.73	2.62	2.81	1.33
o-Ethyltoluene	0.38	0.63	0.41b	0.48	1.12	1.38	0.94	0.83	0.38
1,2,3-Trimethylbenzene	0.25	0.59	0.29	0.43	1.14	1.53	1.11	0.85	0.48
1,2,4-Trimethlybenzene	0.25	2.26	1.28	1.70	4.07	4.63	3.20	2.86	1.34
1,3,5-Trimethylbenzene	0.65	0.80	ND	ND	1.36	1.56	0.96	0.96	0.43
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	1.72b	ND	ND	--[d]
n-Decane	1.50	3.04	3.62b	2.86	5.30	6.25	3.88	4.16	1.34
n-Undecane	1.50	3.66	ND	3.07	4.94	5.56	4.06	3.62	1.80
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	1.81	ND	ND	--
1,1,1-Trichloroethane	0.65	1.01	0.88	0.93	2.82	3.20	1.76	1.77	1.02
Trichloroethylene	0.38	ND	ND	0.49b	0.96	0.68	1.31b	0.59	0.50
Tetrachloroethylene	0.80	ND	ND	ND	1.49	2.61	ND	0.97	0.92
p-Dichlorobenzene	0.50	0.52	ND	ND	0.83	1.43	1.13	0.74	0.48
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	1.03b	1.99	1.49	1.07	1.12	0.58
2-Ethoxyethyl acetate	1.00	ND	ND	ND	1.79	1.76	1.36	1.20	0.53

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 95. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (NEW), TRIP 2, OUTDOORS

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.33	1.80b	2.51b	4.37b	4.06	5.32b	3.40	1.38
m,p-Xylene	0.23	3.39	2.09	2.94	6.09b	8.32	3.22	4.34	2.37
o-Xylene	0.38	1.26	0.76	1.02	2.51b	3.80	1.22	1.76	1.17
Styrene	0.23	0.90	0.48	0.83b	0.88b	1.03b	0.91b	0.84	0.19
Ethylbenzene	0.25	1.29	0.73b	0.74b	1.75b	3.41	0.94	1.48	1.02
Isopropylbenzene	0.25	ND[c]	ND	ND	ND	0.32	ND	ND	--[d]
n-Propylbenzene	0.50	ND	ND	ND	0.58b	0.82	ND	ND	--
m-Ethyltoluene	0.38	1.41	0.75b	1.12	2.50b	3.73	1.14	1.78	1.13
o-Ethyltoluene	0.38	0.38	ND	0.39	0.88	1.14	0.47	0.58	0.35
1,2,3-Trimethylbenzene	0.25	0.32	ND	0.30	0.73	1.16	0.26b	0.49	0.38
1,2,4-Trimethlybenzene	0.25	1.40	0.84	1.24	2.58	4.00	1.43	1.92	1.17
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	0.96	1.20	ND	0.65	0.35
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Undecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	2.32	ND	ND	--
1,1,1-Trichloroethane	0.65	0.86	0.83	0.76b	2.17b	3.86	ND	1.51	1.29
Trichloroethylene	0.38	ND	ND	ND	0.44b	0.47	ND	ND	--
Tetrachloroechylene	0.80	ND	ND	ND	1.30b	3.17	ND	1.01	1.12
p-Dichlorobenzene	0.50	ND	ND	ND	ND	1.15	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 96. AVERAGE CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (NEW), TRIP 2

Compound	QL[a]	Average Concentration (ng/L)							
		Day Room		Nurses' Station		Patients' Room (Unoccupied)		Outdoors	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.37	1.57	2.36	1.04	2.60	1.45	3.40	1.38
m,p-Xylene	0.23	5.86	2.68	4.74	2.03	5.40	2.60	4.34	2.37
o-Xylene	0.38	2.25	1.02	1.82	0.79	2.13	1.08	1.76	1.17
Styrene	0.23	1.44	0.57	0.97	0.21	1.40	0.47	0.84	0.19
Ethylbenzene	0.25	2.38	1.14	1.78	0.68	2.29	1.23	1.48	1.02
Isopropylbenzene	0.25	0.41	0.26	0.25	0.11	0.34	0.15	ND[b]	--[c]
n-Propylbenzene	0.50	0.76	0.39	0.56	0.24	0.79	0.34	ND	--
m-Ethyltoluene	0.38	2.85	1.45	2.19	0.98	2.81	1.33	1.78	1.13
o-Ethyltoluene	0.38	0.77	0.36	0.60	0.26	0.83	0.38	0.58	0.35
1,2,3-Trimethylbenzene	0.25	0.73	0.38	0.59	0.30	0.85	0.48	0.49	0.38
1,2,4-Trimethlybenzene	0.25	2.51	1.07	2.18	0.97	2.86	1.34	1.92	1.17
1,3,5-Trimethylbenzene	0.65	1.03	0.47	0.78	0.32	0.96	0.43	0.65	0.35
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	--	ND	--	ND	--	ND	--
n-Decane	1.50	4.26	2.91	3.00	1.77	4.16	1.34	ND	--
n-Undecane	1.50	3.37	2.15	3.44	2.28	3.62	1.80	ND	--
n-Dodecane	1.50	ND	--	ND	--	ND	--	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	--	ND	--	ND	--	ND	--
1,1,1-Trichloroethane	0.65	1.60	0.98	1.91	1.05	1.77	1.02	1.51	1.29
Trichloroethylene	0.38	0.45	0.40	0.68	0.77	0.59	0.50	ND	--
Tetrachloroethylene	0.80	0.94	0.88	0.96	0.90	0.97	0.92	1.01	1.12
p-Dichlorobenzene	0.50	ND	--	0.72	0.31	0.74	0.48	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	1.89	1.37	ND	--	1.12	0.58	ND	--
2-Ethoxyethyl acetate	1.00	ND	--	ND	--	1.20	0.53	ND	--

[a] Quantifiable limit.
[b] Below the QL.
[c] Not calculated.

TABLE 97. SUMMARY STATISTICS - NURSING HOME (NEW), TRIP 2

Compound	QL[a]	Concentration (ng/L) Mean Indoor	Mean Outdoor	Median Indoor	Median Outdoor	Max Indoor	Max Outdoor	Ratio Mean (In/Out)	Median (In/Out)	Max (In/Out)
Aromatic Hydrocarbons										
Benzene	0.25	2.44	3.40	2.29	3.28	5.38	5.32	0.72	0.70	1.01
m,p-Xylene	0.23	5.33	4.34	4.25	3.30	9.38	8.32	1.23	1.29	1.13
o-Xylene	0.38	2.07	1.76	1.74	1.24	3.66	3.80	1.18	1.41	0.96
Styrene[b]	0.23	1.27	0.84	1.13	0.89	2.31	1.03	1.51	1.28	2.24
Ethylbenzene	0.25	2.15	1.48	1.86	1.11	4.15	3.41	1.45	1.67	1.22
Isopropylbenzene[b]	0.25	0.33	ND[c]	0.30	ND	0.82	0.32	--[d]	--	2.56
n-Propylbenzene	0.50	0.70	ND	0.63	ND	1.34	0.82	--	--	1.63
m-Ethyltoluene	0.38	2.62	1.78	2.34	1.27	5.05	3.73	1.47	1.84	1.35
o-Ethyltoluene	0.38	0.73	0.58	0.64	0.43	1.38	1.14	1.26	1.50	1.21
1,2,3-Trimethylbenzene	0.25	0.72	0.49	0.62	0.31	1.53	1.16	1.47	2.02	1.32
1,2,4-Trimethlybenzene	0.25	2.52	1.92	2.26	1.41	4.63	4.00	1.31	1.60	1.16
1,3,5-Trimethylbenzene	0.65	0.92	0.65	0.80	ND	1.68	1.20	1.42	--	1.40
Aliphatic Hydrocarbons										
α-Pinene[b]	1.50	ND	ND	ND	ND	1.72	ND	--	--	--
n-Decane[b]	1.50	3.81	ND	3.59	ND	7.36	ND	--	--	--
n-Undecane[b]	1.50	3.48	ND	3.42	ND	7.71	ND	--	--	--
n-Dodecane	1.50	ND	ND	ND	ND	2.13	ND	--	--	--
Chlorinated Hydrocarbons										
1,2-Dichloroethane	0.75	ND	ND	ND	ND	2.11	2.32	--	--	0.91
1,1,1-Trichloroethane	0.65	1.76	1.51	1.42	0.84	3.22	3.86	1.17	1.68	0.83
Trichloroethylene[b]	0.38	0.57	ND	0.49	ND	1.89	0.47	--	--	4.02
Tetrachloroethylene	0.80	0.96	1.01	ND	ND	2.63	3.17	0.95	--	0.83
p-Dichlorobenzene	0.50	0.62	ND	0.53	ND	1.43	1.15	--	--	1.24
Oxygenated Hydrocarbons										
n-Butylacetate[b]	0.90	1.22	ND	0.95	ND	3.53	ND	--	--	--
2-Ethoxyethylacetate	1.00	ND	ND	ND	ND	1.79	ND	--	--	--

[a]Quantifiable limit.
[b]Significant difference between indoor and outdoor mean concentrations at the 0.05 level.
[c]Below the QL.
[d]Not calculated.

TABLE 98. INDOOR DAY/NIGHT CONCENTRATIONS AND CONCENTRATION RATIO - NURSING HOME (NEW), TRIP 2

Compound	QL[a]	Mean Concentration (ng/L) Day	Night	Day/Night Ratio
Aromatic Hydrocarbons				
Benzene	0.25	2.94	1.94	1.52
m,p-Xylene	0.23	5.57	5.09	1.09
o-Xylene	0.38	2.15	1.98	1.09
Styrene	0.23	1.22	1.31	0.93
Ethylbenzene	0.25	2.05	2.24	0.92
Isopropylbenzene	0.25	0.31	0.35	0.89
n-Propylbenzene	0.50	0.68	0.71	0.96
m-Ethyltoluene	0.38	2.52	2.71	0.93
o-Ethyltoluene	0.38	0.76	0.71	1.07
1,2,3-Trimethylbenzene	0.25	0.74	0.71	1.04
1,2,4-Trimethylbenzene	0.25	2.63	2.40	1.10
1,3,5-Trimethylbenzene	0.65	0.93	0.92	1.01
Aliphatic Hydrocarbons				
α-Pinene	1.50	ND[b]	ND	--[c]
n-Decane	1.50	4.04	3.57	1.13
n-Undecane	1.50	3.57	3.39	1.05
n-Dodecane	1.50	ND	ND	--
Chlorinated Hydrocarbons				
1,2-Dichloroethane	0.75	ND	ND	--
1,1,1-Trichloroethane	0.65	1.88	1.64	1.15
Trichloroethylene	0.38	0.78	ND	--
Tetrachloroethylene	0.80	ND	1.16	--
p-Dichlorobenzene	0.50	0.63	0.62	1.02
Oxygenated Hydrocarbons				
n-Butylacetate	0.90	1.38	1.05	1.31
2-Ethoxyethl acetate	1.00	ND	ND	--

[a]Quantifiable limit.
[b]Not detected.
[c]Not calculated.

some source of volatile organics introduced during day 2. Air mixing between this area and the monitoring area was possible. Increased outdoor concentrations could be due to a shift in prevailing winds during the time period starting with day 3 (see Appendix A).

Average concentration values plus standard deviations calculated for each monitoring location are summarized in Table 96. Comparisons of average concentrations at each indoor location using an F-test showed a uniform distribution of organics with no significant differences at the 0.05 level between monitoring locations.

Table 97 gives summary statistics for this second trip to the home. Although all indoor concentrations were low, highest levels were reported for m,p-xylene (5.33 ng/L), n-decane (3.81 ng/L), n-undecane (3.48 ng/L) and m-ethyltoluene (2.62 ng/L). Highest outdoor concentrations were reported for m,p-xylene (4.34 ng/L), benzene (3.40 ng/L), m-ethyltoluene (1.78 ng/L), and 1,1,1-trichloroethane (1.51 ng/L). With the exception of styrene, isopropylbenzene, n-decane, n-undecane, trichloroethylene, and n-butyl acetate, mean concentrations were not significantly different (0.05 level) between indoor and outdoor samples. This is not surprising since windows and doors were open during approximately one-half of the sampling period. For all compounds, concentration levels were higher indoors. Mean indoor/outdoor concentration ratios ranged from 0.72 for benzene to 1.51 for styrene. Only benzene and tetrachloroethylene had mean indoor/outdoor concentration ratios less than one.

Table 98 gives mean daytime and nighttime concentrations calculated for the indoor locations only. Most ratios ranged from 0.90 to 1.10. Benzene had the highest ratio at 1.52. None of the compounds showed a significantly difference at the 0.05 level between daytime and nighttime mean concentrations.

Comparison Between Trips. Data for volatile organic chemicals at the new nursing home are compared between trips in Table 99, which gives mean indoor and outdoor concentrations for each of the three trips, and Table 100, which gives mean indoor/outdoor concentration ratios by trip.

This nursing home was essentially completed in January, 1985. The first monitoring trip took place in late February of the same year with the building still unoccupied. The second monitoring trip took place in August, 1985, approximately five months after occupancy. One of the major

TABLE 99. MEAN INDOOR AND OUTDOOR CONCENTRATIONS FOR THE TWO TRIPS TO THE NEW NURSING HOME

Compound	Concentration (ng/L)			
	Trip 1		Trip 2	
	Indoor	Outdoor	Indoor	Outdoor
Aromatic Hydrocarbons				
Benzene	1.70	2.06	2.44	3.40
m,p-Xylene	23.80	2.38	5.33	4.34
o-Xylene	8.92	0.69	2.07	1.76
Styrene	2.99	0.31	1.27	0.84
Ethylbenzene	7.90	0.71	2.15	1.48
Isopropylbenzene	2.27	ND[a]	0.33	ND
n-Propylbenzene	2.99	ND	0.70	ND
m-Ethyltoluene	12.38	0.91	2.62	1.78
o-Ethyltoluene	4.01	ND	0.73	0.58
1,2,3-Trimethylbenzene	5.32	0.30	0.72	0.49
1,2,4-Trimethlybenzene	13.95	1.11	2.52	1.92
1,3,5-Trimethylbenzene	6.83	ND	0.92	0.65
Aliphatic Hydrocarbons				
α-Pinene	5.19	ND	ND	ND
n-Decane	68.27	ND	3.81	ND
n-Undecane	68.51	ND	3.48	ND
n-Dodecane	31.42	ND	ND	ND
Chlorinated Hydrocarbons				
1,2-Dichloroethane	ND	ND	ND	ND
1,1,1-Trichloroethane	4.03	1.68	1.76	1.51
Trichloroethylene	2.58	ND	0.57	ND
Tetrachloroethylene	1.13	1.07	0.96	1.01
p-Dichlorobenzene	2.17	ND	0.62	ND
Oxygenated Hydrocarbons				
n-Butylacetate	ND	ND	1.22	ND
2-Ethoxyethyl acetate	9.58	ND	ND	ND

[a]Below the quantifiable limit.

TABLE 100. MEAN INDOOR/OUTDOOR CONCENTRATION RATIOS FOR THE TWO TRIPS TO THE NEW NURSING HOME

Compound	Concentration Ratio	
	Trip 1	Trip 2
Aromatic Hydrocarbons		
Benzene	0.83	0.72
m,p-Xylene	10.00	1.23
o-Xylene	12.93	1.18
Styrene	9.65	1.51
Ethylbenzene	11.13	1.45
Isopropylbenzene	∞[a]	∞
n-Propylbenzene	∞	∞
m-Ethyltoluene	13.60	1.47
o-Ethyltoluene	--[b]	1.26
1,2,3-Trimethylbenzene	17.73	1.47
1,2,4-Trimethlybenzene	12.57	1.31
1,3,5-Trimethylbenzene	∞	1.42
Aliphatic Hydrocarbons		
α-Pinene	∞	--
n-Decane	∞	∞
n-Undecane	∞	∞
n-Dodecane	∞	--
Chlorinated Hydrocarbons		
1,2-Dichloroethane	--	--
1,1,1-Trichloroethane	2.40	1.17
Trichloroethylene	∞	∞
Tetrachloroethylene	1.06	0.95
p-Dichlorobenzene	∞	∞
Oxygenated Hydrocarbons		
n-Butylacetate	--	∞
2-Ethoxyethyl acetate	∞	--

[a]Not calculated. Detected in indoor but not outdoor samples.
[b]Not detected in indoor or outdoor samples.

differences between the first and second trip was the ventilation used in the building. In February most of the windows and doors were closed, and fairly low air exchange rates were found at all monitoring locations. However, in August, the weather was warm and, for at least half of the monitoring period, all outside windows and doors were open, giving very high air exchange rates.

Indoor air concentrations found during the first trip were higher (Table 99) with highest concentrations found for the n-alkanes [illegible] ng/L). Elevated indoor concentrations were also detected for [illegible] of the aromatic hydrocarbons including m-xylene, 1,2,4-trimethylbenzene, m-ethyltoluene, and 2-ethoxyethylacetate. As noted earlier, these elevated indoor concentrations are probably a result of high emissions [illegible] organics from new building materials.

Only benzene and n-butylacetate showed higher mean [illegible] tions during the second trip. The remaining compounds were [illegible] concentrations that were three to ten times lower in [illegible] monitoring trip. Largest decreases were seen for [illegible] indoor concentrations during the second trip are [illegible] first, lower emissions from building materials after aging and, second increased ventilation during the second monitoring trip.

Old Office--

Concentration data for volatile organics measured during field monitoring at the old office (August 1984) are given in Tables 10[illegible] Concentrations are reported for each location by time period. [illegible] tion averages and standard deviations for the entire 3-day period [illegible] given. No unusual occurrences of chemical emissions were observed during this monitoring trip. Likewise, data showed no discernible trends [illegible] the 3-day monitoring period.

The average concentration values from each of the preceding [illegible] are summarized in Table 105. Comparisons of average concentrations [illegible] indoor locations indicates generally highest concentrations measured in the fifth floor hallway followed in decreasing order by the third floor hallway and the eighth floor hallway. Concentration levels between monitoring locations were significantly different at the 0.05 level only for

TABLE 101. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (OLD), TRIP 1, 3RD FLOOR HALLWAY

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	3.97	3.76b	5.46	5.04	9.95	4.95	5.52	2.27
m,p-Xylene	0.23	20.89	25.09	22.89	30.77	38.17	24.13	26.99	6.40
o-Xylene	0.38	6.05	8.60	7.89	11.33	12.40	8.29	9.09	2.35
Styrene	0.23	1.91	1.53	2.55	1.90	4.00b	1.90b	2.30	0.90
Ethylbenzene	0.25	6.88	9.74	7.92	12.47	12.03	8.13	9.53	2.30
Isopropylbenzene	0.25	0.60	0.65	0.71	1.04	1.00	1.01b	0.84	0.20
n-Propylbenzene	0.50	0.95	0.98	1.30	1.57	1.74	1.52b	1.34	0.33
m-Ethyltoluene	0.38	3.82	4.84	6.51	7.83	9.21	7.26	6.58	1.98
o-Ethyltoluene	0.38	1.25	1.29	1.76	2.06	2.39	1.74	1.75	0.44
1,2,3-Trimethylbenzene	0.25	1.51	1.29	1.78	1.86	2.48	0.96b	1.65	0.52
1,2,4-Trimethlybenzene	0.25	5.01	4.96	5.52b	7.32	9.47	6.48	6.46	1.73
1,3,5-Trimethylbenzene	0.65	1.43	1.54	1.93	2.41	2.59	2.00	1.98	0.46
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
n-Decane	1.50	2.33	1.84	2.33	2.63	3.21	2.94b	2.55	0.49
n-Undecane	1.50	2.88	2.13	2.68	3.20	3.23	2.68b	2.80	0.41
n-Dodecane	1.50	ND	ND	ND	ND	ND	1.56	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	19.92	35.13	28.37	38.58	62.90	24.42	34.89	15.33
Trichloroethylene	0.38	0.76	0.99b	0.72b	0.45b	0.91	0.53b	0.73	0.21
Tetrachloroethylene	0.30	4.55	1.69	7.37	3.50	7.59	1.54b	4.37	2.66
p-Dichlorobenzene	0.50	0.64	ND	0.66	0.71	0.82	ND	0.61	0.17
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	4.02b	1.15	5.34b	1.82	3.36	1.04b	2.79	1.73
2-Ethoxyethyl acetate	1.00	2.89	3.84	3.69	4.15	ND	ND	2.49	1.84

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL.
[d] Not calculated.

TABLE 102. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (OLD) , TRIP 1, 5TH FLOOR HALLWAY

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	3.47	4.99	4.91	8.12	7.55	7.78	6.14	1.93
m,p-Xylene	0.23	16.82	55.99b	21.04	46.63	23.11	45.10	34.78	16.40
o-Xylene	0.38	5.07	19.66b	7.13	18.69	7.42	15.70	12.28	6.47
Styrene	0.23	1.11b	2.88	2.90b	3.07	3.00	3.03	2.67	0.77
Ethylbenzene	0.25	5.43	26.10b	7.06	22.43	7.61	18.27	14.48	8.91
Isopropylbenzene	0.25	0.50	1.12	0.68	1.27	0.67	1.20	0.91	0.33
n-Propylbenzene	0.50	ND[c]	1.20b	1.19	1.63	1.16	1.63	1.21	0.43
m-Ethyltoluene	0.38	3.85	5.75b	5.83	8.15	5.88	8.29	6.29	1.68
o-Ethyltoluene	0.38	0.51b	1.55b	1.62	2.22	1.55	2.17	1.60	0.62
1,2,3-Trimethylbenzene	0.25	4.71b	1.51b	1.68	2.15	1.69	1.96	2.28	1.21
1,2,4-Trimethlybenzene	0.25	4.71	6.18b	6.11	8.30	6.25	8.39	6.66	1.43
1,3,5-Trimethylbenzene	0.65	1.25	1.76b	1.71	2.42	1.75	2.38	1.88	0.45
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--[d]
n-Decane	1.50	1.67	2.42b	2.01	3.04	1.83	3.43	2.40	0.70
n-Undecane	1.50	2.27	4.00b	2.49	4.22	2.22	5.12	3.39	1.22
n-Dodecane	1.50	ND	ND	ND	1.55	ND	1.77	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	20.93	107.43b	29.70	78.86	60.69	70.26	61.31	32.08
Trichloroethylene	0.38	0.42	0.95	0.60	0.62	0.56b	1.24	0.73	0.30
Tetrachloroethylene	0.80	ND	3.12	6.85	5.05	5.96	3.98	4.16	2.44
p-Dichlorobenzene	0.50	0.70	0.65b	0.69	0.69	0.61	0.67	0.67	0.03
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	2.54	2.93	3.42	7.00	3.87	3.32	2.22
2-Ethoxyethyl acetate	1.00	2.18	ND	1.68	1.88b	ND	ND	ND	--

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 103. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (OLD), TRIP 1, 8TH FLOOR HALLWAY

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	7.07	2.52	5.42	4.61	6.65	4.82	5.18	1.63
m,p-Xylene	0.23	19.60	13.26b	21.66	20.75	23.33	18.74b	19.56	3.48
o-Xylene	0.38	5.90	4.42b	7.38	7.17	7.54	6.33b	6.46	1.18
Styrene	0.23	3.55b	0.95b	3.03b	1.21	2.79	1.21	2.12	1.13
Ethylbenzene	0.25	6.66	4.48b	7.19	7.01	7.45	5.81b	6.43	1.11
Isopropylbenzene	0.25	0.58	0.40b	0.66	0.68	0.66	0.76b	0.62	0.12
n-Propylbenzene	0.50	0 96	0.74b	1.16	1.22	1.23	1.29b	1.10	0.21
m-Ethyltoluene	0.38	4.52	3.91b	5.87	6.34	5.07	6.41b	5.35	1.02
o-Ethyltoluene	0.38	1.23	1.07b	1.59	1.62	1.61	1.53b	1.44	0.23
1,2,3-Trimethylbenzene	0.25	1.96	1.05b	1.55	1.39	1.65	1.21	1.47	0.33
1,2,4-Trimethlybenzene	0.25	4.95	4.67b	6.16	6.11	6.62	5.76b	5.71	0.76
1,3,5-Trimethylbenzene	0.65	1.37	1.28b	1.73	1.85	1.83	1.75b	1.64	0.25
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
n-Decane	1.50	2.19b	ND	2.03	1.52b	2.07b	2.00b	1.84	0.37
n-Undecane	1.50	2.84b	1.91b	2.89	2.04b	2.88b	1.69b	2.38	0.55
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	16.75b	10.34	26.94	17.63	74.55	14.16	26.73	24.07
Trichloroethylene	0.38	0.40b	ND	0.48b	ND	0.54b	0.40b	ND	--
Tetrachloroethylene	0.30	2.71b	1.39b	6.74	2.77	5.36	1.23	3.37	2.22
p-Dichlorobenzene	0.50	0.65	ND	0.61	0.55	0.58	ND	0.53	0.11
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	2.19	ND	3.18b	1.49	2.06	1.08b	1.79	0.88
2-Ethoxyethyl acetate	1.00	ND	2.41b	3.30	3.68	ND	ND	1.57	1.76

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 104. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (OLD) , TRIP 1, OUTDOORS

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	6.11	4.16	7.81	5.49	10.50	5.62	6.62	2.24
m,p-Xylene	0.23	11.86	9.28	21.79	11.09	18.67	15.13b	14.64	4.83
o-Xylene	0.38	3.54	3.39	8.05	4.08	6.78	5.61b	5.24	1.90
Styrene	0.23	1.55b	0.82	1.83	0.79	1.67	0.84	1.25	0.48
Ethylbenzene	0.25	3.81	2.85	7.23	3.50	5.88	4.54b	4.64	1.64
Isopropylbenzene	0.25	0.33	ND	0.75	0.40	0.63	0.46b	0.46	0.20
n-Propylbenzene	0.50	0.88	0.78	1.96	0.97	1.66	1.19	1.24	0.47
m-Ethyltoluene	0.38	4.43	4.07	9.96	4.48	7.71	6.60b	6.21	2.33
o-Ethyltoluene	0.38	1.21	1.11	2.72	1.41	2.49	1.67b	1.77	0.68
1,2,3-Trimethylbenzene	0.25	1.71	1.18	2.49	1.27	2.41	1.58b	1.77	0.56
1,2,4-Trimethlybenzene	0.25	4.63	4.74	10.13	5.69	9.55	7.21b	6.99	2.40
1,3,5-Trimethylbenzene	0.65	1.37	1.35	3.11	1.61	2.81	1.93b	2.03	0.76
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
n-Decane	1.50	ND	ND	ND	ND	2.10	ND	ND	--
n-Undecane	1.50	ND	ND	ND	ND	1.61	ND	ND	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	0.69b	1.33	14.05	4.65	5.71	3.43	4.98	4.84
Trichloroethylene	0.38	ND	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	2.03	1.03	7.58	2.51	4.68	1.56	3.23	2.47
p-Dichlorobenzene	0.50	ND	ND	ND	0.62	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	2.68b	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL.
[d] Not calculated.

TABLE 105. AVERAGE CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE (OLD), TRIP 1

		Average Concentration (ng/L)							
		3rd Floor Hallway		5th Floor Hallway		8th Floor Hallway		Outdoors	
Compound	QL[a]	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	5.52	2.27	6.14	1.93	5.18	1.63	6.62	2.24
m,p-Xylene	0.23	26.99	6.40	34.78	16.40	19.56	3.48	14.64	4.83
o-Xylene	0.38	9.09	2.35	12.28	6.47	6.46	1.18	5.24	1.90
Styrene	0.23	2.30	0.90	2.67	0.77	2.12	1.13	1.25	0.48
Ethylbenzene	0.25	9.53	2.30	14.48	8.91	6.43	1.11	4.64	1.64
Isopropylbenzene	0.25	0.84	0.20	0.91	0.33	0.62	0.12	0.46	0.20
n-Propylbenzene	0.50	1.34	0.33	1.21	0.43	1.10	0.21	1.24	0.47
m-Ethyltoluene	0.38	6.58	1.98	6.29	1.68	5.35	1.02	6.21	2.33
o-Ethyltoluene	0.38	1.75	0.44	1.60	0.62	1.44	0.23	1.77	0.68
1,2,3-Trimethylbenzene	0.25	1.65	0.52	2.28	1.21	1.47	0.33	1.77	0.56
1,2,4-Trimethlybenzene	0.25	6.46	1.73	6.66	1.43	5.71	0.76	6.99	2.40
1,3,5-Trimethylbenzene	0.65	1.98	0.46	1.88	0.45	1.64	0.25	2.03	0.76
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND[b]	--[c]	ND	--	ND	--	ND	--
n-Decane	1.50	2.55	0.49	2.40	0.70	1.84	0.37	ND	--
n-Undecane	1.50	2.80	0.41	3.39	1.22	2.38	0.55	ND	--
n-Dodecane	1.50	ND	--	ND	--	ND	--	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	--	ND	--	ND	--	ND	--
1,1,1-Trichloroethane	0.65	34.89	15.33	61.31	32.08	26.73	24.07	4.98	4.84
Trichloroethylene (1,2;2,3)[d]	0.38	0.73	0.21	0.73	0.30	ND	--	ND	--
Tetrachloroethylene	0.30	4.37	2.66	4.16	2.44	3.37	2.22	3.23	2.47
p-Dichlorobenzene	0.50	0.61	0.17	0.67	0.03	0.53	0.11	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	2.79	1.73	3.32	2.22	1.79	0.88	ND	--
2-Ethoxyethyl acetate	1.00	2.49	1.84	ND	--	1.57	1.76	ND	--

[a] Quantifiable limit.
[b] Below the QL.
[c] Not calculated.
[d] Significant difference (0.05 level) found between concentration pairs
1 = 3rd floor hallway
2 = 5th floor hallway
3 = 8th floor hallway

trichloroethylene. This difference could not be explained based on information collected at the building during field monitoring.

Table 106 gives summary statistics calculated for this trip to the old office. Mean, median, and maximum concentration values were determined. These statistics are given for indoor and outdoor samples separately. Indoor/outdoor concentration ratios for the mean, median, and maximum concentrations have also been calculated. Results show only small differences between mean and median concentrations and indicate that the data are not skewed toward either high or low concentration values; an exception is ethylbenzene, which showed higher mean values. 1,1,1-Trichloroethane (40.98 ng/L), m,p-xylene (27.11 ng/L), and ethylbenzene (10.15 ng/L) showed highest mean indoor concentrations. m,p-Xylene (14.64 ng/L), 1,2,4-trimethylbenzene (6.99 ng/L), and benzene (6.62 ng/L) gave highest outdoor concentrations. A two sample t-test performed using the mean concentration values showed significant differences (0.05 level) between indoor and outdoor concentrations for m,p-xylene, o-xylene, styrene, ethylbenzene, isopropylbenzene, n-decane, n-undecane, 1,1,1-trichloroethane, trichloroethylene, p-dichlorobenzene, and 2-ethoxyethylacetate. For all compounds, indoor concentrations were higher. 1,1,1-Trichloroethane (8.23) showed the highest mean indoor/outdoor concentration ratio.

Table 107 lists mean daytime and nighttime concentrations measured at the indoor sampling locations. Day/night concentration ratios are also given. The day/night concentration ratios were highest for tetrachloroethylene (1.94), n-butylacetate (1.77), 1,2,3-trimethylbenzene (1.42), and p-dichlorobenzene (1.20), although only tetrachloroethylene and p-dichlorobenzene showed significant differences (0.05 level) between daytime and nighttime concentrations. In this building, the ventilation system was turned off at night. Under these conditions, one would expect nighttime concentrations to be higher (i.e., day/night ratios less than 1.00) for constantly emitting sources. Only when there are sources specific to daytime use would daytime concentrations be expected to be higher than nighttime levels.

Old Nursing Home--

Concentration data for volatile organics measured during field monitoring at the old nursing home are given in Tables 108 to 114.

TABLE 106. SUMMARY STATISTICS - OFFICE (OLD), TRIP 1

Compound	QL[a]	Concentration (ng/L) Mean Indoor	Mean Outdoor	Median Indoor	Median Outdoor	Max Indoor	Max Outdoor	Ratio Mean (In/Out)	Median (In/Out)	Max (In/Out)
Aromatic Hydrocarbons										
Benzene	0.25	5.61	6.62	5.01	5.86	9.95	10.50	0.85	0.86	0.95
m,p-Xylene[b]	0.23	27.11	14.64	23.00	13.49	55.99	21.79	1.85	1.70	2.57
o-Xylene[b]	0.38	9.28	5.24	7.48	4.84	19.66	8.05	1.77	1.54	2.44
Styrene[b]	0.23	2.36	1.25	2.67	1.19	4.00	1.83	1.89	2.23	2.19
Ethylbenzene[b]	0.25	10.15	4.64	7.53	4.17	26.10	7.23	2.19	1.80	3.61
Isopropylbenzene[b]	0.25	0.79	0.46	0.68	0.43	1.27	0.75	1.72	1.58	1.69
n-Propylbenzene	0.50	1.22	1.24	1.21	1.08	1.74	1.96	0.98	1.12	0.89
m-Ethyltoluene	0.38	6.07	6.21	5.87	5.54	9.21	9.96	0.98	1.06	0.92
o-Ethyltoluene	0.38	1.60	1.77	1.60	1.54	2.39	2.72	0.90	1.04	0.88
1,2,3-Trimethylbenzene	0.25	1.80	1.77	1.66	1.64	4.71	2.49	1.02	1.01	1.89
1,2,4-Trimethlybenzene	0.25	6.28	6.99	6.13	6.45	9.47	10.13	0.90	0.95	0.93
1,3,5-Trimethylbenzene	0.65	1.83	2.03	1.75	1.77	2.59	3.11	0.90	0.99	0.83
Aliphatic Hydrocarbons										
α-Pinene	1.50	ND[c]	ND	ND	ND	ND	ND	--[d]	--	--
n-Decane[b]	1.50	2.26	ND	2.13	ND	3.43	2.10	--	--	1.63
n-Undecane[b]	1.50	2.85	ND	2.76	ND	5.12	1.61	--	--	3.18
n-Dodecane	1.50	ND	ND	ND	ND	1.77	ND	--	--	--
Chlorinated Hydrocarbons										
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	--	--	--
1,1,1-Trichloroethane[b]	0.65	10.98	4.98	29.03	4.04	107.43	14.05	8.23	7.19	7.65
Trichloroethylene[b]	0.38	0.61	ND	0.55	ND	1.24	ND	--	--	--
Tetrachloroethylene	0.80	3.97	3.23	3.74	2.27	7.59	7.58	1.23	1.65	1.00
p-Dichlorobenzene[b]	0.50	0.60	ND	0.64	ND	0.82	0.62	--	--	1.32
Oxygenated Hydrocarbons										
n-Butylacetate[b]	0.90	2.63	ND	2.36	ND	7.00	2.68	--	--	2.61
2-Ethoxyethyl acetate[b]	1.00	1.67	ND	1.78	ND	4.15	ND	--	--	--

[a] Quantifiable limit.
[b] Significant difference between indoor and outdoor mean concentrations at the 0.05 level.
[c] Below the QL.
[d] Not calculated.

TABLE 107. INDOOR DAY/NIGHT CONCENTRATIONS AND CONCENTRATION RATIO - OFFICE (OLD), TRIP 1

Compound	QL[a]	Mean Concentration (ng/L) Day	Night	Day/Night Ratio
Aromatic Hydrocarbons				
Benzene	0.25	6.05	5.18	1.17
m,p-Xylene	0.23	23.06	31.16	0.74
o-Xylene	0.38	7.42	11.13	0.67
Styrene	0.23	2.76	1.96	1.41
Ethylbenzene	0.25	7.58	12.72	0.60
Isopropylbenzene	0.25	0.67	0.90	0.74
n-Propylbenzene	0.50	1.13	1.31	0.86
m-Ethyltoluene	0.38	5.62	6.53	0.86
o-Ethyltoluene	0.38	1.50	1.69	0.89
1,2,3-Trimethylbenzene	0.25	2.11	1.49	1.42
1,2,4-Trimethylbenzene	0.25	6.09	6.46	0.94
1,3,5-Trimethylbenzene	0.65	1.73	1.93	0.90
Aliphatic Hydrocarbons				
α-Pinene	1.50	ND[b]	ND	--[c]
n-Decane	1.50	2.19	2.34	0.94
n-Undecane	1.50	2.71	3.00	0.90
n-Dodecane	1.50	ND	ND	--
Chlorinated Hydrocarbons				
1,2-Dichloroethane	0.75	ND	ND	--
1,1,1-Trichloroethane	0.65	37.86	44.09	0.86
Trichloroethylene	0.38	0.60	0.62	0.97
Tetrachloroethylene[d]	0.80	5.24	2.70	1.94
p-Dichlorobenzene[d]	0.50	0.66	0.55	1.20
Oxygenated Hydrocarbons				
n-Butylacetate	0.90	3.36	1.90	1.77
2-Ethoxyethl acetate	1.00	1.53	1.81	0.85

[a]Quantifiable limit.
[b]Below the QL.
[c]Not calculated.
[d]Significant difference between daytime and nighttime mean concentration at the 0.05 level.

TABLE 108. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (OLD) , TRIP 1, TV LOUNGE

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	3.31b	2.94	2.92	2.57	2.57b	5.92b	3.37	1.28
m,p-Xylene	0.23	3.18	2.01	2.26	2.00	3.22	3.94b	2.77	0.80
o-Xylene	0.38	0.89b	0.61	0.80	0.70	1.07	1.40b	0.91	0.29
Styrene	0.23	1.22	1.14	0.76	0.85	1.55	2.48b	1.33	0.63
Ethylbenzene	0.25	1.07	0.72	0.76	0.71	1.09	1.24	0.93	0.23
Isopropylbenzene	0.25	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	0.96	0.55	0.85	0.60	1.03	0.91	0.82	0.20
o-Ethyltoluene	0.38	ND	ND	ND	ND	ND	ND	ND	--
1,2,3-Trimethylbenzene	0.25	0.68b	0.49	0.81b	0.50	0.66	0.78b	0.65	0.14
1,2,4-Trimethlybenzene	0.25	1.05	0.52	0.87	0.62	1.08	0.88	0.84	0.23
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	1.57	1.52	2.05	1.57b	ND	ND	1.52	0.31
n-Undecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	3.86b	4.12b	1.72	1.38	7.51	2.03b	3.44	2.30
Trichloroethylene	0.33	ND	ND	ND	ND	ND	0.47b	ND	--
Tetrachloroethylene	0.80	ND	1.03	ND	ND	1.08	0.88	0.86	0.16
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenaced Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a]Quantifiable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 109. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (OLD), TRIP 1, UNOCCUPIED APARTMENT

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.86	2.65	2.71	2.17	2.53	2.05	2.50	0.32
m,p-Xylene	0.23	2.64	1.99	2.56	1.76	2.75	4.15	2.64	0.84
o-Xylene	0.38	0.91	0.67	0.93	0.62	1.08	1.49	0.95	0.32
Styrene	0.23	1.01	0.84	0.77	0.86	1.12	1.12	0.95	0.15
Ethylbenzene	0.25	0.89	0.68	0.80	0.64	0.90	1.21	0.85	0.20
Isopropylbenzene	0.25	ND[b]	ND	ND	ND	ND	ND	ND	--[c]
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	1.04	0.86	1.14	0.68	1.09	0.92	0.96	0.17
o-Ethyltoluene	0.38	ND	ND	0.45	ND	ND	ND	ND	--
1,2,3-Trimethylbenzene	0.25	0.59	0.98	1.40	0.83	0.64	0.70	0.86	0.30
1,2,4-Trimethlybenzene	0.25	1.13	1.27	1.71	0.79	1.24	1.03	1.20	0.31
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	2.00	2.83	2.88	2.51	ND	2.07	2.29	0.56
n-Undecane	1.50	1.63	3.10	2.63	1.85	ND	1.74	2.04	0.68
n-Dodecane	1.50	ND	1.70	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	1.87	2.09	1.38	1.32	2.55	1.69	1.82	0.46
Trichloroethylene	0.38	ND	ND	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	0.87	1.25	0.90	1.06	1.18	1.40	1.11	0.21
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	2.29[d]	0.94	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] Below the QL.
[c] Not calculated.
[d] % RSD > 30%.

TABLE 110. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (OLD) , TRIP 1, OCCUPIED APARTMENT

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	3.11	4.52	2.93	3.76	2.88	3.97	3.53	0.66
m,p-Xylene	0.23	2.91	3.23	2.59	2.96	3.28	5.71	3.45	1.14
o-Xylene	0.38	0.95	0.90	0.87	0.93	1.15	1.79	1.10	0.35
Styrene	0.23	1.17	1.36	0.80	1.22	1.47	1.68	1.28	0.30
Ethylbenzene	0.25	0.99	1.09	0.84	0.98	1.10	1.73	1.12	0.31
Isopropylbenzene	0.25	ND[b]	ND	ND	ND	ND	ND	ND	--[c]
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	0.95	0.77	0.91	0.80	1.03	1.14	0.93	0.14
o-Ethyltoluene	0.38	ND	ND	ND	ND	ND	ND	ND	--
1,2,3-Trimethylbenzene	0.25	0.58	0.66	0.90	1.38	0.65	0.95b	0.85	0.30
1,2,4-Trimethlybenzene	0.25	0.97	0.69	0.92	0.72	1.04	1.07	0.90	0.16
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	ND	2.11	2.22	2.24	ND	1.60	1.80	0.46
n-Undecane	1.50	ND	1.52	ND	ND	ND	ND	ND	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	3.69	4.73d	1.88	4.07	6.79	2.88d	4.01	1.68
Trichloroethylene	0.38	ND	0.41d	ND	ND	ND	ND	ND	--
Tetrachloroethylene	0.80	ND	1.37	ND	1.05	0.92	1.14	0.99	0.25
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] Below the QL.
[c] Not calculated.
[d] % RSD > 30%.

TABLE 111. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (OLD) , TRIP 1, OUTDOORS

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	NA[b]	2.30	2.95	2.10	4.30[c]	3.50[c]	3.03	0.90
m,p-Xylene	0.23	NA	ND[d]	1.84	0.42	2.42	2.31	1.44	1.06
o-Xylene	0.38	NA	ND	0.67	ND	0.93	0.84	0.53	0.40
Styrene	0.23	NA	0.26[c]	0.53[c]	0.27[c]	1.49[c]	0.64[c]	0.64	0.50
Ethylbenzene	0.25	NA	ND	0.60	ND	0.94	0.65	0.51	0.33
Isopropylbenzene	0.25	NA	ND	ND	ND	ND	ND	ND	--[e]
n-Propylbenzene	0.50	NA	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	NA	ND	0.92	ND	0.89[c]	ND	0.44	0.43
o-Ethyltoluene	0.38	NA	ND	ND	ND	0.52[c]	ND	ND	--
1,2,3-Trimethylbenzene	0.25	NA	0.34	0.78[c]	0.28	0.69	1.78[c]	0.77	0.60
1,2,4-Trimethlybenzene	0.25	NA	ND	0.98	ND	0.84[c]	ND	0.43	0.44
1,3,5-Trimethylbenzene	0.65	NA	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	NA	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	NA	ND	ND	ND	ND	ND	ND	--
n-Undecane	1.50	NA	ND	ND	ND	ND	ND	ND	--
n-Dodecane	1.50	NA	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	NA	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	NA	1.49	1.36	1.01	1.15	1.41	1.28	0.20
Trichloroethylene	0.38	NA	ND	ND	ND	ND	ND	ND	--
Tetrachloroechylene	0.30	NA	ND	ND	ND	ND	ND	ND	--
p-Dichlorobenzene	0.50	NA	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	NA	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	NA	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] Samples not analyzed.
[c] % RSD > 30%.
[d] Below the quantifiable limit.
[e] Not calculated.

TABLE 112. AVERAGE CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE NURSING HOME (OLD) . TRIP 1

Compound	QL[a]	Average Concentration (ng/L)							
		TV Lounge		Unoccupied Apartment		Occupied Apartment		Outdoors	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	3.37	1.28	2.50	0.32	3.53	0.66	3.03	0.90
m,p-Xylene	0.23	2.77	0.80	2.64	0.84	3.45	1.14	1.44	1.06
o-Xylene	0.38	0.91	0.29	0.95	0.32	1.10	0.35	0.53	0.40
Styrene	0.23	1.33	0.63	0.95	0.15	1.28	0.30	0.64	0.50
Ethylbenzene	0.25	0.93	0.23	0.85	0.20	1.12	0.31	0.51	0.33
Isopropylbenzene	0.25	ND[b]	--[c]	ND	--	ND	--	ND	--
n-Propylbenzene	0.50	ND	--	ND	--	ND	--	ND	--
m-Ethyltoluene	0.38	0.82	0.20	0.96	0.17	0.93	0.14	0.44	0.43
o-Ethyltoluene	0.38	ND	--	ND	--	ND	--	ND	--
1,2,3-Trimethylbenzene	0.25	0.65	0.14	0.86	0.30	0.85	0.30	0.77	0.60
1,2,4-Trimethlybenzene	0.25	0.84	0.23	1.20	0.31	0.90	0.16	0.43	0.44
1,3,5-Trimethylbenzene	0.65	ND	--	ND	--	ND	--	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	--	ND	--	ND	--	ND	--
n-Decane (1,2)[d]	1.50	1.52	0.31	2.29	0.56	1.80	0.46	ND	--
n-Undecane (1,2;2,3)	1.50	ND	--	2.04	0.68	ND	--	ND	--
n-Dodecane	1.50	ND	--	ND	--	ND	--	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	--	ND	--	ND	--	ND	--
1,1,1-Trichloroethane	0.65	3.44	2.30	1.82	0.46	4.01	1.68	1.28	0.20
Trichloroethylene	0.38	ND	--	ND	--	ND	--	ND	--
Tetrachloroethylene	0.80	0.86	0.16	1.11	0.21	0.99	0.25	ND	--
p-Dichlorobenzene	0.50	ND	--	ND	--	ND	--	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	--	ND	--	ND	--	ND	--
2-Ethoxyethyl acetate	1.00	ND	--	ND	--	ND	--	ND	--

[a] Quantifiable limit.
[b] Below the QL.
[c] Not calculated.
[d] Significant difference (0.05 level) found between concentration pairs
1 = TV Lounge
2 = Unoccupied Apartment
3 = Occupied Apartment

TABLE 113. SUMMARY STATISTICS - HOME (OLD) , TRIP 1

Compound	QL[a]	Concentration (ng/L) Mean Indoor	Mean Outdoor	Median Indoor	Median Outdoor	Max Indoor	Max Outdoor	Ratio Mean (In/Out)	Median (In/Out)	Max (In/Out)
Aromatic Hydrocarbons										
Benzene	0.25	3.13	3.03	2.90	2.95	5.92	4.30	1.03	0.98	1.38
m,p-Xylene[b]	0.23	2.95	1.44	2.83	1.84	5.71	2.42	2.05	1.54	2.36
o-Xylene[b]	0.38	0.99	0.53	0.92	0.67	1.79	0.93	1.87	1.37	1.92
Styrene[b]	0.23	1.19	0.64	1.13	0.53	2.48	1.49	1.86	2.13	1.66
Ethylbenzene[b]	0.25	0.97	0.51	0.94	0.60	1.73	0.94	1.90	1.57	1.84
Isopropylbenzene	0.25	ND[c]	ND	ND	ND	ND	ND	--[d]	--	--
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	--	--	--
m-Ethyltoluene	0.38	0.90	0.44	0.91	ND	1.14	0.92	2.05	--	1.24
o-Ethyltoluene	0.38	ND	ND	ND	ND	0.45	0.52	--	--	0.87
1,2,3-Trimethylbenzene[b]	0.25	0.79	0.77	0.69	0.69	1.40	1.78	1.03	1.00	0.79
1,2,4-Trimethlybenzene[b]	0.25	0.98	0.43	1.00	ND	1.71	0.98	2.28	--	1.74
1,3,5-Trimethylbenzene[b]	0.65	ND	ND	ND	ND	ND	ND	--	--	--
Aliphatic Hydrocarbons										
α-Pinene[b]	1.50	ND	ND	ND	ND	ND	ND	--	--	--
n-Decane	1.50	1.87	ND	1.80	ND	2.38	ND	--	--	--
n-Undecane	1.50	ND	ND	ND	ND	3.10	ND	--	--	--
n-Dodecane	1.50	ND	ND	ND	ND	1.70	ND	--	--	--
Chlorinated Hydrocarbons										
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	--	--	--
1,1,1-Trichloroethane[b]	0.65	3.09	1.28	2.32	1.36	7.51	1.49	2.41	1.71	5.04
Trichloroethylene	0.38	ND	ND	ND	ND	0.47	ND	--	--	--
Tetrachloroethylene[b]	0.80	0.99	ND	0.97	ND	1.40	ND	--	--	--
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	--	--	--
Oxygenated Hydrocarbons										
n-Butylacetate	0.90	ND	ND	ND	ND	2.29	ND	--	--	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	--	--	--

[a]Quantifiable limit.
[b]Significant difference between indoor and outdoor mean concentrations at the 0.05 level.
[c]Below the QL.
[d]Not calculated.

TABLE 114. INDOOR DAY/NIGHT CONCENTRATIONS AND CONCENTRATION RATIO - NURSING HOME (OLD), TRIP 1

Compound	QL[a]	Mean Concentration (ng/L) Day	Night	Day/Night Ratio
Aromatic Hydrocarbons				
Benzene	0.25	3.39	2.87	1.18
m,p-Xylene	0.23	3.08	2.82	1.09
o-Xylene	0.38	1.01	0.96	1.05
Styrene	0.23	1.28	1.10	1.16
Ethylbenzene	0.25	1.00	0.94	1.06
Isopropylbenzene	0.25	ND[b]	ND	--[c]
n-Propylbenzene	0.50	ND	ND	--
m-Ethyltoluene[d]	0.38	0.80	1.00	0.80
o-Ethyltoluene	0.38	ND	ND	--
1,2,3-Trimethylbenzene	0.25	0.81	0.77	1.05
1,2,4-Trimethylbenzene[d]	0.25	0.84	1.11	0.76
1,3,5-Trimethylbenzene	0.65	ND	ND	--
Aliphatic Hydrocarbons				
α-Pinene	1.50	ND	ND	--
n-Decane	1.50	1.97	1.76	1.12
n-Undecane	1.50	1.59	ND	--
n-Dodecane	1.50	ND	ND	--
Chlorinated Hydrocarbons				
1,2-Dichloroethane	0.75	ND	ND	--
1,1,1-Trichloroethane	0.65	2.70	3.47	0.78
Trichloroethylene	0.38	ND	ND	--
Tetrachloroethylene[d]	0.80	1.11	0.87	1.28
p-Dichlorobenzene	0.50	ND	ND	--
Oxygenated Hydrocarbons				
n-Butylacetate	0.90	ND	ND	--
2-Ethoxyethylacetate	1.00	ND	ND	--

[a]Quantifiable limit.
[b]Below the QL.
[c]Not calculated.
[d]Significant difference between daytime and nighttime mean concentration at the 0.05 level.

Tables 108 to 111 give measured concentrations of volatile organics for each location by time period. Mean concentrations and standard deviations for the entire 3-day period are also given. No unusual occurrences of chemical emissions were observed indoors. Likewise, data showed no discernible trends over the 3-day monitoring period. Malathion was sprayed on trees shrubs and the lawn surrounding the building on the third day. This activity did not appear to increase outdoor levels of volatile organic compounds during that time period.

The average concentration values from each of the preceding tables are summarized in Table 112. Comparisons of average concentrations between indoor locations showed significant differences at the 0.05 level only for n-decane and n-undecane. Concentrations were highest in the unoccupied apartment.

Table 113 gives summary statistics calculated for this trip to the old nursing home. Mean, median, and maximum concentrations were determined. These statistics are given for indoor and outdoor samples separately. Indoor/outdoor ratios for the mean, median, and maximum concentrations have also been calculated. Results showed only small differences between mean and median concentrations indicating that the data were not skewed toward either high or low concentration values. 1,1,1-Trichloroethane was an exception showing higher mean concentrations.

Benzene (3.13 ng/L), 1,1,1-trichloroethane (3.09 ng/L), and m,p-xylene (2.95 ng/L) showed high indoor concentrations. The same three compounds also had highest outdoor concentrations (1.28 to 3.03 ng/L). A two sample t-test performed using the mean concentration values showed significant differences (0.05 level) between indoor and outdoor concentrations for the xylenes, styrene, ethylbenzene, 1,2,4-trimethylbenzene, n-decane, 1,1,1-trichloroethane, and tetrachloroethylene. In all cases, indoor concentrations were higher. 1,1,1-Trichloroethane (2.41) showed the highest indoor/outdoor concentration ratio.

Table 114 lists mean daytime and nighttime concentrations measured at the indoor sampling locations. Day/night concentration ratios are also given and ranged from 0.76 for 1,2,4-trimethylbenzene to 1.28 for tetrachloroethylene, indicating only small differences in daytime and nighttime concentrations for all targets with measurable levels. n-Ethyltoluene,

1,2,4-trimethylbenzene, and tetrachloroethylene showed significant differences between daytime and nighttime indoor concentrations. Only tetrachloroethylene gave higher daytime concentrations.

Old Office/School--

Concentration data for volatile organics measured during field monitoring at the old office/school are given in Tables 115 to 121.

Tables 115 to 118 give measured concentrations of volatile organics for each location by time period. Mean concentrations and standard deviations for the entire 3-day period are also given. The data showed several noticeable trends throughout the monitoring period. For example, the xylenes showed highest indoor concentrations during the first two monitoring periods, whereas n-decane and n-undecane showed highest indoor concentrations for the second and third monitoring periods. High levels of halogenated hydrocarbons were detected in the third floor occupied office throughout the monitoring period. Trichloroethylene concentrations were fairly steady throughout, whereas 1,1,1-trichloroethane and tetrachloroethylene showed highest concentrations during day 2 and night 3 of the monitoring period. The cause for any of these intermittent chemical emissions could not be pinpointed. There was some painting the day prior to monitoring in an area adjacent to the first floor renovated office and the second floor unoccupied offices. Xerox machines were in operation during each day near each of the sampling locations. General office activities took place in the third floor occupied area. "White-out" was used in this office during each daytime period and could be responsible for elevated levels of chlorinated solvents.

The average concentration values for each of the preceding tables are summarized in Table 119. Comparisons of average concentrations between indoor locations showed several interesting trends. Most of the aromatic hydrocarbons showed a uniform distribution with no significant difference at the 0.05 level between monitoring locations. The n-alkanes showed highest concentration at second floor unoccupied office, although this difference was significant only for n-dodecane. α-Pinene showed lowest levels at the first floor office. This would be expected since this office contained little furniture, which appears to be the major source of α-pinene in most buildings. In contrast, the third floor occupied office

TABLE 115. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE/SCHOOL (OLD) , TRIP 1, 1ST FLOOR RENOVATED OFFICE

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.90	4.88	NA[b]	5.73	3.12[c]	3.11	3.95	1.28
m,p-Xylene	0.23	10.72b	11.46	NA	6.47	4.33	3.20[c]	7.24	3.72
o-Xylene	0.38	4.05b	4.94	NA	2.60	1.70	1.31[c]	2.92	1.54
Styrene	0.23	0.75	2.32	NA	0.80	0.60	0.60	1.01	0.74
Ethylbenzene	0.25	2.80b	3.74	NA	2.08	1.35	1.04b	2.20	1.10
Isopropylbenzene	0.25	0.35	0.58	NA	0.28	ND[d]	ND	0.30	0.18
n-Propylbenzene	0.50	0.55	0.84	NA	ND	ND	ND	ND	--[e]
m-Ethyltoluene	0.38	2.48	3.76	NA	2.28	1.60	1.22[c]	2.27	0.98
o-Ethyltoluene	0.38	0.64	1.29	NA	0.76	0.58	0.41[c]	0.74	0.33
1,2,3-Trimethylbenzene	0.25	0.93	1.41	NA	0.90	0.60[c]	0.40[c]	0.85	0.38
1,2,4-Trimethlybenzene	0.25	3.02	4.01	NA	2.66	1.97	1.43[c]	2.62	0.99
1,3,5-Trimethylbenzene	0.65	0.78	2.06	NA	0.89	0.66	ND	0.97	0.63
Aliphatic Hydrocarbons									
α-Pinene	1.50	2.00	1.85	NA	1.74[c]	1.62[c]	ND	1.67	0.33
n-Decane	1.50	2.51	13.58	NA	3.45	2.99	1.93[c]	4.89	4.89
n-Undecane	1.50	2.26	10.61	NA	4.62	3.75	2.15[c]	4.68	3.47
n-Dodecane	1.50	ND	2.72	NA	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	NA	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	2.37	3.10	NA	3.58[c]	2.48	8.35[c]	3.98	2.49
Trichloroethylene	0.38	1.15	5.06	NA	2.96	2.04	2.84[c]	2.81	1.45
Tetrachloroethylene	0.80	1.28b	1.56	NA	1.86	ND	ND	1.21	0.53
p-Dichlorobenzene	0.50	ND	ND	NA	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	1.27[c]	NA	0.91[c]	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	NA	ND	ND	ND	ND	--

[a]Quantifiable limit.
[b]Samples not analyzed.
[c]% RSD > 30%.
[d]Below QL.
[e]Not calculated.

TABLE 116. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE/SCHOOL (OLD) , TRIP 1, 2ND FLOOR UNOCCUPIED OFFICE

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	2.34b	2.57	6.85	4.69b	3.76b	NA[c]	4.04	1.83
m,p-Xylene	0.23	14.30b	15.07	10.30	6.51	6.03	NA	10.44	4.22
o-Xylene	0.38	5.12	5.56	4.13	2.58	2.28	NA	3.93	1.47
Styrene	0.23	1.22	2.51	1.62	1.19	0.88	NA	1.48	0.63
Ethylbenzene	0.25	3.63	4.24	3.27	2.18	1.93	NA	3.05	0.98
Isopropylbenzene	0.25	0.45	0.78	0.47	0.30	0.28	NA	0.46	0.20
n-Propylbenzene	0.50	0.52	1.19	0.82	0.54	ND	NA	0.71	0.30
m-Ethyltoluene	0.38	2.41	5.30	3.87	2.64	2.21	NA	3.29	1.30
o-Ethyltoluene	0.38	0.57	0.53b	1.04	0.69	0.77	NA	0.72	0.20
1,2,3-Trimethylbenzene	0.25	1.37	2.22	1.71	1.15	1.00	NA	1.49	0.49
1,2,4-Trimethlybenzene	0.25	2.99	3.93	3.99	2.65	2.64	NA	3.24	0.67
1,3,5-Trimethylbenzene	0.65	0.82	2.79	1.76	1.16	1.02	NA	1.51	0.80
Aliphatic Hydrocarbons									
α-Pinene	1.50	2.33	3.14	4.48	2.72	3.44	NA	3.22	0.82
n-Decane	1.50	3.45	14.36	10.45	6.24	6.01	NA	8.10	4.31
n-Undecane	1.50	4.29	14.69	12.79	8.57	8.17	NA	9.70	4.10
n-Dodecane	1.50	1.73	4.16	4.49	3.37	2.79	NA	3.31	1.11
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND[d]	ND	ND	ND	ND	NA	ND	--[e]
1,1,1-Trichloroethane	0.65	2.54	2.64b	5.07	2.99	4.53	NA	3.55	1.17
Trichloroethylene	0.38	2.12	3.93b	7.38	3.14	4.31	NA	4.18	1.98
Tetrachloroethylene	0.80	1.70	1.62	1.30	1.82	1.18	NA	1.52	0.27
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	NA	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	1.23	1.38b	2.92	1.96b	1.08b	NA	1.71	0.75
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	NA	ND	--

[a] Quantifiable limit.
[b] RSD > 30%.
[c] Samples not analyzed.
[d] Below QL.
[e] Not calculated.

TABLE 117. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE/SCHOOL (OLD) , TRIP 1, 3RD FLOOR OCCUPIED OFFICE

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	4.42b	4.02	5.89	8.35b	3.04b	6.34b	5.34	1.91
m,p-Xylene	0.23	9.91	11.36	11.26	7.00	7.21	4.43	8.53	2.77
o-Xylene	0.38	3.91	4.53	4.79	2.73	2.83	1.83	3.44	1.16
Styrene	0.23	1.33	2.00	1.83	1.07	1.09	1.34b	1.44	0.39
Ethylbenzene	0.25	3.14	3.56	3.89	2.40	2.34	1.51	2.81	0.89
Isopropylbenzene	0.25	0.35	0.47	0.41	0.30	ND	ND	0.32	0.11
n-Propylbenzene	0.50	0.52	0.71	0.64	ND	ND	ND	0.50	0.16
m-Ethyltoluene	0.38	2.48	3.29	3.09	2.31	1.61	1.33	2.35	0.78
o-Ethyltoluene	0.38	0.78	1.02	0.97	0.73	0.53	0.47	0.75	0.22
1,2,3-Trimethylbenzene	0.25	0.88	1.16	1.22	0.89	0.62b	0.55	0.89	0.27
1,2,4-Trimethlybenzene	0.25	2.67	3.60	3.32	2.55	1.88	1.51	2.59	0.80
1,3,5-Trimethylbenzene	0.65	0.98	1.49	1.27	0.88	0.65	ND	0.97	0.36
Aliphatic Hydrocarbons									
α-Pinene	1.50	3.66	3.31	4.22	1.98	3.07	1.76b	3.00	0.96
n-Decane	1.50	4.51	9.58	7.10	3.64	3.78	2.12	5.12	2.73
n-Undecane	1.50	5.66	8.86	8.37	4.96	5.20	3.34	6.07	2.13
n-Dodecane	1.50	2.05	2.53	2.90	1.80	1.76	ND	2.09	0.53
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
1,1,1-Trichloroethane	0.65	14.91	13.39	16.36	31.92	39.19	17.63b	22.23	10.67
Trichloroethylene	0.38	26.29	25.20	24.37	18.80	26.74	17.91	23.22	3.87
Tetrachloroethylene	0.80	4.92	3.87	3.59	15.75	21.42	2.54	8.68	7.91
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	1.07	4.04	2.18	1.95b	1.30	1.12b	1.94	1.12
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a] Quantifiable limit.
[b] % RSD > 30%.
[c] Below the QL.
[d] Not calculated.

TABLE 118. CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE/SCHOOL (OLD) , TRIP 1, OUTDOORS

Compound	Concentration (ng/L)								
	QL[a]	Night 1	Day 1	Night 2	Day 2	Night 3	Day 3	Average	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	5.40b	5.44	4.93b	5.85b	5.07b	2.40b	4.85	1.24
m,p-Xylene	0.23	3.07	3.38	2.44	3.16	1.33	2.67	2.68	0.74
o-Xylene	0.38	1.17	1.29	0.88	1.15	0.55	1.06b	1.02	0.27
Styrene	0.23	0.24	0.56b	0.26	0.27	ND	0.38	0.31	0.15
Ethylbenzene	0.25	0.93	1.09	0.83	1.11	0.47	0.88	0.89	0.23
Isopropylbenzene	0.25	ND[c]	ND	ND	ND	ND	ND	ND	--[d]
n-Propylbenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
m-Ethyltoluene	0.38	1.27	1.48	1.11	1.37	0.59	1.16	1.16	0.31
o-Ethyltoluene	0.38	ND	0.41	ND	0.40	ND	ND	ND	--
1,2,3-Trimethylbenzene	0.25	0.29	0.41	0.27b	0.31	ND	0.27b	0.28	0.08
1,2,4-Trimethlybenzene	0.25	1.38	1.54	1.20	1.38	0.60	1.17	1.21	0.33
1,3,5-Trimethylbenzene	0.65	ND	ND	ND	ND	ND	ND	ND	--
Aliphatic Hydrocarbons									
α-Pinene	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Decane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Undecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
n-Dodecane	1.50	ND	ND	ND	ND	ND	ND	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	ND	--
1,1,1-Trichloroethane	0.65	1.66	1.00	4.36	2.90	1.25	1.71b	2.15	1.27
Trichloroethylene	0.38	0.45	0.42	0.64b	ND	ND	0.43b	0.39	0.18
Tetrachloroethylene	0.80	1.12	1.25	1.07	2.02	ND	1.22b	1.14	0.59
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	ND	ND	ND	ND	ND	ND	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	ND	--

[a]Quantitable limit.
[b]% RSD > 30%.
[c]Below the QL.
[d]Not calculated.

TABLE 119. AVERAGE CONCENTRATION OF VOLATILE ORGANICS FOUND IN THE OFFICE/SCHOOL (OLD), TRIP 1

		Average Concentration (ng/L)							
		1st Floor Renovated Office		2nd Floor Unoccupied Office		3rd Floor Occupied Office		Outdoors	
Compound	QL[a]	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Aromatic Hydrocarbons									
Benzene	0.25	3.95	1.28	4.04	1.83	5.34	1.91	4.85	1.24
m,p-Xylene	0.23	7.24	3.72	10.44	4.22	8.53	2.77	2.68	0.74
o-Xylene	0.38	2.92	1.54	3.93	1.47	3.44	1.16	1.02	0.27
Styrene	0.23	1.01	0.74	1.48	0.63	1.44	0.39	0.31	0.15
Ethylbenzene	0.25	2.20	1.10	3.05	0.98	2.81	0.89	0.89	0.23
Isopropylbenzene	0.25	0.30	0.18	0.46	0.20	0.32	0.11	ND	--
n-Propylbenzene	0.50	ND[b]	--[c]	0.71	0.30	0.50	0.16	ND	--
m-Ethyltoluene	0.38	2.27	0.98	3.29	1.30	2.35	0.78	1.16	0.31
o-Ethyltoluene	0.38	0.74	0.33	0.72	0.20	0.75	0.22	ND	--
1,2,3-Trimethylbenzene	0.25	0.85	0.38	1.49	0.49	0.89	0.27	0.28	0.08
1,2,4-Trimethlybenzene	0.25	2.62	0.99	3.24	0.67	2.59	0.80	1.21	0.33
1,3,5-Trimethylbenzene	0.65	0.97	0.63	1.51	0.80	0.97	0.36	ND	--
Aliphatic Hydrocarbons									
α-Pinene (1,2:1,3)[d]	1.50	1.67	0.33	3.22	0.82	3.00	0.96	ND	--
n-Decane	1.50	4.89	4.89	8.10	4.31	5.12	2.73	ND	--
n-Undecane	1.50	4.68	3.47	9.70	4.10	6.07	2.13	ND	--
n-Dodecane (1,2)	1.50	ND	--	3.31	1.11	2.09	0.53	ND	--
Chlorinated Hydrocarbons									
1,2-Dichloroethane	0.75	ND	--	ND	--	ND	--	ND	--
1,1,1-Trichloroethane (1,3;2,3)	0.65	3.98	2.49	3.55	1.17	22.23	10.67	2.15	1.27
Trichloroethylene (1,3;2,3)	0.38	2.81	1.45	4.18	1.98	23.22	3.87	0.35	0.18
Tetrachloroethylene	0.80	1.21	0.53	1.52	0.27	8.68	7.91	1.14	0.59
p-Dichlorobenzene	0.50	ND	--	ND	--	ND	--	ND	--
Oxygenated Hydrocarbons									
n-Butylacetate	0.90	ND	--	1.71	0.75	1.94	1.12	ND	--
2-Ethoxyethyl acetate	1.00	ND	--	ND	--	ND	--	ND	--

[a]Quantifiable limit.
[b]Below the QL.
[c]Not calculated.
[d]Significant difference (0.05 level) found between concentration pairs
1 = 1st Floor Office
2 = 2nd Floor Office
3 = 3rd Floor Office.

TABLE 120. SUMMARY STATISTICS - OFFICE/SCHOOL (OLD), TRIP 1

Compound	QL[a]	Concentration (ng/L) Mean Indoor	Mean Outdoor	Median Indoor	Median Outdoor	Max Indoor	Max Outdoor	Ratio Mean (In/Out)	Ratio Median (In/Out)	Ratio Max (In/Out)
Aromatic Hydrocarbons										
Benzene	0.25	4.50	4.85	4.22	5.23	8.35	5.85	0.93	0.81	1.43
m,p-Xylene[b]	0.23	8.72	2.68	8.56	2.87	15.07	3.38	3.25	2.98	4.46
o-Xylene[b]	0.38	3.43	1.02	3.37	1.10	5.56	1.29	3.36	3.05	4.31
Styrene[b]	0.23	1.32	0.31	1.20	0.26	2.51	0.56	4.26	4.55	4.48
Ethylbenzene[b]	0.25	2.69	0.89	2.60	0.90	4.24	1.11	3.02	2.87	3.82
Isopropylbenzene[b]	0.25	0.36	ND[c]	0.32	ND	0.78	ND	--[d]	--	--
n-Propylbenzene[b]	0.50	0.56	ND	0.52	ND	1.19	ND	--	--	--
m-Ethyltoluene[b]	0.38	2.62	1.16	2.44	1.21	5.30	1.48	2.26	2.01	3.58
o-Ethyltoluene[b]	0.38	0.74	ND	0.71	ND	1.29	0.41	--	--	3.15
1,2,3-Trimethylbenzene[b]	0.25	1.06	0.28	0.96	0.28	2.22	0.41	3.79	3.45	5.41
1,2,4-Trimethlybenzene[b]	0.25	2.80	1.21	2.66	1.29	4.01	1.54	2.31	2.07	2.60
1,3,5-Trimethylbenzene[b]	0.65	1.14	ND	0.93	ND	2.79	ND	--	--	--
Aliphatic Hydrocarbons										
α-Pinene[b]	1.50	2.65	ND	2.52	ND	4.48	ND	--	--	--
n-Decane[b]	1.50	5.98	ND	4.14	ND	14.36	ND	--	--	--
n-Undecane[b]	1.50	6.77	ND	5.43	ND	14.69	ND	--	--	--
n-Dodecane[b]	1.50	2.23	ND	1.92	ND	4.49	ND	--	--	--
Chlorinated Hydrocarbons										
1,2-Dichloroethane	0.75	ND	ND	ND	ND	ND	ND	--	--	--
1,1,1-Trichloroethane[b]	0.65	10.69	2.15	4.80	1.68	39.19	4.36	4.97	2.85	8.99
Trichloroethylene[b]	0.38	10.89	0.39	4.68	0.42	26.74	0.64	27.92	11.02	41.78
Tetrachloroethylene	0.80	4.11	1.14	1.76	1.17	21.42	2.02	3.61	1.50	10.60
p-Dichlorobenzene	0.50	ND	ND	ND	ND	ND	ND	--	--	--
Oxygenated Hydrocarbons										
n-Butylacetate[b]	0.90	1.48	ND	1.25	ND	4.04	ND	--	--	--
2-Ethoxyethyl acetate	1.00	ND	ND	ND	ND	ND	ND	--	--	--

[a] Quantifiable limit.
[b] Significant difference between indoor and outdoor mean concentrations at the 0.05 level.
[c] Below the QL.
[d] Not calculated.

TABLE 121. INDOOR DAY/NIGHT CONCENTRATIONS AND CONCENTRATION RATIO - SCHOOL (OLD), TRIP 1

Compound	QL[a]	Mean Concentration (ng/L) Day	Night	Day/Night Ratio
Aromatic Hydrocarbons				
Benzene	0.25	4.96	4.04	1.23
m,p-Xylene	0.23	8.19	9.26	0.88
o-Xylene	0.38	3.26	3.60	0.91
Styrene	0.23	1.48	1.17	1.26
Ethylbenzene	0.25	2.59	2.79	0.93
Isopropylbenzene	0.25	0.38	0.34	1.12
n-Propylbenzene	0.50	0.59	0.53	1.11
m-Ethyltoluene	0.38	2.77	2.47	1.12
o-Ethyltoluene	0.38	0.74	0.74	1.00
1,2,3-Trimethylbenzene	0.25	1.09	1.04	1.05
1,2,4-Trimethylbenzene	0.25	2.79	2.81	0.99
1,3,5-Trimethylbenzene	0.65	1.29	0.99	1.30
Aliphatic Hydrocarbons				
α-Pinene	1.50	2.21	3.10	0.71
n-Decane	1.50	6.86	5.10	1.35
n-Undecane	1.50	7.23	6.31	1.15
n-Dodecane	1.50	2.26	2.20	1.03
Chlorinated Hydrocarbons				
1,2-Dichloroethane	0.75	ND[b]	ND	--[c]
1,1,1-Trichloroethane	0.65	10.45	10.93	0.96
Trichloroethylene	0.38	9.98	11.80	0.85
Tetrachloroethylene	0.80	3.72	4.50	0.83
p-Dichlorobenzene	0.50	ND	ND	--
Oxygenated Hydrocarbons				
n-Butylacetate	0.90	1.63	1.33	1.23
2-Ethoxyethyl acetate	1.00	ND	ND	--

[a]Quantifiable limit.
[b]Below the QL.
[c]Not calculated.

showed much higher levels of 1,1,1-trichloroethene, trichloroethylene, and tetrachloroethylene than the other indoor locations. Again this appears to be due to general office activities taking place at that location. The first floor renovated office generally had the lowest mean concentrations compared to other indoor monitoring locations. This was a surprise since some painting and building activities had recently occurred at this monitoring site and we expected to find high localized concentrations of volatile organics.

Table 120 gives summary statistics for this trip to the old office/-school. Results for the aromatic hydrocarbons showed small differences between mean and median concentration. The n-alkane and halogenated hydrocarbons, however, showed higher mean concentrations. Apparently, higher concentrations of the compounds detected at individual monitoring locations was responsible for skewing the mean value upward. Highest indoor mean concentrations were detected for trichloroethylene (10.89 ng/L), 1,1,1-trichloroethane (10.69 ng/L), and m,p-xylene (8.72 ng/L). Highest indoor median concentrations were detected for m,p-xylene (8.56 ng/L), n-undecane (5.43 ng/L), and 1,1,1-trichloreothane (4.80 ng/L). Highest outdoor mean concentrations were reported for benzene (4.85 ng/L). A two sample t-test performed using the mean concentration values showed significant differences (0.05 level) between indoor and outdoor concentrations for all compounds that were detected indoors, with the exception of benzene and tetrachloroethylene. In all cases, indoor concentrations were greater. Highest mean indoor/outdoor concentration ratios were calculated for trichloroethylene (27.92), 1,1,1-trichloroethane (4.97), and styrene (4.26).

Table 121 lists mean daytime and nighttime concentrations measured at the indoor sampling locations. Day/night concentration ratios are also given. Daytime/nighttime concentration ratios ranged from 0.71 for α-pinene to 1.35 for n-decane. There were no significant differences between daytime and nighttime concentrations at the 0.05 level.

Comparison Between Building Types--

Data for volatile organics are compared between buildings in Tables 122 to 124. Table 122 lists mean indoor concentrations for target volatiles by trip; Table 123 gives mean outdoor concentrations by trip; and Table 124

TABLE 122. MEAN INDOOR CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS FOR ALL MONITORING TRIPS

Compound	Mean Indoor Concentration (ng/L)									
	Martinsburg, WV			Fairfax, VA		Worcester, MA		Washington, DC	Cambridge, MA	Martinsburg, WV
	Hospital (New)[a]			Office (New)[b]		Nursing Home (New)[c]		Office (Old)	Office/School (Old)	Nursing Home (Old)
	Trip 1 (7/84)	Trip 2 (10/84)	Trip 3 (8/85)	Trip 1 (1/85)	Trip 2 (4/85)	Trip 1 (4/85)	Trip 2 (8/85)	Trip 1 (8/84)	Trip 1 (2/85)	Trip 1 (7/84)
Aromatic Hydrocarbons										
Benzene	1.55	2.13	2.88	2.74	4.95	1.70	2.44	5.61	4.50	3.13
m,p-Xylene	6.88	3.13	9.91	41.53	15.05	23.80	5.33	27.11	8.72	2.95
o-Xylene	3.05	0.92	3.07	18.40	3.67	8.92	2.07	9.28	3.43	0.99
Styrene	1.00	1.07	1.33	2.52	2.87	2.99	1.27	2.36	1.32	1.19
Ethylbenzene	1.94	1.01	2.88	51.26	5.37	7.90	2.15	10.15	2.69	0.97
Isopropylbenzene	0.31	ND[d]	0.33	3.94	0.67	2.27	0.33	0.79	0.36	ND
n-propylbenzene	ND	ND	ND	5.00	1.13	2.99	0.70	1.22	0.56	ND
m-Ethyltoluene	1.11	0.86	1.48	27.41	5.57	12.38	2,62	6.07	2.62	0.90
o-Ethyltoluene	ND	ND	0.66	8.89	2.08	4.01	0.73	1.60	0.74	ND
1,2,3-Trimethylbenzene	0.63	0.43	0.76	15.10	2.91	5.32	0.72	1.80	1.06	0.79
1,2,4-Trimethlybenzene	1.48	0.98	1.82	73.51	7.27	13.95	2.52	6.28	2.80	0.98
1,3,5-Trimethylbenzene	ND	ND	0.75	16.97	2.75	6.83	0.92	1.83	1.14	ND
Aliphatic Hydrocarbons										
α-Pinene	ND	ND	ND	14.13	24.64	5.19	ND	ND	2.65	ND
n-Decane	3.65	2.73	2.71	436.38	15.24	68.27	3.81	2.26	5.98	1.87
n-Undecane	3.31	1.96	2.34	210.80	33.93	68.51	3.48	2.85	6.77	ND
n-Dodecane	ND	ND	ND	152.69	23.74	31.42	ND	ND	2.23	ND
Chlorinated Hydrocarbons										
1,2-Dichloroethane	2.06	1.49	2.21	ND	4.51	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	4.98	4.50	15.54	12.54	38.85	4.03	1.76	40.98	10.69	3.09
Trichloroethylene	1.05	ND	ND	ND	7.93	2.58	0.57	0.61	10.89	ND
Tetrachloroethylene	ND	ND	1.79	ND	1.64	1.13	0.96	3.97	4.11	0.99
p-Dichlorobenzene	ND	ND	6.61	ND	2.64	2.17	0.62	0.60	ND	ND
Oxygenated Hydrocarbons										
n-Butylacetate	ND	ND	ND	ND	6.34	ND	1.22	2.63	1.48	ND
2-Ethoxyethylacetate	1.31	ND	ND	ND	2.16	9.58	ND	1.67	ND	ND

[a]Building completed ~34 weeks before first monitoring trip.
[b]Building completed ~1 week before first monitoring trip.
[c]Building completed ~4 weeks before first monitoring trip.
[d]Below the quantifiable limit.

TABLE 123. MEAN OUTDOOR CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS FOR ALL MONITORING TRIPS

Compound	Mean Outdoor Concentration (ng/L)									
	Martinsburg, WV			Fairfax, VA		Worcester, MA		Washington, DC	Cambridge, MA	Martinsburg, WV
	Hospital (New)[a]			Office (New)[b]		Nursing Home (New)[c]		Office (Old)	Office/ School (Old)	Nursing Home (Old)
	Trip 1 (7/84)	Trip 2 (10/84)	Trip 3 (8/85)	Trip 1 (1/85)	Trip 2 (4/85)	Trip 1 (4/85)	Trip 2 (8/85)	Trip 1 (8/84)	Trip 1 (2/85)	Trip 1 (7/84)
Aromatic Hydrocarbons										
Benzene	2.09	2.31	1.42	4.08	3.63	2.06	3.40	6.62	4.85	3.03
m,p-Xylene	1.18	1.03	1.79	3.84	3.11	2.38	4.34	14.64	2.68	1.44
o-Xylene	0.38	ND[d]	0.75	1.37	1.17	0.69	1.76	5.24	1.02	0.53
Styrene	0.62	0.73	0.28	0.56	1.05	0.31	0.84	1.25	0.31	0.64
Ethylbenzene	0.46	0.38	0.74	1.49	0.94	0.71	1.48	4.64	0.89	0.51
Isopropylbenzene	ND	ND	ND	ND	ND	ND	ND.	0.46	ND	ND
n-Propylbenzene	ND	ND	ND	ND	ND	ND	ND	1.24	ND	ND
m-Ethyltoluene	ND	ND	0.53	1.56	1.15	0.91	1.78	6.21	1.16	0.44
o-Ethyltoluene	ND	ND	ND	0.43	ND	ND	0.58	1.77	ND	ND
1,2,3-Trimethylbenzene	0.42	0.28	ND	0.54	0.29	0.30	0.49	1.77	0.28	0.77
1,2,4-Trimethlybenzene	0.28	0.32	0.70	2.05	1.22	1.11	1.92	6.99	1.21	0.43
1,3,5-Trimethylbenzene	ND	ND	ND	ND	ND	ND	0.65	2.03	ND	ND
Aliphatic Hydrocarbons										
α-Pinene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Decane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Undecane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Dodecane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorinated Hydrocarbons										
1,2-Dichloroethane	2.58	2.13	1.50	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	1.10	3.18	1.70	1.02	1.88	1.68	1.51	4.98	2.15	1.28
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	0.39	ND
Tetrachloroethylene	ND	ND	ND	ND	1.16	1.07	1.01	3.23	1.14	ND
p-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygenated Hydrocarbons										
n-Butylacetate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Ethoxyethylacetate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

[a]Building completed ~34 weeks before first monitoring trip.
[b]Building completed ~1 week before first monitoring trip.
[c]Building completed ~4 weeks before first monitoring trip.
[d]Below the quantifiable limit.

TABLE 124. MEAN INDOOR/OUTDOOR CONCENTRATION RATIO OF VOLATILE ORGANIC COMPOUNDS FOR ALL MONITORING TRIPS

Compound	Hospital (New)[a]			Nursing Home (New)[b]		Nursing Home (Old)	Office (New)[c]		Office (Old)	Office/ School (Old)
	Trip 1 (7/84)	Trip 2 (10/84)	Trip 3 (8/85)	Trip 1 (4/85)	Trip 2 (6/85)	Trip 1 (7/84)	Trip 1 (1/85)	Trip 2 (4/85)	Trip 1 (8/84)	Trip 1 (2/85)
Aromatic Hydrocarbons										
Benzene	0.74	0.92	2.03	0.83	0.72	1.03	0.67	1.36	0.85	0.93
m,p-Xylene	5.83	3.04	5.54	10.00	1.23	2.05	10.82	4.84	1.85	3.25
o-Xylene	8.03	∞[d]	4.09	12.93	1.18	1.87	13.43	3.14	1.77	3.36
Styrene	1.61	1.47	4.75	9.65	1.51	1.86	4.50	2.73	1.89	4.26
Ethylbenzene	4.22	2.66	3.89	11.13	1.45	1.90	34.40	5.71	2.19	3.02
Isopropylbenzene	∞	∞[e]	--	∞	∞	--	∞	∞	1.72	∞
n-Propylbenzene	--	--	∞	∞	∞	--	∞	∞	0.98	∞
m-Ethyltoluene	∞	∞	2.79	13.60	1.47	2.05	17.57	4.84	0.98	2.26
o-Ethyltoluene	--	--	∞	--	1.26	--	20.67	∞	0.90	∞
1,2,3-Trimethylbenzene	1.50	1.54	∞	17.73	1.47	1.03	27.96	10.03	1.02	3.79
1,2,4-Trimethylbenzene	5.29	3.06	2.60	12.57	1.31	2.28	35.86	5.96	0.90	2.31
1,3,5-Trimethylbenzene	--	--	--	--	1.42	--	--	--	0.90	∞
Aliphatic Hydrocarbons										
α-Pinene	--	--	--	∞	--	--	∞	∞	--	∞
n-Decane	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
n-Undecane	∞	∞	∞	∞	∞	--	∞	∞	∞	∞
n-Dodecane	--	--	--	∞	--	--	∞	∞	--	∞
Chlorinated Hydrocarbons										
1,2-Dichloroethane	0.80	0.70	1.47	--	--	--	--	∞	--	--
1,1,1-Trichloroethane	4.53	1.42	9.14	2.40	1.17	2.41	12.29	20.66	8.23	4.97
Trichloroethylene	∞	--	--	∞	∞	--	--	∞	∞	27.92
Tetrachloroethylene	--	--	∞	1.06	0.95	∞	--	1.41	1.23	3.61
p-Dichlorobenzene	--	--	∞	∞	∞	--	--	∞	∞	--
Oxygenated Hydrocarbons										
n-Butylacetate	--	--	--	--	∞	--	--	∞	∞	∞
2-Ethoxyethyl acetate	∞	--	--	∞	--	--	--	∞	∞	--

[a] Building completed ~34 weeks before first monitoring.
[b] Building completed ~4 weeks before first monitoring.
[c] Building completed ~1 week before first monitoring.
[d] Not calculated. Detected in indoor but not outdoor samples.
[e] Not detected in indoor or outdoor samples.

gives mean indoor/outdoor concentration ratios by trip. Data in these tables are summarized by compound class in Table 125. Several interesting trends are noted from these data.

1. The new buildings showed very high total levels of volatile organics immediately after construction (trip 1). These levels decreased dramatically during subsequent field monitoring trips. An exception to this trend is the new hospital; however, this building was monitored eight months after completion and presumably, during this time, the outgassing of volatile organics from new building materials was no longer a significant source of indoor pollutants. Even in this case, the indoor concentrations of volatile organics decreased between the first and second monitoring trips, suggesting that outgassing was still occurring even eight months after construction.
2. The major indoor contaminants in the new buildings monitored immediately after construction were the aliphatic organics. For both the new nursing home and the office, these compounds accounted for greater than 60% of the total mass of material quantitated. Levels of the aliphatic hydrocarbons in existing buildings were quite low, while mean outdoor concentrations were below the quantifiable limit in all cases.
3. Although the aromatic hydrocarbons were ubiquitous, they were also found in highest concentrations at the new buildings immediately after construction. Trips 1 to the new nursing home and the new office were the only trips where mean indoor/outdoor concentration ratios were greater than five. Again, levels decreased substantially by the second monitoring trip to each of these buildings.
4. Mean indoor concentrations for chlorinated hydrocarbons were highest for the existing office buildings. Presumably, indoor concentrations resulted from the use of solvent-based office materials. Elevated levels of chlorinated hydrocarbons were also found during the third trip to the hospital.
5. There appeared to be no discernible trends either for building type or age of building for the oxygenated compounds.

Results from indoor air samples are summarized for each building type by averaging data in the following categories.

TABLE 125. CONCENTRATION DATA FOR VOLATILE ORGANICS SUMMARIZED BY COMPOUND CLASS

	Concentration (ng/L)														
	Aromatic Hydrocarbons			Aliphatic Hydrocarbons			Chlorinated Hydrocarbons			Oxygenated Hydrocarbons			Total		
	Indoor	Outdoor	In/Out Ratio	Indoor	Outdoor	In/Out Ratio	Indoor	Outdoor	In/Out Ratio	Indoor	Outdoor	In/Out Ratio	Indoor	Outdoor	In/Out Ratio
Hospitals															
Hospital (New)															
Trip 1	18	5.4	3.3	7.0	ND[a]	∞[b]	8.1	3.7	2.2	1.3	ND	∞	34	9.1	3.7
Trip 2	11	5.1	2.2	4.7	ND	∞	6.0	5.3	1.1	ND	ND	-[c]	21	10	2.1
Trip 3	26	6.2	4.2	5.1	ND	∞	26	3.2	8.1	ND	ND	-	57	9.4	6.1
Offices															
Office (New)															
Trip 1	270	16	17	810	ND	∞	13	1.0	13	ND	ND	-	1100	17	65
Trip 2	54	13	4.2	98	ND	∞	56	3.0	19	8.5	ND	∞	220	16	14
Office (Old)															
Trip 1	74	50	1.5	5.1	ND	∞	46	8.1	5.6	4.3	ND	∞	130	58	2.2
Office/School (Old)															
Trip 1	30	12	2.5	18	ND	∞	26	3.7	7.0	1.5	ND	∞	75	16	4.6
Homes															
Nursing Home (New)															
Trip 1	93	8.5	11	173	ND	∞	9.9	2.8	3.5	9.6	ND	∞	286	11	26
Trip 2	22	17	1.3	7.3	ND	∞	3.9	2.5	1.6	1.2	ND	∞	34	20	1.7
Nursing Home (Old)															
Trip 1	12	7.8	1.5	1.9	ND	∞	4.1	1.3	3.2	ND	ND	-	18	9.1	2.0

[a]Below the quantifiable limit.
[b]Not calculated. Detected in indoor but not outdoor samples.
[c]Not detected in indoor or outdoor samples.

Hospitals	-	Hospital (new), Trip 3
Nursing Home	-	Nursing home (new), Trip 2 Nursing home (old), Trip 1
Offices	-	Office (new), Trip 2 Office (old), Trip 1 Office/School (old), Trip 1 (occupied office only)

For the new buildings only the last monitoring trip from each site was included. This was done to minimize effects resulting from the outgassing of building materials and to allow comparisons of activity pattern effects in each building.

These summarized results are given in Tables 126 to 128 for indoor concentrations, outdoor concentrations, and indoor/outdoor concentration ratios. These data show highest mean indoor concentrations for the offices for all compound classes. Highest mean indoor/outdoor concentration ratios were found in the hospital for the aromatic, aliphatic, and chlorinated hydrocarbons. Highest indoor/outdoor concentration ratios for the oxygenated compounds were found in the offices. In fact, this was the only building type where oxygenated compounds were detected. Both the offices and the hospital appear to have indoor sources for the chlorinated organics which would be responsible for the elevated levels compared to outdoor air samples. Indoor levels of volatile organics showed only small increases compared to outdoor levels in the nursing homes for all target chemicals.

NITROSAMINES

Sample screening analysis for a single sample from each location was performed for all monitoring trips. During this screening, only n-nitrosomorpholine was detected in any samples and, for this compound, only in samples from the old office building. All samples collected from this building were then analyzed. Again, only n-nitrosomorpholine was found. Table 129 lists reported concentration levels for this pollutant for each sample collected in the office. Results showed detectable levels in most indoor samples with none found outdoors. Concentration levels did not appear to vary between sampling locations. Data in Table 130 are mean indoor concentrations calculated for n-nitrosomorpholine in daytime and

TABLE 126. MEAN INDOOR CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS BY BUILDING TYPE

Compound	Mean Indoor Concentration (ng/L)		
	Hospitals	Nursing Homes	Offices
Aromatic Hydrocarbons			
Benzene	2.88	2.79	5.30
m,p-Xylene	9.91	3.05	16.90
o-Xylene	3.07	1.53	5.46
Styrene	1.33	1.24	1.56
Ethylbenzene	2.88	1.59	6.11
Isopropylbenzene	0.33	ND	0.59
n-Propylbenzene	ND[a]	0.50	0.95
m-Ethyltoluene	1.48	1.76	4.66
o-Ethyltoluene	0.66	0.40	1.48
1,2,3-Trimethylbenzene	0.76	0.76	1.87
1,2,4-Trimethylbenzene	1.82	1.75	5.38
1,3,5-Trimethylbenzene	0.75	ND	1.85
TOTAL	25.87	15.37	52.11
Aliphatic Hydrocarbons			
α-Pinene	ND	ND	9.38
n-Decane	2.71	2.84	7.54
n-Undecane	2.34	1.88	14.30
m-Dodecane	ND	ND	8.88
TOTAL	5.05	4.72	40.10
Chlorinated Hydrocarbons			
1,2-Dichloroethane	2.21	ND	1.75
1,1,1-Trichloroethane	15.54	2.42	34.00
Trichloroethylene	ND	ND	10.60
Tetrachloroethylene	1.79	.97	4.76
p-Dichlorobenzene	6.61	ND	1.16
TOTAL	26.15	3.39	32.26
Oxygenated Hydrocarbons			
n-Butylacetate	ND	ND	3.63
2-Ethoxyethyl acetate	ND	ND	1.44
TOTAL	ND	ND	5.07
TOTAL	57.07	23.48	172.98

[a]Below the quantifiable limit.

TABLE 127. MEAN OUTDOOR CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS BY BUILDING TYPE

Compound	Mean Outdoor Concentration (ng/L)		
	Hospitals	Nursing Homes	Offices
Aromatic Hydrocarbons			
Benzene	1.42	3.22	5.03
m,p-Xylene	1.79	2.89	6.81
o-Xylene	0.75	1.16	2.47
Styrene	0.28	0.74	0.87
Ethylbenzene	0.74	1.00	2.16
Isopropylbenzene	ND[a]	ND	ND
n-Propylbenzene	ND	ND	0.87
m-Ethyltoluene	0.53	1.11	2.85
o-Ethyltoluene	ND	ND	0.72
1,2,3-Trimethylbenzene	ND	0.63	0.78
1,2,4-Trimethylbenzene	0.70	1.18	3.14
1,3,5-Trimethylbenzene	ND	ND	0.90
TOTAL	6.21	11.93	26.60
Aliphatic Hydrocarbons			
α-Pinene	ND	ND	ND
n-Decane	ND	ND	ND
n-Undecane	ND	ND	ND
m-Dodecane	ND	ND	ND
TOTAL	ND	ND	ND
Chlorinated Hydrocarbons			
1,2-Dichloroethane	1.50	ND	ND
1,1,1-Trichloroethane	1.70	1.40	3.00
Trichloroethylene	ND	ND	ND
Tetrachloroethylene	ND	0.70	1.84
p-Dichlorobenzene	ND	ND	ND
TOTAL	3.20	2.10	4.84
Oxygenated Hydrocarbons			
n-Butylacetate	ND	ND	ND
2-Ethoxyethyl acetate	ND	ND	ND
TOTAL	ND	ND	ND
TOTAL	9.41	14.03	

[a]Below the quantifiable limit.

TABLE 128. MEAN INDOOR/OUTDOOR CONCENTRATION RATIO OF VOLATILE ORGANIC COMPOUNDS BY BUILDING TYPE

Compound	Mean Indoor/Outdoor Concentration Ratios		
	Hospitals	Nursing Homes	Offices
Aromatic Hydrocarbons			
Benzene	2.03	0.87	1.05
m,p-Xylene	5.54	1.06	2.48
o-Xylene	4.09	1.32	2.21
Styrene	4.75	1.67	1.79
Ethylbenzene	3.89	1.59	2.82
Isopropylbenzene	-[a]	-	∞[b]
n-Propylbenzene	∞	∞	1.09
m-Ethyltoluene	2.79	1.58	1.64
o-Ethyltoluene	∞	∞	2.06
1,2,3-Trimethylbenzene	∞	1.21	2.40
1,2,4-Trimethylbenzene	2.60	1.48	1.72
1,3,5-Trimethylbenzene	-	-	2.06
TOTAL	4.17	1.28	2.84
Aliphatic Hydrocarbons			
α-Pinene	-	-	∞
n-Decane	∞	∞	∞
n-Undecane	∞	∞	∞
m-Dodecane	-	-	∞
TOTAL	∞	∞	∞
Chlorinated Hydrocarbons			
1,2-Dichloroethane	1.47	-	∞
1,1,1-Trichloroethane	9.14	1.73	11.3
Trichloroethylene	-	-	∞
Tetrachloroethylene	∞	1.38	2.58
p-Dichlorobenzene	∞	-	∞
TOTAL	8.17	1.61	6.66
Oxygenated Hydrocarbons			
n-Butylacetate	-	-	∞
2-Ethoxyethyl acetate	-	-	∞
TOTAL	-	-	-
TOTAL	6.06	1.67	5.50

[a]Not detected in indoor or outdoor samples.
[b]Not calculated. Detected in indoor but not outdoor samples.

TABLE 129. CONCENTRATION OF N-NITROSOMORPHOLINE AT THE OFFICE (OLD), TRIP 1

Sampling Period	Concentration (ng/m^3)			
	3rd Floor Hallway	5th Floor Hallway	8th Floor Hallway	Outdoors
Day 1	0.25	0.21	0.33	ND
Night 1	0.47	0.28	0.25	ND
Day 2	ND[a]	ND	0.18	ND
Night 2	0.45	0.24, 0.19	0.36	ND
Day 3	ND	ND	0.22	ND
Night 3	0.64	0.29	0.29, 0.33	ND
Average	0.32[b] ± 0.23	0.20 ± 0.09	0.28 ± 0.07	ND

[a]Not detected - LOD = 0.14 μ/m^3.
[b]To calculate, ND values were used as provided Thermedics.

TABLE 130. COMPARISON OF DAY/NIGHT CONCENTRATION LEVELS FOR N-NITROSOMORPHOLINE AT THE OFFICE (OLD), TRIP 1

Location	Mean Concentration (ng/m^3) ± S.D.	
	Day	Night
Third Floor Elevator Alcove	0.13 ± 0.10	0.52 ± 0.10
Fifth Floor Hallway	0.13 ± 0.07	0.26 ± 0.04
Eighth Floor Hallway	0.24 ± 0.08	0.31 ± 0.06
All Locations	0.17 ± 0.09	0.36 ± 0.13

nighttime samples. There appears to be higher concentration in the nighttime samples, although the reason for this is unknown. This office building contained a fast food restaurant on the ground floor and a cooking odor could be detected throughout. Cooking at the restaurant could be a possible source of nitrosamines throughout the building.

MISCELLANEOUS VOLATILES AND ACRYLONITRILE

After consultation with the EPA Project Officer, samples collected for miscellaneous volatiles and acrylonitrile were not analyzed.

PESTICIDES/PCBs

Sample screening, which consisted of analyzing a single sample from each location, was performed for nine out of ten field monitoring trips. Because screening results did not show elevated levels of pesticides (>10 ng/m^3) in greater than 25% of the samples, no further analyses were performed. The single exception to this protocol was made for the first trip to the old nursing home. Here, Malathion had been sprayed around the outside of the building during the third day of monitoring, hence, all samples from this trip were analyzed.

To initially look at the data, we calculated the percentage of air samples that had concentrations reported above the quantifiable limit. This statistic, referred to as percent detected, was calculated for both indoor and outdoor air samples collected during each field monitoring trip. Results for percent detected given in Table 131 indicated α-, β-, and γ-BHC were the most frequently detected compounds. Although tech.-chlordane was not found above the quantifiable limit in most cases, it was often detected at trace levels.

Concentration data for pesticides/PCBs measured during each field monitoring trip are given in Tables 132 to 144. Concentrations are reported for each location by time period. With the exception of Malathion found during day 3 at the old nursing home (Tables 141 to 144), only low levels of target pesticides/PCBs were found. No conclusions were drawn from these results due to limited amounts of data.

Table 145 shows reported pesticide usage for each of the buildings monitored. Chlorpyrifos was used in several buildings, but was not recovered from field controls. Data from Lewis et al. (24) showed similar

TABLE 131. PERCENTAGE OF SAMPLES WITH QUANTIFIABLE LEVELS OF TARGET PESTICIDES

Monitoring Trip (No. of Samples)	QL[a]	% Detected									
		Dichlorvos	α-BHC	β-BHC	γ-BHC	Diazinon	Ronnel	Malathion	Chlor-pyrifos	PCBs	*tech.*-Chlordane
Hospitals											
Hospital (New)											
Trip 1											
Indoor (3)		NR[b]	0	0	0	0	33	0	0	0	0
Outdoor (1)		NR	0	0	0	0	0	0	0	0	0
Trip 2											
Indoor (3)		NR	33	0	100	0	0	0	0	0	I[c]
Outdoor (1)		NR	100	0	0	0	0	0	0	0	I[c]
Trip 3											
Indoor (3)		NR	0	0	66	0	0	0	0	0	0
Outdoor (1)		NR	0	0	0	0	0	0	0	0	0
Homes											
Nursing Home (Old)											
Indoor (12)		NR	92	0	8	0	0	25	0	0	0
Outdoor (4-5)		NR	5	0	20	0	0	25	0	0	25
Nursing Home (New)											
Trip 1											
Indoor (2)		NR	0	0	100[d]	0	0	0	0	0	0
Outdoor (1)		NR	0	0	100[d]	0	0	0	0	0	0
Offices											
Office (Old)											
Indoor (3)		NR	100	100	0	0	0	NR	33	0	0
Outdoor (0)		SL[e]	SL	SL	SL	SL	SL	SL	SL	SL	SL
Office (New)											
Trip 1											
Indoor (3)		NR	0	0	0	I	0	0	0	0	0
Outdoor (1)		NR	0	0	0	I	0	0	0	0	0
Trip 2											
Indoor (3)		NR	0	100[d]	0	0	0	0	0	0	0
Outdoor (1)		NR	0	100[d]	0	0	0	0	0	0	0
Office/School (Old)											
Indoor (3)		NR	0	0	0	0	0	0	0	0	0
Outdoor (1)		ND	0	0	0	0	0	0	0	0	0

[a]Quantifiable limit, detection limit are one quarter the LOD.
[b]Not recovered on field controls (<15%).
[c]Interference in samples.
[d]Field blanks were contaminated.
[e]Sample lost

TABLE 132. PESTICIDES/PCBs DETECTED AT THE HOSPITAL (NEW), TRIP 1, NIGHT 1

Compound	QL[a]	Concentration (ng/m^3)			
		Visitors' Lounge	Nurses' Station	Patients' Room	Outdoors
Dichlorvos	2.8	NR[b]	NR	NR	NR
α-BHC	0.76	T[c]	T	T	T
β-BHC	2.8	ND[d]	ND	ND	ND
γ-BHC	0.83	ND	ND	ND	ND
Diazinon[e]	4.8	ND	ND	ND	ND
Ronnel	3.6	3.8	T	ND	ND
Malathion	2.0	ND	ND	ND	ND
Chlorpyrifos	4.0	ND	ND	ND	ND
PCBs	15	ND	ND	ND	ND
tech.-Chlordane	32	ND	ND	ND	ND

[a]Quantifiable limits, detection limits (LOD) are one-quarter the QL.
[b]Not recovered in field controls (<15%).
[c]Below the QL, but above the LOD.
[d]Below the LOD.
[e]High contamination on field blank.

TABLE 133. PESTICIDES/PCBs DETECTED AT THE HOSPITAL (NEW), TRIP 2, NIGHT 1

Compound	QL[a]	Concentration (ng/m^3)			
		Visitors' Lounge	Nurses' Station	Patients' Room	Outdoors
Dichlorvos	2.8	NR[b]	NR	NR	NR
α-BHC	0.76	T[c]	1.1	T	1.1
β-BHC	2.8	ND[d]	ND	ND	ND
γ-BHC	0.83	2.2	7.4	2.6	T
Diazinon	48	T	T	T	T
Ronnel	3.6	ND	ND	ND	ND
Malathion	2.0	ND	ND	ND	ND
Chlorpyrifos	4.0	ND	ND	ND	ND
PCBs	15	ND	T	T	T
tech.-Chlordane	32	I[e]	I[e]	I[e]	I[e]

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Not recovered in field controls (<15%).
[c]Below the QL, but above the LOD.
[d]Below the LOD.
[e]Interference in the sample prevented quantitation.

TABLE 134. PESTICIDES/PCBs DETECTED AT THE HOSPITAL (NEW), TRIP 3, NIGHT 1

Compound	QL[a]	Concentration (ng/m^3)			
		Visitors' Lounge	Nurses' Station	Patients' Room	Outdoors
Dichlorvos	2.8	NR[b]	NR	NR	NR
α-BHC	0.76	ND[c]	ND	ND	ND
β-BHC	2.8	ND	ND	ND	ND
γ-BHC	0.83	ND	4.4	20	T[d]
Diazinon	48	ND	ND	ND	ND
Ronnel	3.6	ND	ND	ND	ND
Malathion	2.0	ND	ND	ND	ND
Chlorpyrifos	4.0	ND	ND	ND	ND
PCBs	15	ND	ND	ND	ND
tech.-Chlordane	32	ND	ND	ND	T

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Not recovered in field controls (<15%).
[c]Below the LOD.
[d]Below the QL, but above the LOD.

TABLE 135. PESTICIDES/PCBs DETECTED AT THE OFFICE (NEW), TRIP 1, NIGHT 1

Compound	QL[a]	Concentration (ng/m^3)			
		Office, R-4	Office, R-1	Office, R-7	Outdoors
Dichlorvos	28	NR[b]	NR	NR	NR
α-BHC	0.76	ND[c]	ND	ND	ND
β-BHC	2.8	ND	ND	ND	ND
γ-BHC	0.83	ND	ND	ND	ND
Diazinon	48	I[d]	I	I	I
Ronnel	3.6	ND	ND	ND	ND
Malathion	20	ND	ND	ND	ND
Chlorpyrifos	4.0	ND	ND	ND	ND
PCBs	15	T[e]	T	T	T
tech.-Chlordane	32	ND	ND	ND	ND

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Not recovered in field controls (<15%).
[c]Below the LOD.
[d]Interference in sample prevented quantitation; levels appeared to be trace.
[e]Below the QL, but above the LOD.

TABLE 136. PESTICIDES/PCBs DETECTED AT THE OFFICE (NEW), TRIP 2, DAY 1

Compound	QL[a]	Concentration (ng/m^3)			
		Office, R-4	Office, R-1	Office, R-7	Outdoors
Dichlorvos	28	NR[b]	NR	NR	NR
α-BHC	0.76	ND[c]	ND	ND	ND
β-BHC[d]	2.8	13	17	6	10
γ-BHC	0.83	ND	T[e]	T	ND
Diazinon	48	ND	ND	T	T
Ronnel	3.6	ND	T	T	ND
Malathion	20	ND	ND	ND	ND
Chlorpyrifos	4.0	ND	ND	ND	ND
PCBs	15	ND	ND	ND	ND
tech.-Chlordane	32	T	T	T	T

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Not recovered in field controls (<15%).
[c]Below the LOD.
[d]Background contamination in blanks.
[e]Below the QL, but bove the LOD.

TABLE 137. PESTICIDES/PCBs DETECTED AT THE NURSING HOME (NEW), TRIP 1, NIGHT 1

Compound	QL[a]	Concentration (ng/m^3)			
		Day Room	Nurses' Station	Patients' Room	Outdoors
Dichlorvos	28	SL[b]	NR[c]	NR	NR
α-BHC	0.76	SL	ND[d]	T[e]	ND
β-BHC	2.8	SL	6.1[f]	11[f]	7.6[f]
γ-BHC	0.83	SL	ND	ND	ND
Diazinon	48	SL	T	T	T
Ronnel	3.6	SL	ND	ND	ND
Malathion	20	SL	ND	ND	T
Chlorpyrifos	4.0	SL	ND	T	T
PCBs	15	SL	T	T	ND
tech.-Chlordane	32	SL	T	T	ND

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Sample lost during processing.
[c]Not recovered in field controls (<15%).
[d]Below the LOD.
[e]Below the QL, but above the LOD.
[f]Probable contamination; no blank available.

TABLE 138. PESTICIDES/PCBs DETECTED AT THE NURSING HOME (NEW), TRIP 2, DAY 1

Compound	QL[a]	Concentration (ng/m^3)			
		Day Room	Nurses' Station	Patients' Room	Outdoors
Dichlorvos	28	NR[b]	NR	NR	NR
α-BHC	0.76	T[c]	T	T	T
β-BHC	2.8	T	7.2[d]	ND[e]	ND
γ-BHC	0.83	ND	ND	ND	ND
Diazinon	48	ND	T	ND	ND
Ronnel	3.6	ND	T	ND	ND
Malathion	20	T	ND	ND	ND
Chlorpyrifos	4.0	T	ND	ND	ND
PCBs	15	ND	ND	ND	ND
tech.-Chlordane	32	ND	T	T	T

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Not recovered in field controls (<15%).
[c]Below the QL, but above the LOD.
[d]High background contamination.
[e]Below the LOD.

TABLE 139. PESTICIDES/PCBs DETECTED AT THE OFFICE (OLD), TRIP 1, DAY 1

Compound	QL[a]	Concentration (ng/m^3)			
		3rd Floor Hallway	5th Floor Hallway	8th Floor Hallway	Outdoors
Dichlorvos	2.8	NR[b]	NR	NR	SL[c]
α-BHC	0.76	1.7	2.6	1.9	SL
β-BHC	2.8	5.9	12	3.7	SL
γ-BHC	0.83	T[d]	T	T	SL
Diazinon	48	ND[e]	ND	ND	SL
Ronnel	3.6	ND	T	T	SL
Malathion	20	ND	ND	ND	SL
Chlorpyrifos	4.0	T	T	4.6	SL
PCBs	15	T	T	T	SL
tech.-Chlordane	32	T	T	T	SL

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Not recovered in field controls (<15%).
[c]Sample lost during processing.
[d]Below the QL, but above the LOD.
[e]Below the LOD.

TABLE 140. PESTICIDES/PCBs DETECTED AT THE OFFICE/SCHOOL (OLD), TRIP 1, NIGHT 1

Compound	QL[a]	Concentration (ng/m^3)			
		First Floor Renovated Office	Second Floor Unoccupied Office	Third Floor Occupied Office	Outdoors
Dichlorvos	28	NR[b]	NR	NR	NR
α-BHC	0.76	ND[c]	ND	ND	ND
β-BHC	2.8	ND	ND	ND	ND
γ-BHC	0.83	ND	ND	ND	ND
Diazinon	48	ND	ND	ND	ND
Ronnel	3.6	T[d]	ND	ND	ND
Malathion	20	ND	ND	ND	ND
Chlorpyrifos	4.0	T	T	T	T
PCBs	15	ND	ND	ND	ND
tech.-Chlordane	32	ND	ND	ND	ND

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Not recovered in field controls (<15%).
[c]Below the LOD.
[d]Below the QL, but above the LOD.

TABLE 141. PESTICIDES/PCBs DETECTED AT THE NURSING HOME (OLD), UNOCCUPIED APARTMENT

Compound	QL[a]	Concentration (ng/m^3)					
		Night 1	Day 1	Night 2	Day 2	Night 3	Day 3
Dichlorvos	28	NR[b]	NR	NR	NR	NR	NR
α-BHC	0.76	1.5	2.1	NQ[c]	T[d]	NQ	2.4
β-BHC	2.8	ND[e]	ND	NQ	ND	ND	ND
γ-BHC	0.83	ND	ND	ND	ND	ND	ND
Diazinon	48	ND	ND	NQ	ND	NQ	T
Ronnel	3.6	ND	ND	ND	ND	NQ	ND
Malathion	20	T	T	ND	T	NQ	35
Chlorpyrifos	4.0	ND	T	NQ	ND	T	ND
PCBs	15	ND	ND	ND	ND	ND	ND
tech.-Chlordane	32	T	T	NQ	T	NQ	43

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Not recovered in field controls (<15%).
[c]Not quantified.
[d]Below the QL, but above the LOD.
[e]Below the LOD.

TABLE 142. PESTICIDES/PCBs DETECTED AT THE NURSING HOME (OLD), TV LOUNGE

Compound	QL[a]	Concentration (ng/m^3)					
		Night 1	Day 1	Night 2	Day 2[b]	Night 3	Day 3
Dichlorvos	28	NR[c]	NR	NR	NR	NR	NR
α-BHC	0.76	0.9	1.0	NQ[d]	0.93, 1.0	NQ	0.9
β-BHC	2.8	ND[e]	ND	ND	ND, ND	ND	ND
γ-BHC	0.83	ND	ND	NQ	T[f], ND	ND	ND
Diazinon	48	T	T	NQ	ND, ND	T	ND
Ronnel	3.6	ND	ND	ND	ND, ND	NQ	T
Malathion	20	23	T	NQ	ND, T	NQ	T
Chlorpyrifos	4.0	ND	ND	NQ	ND, ND	ND	ND
PCBs	15	ND	ND	ND	ND, ND	ND	ND
tech.-Chlordane	32	T	T	NQ	T, T	NQ	T

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Duplicate samples.
[c]Not recovered in field controls (<15%).
[d]Not quantified.
[e]Below the LOD.
[f]Below the QL, but above the LOD.

TABLE 143. PESTICIDES/PCBs DETECTED AT THE NURSING HOME (OLD), OCCUPIED APARTMENT

Compound	QL[a]	Concentration (ng/m^3)					
		Night 1	Day 1	Night 2	Day 2[b]	Night 3	Day 3
Dichlorvos	28	NR [c]	NR	NR	NR, NR	NR	NR
α-BHC	0.76	0.9	1.0	NQ[d]	0.93, 1.0	NQ	0.9
β-BHC	2.8	ND[e]	ND	ND	ND, ND	ND	ND
γ-BHC	0.83	ND	ND	NQ	T[f], ND	ND	ND
Diazinon	48	T	T	NQ	ND, ND	T	ND
Ronnel	3.6	ND	ND	ND	ND, ND	NQ	T
Malathion	20	23	T	NQ	ND, T	NQ	T
Chlorpyrifos	4.0	ND	ND	NQ	ND, ND	ND	ND
PCBs	15	ND	ND	ND	ND, ND	ND	ND
tech.-Chlordane	32	T	T	NQ	T, T	NQ	T

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Duplicate samples.
[c]Not recovered in field controls (<15%).
[d]Not quantified.
[e]Below the LOD.
[f]Below the QL, but above the LOD.

TABLE 144. PESTICIDES/PCBs DETECTED AT THE NURSING HOME (OLD), OUTDOORS

Compound	QL[a]	Concentration (ng/m^3)					
		Night 1	Day 1	Night 2	Day 2	Night 3	Day 3
Dichlorvos	28	NR[b]	NR	SL[c]	NR	NR	NR
α-BHC	0.76	1.5	1.9	SL	1.6	NQ[d]	ND[e]
β-BHC	2.8	ND	ND	SL	ND	ND	ND
γ-BHC	0.83	ND	ND	SL	1.1	ND	ND
Diazinon	48	T[f]	ND	SL	ND	ND	ND
Ronnel	3.6	ND	ND	SL	T	ND	ND
Malathion	20	T	T	SL	ND	ND	95
Chlorpyrifos	4.0	ND	ND	SL	ND	ND	ND
PCBs	15	ND	ND	SL	ND	NQ	ND
tech.-Chlordane	32	T	65	SL	T	NQ	T

[a]Quantifiable limits, detection limits (LOD) are one-fourth the QL.
[b]Not recovered in field control (<15%).
[c]Sample lost during processing.
[d]Not quantified.
[e]Below the LOD.
[f]Below QL, but above LOD.

TABLE 145. PESTICIDE USE INFORMATION

Site	Pesticide
Hospital (new)	Bendiocarb Chlorpyrifos Pyrethins
Nursing Home (new)	Bendiocarb Bromophos
Nursing Home (old)	Malathion Bendiocarb Chlorpyrifos Pyrethins
Office (new)	Chlorpyrifos Diazinon Baygon
Office (old)	Unidentified
Office/School (old)	Chlorpyrifos Boric acid Propetamphos Talon

problems with poor recovery during storage. Although Diazinon was to be used at the new office, it had not been applied prior to either field monitoring trip. None of the other target pesticides were used in any of the monitored buildings. Based on usage patterns, it is not surprising that only low concentrations of pesticides/PCBs were found throughout this program. Although it was not the mandate of this project, future work on measuring these compounds in indoor air should specifically be designed to monitor for the pesticides actually in use, and samples should be collected during or shortly after applications.

INHALABLE AND RESPIRABLE PARTICULATE MASS

Measured inhalable (coarse) and respirable (fine) particulate concentrations for samples collected during this program are given in Table 146. The table also gives a subjective measure of the amount of smoking that took place at each location during monitoring. The increase in particulate mass as a result of smoking was most noticeable for the old nursing home. Heavy smoking in the TV lounge raised inhalable (coarse) particulate levels slightly over the other indoor location. However, respirable (fine) particulate concentrations increased from ~16 to 45 $\mu g/m^3$ when compared to the other two indoor locations.

Table 147 gives mean indoor and outdoor concentrations for each field monitoring trip. Indoor/outdoor concentration ratios have also been calculated by trip and are listed. Very few trends are clear from these data. For the new buildings, particulate levels appear to increase after occupancy. An exception to this is the new nursing home; however, during the second trip in August, the windows and doors were open throughout the building during part of the time. This increased ventilation could have helped reduce indoor particulate levels.

In areas where there was no smoking, indoor concentrations were generally lower than outdoor concentrations for both inhalable (coarse) and respirable (fine) particulates. This is probably not surprising since all buildings had mechanical ventilation systems that filtered the indoor air and, hence, should have reduced particulate levels, especially if specific indoor sources were not present.

TABLE 146. RESULTS OF PARTICULATE ANALYSIS

Site		Particulate Concentration ($\mu g/m^3$) Inhalable (Coarse)	Respirable (Fine)	Smoking[a]
Hospital (New), Trip 1				
Nurses' Station	Day 1	2.3	4.0	None
	Day 2	2.9	4.1	None
	Day 3	T (1.6)[b]	T (3.1)	None
Patient Room	Day 1	NC[c]	NC	None
	Day 2	3.2	T (3.4)	None
	Day 3D[d]	4.1	4.1	None
	Day 3	4.4	7.6	None
Outdoors	Day 1	11.4	26.9	None
	Day 2	6.9	T (6.1)	None
	Day 3	21.9	18.9	None
Hospital (New), Trip 2				
Nurses' Station	Day 1	T (8.9)	15.8	None[a]
	Day 2	T (9.4)	16.3	None
	Day 3	T (8.8)	15.6	None
Patient Room	Day 1	T (9.1)	21.1	None[a]
	Day 2	T (8.8)	25.6	None
	Day 3	T (9.4)	16.4	None
Outdoors	Day 1	NC	NC	None
	Day 2	NC	NC	None
	Day 3	T (10.2)	17.0	None
Hospital (New), Trip 3				
Nurses' Station	Day 1	4.4	17.5	None
	Day 2	5.3	35.4	None
	Day 3	4.7	19.5	None
Patient Room	Day 1	7.3	26.8	None
	Day 2	9.6	37.8	None
	Day 3	8.8	36.0	None
Outdoors	Day 1	15.7	24.8	None
	Day 2	15.8	48.6	None
	Day 3	11.1	25.9	None

(continued)

[a]Visitors' Lounge on same floor had smoking.

TABLE 146. (continued)

Site		Particulate Concentration ($\mu g/m^3$) Inhalable (Coarse)	Respirable (Fine)	Smoking[a]
Nursing Home (Old), Trip 1				
Occupied Apartment	Day 1	ND (2.5)[e]	14.5	Light
	Day 2	T (3.6)	17.6	Light
	Day 3	4.1	17.0	Light
TV Lounge	Day 1	4.3	40.3	Heavy
	Day 2	6.4	38.2	Heavy
	Day 3	5.9	55.5	Heavy
	Day 3D	8.3	52.8	Heavy
Outdoors	Day 1	NC[f]	NC[f]	None
	Day 2	NC[f]	NC[f]	None
	Day 3	NC[f]	NC[f]	None
Office (Old), Trip 1				
Third Floor Hallway	Day 1	6.7	10.4	Unknown[g]
	Day 2	8.0	13.3	Unknown
	Day 3	7.5	12.5	Unknown
Fifth Floor Hallway	Day 1	NC	NC	Unknown
	Day 2	10.6	19.5	Unknown
	Day 3	11.9	14.7	Unknown
Outdoors	Day 1	NC	NC	None
	Day 2	15.8	23.1	None
	Day 3	12.9	22.0	None
Office (New), Trip 1				
Office, R1	Day 1	8.8	13.2	None
	Day 2	ND (3.7)	10.7	None
	Day 3	19.3	21.7	None
Office R7	Day 1	13.5	15.4	None
	Day 2	10.5	15.6	None
	Day 3	39.7	25.2	None
Outdoors	Day 1	T (7.8)	T (10.2)	None
	Day 2	16.1	20.7	None
	Day 3	22.0	30.0	None

(continued)

TABLE 146. (continued)

Site		Particulate Concentration ($\mu g/m^3$) Inhalable (Coarse)	Respirable (Fine)	Smoking[a]
Office (New), Trip 2				
Office, R-1	Day 1	20.3	52.8	Light
	Day 2	18.6	50.0	Light
	Day 3	19.8	51.8	Light
Office, R-7	Day 1	19.8	45.7	None
	Day 2	21.8	44.6	None
	Day 3	22.2	37.1	None
Outdoors	Day 1	27.0	31.2	None
	Day 2	25.4	17.2	None
	Day 3	14.8	24.2	None
Office/School (Old), Trip 1				
Second Floor, Unoccupied Office	Day 1	14.7	ND (8.2)	None
	Day 2	16.5	15.5	None
	Day 3	NC	NC	None
Third Floor Occupied Office	Day 1	7.6	12.1	None
	Day 2	12.8	12.9	None
	Day 3	5.6	9.9	None
Outdoors	Day 1	26.7	16.9	None
	Day 2	13.5	25.4	None
	Day 3	8.4	11.0	None
Nursing Home (New), Trip 1				
Nurses' Station	Day 1	T (8.6)	23.8	None
	Day 2	9.5	16.1	None
	Day 3	22.2	ND (13.4)	None
Patient Room	Day 1	18.0	14.2	None
	Day 2	53.3	11.0	None
	Day 3	10.6	14.1	None
	Day 3D	15.2	15.5	None
Outdoors	Day 1	9.8	15.2	None
	Day 2	10.2	14.3	None
	Day 3	NC	NC	None

(continued)

TABLE 146. (concluded)

Site		Particulate Concentration ($\mu g/m^3$) Inhalable (Coarse)	Respirable (Fine)	Smoking[a]
Nursing Home (New), Trip 2				
Nurses' Station	Day 1	16.3	8.3	None
	Day 2	12.4	9.7	None
	Day 3	11.6	9.6	None
Patient Room	Day 1	NC	NC	None
	Day 2	T (5.7)	T (3.5)	None
	Day 3	4.9	12.6	None
	Day 3D	6.7	19.9	None
Outdoors	Day 1	8.3	7.2	None
	Day 2	5.9	8.9	None
	Day 3	NC	NC	None

[a]Amount of smoking; based on observation.
[b]Trace (quantifiable limit).
[c]Not collected, pump failed.
[d]D = duplicate sample.
[e]Not detected (limit of detection).
[f]Location was the same as the new hospital; monitoring was performed on the third day following trip 1 to the hospital.
[g]Could not predict based on occupant's habits, probably light.

TABLE 147. MEAN INDOOR AND OUTDOOR CONCENTRATIONS FOR PARTICULATE MASS

Site	Trip	Mean Concentration ($\mu g/m^3$) ± S.D.				Indoor/Outdoor Ratio	
		Indoor		Outdoor			
		Inhalable (Coarse)	Respirable (Fine)	Inhalable (Coarse)	Respirable (Fine)	Inhalable (Coarse)	Respirable (Fine)
Hospitals							
Hospital (New)	1	2.7 ± 1.3	2.7 ± 2.2	13.4 ± 7.7	16.3 ± 12.1	0.20	0.17
	2	T[a]	16.8 ± 2.1	T	17.0[b]	-[c]	0.99
	3	6.7 ± 2.2	28.8 ± 8.9	14.2 ±	33.1 ± 13.4	0.47	0.87
Nursing Homes							
Nursing Home (New)	1	17.5 ± 18.8	14.4 ± 5.7	10.0 ± 0.2	14.8 ± 0.5	1.75	0.97
	2	10.0 ± 5.1	9.0 ± 5.0	7.1 ± 1.2	8.0 ± 0.9	1.41	1.13
Nursing Home (Old)	1	5.7	39.3	NC[d]	NC	-	-
Offices							
Office (New)	1	15.6 ± 13.1	17.0 ± 5.4	14.0 ± 9.2	18.6 ± 12.5	1.11	0.91
	2	20.4 ± 1.4	47.0 ± 5.9	22.4 ± 6.6	24.2 ± 7	0.91	1.90
Office (Old)	1	8.9	14.1	14.4 ± 1.4	22.6 ± 0.6	0.62	0.62
Office/School (Old)	1	11.4	10.1	17.2	17.8	0.66	0.56

[a]Trace.

[b]Single determination.

[c]Unable to calculate.

[d]Not collected; pump failed.

POLYNUCLEAR AROMATIC HYDROCARBONS (PNAs)

Polynuclear aromatic hydrocarbons were not found in any samples. The detection limits for the method was ~1 ng/m^3 for individual PNAs. Results indicate that much larger samples are required if measurements of PNAs are desired for indoor locations where no specific sources exist such as wood fireplaces or wood stoves.

METALS

Table 148 lists the metal samples that were submitted to the subcontractor for PIXE analysis, as well as those that were actually analyzed. Sample screening consisted of one sample collected at two indoor and one outdoor monitoring locations. If screening analysis gave positive results, then the remaining samples collected during that trip were submitted for analysis. Information in Table 148 shows that many of the samples sent to the subcontractor were never analyzed; therefore, only limited data are available.

To initially look at the data, the percentage of air samples that had concentrations reported above the quantifiable limit (QL) was calculated. This statistic, referred to as percent detected, was calculated for both indoor and outdoor air samples collected during each field monitoring trip. QLs for each trip are listed in Table 149. For the hospital (new), trip 3, and the nursing home (new), trip 2, larger sample volumes were collected; hence, a substantially lower QL was achieved for these two trips. Results for percent detected given in Table 150 indicate that nickel, bromine, and lead were detected most frequently. Aluminum, selenium, and cadmium were not detected in any samples.

Mean concentrations calculated for the six metals detected during field monitoring are given in Table 151. To calculate these means, one-half the LOD was used for concentrations below the detection limit; the average of the QL and the LOD was used for concentrations reported below the QL but above the LOD. A comparison of indoor to outdoor mean concentrations show higher levels found outdoors. Three exceptions should be noted to this trend. Higher indoor concentrations were found for lead at both the new nursing home, trip 2 and the old office/school. Higher indoor concentrations of arsenic were found at the new hospital, trip 3.

TABLE 148. SAMPLES SUBMITTED AND ANALYZED FOR METALS

Site	Trip	Submitted		Analyzed	
		Type	Number	Type	Number
Hospital (New)	1	Screen[a]	3	Screen	3
		Total[b]	7	Total	7
	2	Screen	3	Screen	3
		Total	7	Total	7
	3[c]	Screen	0	Screen	0
		Total	3	Total	3
Office (New)	1	Screen	3	Screen	3
		Total	7	Total	0
	2	Screen	3	Screen	0
		Total	0	Total	0
Nursing Home (New)	1	Screen	3	Screen	3
		Total	7	Total	0
	2[c]	Screen	0	Screen	0
		Total	3	Total	3
Office (Old)	1	Screen	3	Screen	3
		Total	7	Total	7
School (Old)	1	Screen	3	Screen	3
		Total	7	Total	0
Nursing Home (Old)	1	Screen	3	Screen	3
		Total	0	Total	0

[a]Consisted of one sample collected at the indoor and outdoor locations.
[b]All remaining samples collected at the building, these were submitted if the screening analysis gave positive results.

TABLE 149. QUANTIFIABLE LIMITS FOR METAL SAMPLES COLLECTED DURING FIELD MONITORING

	Trip	Quantifiable Limit (ng/m^3)								
		Al	Cr	Mn	Ni	As	Se	Br	Cd	Pb
New Buildings										
Hospital	1	38	67	10	1.3	17	14	6.8	118	31
	2	390	42	11	3.2	18	14	11	121	32
	3	130	16	1.6	0.20	2.1	0.56	0.70	6.7	4.6
Office	1	380	42	10	3.1	18	14	11	121	32
Nursing Home	1	380	42	11	3.1	18	14	11	121	32
	2	130	16.4	1.7	0.20	2.2	0.58	0.72	7.2	4.8
Old Buildings										
Office	1	390	60	14	0.32	18	14	3.2	121	32
Office/School	1	400	44	11	3.2	18	15	12	124	33
Nursing Home	1	390	24	11	7.4	18	14	11	96	35

TABLE 150. PERCENTAGE OF SAMPLES WITH QUANTIFIABLE LEVELS OF TARGET METALS

Site	Trip	Percent Detected								
		Al	Cr	Mn	Ni	As	Se	Br	Cd	Pb
New Buildings										
Hospital										
Indoor (6)[a]	1	0	0	0	0	0	0	0	0	0
Outdoor (3)		0	0	0	33	0	0	0	0	66
Indoor (2)	2	0	0	0	0	0	0	0	0	0
Outdoor (1)		0	0	0	100	0	0	0	0	0
Indoor (2)	3	0	0	0	100	50	0	100	0	100
Outdoor (1)		0	0	100	100	0	0	100	0	100
Office										
Indoor (2)	1	0	0	0	0	0	0	100	0	0
Outdoor (1)		0	0	0	0	0	0	0	0	0
Nursing Home										
Indoor (2)	1	0	0	0	50	0	0	50	0	50
Outdoor (1)		0	0	100	100	0	0	100	0	100
Indoor (2)	2	0	0	50	100	0	0	100	0	100
Outdoor (1)		0	0	100	100	0	0	100	0	100

(continued)

TABLE 150. (continued

Site	Trip	Percent Detected								
		Al	Cr	Mn	Ni	As	Se	Br	Cd	Pb
Old Buildings										
Office										
Indoor (6)	1	0	66	33	66	0	0	33	0	33
Outdoor (3)		0	66	100	100	0	0	100	0	100
Office/School										
Indoor (2)	1	0	0	0	50	0	0	0	0	50
Outdoor (1)		0	0	0	100	0	0	100	0	0
Nursing Home										
Indoor (2)		0	0	0	0	0	0	0	0	0
Outdoor (1)		0	0	0	0	0	0	0	0	100

[a]Number of samples analyzed.

TABLE 151. MEAN CONCENTRATIONS OF METALS FOUND DURING FIELD MONITORING

Site	Trip	Mean Concentration (ng/m^3)					
		Cr	Mn	Ni	Br	Pb	As
New Buildings							
Hospital							
Indoor (6)[b]	1	ND[a]	ND	ND	ND	ND	ND
Outdoor (3)		ND	ND	4.9	ND	26	ND
Indoor (2)	2	ND	ND	ND	ND	ND	ND
Outdoor (1)		ND	ND	7.2	ND	ND	ND
Indoor (2)	3	ND	ND	0.64	3.0	5.4	1.3
Outdoor (1)		ND	1.9	8.8	2.8	6.6	ND
Office[c]							
Indoor (2)	1	ND	ND	ND	20	ND	ND
Outdoor (1)		ND	ND	ND	ND	ND	ND
Nursing Home							
Indoor (2)	1	ND	ND	3.9	13	30	ND
Outdoor (1)		ND	12	12	27	86	ND
Indoor (2)	2	ND	1.7	2.0	6.5	16	ND
Outdoor (1)		ND	7.5	4.7	11	4.7	ND

(continued)

TABLE 151. (continued)

Site	Trip	Mean Concentration (ng/m^3)					
		Cr	Mn	Ni	Br	Pb	As
Old Buildings							
Office							
Indoor (6)[a]	1	ND[b]	16	7.2	6.5	39	ND
Outdoor (3)		ND	41	15	43	240	ND
Office/School							
Indoor (2)	1	ND	ND	3.5	ND	38	ND
Outdoor (1)		ND	ND	8.6	32	ND	ND
Nursing Home							
Indoor (2)	1	ND	ND	ND	ND	ND	ND
Outdoor (1)		ND	ND	ND	ND	65	ND

[a]Sample number.
[b]Below the quantifiable limit.
[c]Samples from Trip 2 were never analyzed.

FORMALDEHYDE

Results of formaldehyde analyses are given in Table 152 to 153. Table 152 reports the percentage of air samples that had concentrations reported above the quantifiable limits (QL). This statistic, referred to as percent detected, was calculated for both indoor and outdoor samples collected during each field monitoring trip. Results indicate that indoor samples had higher percent detected values than outdoor samples. The new office building, trip 2, and the old nursing home had highest percent detected values.

Table 153 gives formaldehyde concentrations measured during field monitoring. Concentrations are reported for each location by time period for each trip. Trip 2 to the new office showed highest indoor concentration, as well as highest percent detected values. This observation correlates nicely with the concentration data for α-pinene (see volatile organics section), where concentrations were also highest. As with formaldehyde, concentrations of α-pinene also increased between the first and second field monitoring trips. Since both formaldehyde and α-pinene outgas from particle board, we presume that both observations resulted from moving office furniture into the building between the first and second field monitoring trips. For the remaining buildings, no conclusions were drawn from the results due to limited data.

RADON

Results of radon analysis for samples collected during this field monitoring program are given in Table 154. These results may be compared to the following indoor radon levels:

Radon (pCi/L)	Type of Level and Remarks
4.0	U.S. EPA target level regulation for homes built on sites contaminated by uranium processing.
5.0	Bonneville Power Administration (U.S. Department of Energy) level for remedial action in weatherized homes.
8.0	National Council on Radiation Protection and Measurements recommended level for remedial action for continuous exposure.

TABLE 152. PERCENTAGE OF FORMALDEHYDE SAMPLES ABOVE THE QUANTIFIABLE LEVELS

Site	Trip	LOD (ppb)[a]	QL (ppb)[b]	Percent Detected[c] Indoors	Percent Detected[c] Outdoors
New Buildings					
Hospital	1	28	55	66	66
	2	39	78	11	0
	3	24	58	0	0
Office	1	9.5	19	44	0
	2	17	32	100	33
Nursing Home	1	NC	NC	NC	NC
	2	161	299	0	NC
Old Buildings					
Office	1	31	61	22	0
Office/School	1	38	76	0	0
Nursing Home	1	7.6	9.6	89	33

[a]Limit of detection.
[b]Quantifiable limit.
[c]Percent above the QL.

TABLE 153. RESULTS OF FORMALDEHYDE ANALYSIS

Site	Trip	Concentration (ppb) Day 1	Day 2	Day 3
New Buildings				
Hospital				
Visitors' Lounge	1	ND[a]	ND	ND
Nurses' Station		64	65	124
Patients' Room		65	81	69, 73[b]
Outdoors		ND	93	73
Visitors' Lounge	2	ND	ND	ND
Nurses' Station		ND	ND	ND
Patients' Room		ND	230	ND
Outdoors		ND	ND	ND
Visitors' Lounge	3	ND	ND	ND
Nurses' Station		ND	ND	ND
Patients' Room		T[c]	T	ND, ND
Outdoors		ND	ND	ND
Offices				
Office, R-4	1	55	107	7
Office, R-1		489	ND	T
Office, R-7		46	T	T
Outdoors		45	ND	ND
Office, R-4	2	139	116	156
Office, R-1		148	110	109
Office, R-7		NC	192	137, 140
Outdoors		44	T	ND

(continued)

TABLE 153. (continued)

Site	Trip	Concentration (ppb) Day 1	Day 2	Day 3
New Buildings (continued)				
Nursing Homes				
Day Room	1	NC[d]	NC	NC
Nurses' Station		NC	NC	NC
Patients' Room		NC	NC	NC
Outdoors		NC	NC	NC
Day Room	2	ND	T	ND
Nurses' Station		ND	ND	ND
Patients' Room		NC	NC	NC
Outdoors		NC	NC	NC
Old Buildings				
Offices				
Third Floor Hallway	1	63	ND	T
Fifth Floor Hallway		T	ND	ND
Eighth Floor Hallway		T	T	T,97
Outdoors		T	T	ND

(continued)

TABLE 153. (continued)

Site	Trip	Concentration (ppb)		
		Day 1	Day 2	Day 3
Old Buildings (continued)				
Office/School				
First Floor Office	1	T	ND	ND
Second Floor Office		ND	ND	ND
Third Floor Office		T	T	T
Outdoors		ND	ND	ND
Nursing Home				
Unoccupied Apartment	1	72	78	103
TV Lounge		68	41	24
Occupied Apartment		34	ND	77, 84
Outdoors		24	ND	ND

[a]Below the detection limit.
[b]Duplicate determinations.
[c]Below the quantifiable limit, but above the detection limit.
[d]Not calcualted, poor results for controls.

TABLE 154. RESULTS OF RADON MONITORING

Location	Trip	Radon Concentration (pCi/L)
New Buildings		
Hospital (New)	1	
Nurses' Station		1.49
Patients' Room		1.49 (0.37)[a]
Office	1	
Office, R-1		4.11
Office, R-7		0.65
Office, R-1	2	0.44
Office, R-7		0.54 (0.331)
Nursing Home	1	
Nurses' Station		0.26
Patients' Room		0.14 (0.24)
Old Buildings		
Office	1	
5th Floor Hallway		NS[b]
8th Floor Hallway		1.68 (1.68)
Office/School	1	
2nd Floor Unoccupied Office		0.30
3rd Floor Occupied Office		0.41 (0.19)
Nursing Home	1	
Occupied Apartment		1.41
TV Lounge		1.50 (1.95)

[a]Duplicate samples.
[b]Sample removed from monitoring location during 3-month exposure period.

20.0 State of Pennsylvania recommended level for early remedial action.

One of the samples collected at the new office building, Office R-1, trip 1 had levels greater than 4.0 pCi/L. A sample taken during the same trip and a sample collected at the same location during trip 2 showed levels less than 1 pCi/L. Given these results, we feel the 4.1 pCi/L reading should be viewed with caution.

AIR EXCHANGE

In parallel with sampling air for target pollutants, 12-hour air exchange rate determinations were conducted by releasing sulfur hexafluoride (SF_6) into the air.

In most cases, the analysis showed a linear relationship that allowed the calculation of an air exchange rate. Where linearity could not be established, a calculation was not made. This was, in fact, the case for the second trip to the new nursing home. Here, the windows and doors were open throughout the monitoring period, and SF_6 concentrations quickly dropped below the detection levels, hence, no calculations could be made.

Results of air exchange measurements are reported in Table 155 for each location in each building by time period. Average concentrations were calculated for each trip over the entire measurement period as given in Table 156. Daytime and nighttime average exchange rates were also calculated and included in the table. Average air exchange rates were generally in the range 0.3 to 0.6 changes/h. The new hospital, trip 1, had the highest exchange rate (0.94 changes/h), while trip 2 to the same building (0.14) had the lowest. Noticeable difference between daytime and nighttime air exchange rates were found for the new hospital trips 1 and 2, the new office, trip 2, the new nursing home, trip 1 and the old nursing home. Daytime air exchange rates were usually higher.

CARBON MONOXIDE

Field data generated using the Bendix Infrared CO monitors were compiled for the four sampling locations monitored at the old office building. Results in Table 157 are presented as 12-hour averages representing daytime (7 AM to 7 PM) and nighttime (7 PM to 7 AM) samples. No

TABLE 155. AIR EXCHANGE RATES MEASURED DURING FIELD MONITORING

Site	Trip	Location	Air Exchange Rate (1/hr)					
			Night 1	Day 1	Night 2	Day 2	Night 3	Day 3
New Buildings								
Hospital	1	Visitors' Lounge	1.94	1.96	0.46	0.28	0.69	1.06
		Nurses' Station	0.64	0.12	0.27	0.12	1.12	2.43
		Patients' Room	1.90	NC[a]	0.55	0.57	NC	0.92
	2	Visitors' Lounge	0.21	0.09	0.13	0.24	0.10	0.27
		Nurses' Station	NC	-0.02	0.07	0.19	0.08	0.19
		Patients' Room	-0.10	0.03	0.08	0.25	0.03	0.44
	3	Visitors' Lounge	PC[b]	0.52	0.37	0.41	0.39	0.36
		Nurses' Station	0.46	0.39	0.46	0.53	0.42	0.63
		Patients' Room	0.38	0.72	0.27	0.55	0.24	0.42
Office	1	Office, R-4	0.68	0.64	0.63	0.55	0.51	0.48
		Office, R-1	0.71	0.62	0.63	0.49	0.52	0.62
		Office, R-7	0.66	0.69	0.63	0.52	0.49	0.64
	2	Office, R-4	0.19	0.38	0.21	0.39	0.17	0.55
		Office, R-1	0.25	0.37	0.23	0.36	0.18	0.30
		Office, R-7	0.25	0.40	0.21	0.38	NC	0.26

(continued)

TABLE 155. (continued)

Site	Trip	Location	Air Exchange Rate (1/hr)					
			Night 1	Day 1	Night 2	Day 2	Night 3	Day 3
New Buildings (continued)								
Nursing Home	1	Day Room	0.39	0.45	0.54	0.56	0.42	0.66
		Nurses' Station	0.41	0.79	0.54	0.76	0.37	0.72
		Patients' Room	0.37	0.67	0.53	0.66	0.37	0.62
	2	Day Room	ND[c]	ND	ND	0.48	ND	0.68
		Nurses' Station	ND	ND	ND	0.44	0.11	ND
		Patients' Room	ND	ND	0.12	0.64	0.29	0.66
Old Buildings								
Office	1	Third Floor Hallway	0.53	0.37	0.42	0.45	0.54	0.71
		Fifth Floor Hallway	0.18	0.46	0.06	0.29	0.07	0.35
		Eighth Floor Hallway	0.55	0.58	0.54	0.61	0.65	0.62
Office/School	1	Second Floor Renovated Office	0.51	0.61	0.51	0.61	0.59	NC
		Third Floor Unoccupied Office	0.37	0.46	0.33	0.52	0.45	NC
		Fifth Floor Occupied Office	0.39	0.58	0.38	0.68	0.51	NC
Nursing Home	1	Unoccupied Apartment	0.45	PC	0.16	0.14	0.74	0.96
		TV Lounge	NC	0.48	0.24	0.70	0.46	0.80
		Occupied Apartment	0.25	0.16	0.22	PC	0.24	NC

[a]Not collected.
[b]Poor correlation during analysis.
[c]No data; windows and door open during monitoring.

TABLE 156. AVERAGE AIR EXCHANGE MEASUREMENTS FOR FIELD MONITORING TRIPS

Location	Trip	Air Exchange Rate (Changes/h) ± S.D. Overall	Day	Night
New Buildings				
Hospital	1	0.94 ± 0.73	0.93 ± 0.86	0.95 ± 0.64
	2	0.14 ± 0.12	0.19 ± 0.14	0.08 ± 0.08
	3	0.44 ± 0.12	0.50 ± 0.12	0.37 ± 0.08
Office	1	0.60 ± 0.08	0.58 ± 0.08	0.61 ± 0.08
	2	0.30 ± 0.10	0.38 ± 0.07	0.21 ± 0.03
Nursing Home	1	0.54 ± 0.14	0.65 ± 0.10	0.43 ± 0.08
	2	NC[a]	NC	NC
Old Buildings				
Office	1	0.44 ± 0.19	0.49 ± 0.14	0.39 ± 0.23
Office/School	1	0.50 ± 1.10	0.57 ± 0.08	0.45 ± 0.08
Nursing Home	1	0.43 ± .27	0.54 ± 0.33	0.35 ± 0.19

[a]Not calculated.

TABLE 157. CARBON MONOXIDE CONCENTRATIONS AT THE OLD OFFICE, TRIP 1

Location	CO Concentration (ppm)					
	Day			Night		
	Mean±S.D.	Minimum	Maximum	Mean±S.D.	Minimum	Maximum
Third Floor Hallway						
Day 1	1.1 ± 0.17	0.76	1.3	0.98 ± 0.08	0.86	1.1
Day 2	1.5 ± 0.55	1.1	3.1	2.4 ± 0.34	1.8	3.1
Day 3	1.4 ± 0.27	1.0	1.9	1.6 ± 0.19	1.2	1.8
Fifth Floor Hallway						
Day 1	SL[a]	SL	SL	SL	SL	SL
Day 2	SL	SL	SL	SL	SL	SL
Day 3	SL	SL	SL	SL	SL	SL
Eighth Floor Elevator Alcove						
Day 1	ND[b]	ND	ND	ND	ND	ND
Day 2	0.89 ± 0.66	ND	1.5	ND	ND	ND
Day 3	1.6 ± 1.4	ND	2.0	ND	ND	ND
Outdoors						
Day 1	1.1 ± 0.29	0.77	1.6	1.1 ± 0.40	0.72	1.8
Day 2	3.1 ± 1.1	1.9	5.5	1.5 ± 0.35	1.0	2.3
Day 3	3.1 ± 0.69	1.9	4.2	1.6 ± 0.45	1.0	2.3
Outdoors (Duplicate)						
Day 1	ND	ND	ND	ND	ND	ND
Day 2	0.89 ± 0.66	ND	1.5	ND	ND	ND
Day 3	1.64 ± 1.4	ND	2.0	ND	ND	ND

[a]Sample lost, monitor not working.
[b]Not detected; monitor reading was ≤0 ppm.

general trends are noted in the data. Carbon monoxide was not monitored on any other field trips.

NITROGEN DIOXIDE

Field data generated using the Bendix chemiluminescent monitors were compiled for the four sampling locations monitored at the old office building. Results in Table 158 are presented as 12-hour averages representing daytime (7 AM to 7 PM) and nighttime (7 PM to 7 AM) samples. No general trends are noted in the data. Nitrogen dioxide was not monitored on any other field trips.

ASBESTOS

Only one sample, that sample collected at the day room in the new nursing home, had asbestos found above the detection limit. However, the level found in this sample (284 fibers/m^3) was identical to the level found in one of the field blanks. Because there was no known source of asbestos in the building and because none of the other samples from this building had detectable asbestos, the level detected here is probably an artifact, although this cannot be confirmed.

TABLE 158. NITROGEN DIOXIDE CONCENTRATIONS AT THE OLD OFFICE, TRIP 1

Location	NO_2 Concentration (ppb)					
	Day			Night		
	Mean±S.D.	Minimum	Maximum	Mean±S.D.	Minimum	Maximum
Third Floor Hallway						
Day 1	ND[a]	ND	ND	39 ± 21	10	60
Day 2	70 ± 0	70	70	63 ± 7.7	50	70
Day 3	44 ± 31	0	70	49 ± 12	30	60
Fifth Floor Hallway						
Day 1	ND	ND	ND	ND	ND	ND
Day 2	ND	ND	ND	ND	ND	ND
Day 3	ND	ND	ND	ND	ND	ND
Eighth Floor Elevator Alcove						
Day 1	2 ± 4	ND	10	13 ± 7.5	ND	20
Day 2	1 ± 2	ND	10	13 ± 6.5	ND	20
Day 3	1 ± 2	ND	10	11 ± 9.5	ND	30
Outdoors						
Day 1	29 ± 14	20	30	26 ± 12	20	30
Day 2	40 ± 14	30	60	30 ± 9.5	20	50
Day 3	41 ± 12	30	60	31 ± 19	10	60

[a]Not detected; monitor reading was ≤0 ppb.

SECTION 8

SOURCES OF VOLATILE CHEMICALS

INTRODUCTION

The purpose of this portion of the research program was to evaluate volatile organic emissions from building materials and relate these data to results of the concurrent field monitoring study.

The emission study was conducted in two phases. In the first phase, preliminary headspace experiments were performed by placing the material to be tested in a small glass jar and measuring the volatile organics emitted using a dynamic headspace technique. The experiments were specifically designed to give a fast, relatively inexpensive evaluation of emissions from a large variety of building materials.

Based on the results of the preliminary headspace experiments, several materials were selected for detailed emission studies using 12 L chambers under controlled conditions of temperature, humidity, and ventilation. Criteria for chamber testing included high emission of volatile organics from the material; high surface area of the material in the building; and/or unique emission of volatile organics from the material that were also found in the building.

PROCEDURES

Collection and Storage of Building Materials

All emission testing was performed on materials used in the construction of a new single-story office building in Fairfax, Virginia. Most of the 22 solid building materials tested were subsamples of the actual materials used in construction and were collected at the sampling site in January 1985. The remaining solid materials, plus the nine solvent-based materials, were purchased from the manufacturer. Manufacturing lots were matched where possible to materials actually used in the building. Table

159 lists the materials tested and a description of specifications where available.

Each of the solid materials collected at the building site were temporarily stored (<2 weeks) in individual plastic garbage bags (Mobile Kordite[R] large capacity 1.5 mil) in nonlaboratory areas at Research Triangle Institute. For permanent storage, the materials were individually wrapped in heavy duty aluminum foil and placed in an outdoor metal storage shed to minimize the potential for contamination from laboratory solvents and chemicals. Samples were stored for a maximum of four months prior to testing from January to April, 1985.

Solvent-based materials were stored in their containers as received.

Emissions Testing

Headspace Experiments--

Preliminary headspace experiments were performed to determine both the identities and approximate levels of volatile organic emissions from each of the 31 building materials. For solid materials, one or two pieces (~2 x 4 cm) were cut from the material. The total surface area of each material was accurately measured with calipers. For solvent-based products, the material was first mixed, then applied with a Teflon spatula to one side of a clean glass microscope slide (5.5 x 2.6 cm). The prepared slides were allowed to dry at 23°C for seven days protected from both dust and laboratory solvents.

During testing, the prepared sample material was placed in a wide-mouth glass jar, which was sealed with a custom-built Teflon head. Dry, purified nitrogen was introduced to the jar at 15 mL/min and allowed to vent for 60 to 90 minutes. After this equilibration period, a Tenax GC cartridge was placed into the sampling head as illustrated in Figure 9. For solid materials, the headspace was purged through the sorbent overnight at 15 mL/min. Solvent-based materials were tested for ~30 minutes. Blank samples were collected from empty jars under identical conditions to assess contamination. General conditions for the scouting experiments are given in Table 160. Detailed information on each material and test conditions is given in Appendix E.

TABLE 159. BUILDING MATERIALS TESTED FOR VOLATILE ORGANIC EMISSIONS DURING PRELIMINARY HEADSPACE EXPERIMENTS

Building Material	Description
Interior Exposure	
1. Carpet[a]	Wellcome brand, 24 oz. Oleasent fiber without pad.
2. Linoleum tile[a]	Armstrong Excelon brand, vinyl tile, 12 x 12 in.
3. Vinyl cove molding[a]	Vinyl wall baseboard molding, 4 in. high, applied around all interior walls.
4. Vinyl edge molding	Vinyl edging used where carpet meets doorway thresholds.
5. Interior mineral board	Gypsum wall board with paper backing on both sides.
6. Ceiling tile	Acoustical ceiling panels, mineral fiber with paper backing.
7. Black rubber molding[a]	Black rubber window channel and weatherstripping.
8. Particle board[a]	Used for cabinet construction in several rooms.
9. Plastic outlet cover	Beige phenolic plastic.
10. Small diameter telephone cable	Standard wall to telephone cable.
11. Large diameter telephone cable	Bundled wire cable for telephone or computer network.
12. Plastic laminate	Cabinet covering.
Building Shell	
13. Fiberglass insulation	CertainTeed brand, fiberglass with plastic backing, R value 19, batts 6.25 in. x 15 in. x 39 ft. 2 in.
14. Duct insulation	Corning brand, fiberglass with aluminum foil backing, 2 in. thick. (Not collected at building site.)
15. Polystyrene foam insulation[a]	Expanded polystyrene foam, 1 in. thick, R value approximately 4. (Not collected at building site.)
16. Exterior mineral board	Exterior grade mineral board with paper backing on both sides.
17. Water repellant mineral board	Exterior grade mineral board with water repellant backing.
18. Red clay brick	Standard fired clay bricks, origin unknown, for exterior building face.

(continued)

TABLE 159. (continued)

Building Material	Description
Building Shell (continued)	
19. Cement block	Standard cement building block for interior building walls.
20. PVC pipe	Polyvinyl chloride water pipe, 2.5 in. diameter.
21. Treated metal roofing	Sheet steel coated with fluorocarbon paint.
22. Tar paper	Water-proofing in building shell.
Solvent Based Materials	
23. Cove adhesive[a]	Redy-Mastic methanol based vinyl adhesive.
24. Carpet adhesive[a]	Fishman & Son #517 Latex multi-purpose adhesive.
25. Latex caulk	Superior Sealants white interior/exterior latex caulk.
26. Linoleum tile cement	Armstrong S-90 cement for Excelon tile.
27. Latex paint (Bruning)	Bruning Bay Country vinyl flat white #4075.
28. Latex paint (Glidden)[a]	Glidden High Profile Glid-Tex white #5392.
29. Joint compound	USG ready-mixed, all purpose, non-asbestos.
30. Urethane sealant	Sonolastic NP-1 one part sealant.
31. Wall primer/adhesive	R-Wall wall primer and adhesive.

[a]Materials selected for more detailed chamber study.

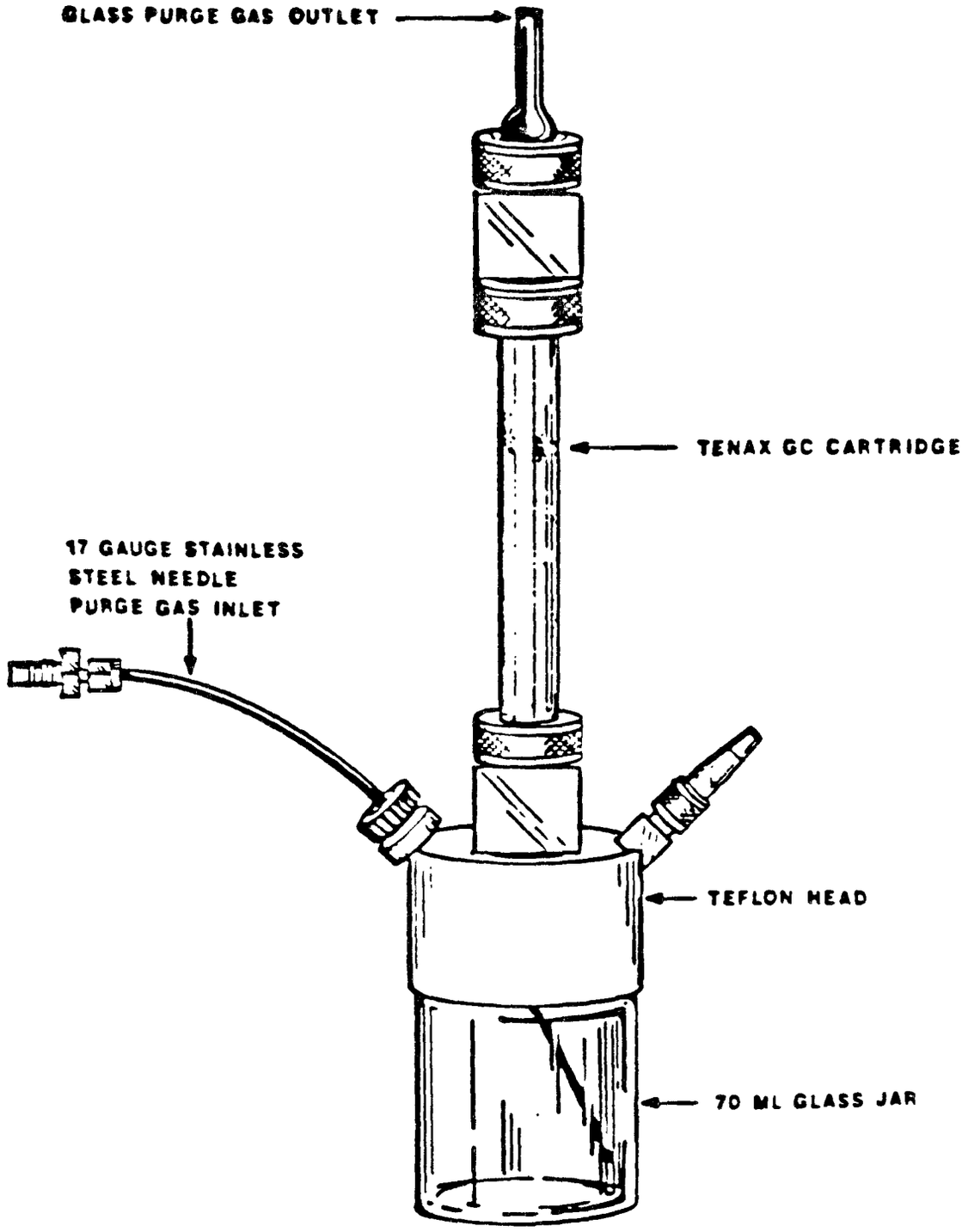


Figure 9. Headspace purge apparatus.

TABLE 160. CONDITIONS FOR EMISSIONS TESTING

Condition	Headspace Purge	Chamber
Chamber volume	0.08 L	12.0 L
Ventilation	0.9 L/hour	6.0 L/hour
Air changes per hour	11	0.5
Temperature	30-34°C	25°C
Relative humidity	0%	48%
Replicates	1	3-10
Solid material age	3 to 6 weeks	14 to 25 weeks
Solvent-based material age	7 days	7 days

Chamber Experiments--

Based on the results of the preliminary headspace experiments, several materials were selected for detailed emission studies using 12 L chambers under controlled conditions of temperature, humidity, and ventilation.

Table 161 lists the materials tested in each chamber experiment. Both solid and solvent-based materials were prepared as described for the scouting experiments.

For each chamber experiment, a sample of material was placed in one of four chambers and the chamber sealed. The ventilation rate was set and the samples allowed to equilibrate overnight at 25°C and 48% relative humidity. Purified air was supplied to each chamber at a rate of 0.1 L/min. From each chamber 0.033 L/min of this air was removed by pumping through an empty sampling tube, while the other 0.067 L/min was vented outside the chamber. A fan blade attached to a magnetic stir bar provided thorough mixing of the chamber atmosphere throughout the experiment. An individual chamber is illustrated in Figure 10 and a schematic representation of the chambers and air supply system is shown in Figure 11. After the equilibration period, Tenax GC cartridges replaced the empty sampling tube to collect organic compounds from the gas stream. Chamber blanks were prepared by leaving one of the chambers empty and collecting a sample of the air from the empty chamber for 6 hours in order to detect background contamination. Experimental conditions for the chamber study are summarized in Table 160. Detailed information on each material and test conditions is given in Appendix F.

Chamber Validation--

An experiment was performed to evaluate recovery of target volatiles from the test chambers by comparing concentration of volatile organics in air collected with and without the chamber in line. The system mimicked real emission sampling by providing a constant source of target volatiles into the chamber with sampling occurring under steady-state conditions.

For testing, twelve target volatiles were continuously introduced into the test chamber at a controlled rate. This was accomplished by placing a permeation tube for each compound in a glass mixing bulb maintained at 30°C. The glass mixing bulb was placed in-line with the humidified clean air supply and allowed to equilibrate overnight. After equilibration,

TABLE 161. MATERIAL TESTED DURING CHAMBER EXPERIMENTS

Material	Weight (g)	Surface Area (cm^2) Face	Surface Area (cm^2) Edge	Analytical Method
Cove Adhesive				
1	0.40	5.0	0.9	GC/MS[a]
2	1.09	14.0	1.6	GC/MS[a]
3	2.41	31.3	2.7	GC/MS[a]
Carpet				
1	37.7	340	43	GC/MS[a]
2	36.1	333	43	GC/MS[a]
3	37.8	357	44	GC/MS[a]
Vinyl Cove Molding				
1	43.4	245	8.9	GC/FID
2	43.0	245	8.9	GC/FID
3	41.3	249	5.0	GC/MS
Particle Board				
1	40.7	93.0	52.0	GC/MS
2	42.7	91.6	56.0	GC/FID[a]
3	31.5	88.4	38.5	GC/FID[a]
Linoleum Tile				
1	106.9	309	15.0	GC/MS
2	ND	257	33.4	GC/FID[a]
3	ND	257	33.4	GC/FID[a]
4	ND	257	33.4	GC/FID[a]
Black Rubber Molding				
1	24.6	130	2.4	GC/FID[a]
2	24.9	129	2.4	GC/FID[a]
3	24.1	125	2.4	GC/FID[a]
4	24.5	129	2.4	GC/MS
Polystyrene Foam Insulation				
1	3.06	166	91	GC/FID[a]
2	3.09	168	92	GC/FID[a]
3	3.07	163	91	GC/FID[a]
4	3.40	177	93	GC/MS

(continued)

TABLE 161. (continued)

Material	Weight (g)	Surface Area (cm^2) Face	Edge	Analytical Method
Carpet Adhesive				
1	0.93	10.1	1.3	GC/MS[a]
2	0.93	10.1	1.3	GC/MS[a]
3	0.93	10.1	1.3	GC/MS[a]
Glidden Latex Paint				
1	3.75	14.3	3.2	GC/FID[a]
2	4.09	14.3	3.2	GC/FID[a]
3	5.07	14.3	3.2	GC/FID[a]
4	4.77	14.3	3.2	GC/MS

[a]Replicates used to evaluate reproducibility.

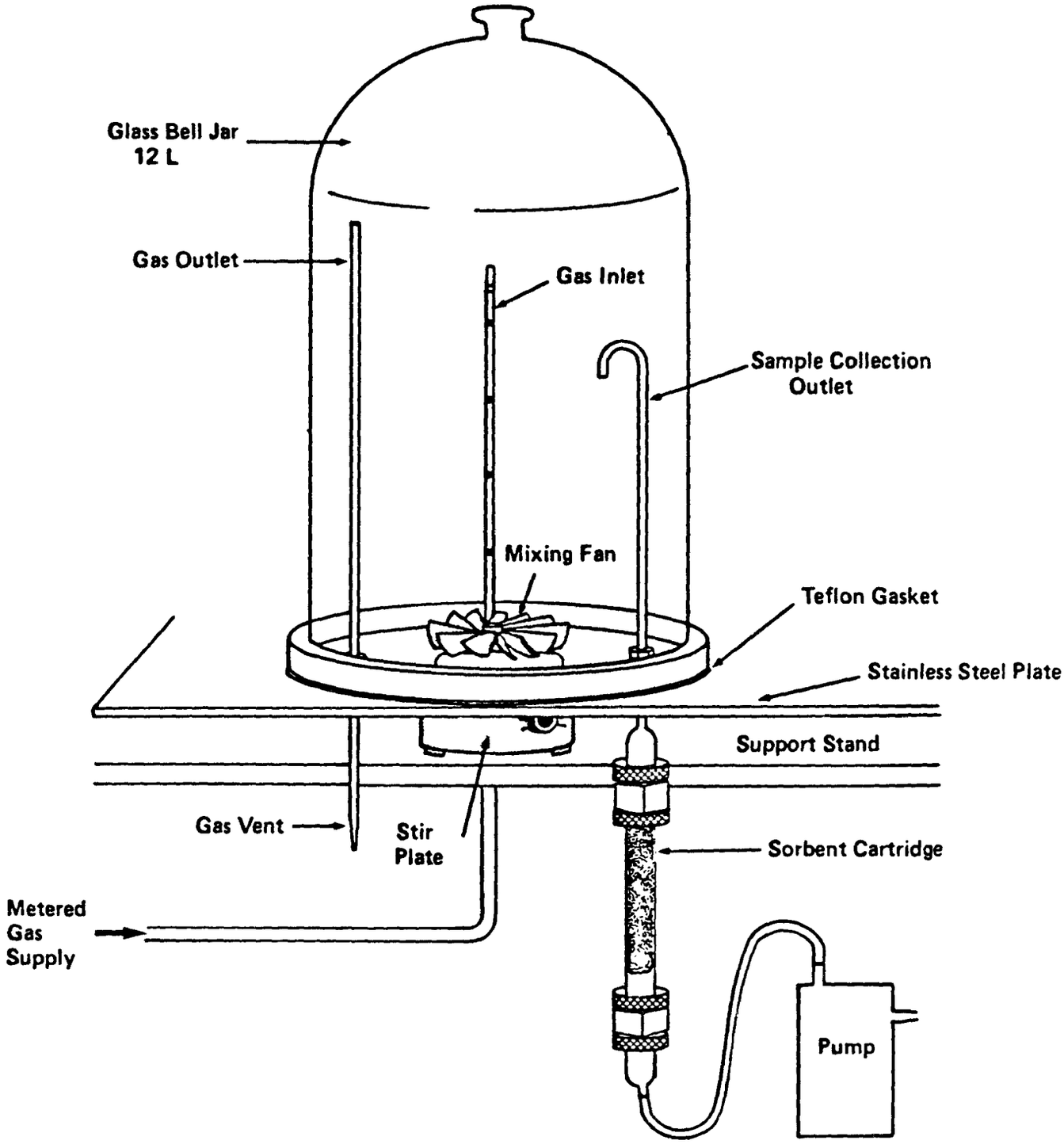


Figure 10. Test chamber.

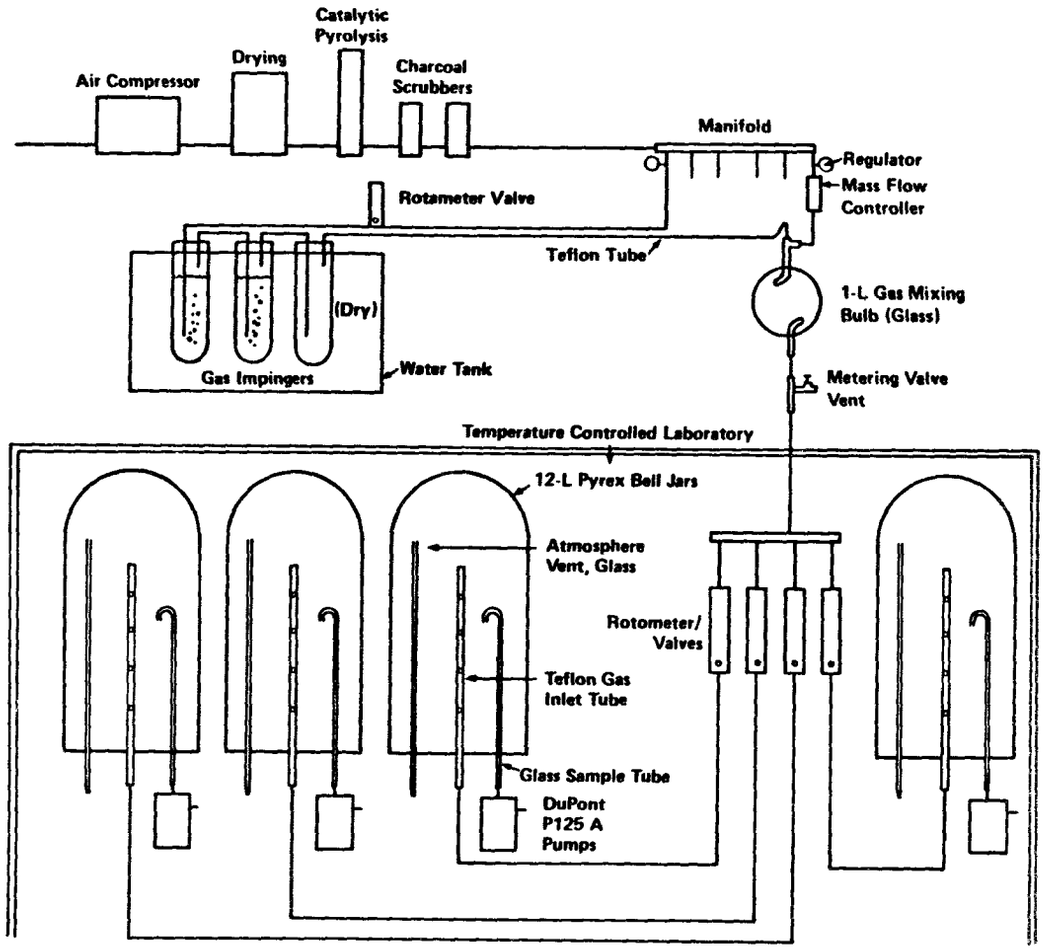


Figure 11. Chambers and air supply system.

three consecutive samples of the chamber air were collected on Tenax GC cartridges. Once the samples were collected, the emission test chamber was removed and replaced with a small glass splitter tube. After a one hour equilibration period, three consecutive air samples were collected on Tenax GC cartridges from the splitter tube. All collected samples were analyzed by GC/MS.

Sample Analysis

Headspace Experiments--

Recovery of volatile organics from Tenax GC was accomplished by thermal desorption and purging with helium into a liquid nitrogen cooled, nickel capillary trap. The vapors were then introduced into a high resolution, fused silica gas chromatographic column for component separation. Characterization and quantitation of the constituents in the sample were accomplished by electron impact mass spectrometry. Quantitation was performed by measuring the intensity of the extracted ion current profile. Gas chromatography/mass spectrometry (GC/MS) conditions used during sample analysis are presented in Table 16. Thirty-two target volatile organic chemicals were quantitated in each sample (ng/cartridge) as described in Section 6.

Concentrations in the chamber air (C) were calculated as:

$$C\ (ng/L) = \frac{ng_T}{\text{volume sampled (L)}}$$

where ng_T are the ng of each target found per cartridge.

Qualitative analysis was also performed on each sample. In order to minimize the effort associated with identifying each sample component, chemical class identifications were made for the alkanes and alkyl benzenes by comparing single ion chromatograms (SIC) to the reconstructed ion chromatograms (RIC) for a given sample. It was assumed, based on mass spectral fragmentation patterns, that sample components with fragment ions at 119 and 134 were alkyl benzenes; similar identifications were made for the aliphatic hydrocarbons using fragment ions at 57 and 71. Major components in each sample that did not correspond to these two chemical classes or that were not target chemicals were identified by searching the EPA/NIH data bases using an INCOS computer search alogrithm.

Chamber Experiments--

Tenax GC cartridges exposed during the chamber experiments were loaded with ~250 ng of bromopentafluorobenzene as an external standard, then thermally desorbed and injected into a high resolution capillary column as described above. Samples were analyzed by either GC/MS or GC/FID as indicated on Table 161.

Procedures for GC/MS analyses and quantitation of the 32 target chemicals are identical to those used for the headspace experiments. Conditions for GC/FID analysis are shown in Table 162.

Quantitation of GC/FID results was accomplished using response factors (RF). RF values for each target chemical were generated by analyzing standard cartridges loaded with known amounts of targets (T) and external standard (ES). RFs were calculated as:

$$RF_T = \frac{A_T \bullet ng_{ES}}{A_{ES} \bullet ng_T}$$

A_T is the peak area of target compound and ng_T is the ng of target compound injected into the GC/FID system. Likewise, A_{ES} and ng_{ES} are the peak area and amount injected of the external standard. The average RF was then used to quantitate targets on sample cartridges from the peak area of the target chemical. Sample concentrations were calculated as described above for headspace experiments.

Target chemicals were identified during GC/FID analysis by comparing relative retention times for the samples and standards. For each material tested, at least one exposed cartridge was analyzed by GC/MS. Comparison of these results to GC/FID results assisted in positively identifying target chemicals. Only those chemicals identified at high levels without chromatographic interferences were quantitated by GC/FID.

RESULTS

Headspace Experiments

Results of preliminary headspace experiments are illustrated in Figures 12 to 15 which give total ion chromatograms resulting from GC/MS analysis of the preliminary headspace experiments. The external standard, bromopentofluorobenzene is designated on each chromatogram as (*). Since the

TABLE 162. GC/FID ANALYSIS CONDITIONS

Thermal Desorption	
Carrier gas:	Helium
Carrier flow:	2 mL/min
Desorption time:	8 min
Purge flow:	17-19 mL/min
Purge temperature:	270°C
Gas chromatography	
Column:	60 m wide-bore DB-1 fused silica, 1 μ film thickness
GC Program:	30°C (5 min) to 240°C at 4°C/min

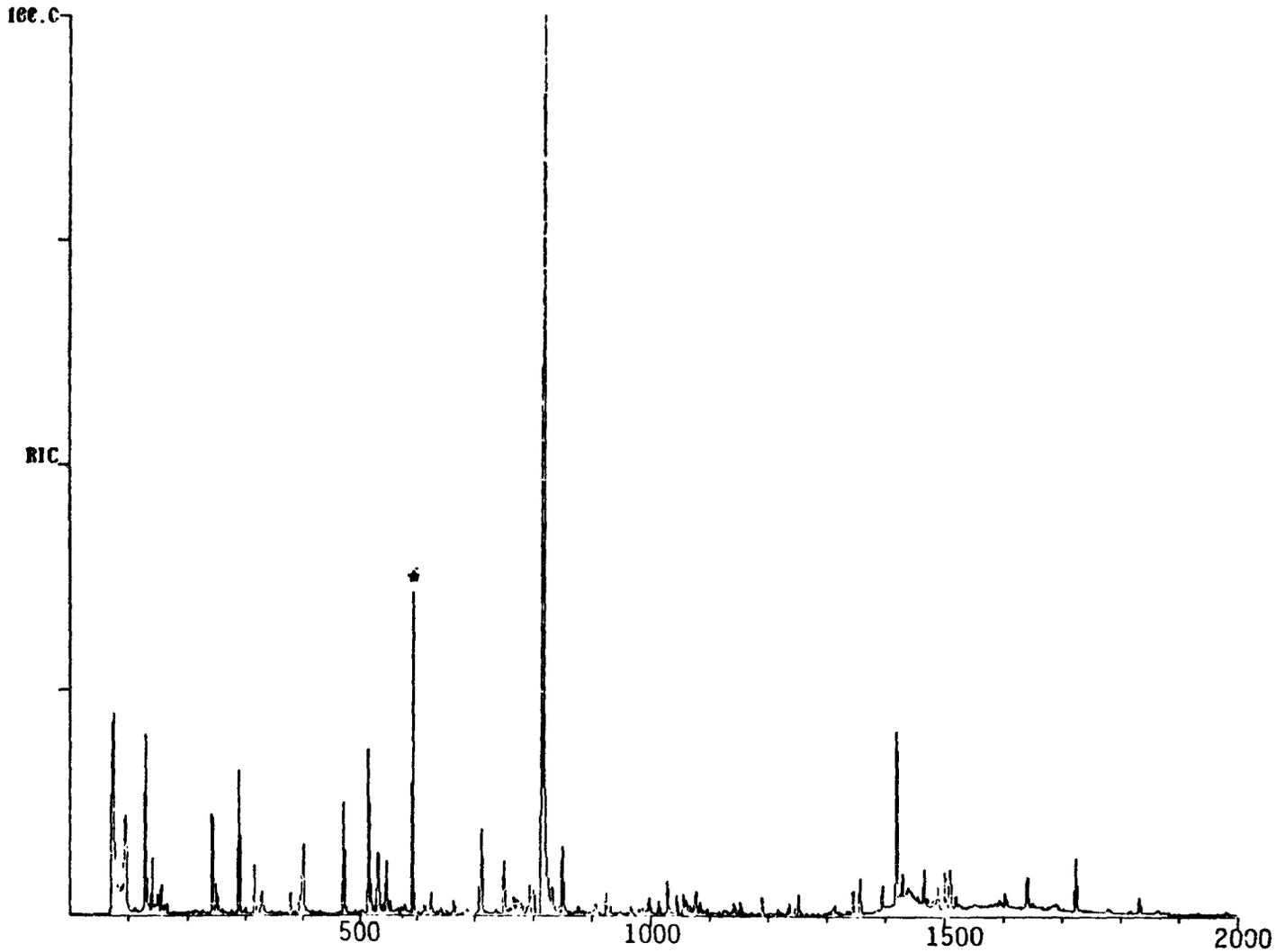


Figure 12. GC/MS chromatogram of air from empty headspace purge apparatus used for emission scouting procedure (* designates the external standard).

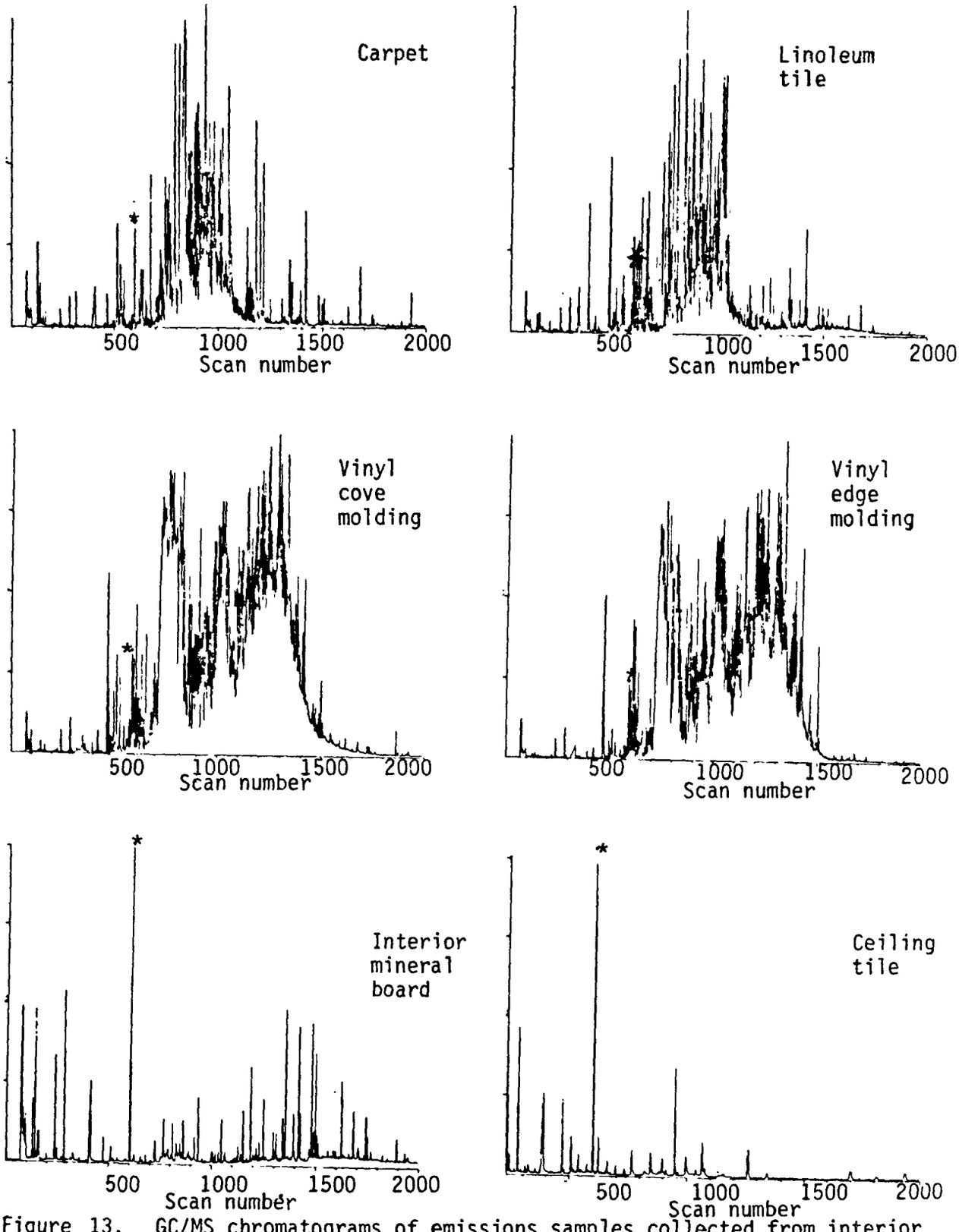


Figure 13. GC/MS chromatograms of emissions samples collected from interior exposure building materials during headspace experiments (* designates the external standard).

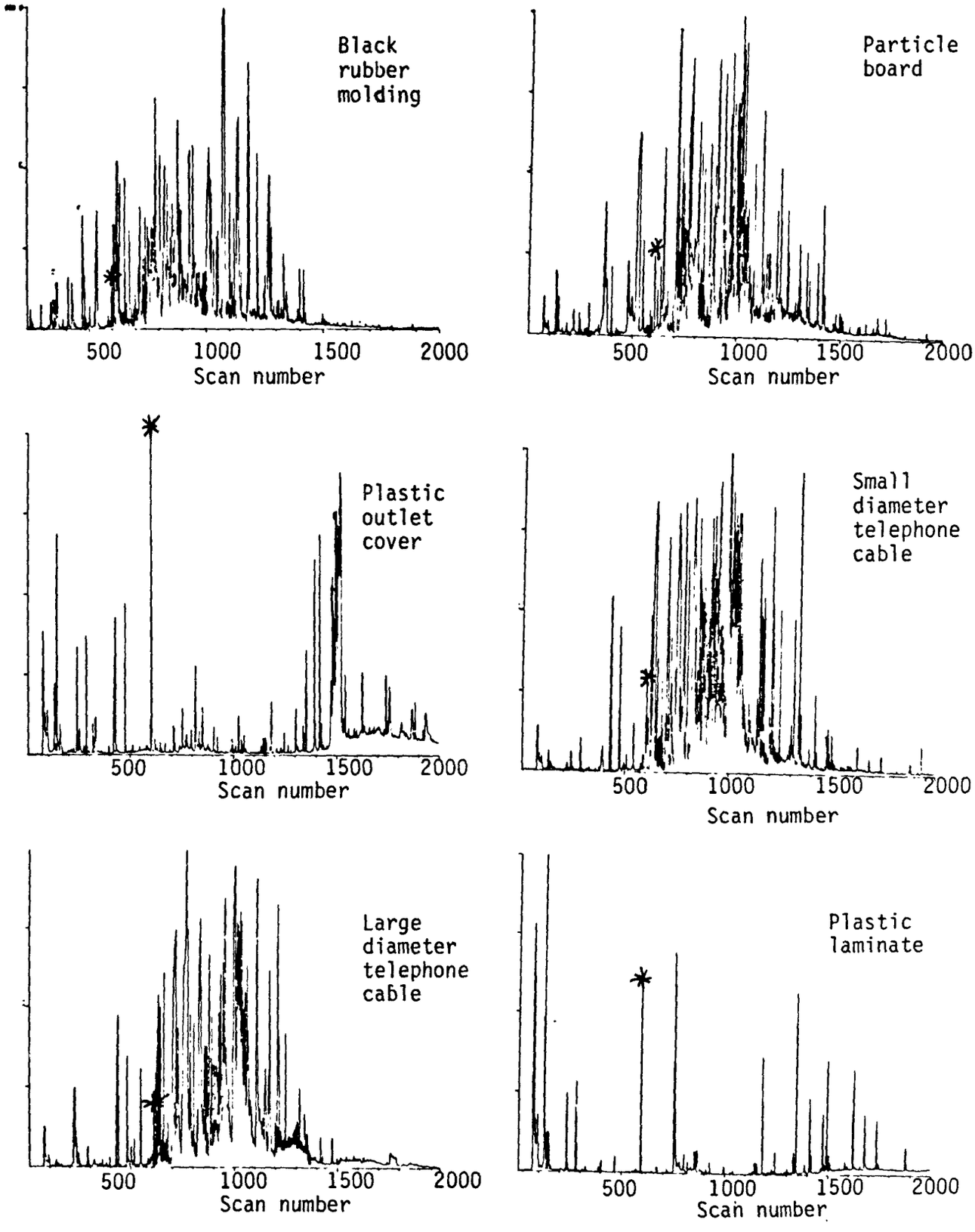


Figure 13. (continued)

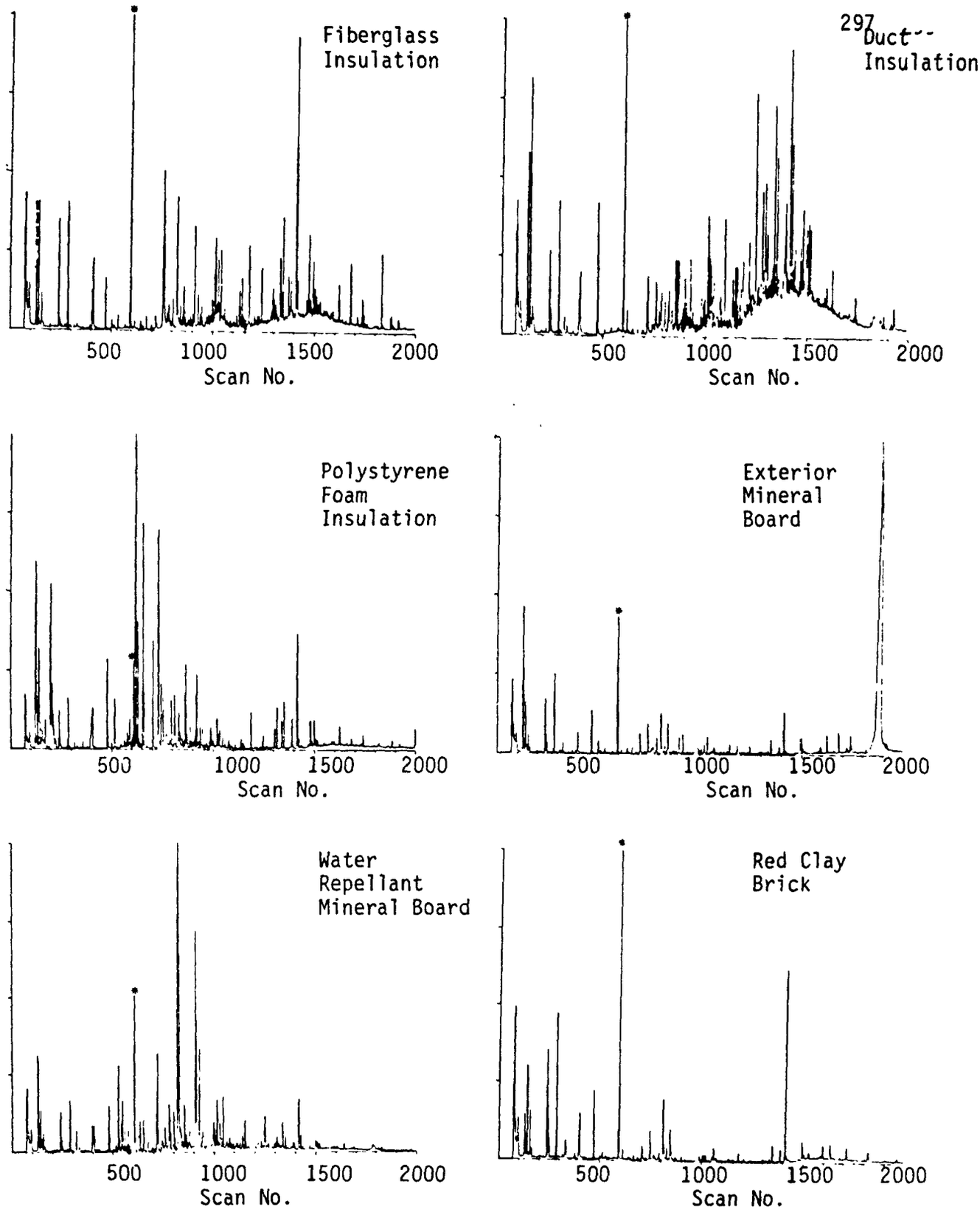
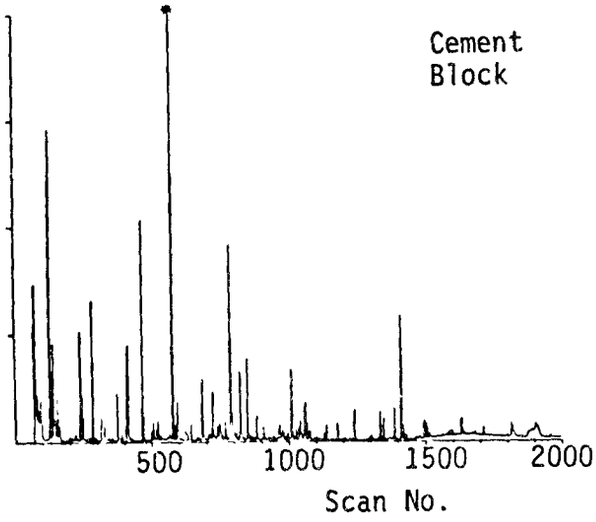
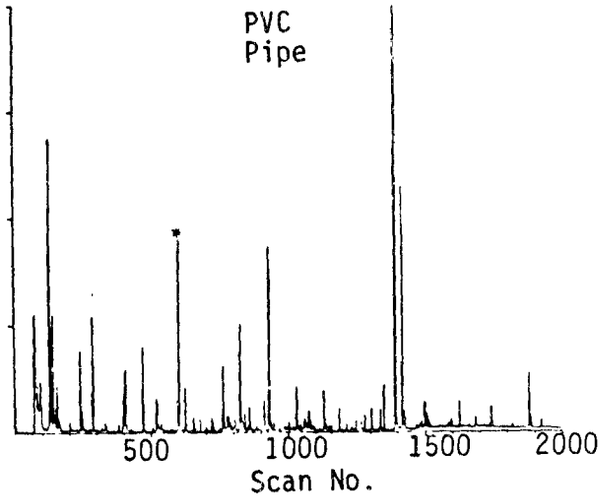
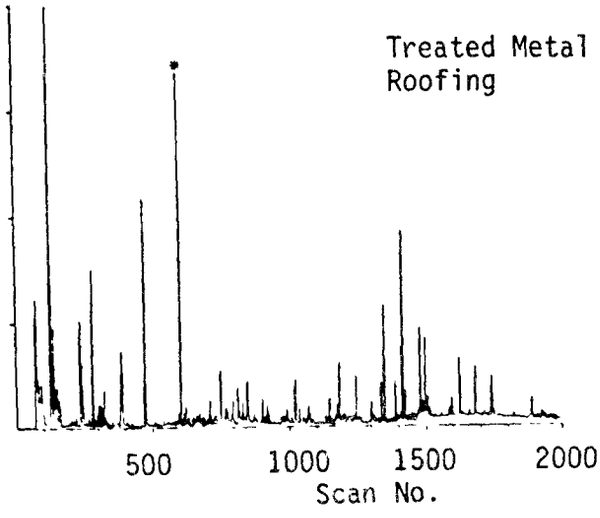


Figure 14. GC/MS chromatograms of emissions samples collected from building shell materials during headspace experiments (* designates the external standard).







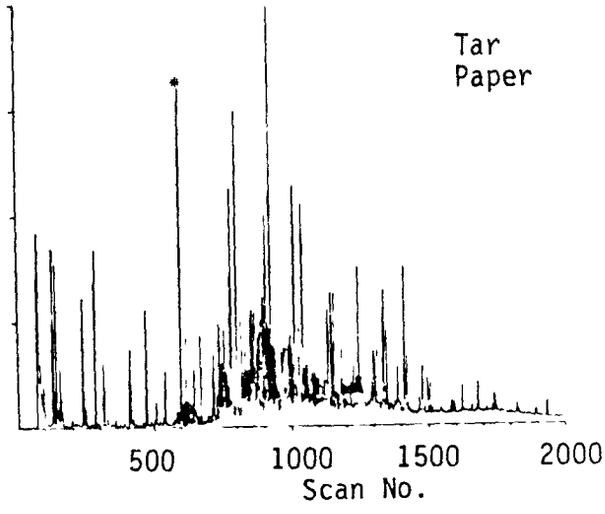


Figure 14. (continued)

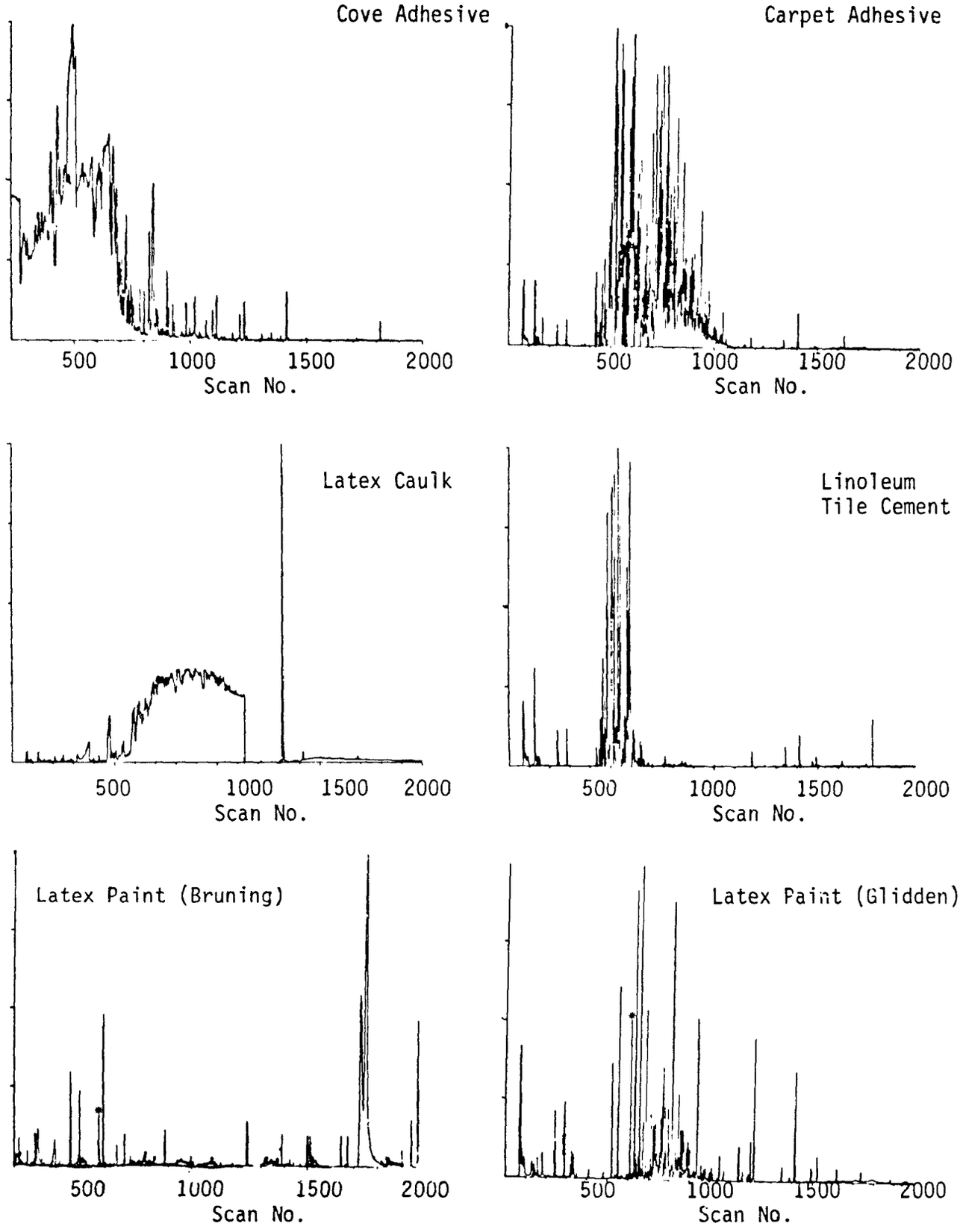
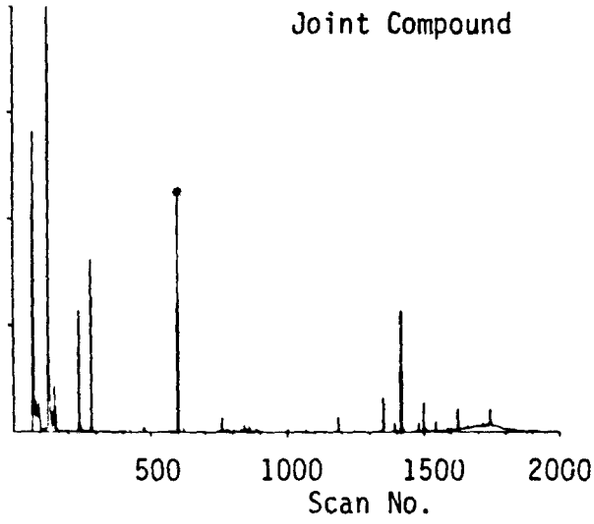
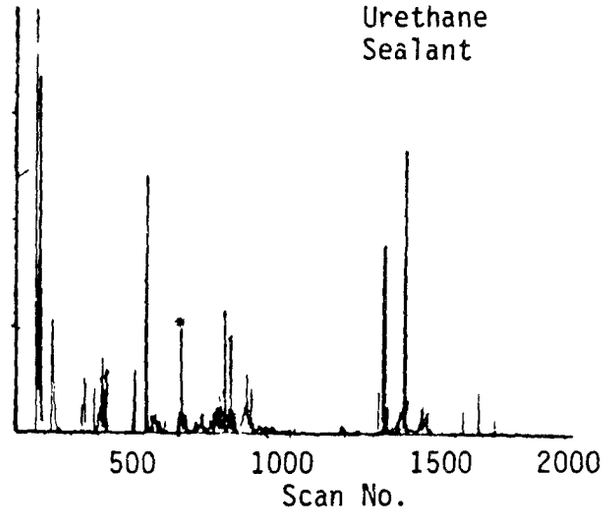


Figure 15. GC/MS chromatograms of emissions samples collected from solvent based building materials during headspace experiments (* designates the external standard).





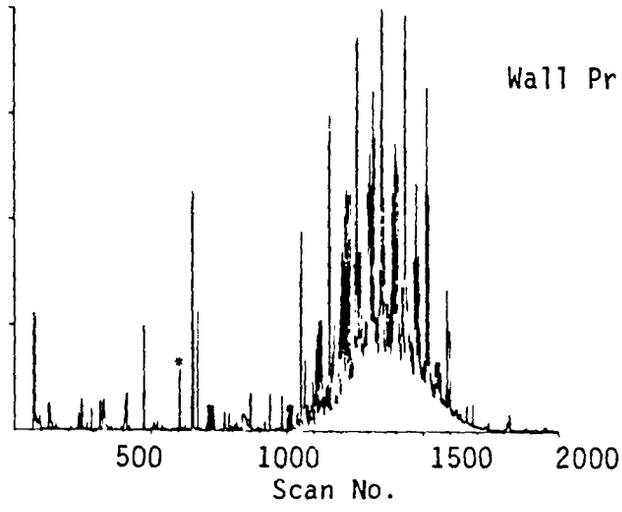


Figure 15. (continued)

same amount (~250 ng) of standard was added to all cartridges, analytical results may be normalized using peak height of the standard.

Quantitative results were used to estimate total emission rates of target chemicals from each of the test materials. Under steady-state conditions, the total emission rate of a chemical from a material should be equal to its removal rate from the test chamber, and a simplified mass balance equation can be used:

$$E_T = CV \times 1000$$

where E_T = total emission rate, μg/h; C = concentration in the chamber atmosphere, ng/L, and V = total ventilation rate, L/h. During experiments, we assumed steady-state conditions were approached when we allowed the samples to equilibrate in the test chamber for 60 to 90 minutes prior to sample collection. An emission rate (E) per material surface area was then calculated as:

$$E\ (\mu g/m^2\ h) = E_T/\text{Surface Area}\ (m^2)$$

Table 163 shows levels of target volatiles found in method blanks. Results indicate contamination problems only for benzene and n-dodecane. Here emission rates were calculated only when the amount of target found in emission samples was 5 times higher than that found in blank samples.

Tables 164 to 166 summarize calculated emission rates for each of the tested materials. In each table, materials with the highest emission rates are listed first. Although cove adhesive gave very high emission rates, data are not reported. The sample was overloaded with organics and accurate identifications and quantitation could not be performed. Information from all three tables is shown in Table 167, which gives the summed emission rates for all target chemicals by material tested and compound class. Results show that for the target compounds, at least, aliphatic and aromatic hydrocarbons were emitted at the highest rates from most materials. The solvent-based materials generally gave high emissions. Although linoleum tile cement and primer adhesive did not emit high levels of target volatiles, they did emit other volatile organics. The Bruning latex paint and joint compound did not give high emissions of any volatile organics.

Table 168 lists other volatile organics that were emitted from the test materials at high rates, but that were not quantitated. Aliphatic and aromatic hydrocarbons were the most abundant chemicals identified in many

TABLE 163. TARGET VOLATILES FOUND IN METHOD BLANKS DURING CHAMBER STUDIES

Compound	Amount (ng)	
	Blank 1	Blank 2
Benzene	32	3.9
m,p-Xylene	ND	4.6
n-Dodecane	ND	36

TABLE 164. CALCULATED EMISSION RATES FOR HALOGENATED ORGANICS DURING HEADSPACE EXPERIMENTS

Sample[a]	Emission Rate ($\mu g/m^2$ h)						
	1,2-Dichloro-ethane	1,1,1-Trichloro-ethane	Trichloro-ethylene	Tetrachloro-ethylene	Chloro-benzene	p-Dichloro-benzene	o-Dichloro-benzene
Latex paint (Glidden)	-[b]	-	-	86	-	-	-
Latex caulk	-	4.9[c]	0.28[c]	-	-	-	-
Large diameter telephone cable	-	0.21	-	3.8	-	0.24	0.08
Linoleum tile	0.16	0.06	3.6	0.09	-	0.08	-
Small diameter telephone cable	0.53	-	0.26	-	-	0.58	-
Polystyrene foam insulation	-	-	-	-	0.46	0.71	0.17
Black rubber molding	-	0.12	-	0.25	-	0.51	-
Vinyl cove molding	-	0.17	0.05	0.18	-	0.18	0.04
Vinyl edge molding	-	0.20	-	-	-	0.18	0.03
Cement block	-	-	-	0.15	-	-	-
Particle board	-	-	-	-	-	0.14	-
Treated metal roofing	-	-	0.06	-	-	-	-
Fiberglass insulation	-	-	-	-	-	-	-
Interior mineral board	-	-	-	-	-	-	-
Ceiling tile	-	-	-	-	-	-	-
Tar paper	-	-	-	-	-	-	-
PVC pipe	-	-	-	-	-	-	-
Red clay brick	-	-	-	-	-	-	-
Exterior mineral board	-	-	-	-	-	-	-
Water repellant mineral board	-	-	-	-	-	-	-
Latex paint (Bruning)	-	-	-	-	-	-	-
Plastic laminate	-	-	-	-	-	-	-
Duct insulation	-	-	-	-	-	-	-
Plastic outlet cover	-	-	-	-	-	-	-
Urethane sealant	-	-	-	-	-	-	-
Primer/adhesive	-	-	-	-	-	-	-
Joint compound	-	-	-	-	-	-	-
Carpet adhesive	-	-	-	-	-	-	-
Linoleum tile cement	-	-	-	-	-	-	-
Carpet	-	-	-	-	-	-	-

[a]Emission rates are not given for cove adhesvie; sample was overloaded.
[b]No detectable emissions.
[c]Minimum value, compound saturated the detector during analysis.

TABLE 165. CALCULATED EMISSION RATES FOR VOLATILE AROMATIC COMPOUNDS DURING HEADSPACE EXPERIMENTS

Sample[a]	Emission Rate ($\mu g/m^2$ hr)											
	Benzene[b]	Ethyl-benzene	m,p-Xylene	Styrene	o-Xylene	Isopropyl-benzene	n-Propyl-benzene	m-Ethyl-toluene	1,3,5-Trimethyl-benzene	o-Ethyl-toluene	1,2,4-Trimethyl-benzene	1,2,3-Trimethyl-benzene
Latex caulk	5.2	2.0	47[c]	-	74[c]	22[c]	2.7[c]	60[c]	35[c]	23[c]	99[c]	12[c]
Carpet adhesive	-[d]	6.5	23	-	18	4 4	3.2	9.6	12	7.0	10	4.5
Black rubber molding	-	4.5	6.2[c]	0.33	7.6	0.51	0.96	3.3	2.1	1.7	3.4	2.6
Latex paint (Glidden)	7.5	1.0	6 4	-	3.0	1.4	1.8	9.1	6.0	2.6	11	1.7
Linoleum tile	-	1.2	2.6	1.1	3.3	1.4	2.3[c]	7.0[c]	3.1	2.0	3.4[c]	7.3[c]
Small diameter telephone cable	-	1.8	5.0[c]	0.67	3.9	0.55	0.79	3 9[c]	1.3	0.84	5.1[c]	1.8
Large diameter telephone cable	-	3.6	5.0[c]	0.63	3.5	0.78	0 65	2.1	0.69	0.17	2.3	1.0
Polystyrene foam insulation	-	10	1.5	4.9[c]	0.38	1 4	0.70	0.73	0.10	0.10	0.44	0.12
Vinyl cove molding	-	1.3	4.7	0.55	2.1	0.28	0.50	1.8	0.80	0.28	1.7	0.33
Vinyl edge molding	-	0 94	3 7	0.52	1.6	0.17	0.34	1 5	0.61	0.25	1.9	0 77
Carpet	0.92	0.05	0.41	0.10	0.37	0 17	0.49	2.1	1.5	1.1	2.2	1.3
Urethane sealant	2.1	0.06	0.21	-	0.13	0.16	0.11	0.79	0.37	0.21	1.2	0.13
Latex paint (Bruning)	2.4	-	-	-	-	-	-	0 22	-	-	-	0.53
Tar paper	-	0.07	0.31	0.04	0.24	-	0 09	0.54	0.30	0.21	0 96	0.32
Primer/adhesive	1.9	-	0.32	-	0.14	-	-	-	-	-	0.11	-
Particle board	-	-	-	0.13	-	0.15	-	0.59	-	-	0.17	0.04
PVC pipe	-	0.06	0.38	-	0.09	-	-	-	-	-	-	-
Water repellant mineral board	-	-	-	0.03	-	-	-	0.08	-	0.04	0.21	0.07
Cement block	-	0.06	0.15	0 05	0.07	-	-	-	-	-	0.06	-
Treated metal roofing	-	0 06	0.09	0.04	-	-	-	-	-	-	-	-
Fiberglass insulation	-	-	0.02	-	-	-	-	-	-	-	0.03	0.03
Duct insulation	-	-	-	-	-	-	-	0.03	-	-	0.08	0.04
Exterior mineral board	-	-	-	-	-	-	-	-	-	-	-	0.03
Interior mineral board	-	-	-	-	-	-	-	-	-	-	-	-
Ceiling tile	-	-	-	-	-	-	-	-	-	-	-	-
Red clay brick	-	-	-	-	-	-	-	-	-	-	-	-
Plastic laminate	-	-	-	-	-	-	-	-	-	-	-	-
Plastic outlet cover	-	-	-	-	-	-	-	-	-	-	-	-
Joint compound	-	-	-	-	-	-	-	-	-	-	-	-
Linoleum tile cement	-	-	-	-	-	-	-	-	-	-	-	-

[a] Emission rates are not reported for cove adhesive; sample was overloaded.
[b] Only emission rates higher than background reported
[c] Minimum value, compound saturated the detector during analysis.
[d] No detectable emissions.

TABLE 166. CALCULATED EMISSION RATES FOR ALIPHATIC AND OXYGENATED ALIPHATIC ORGANICS DURING HEADSPACE EXPERIMENTS

Sample[a]	Emission Rate ($\mu g/m^2$ h)				
	n-Butyl Acetate	α-Pinene	n-Decane	n-Undecane	n-Dodecane
Latex caulk	1.1[b]	-[c]	140[b]	84[b]	27[b]
Carpet adhesive	-	-	89	39	7.8
Latex paint (Glidden)	-	-	78	33	-
Small diameter telephone cable	-	-	9.8	15[b]	8.1[b]
Vinyl cove molding	0.77	-	7.6	12	11
Carpet	-	-	11	12	4.0
Particle board	-	25	-	0.52	1.7
Black rubber molding	-	2.1	11	8.6	2.0
Vinyl edge molding	0.78	0.17	3.0	6.1	7.9
Large diameter telephone cable	0.22	0.28	5.0	5.7	2.5
Linoleum tile	0.15	-	1.3	3.2	1.3
Primer/adhesive	-	-	-	-	3.6
Tar paper	-	-	1.2	2.0	-
Water repellant					
Mineral board	-	-	0.25	0.77	-
Polystyrene foam insulation	-	-	-	0.19	-
Duct insulation	-	-	-	0.13	-
Fiberglass insulation	-	-	-	-	-
Interior mineral board	-	-	-	-	-
Ceiling tile	-	-	-	-	-
PVC pipe	-	-	-	-	-
Red clay brick	-	-	-	-	-
Exterior mineral board	-	-	-	-	-
Cement block	-	-	-	-	-
Latex paint (Bruning)	-	-	-	-	-
Plastic laminate	-	-	-	-	-
Treated metal roofing	-	-	-	-	-
Plastic outlet cover	-	-	-	-	-
Urethane sealant	-	-	-	-	-
Joint compound	-	-	-	-	-
Linoleum tile cement	-	-	-	-	-

[a]Emission rates for cove adhesive not reported; sample was overloaded.
[b]Minimum value, compound saturated the detector during analysis.
[c]No detectable emissions.

TABLE 167. SUMMARY OF EMISSION RESULTS

Sample[a]	Emission Rate ($\mu g/m^2$ h)			
	Aliphatic and Oxygenated Aliphatic Hydrocarbons	Aromatic Hydrocarbons	Halogenated Hydrocarbons	All Target Compounds
Latex caulk	252	380	5.2	637
Latex paint (Glidden)	111	52	86	249
Carpet adhesive	136	98	-[b]	234
Black rubber molding	24	78	0.88	103
Small diameter telephone cable	33	26	1.4	60
Vinyl cove molding	31	14	0.62	46
Linoleum tile	6.0	35	4.0	45
Large diameter telephone cable	14	20	4.3	38
Carpet	27	9.4	-	36
Vinyl edge molding	18	12	0.41	30
Particle board	27	1.1	0.14	28
Polystyrene foam insulation	0.19	20	1.4	22
Tar paper	3.2	3.1	-	6.3
Primer/adhesive	3.6	2.5	-	6.1
Latex paint (Bruning)	-	3.2	-	3.2
Water repellant mineral board	1.1	0.43	-	1.5
Cement block	-	0.39	0.15	0.54
PVC pipe	-	0.53	-	0.53
Duct insulation	0.13	0.15	-	0.28
Treated metal roofing	-	0.19	0.06	0.25
Urethane sealant	-	0.13	-	0.13
Fiberglass insulation	-	0.08	-	0.80
Exterior mineral board	-	0.03	-	0.03
Interior mineral board	-	-	-	-
Ceiling tile	-	-	-	-
Red clay brick	-	-	-	-
Plastic laminate	-	-	-	-
Plastic outlet cover	-	-	-	-
Joint compound	-	-	-	-
Linoleum tile cement	-	-	-	-

[a]Emission rates for cove adhesive not reported; sample was overloaded. It is estimated that cove adhesive is one of the emitters of volatile organics with emissions of target compounds greater than 4700 $\mu g/m^2$.
[b]No detectable emissions.

TABLE 168. VOLATILE ORGANICS FOUND AT HIGH LEVELS IN EMISSION SAMPLES BUT NOT QUANTIFIED

Building Material	Volatile Organics
Interior Exposure	
Carpet	Aromatic hydrocarbons, aliphatic hydrocarbons, cyclohexenylbenzene
Linoleum tile	Aromatic hydrocarbons, aliphatic hydrocarbons, toluene
Vinyl cove molding	Toluene, aliphatic hydrocarbons, aromatic hydrocarbons
Vinyl edge molding	Aromatic hydrocarbons, toluene
Large diameter telephone cable	Pentane, 2-butanone, aliphatic hydrocarbons, aromatic hydrocarbons, toluene, undecanol, 2,6-bisphenol
Small diameter telephone cable	Aliphatic hydrocarbons, aromatic hydrocarbons, 3,3-dimethylbutanone, toluene, dimethylpentene, undecanol, cyclopentane, 2,6-bisphenol
Black rubber molding	1,6-Dichloro-1,5-cyclooctadiene, aliphatic hydrocarbons, aromatic hydrocarbons, phenolic compounds
Particle board	Pentanal, methylpentanal, aliphatic hydrocarbons
Plastic outlet cover	Unidentified component
Interior mineral board	No major emissions
Ceiling tile	No major emissions
Plastic laminante	No major emissions
Building Shell	
Tar paper	Naphthalene
Duct insulation	Trimethylhexene, aliphatic hydrocarbons
Polystyrene foam insulation	2-Butene-1-ol, pentane, 1,2-dimethylcyclopropane, benzonitrile, benzaldehyde
Exterior mineral board	Dioctylphthalate
Water repellant mineral board	2-Ethylhexanol, nonanal
PVC pipe	Diethylphthalate, trimethylhexene, aliphatic hydrocarbons, aromatic hydrocarbons

(continued)

TABLE 168. (continued)

Building Material	Volatile Organics
Building Shell (continued)	
Treated metal roofing	No major emissions
Cement block	No major emissions
Red clay brick	No major emissions
Fiberglass insulation	No major emissions
Solvent-Based Materials	
Cove adhesive	Toluene, octane, aliphatic hydrocarbons
Carpet adhesive	Aliphatic hydrocarbons, aromatic hydrocarbons
Latex caulk	Aliphatic hydrocarbons, aromatic hydrocarbons
Linoleum tile cement	Aliphatic hydrocarbons, trichlorotrifluoromethane
Latex paint (Bruning)	Unidentified component
Latex paint (Glidden)	Aliphatic hydrocarbons, octanone, nonanone
Urethane insulant	Toluene, trimethylhexene
Primer/adhesive	Aliphatic hydrocarbons
Joint compound	No major emissions

of the building materials, although a number of compounds containing oxygen, nitrogen and sulfur were tentatively identified through computer searching. Unfortunately, qualitative analysis was often difficult since spectra of these compounds did not provide a great deal of structural information.

Based on the results of these preliminary headspace experiments, the nine materials in Table 161 were selected for chamber testing. Criteria for selection included high emission of volatile organics from the material; high surface area of the material in the building; and/or unique emission of volatile organics from the material that were also found in the building. Results of the headspace experiments were also used for selecting conditions for the chamber study (i.e., amount of material tested, sample collection times, etc.).

Chamber Studies

Method Validation--

Table 169 shows levels of target volatiles found in chamber blanks. Results show low levels of contamination for all target compounds.

Table 170 shows calculated recoveries from the chamber for the 12 compounds tested. Recoveries were calculated as:

$$\% \text{ Recovery} = \frac{T_{WC}}{T_{NC}} \times 100\%$$

where T_{WC} and T_{NC} are the measured amount of target volatile measured in Tenax samples collected with and without the chamber in place. Results showed high recoveries for all volatile organics tested.

Emission Studies--

Results of the chamber experiments are illustrated in Figures 16 to 24. The external standard bromopentafluorobenzene, is designated on each chromatogram as (*) and may be used to normalize analytical results as described previously.

Emission rates were calculated from results of GC/MS analysis as described for the preliminary headspace experiments. Table 171 lists calculated emission rates for volatile organics from each material.

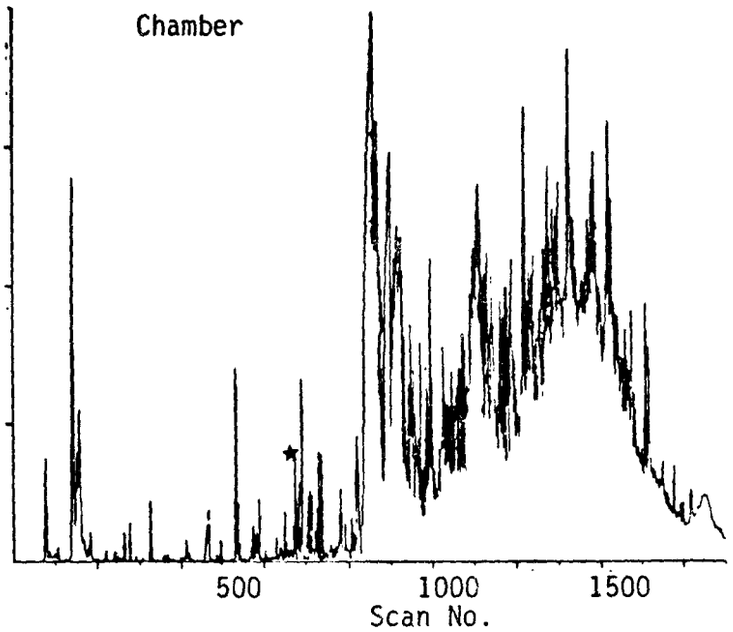
Reproducibility of chamber experiments was evaluated by calculating the %RSD for [illegible] rates calculated for each material using replicate

TABLE 169. TARGET VOLATILES FOUND IN CHAMBER BACKGROUND

Compound	Amount (ng)
1,1,1-Trichloroethane	2.5 ± 1.6
Benzene	5.1 ± 1.4

TABLE 170. RECOVERY OF VOLATILE ORGANIC COMPOUNDS FROM THE TEST CHAMBERS

Compound	% Recovery ± S.D.
1,2-Dichloroethane	114 ± 21
Chloroform	103 ± 17
Trichloroethylene	89 ± 14
Epichlorohydrin	119 ± 31
Tetrachloroethylene	73 ± 6
Chlorobenzene	88 ± 12
Ethylbenzene	85 ± 9
m-Xylene	80 ± 3
o-Xylene	87 ± 7
m-Dichlorobenzene	83 ± 5
o-Dichlorobenzene	86 ± 2
n-Decane	93 ± 9



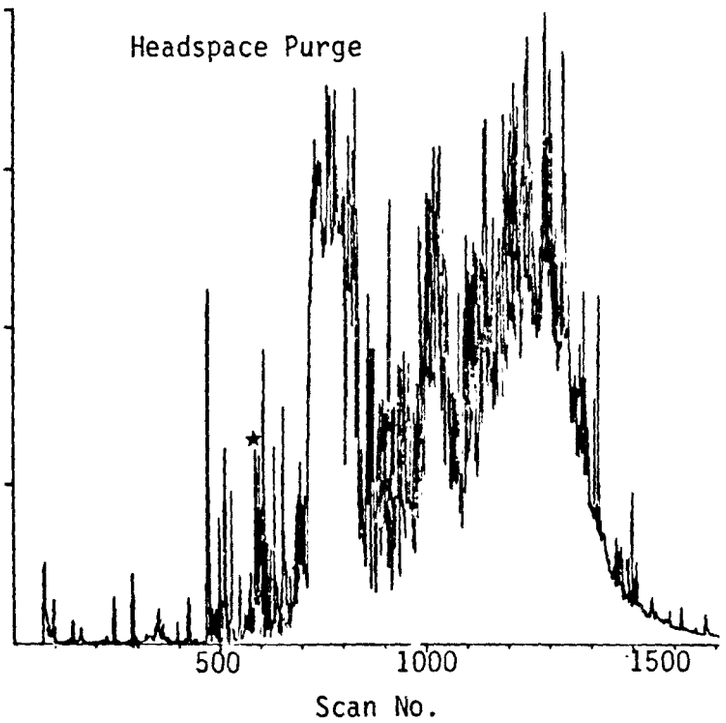


Figure 16. GC/MS chromatograms of emission samples collected from vinyl cove molding (* designates external standard).

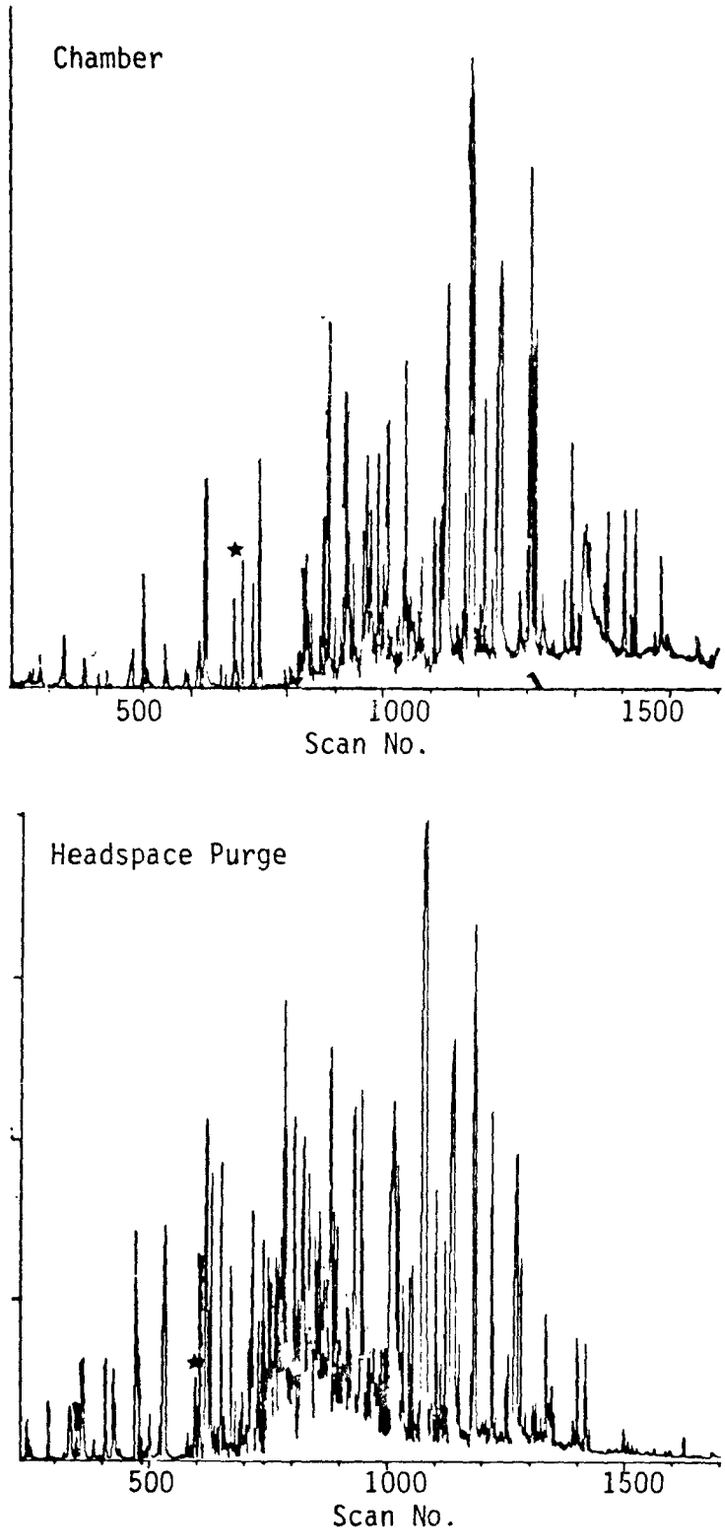


Figure 17. GC/MS chromatograms of emission samples collected from black rubber molding (* designates external standard).

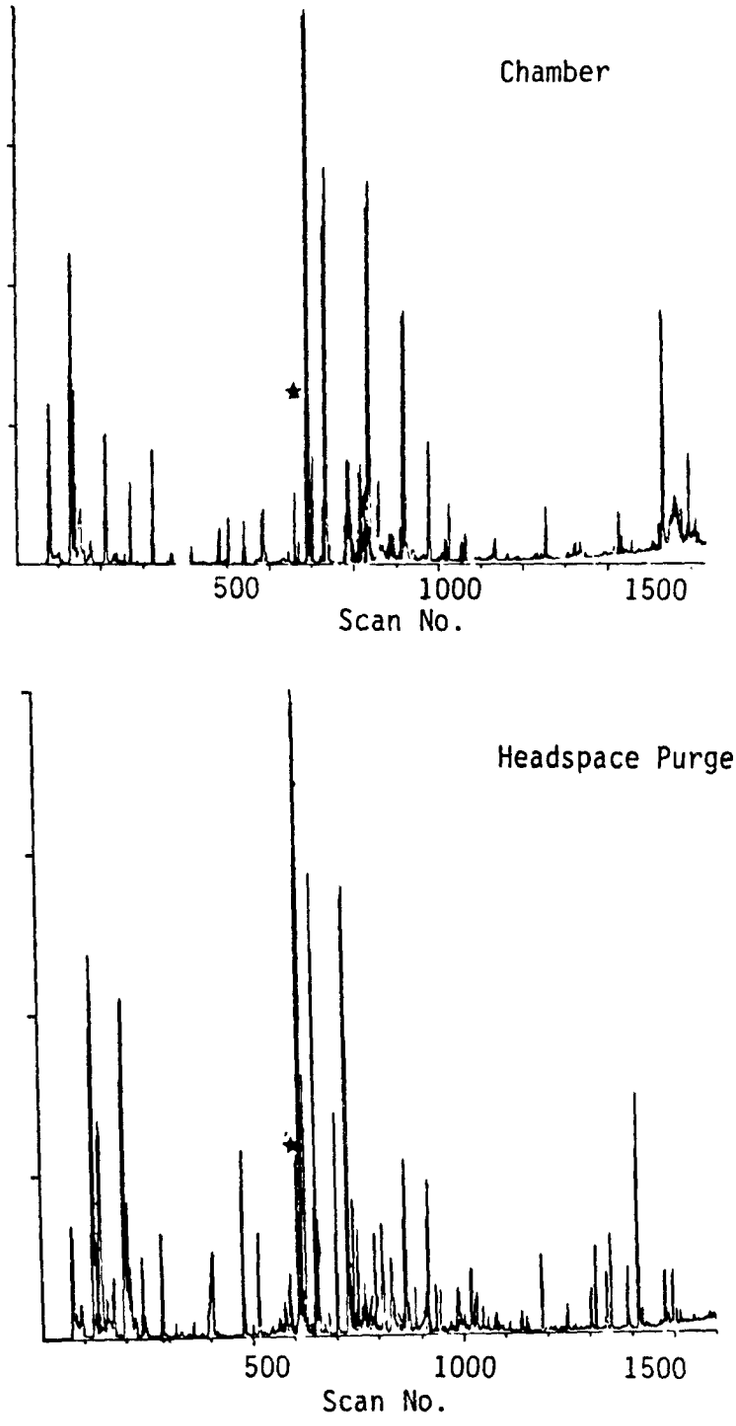
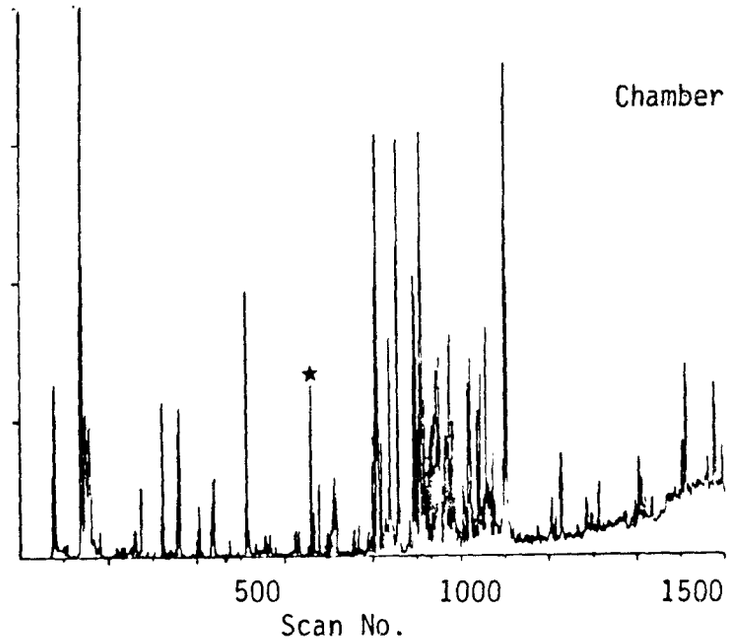


Figure 18. GC/MS chromatograms of emission samples collected from polystyrene foam (* designates external standard).



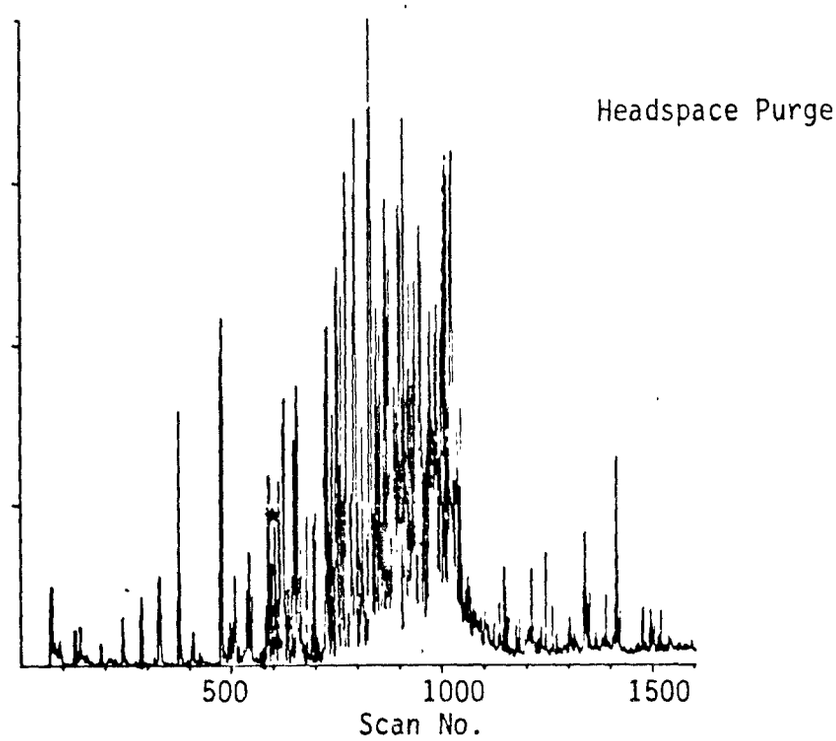


Figure 19. GC/MS chromatograms of emission samples collected from linoleum tile (* designates external standard).

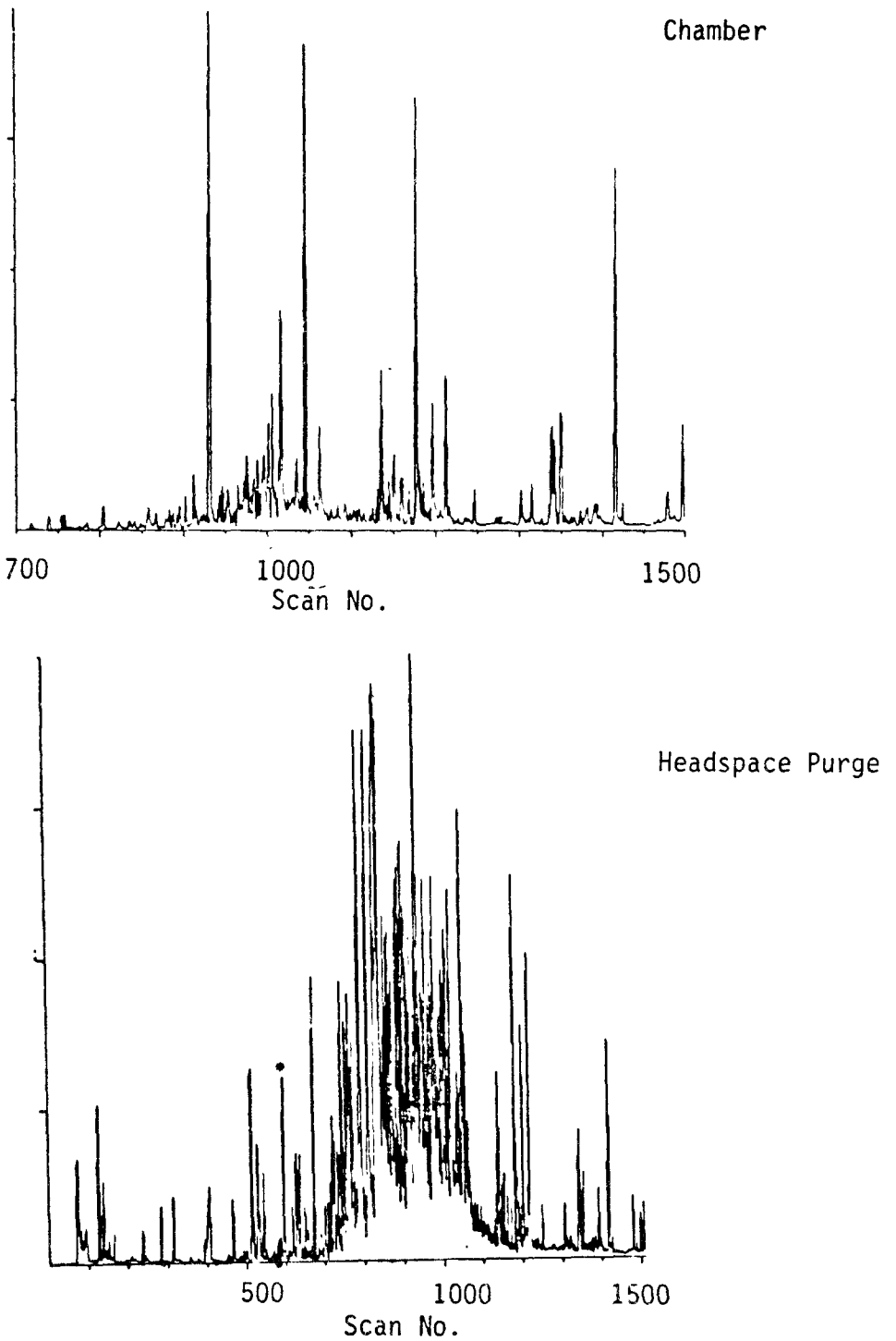


Figure 20. GC/MS chromatograms of emission samples collected from carpet (* designates external standard for chamber sample not shown).

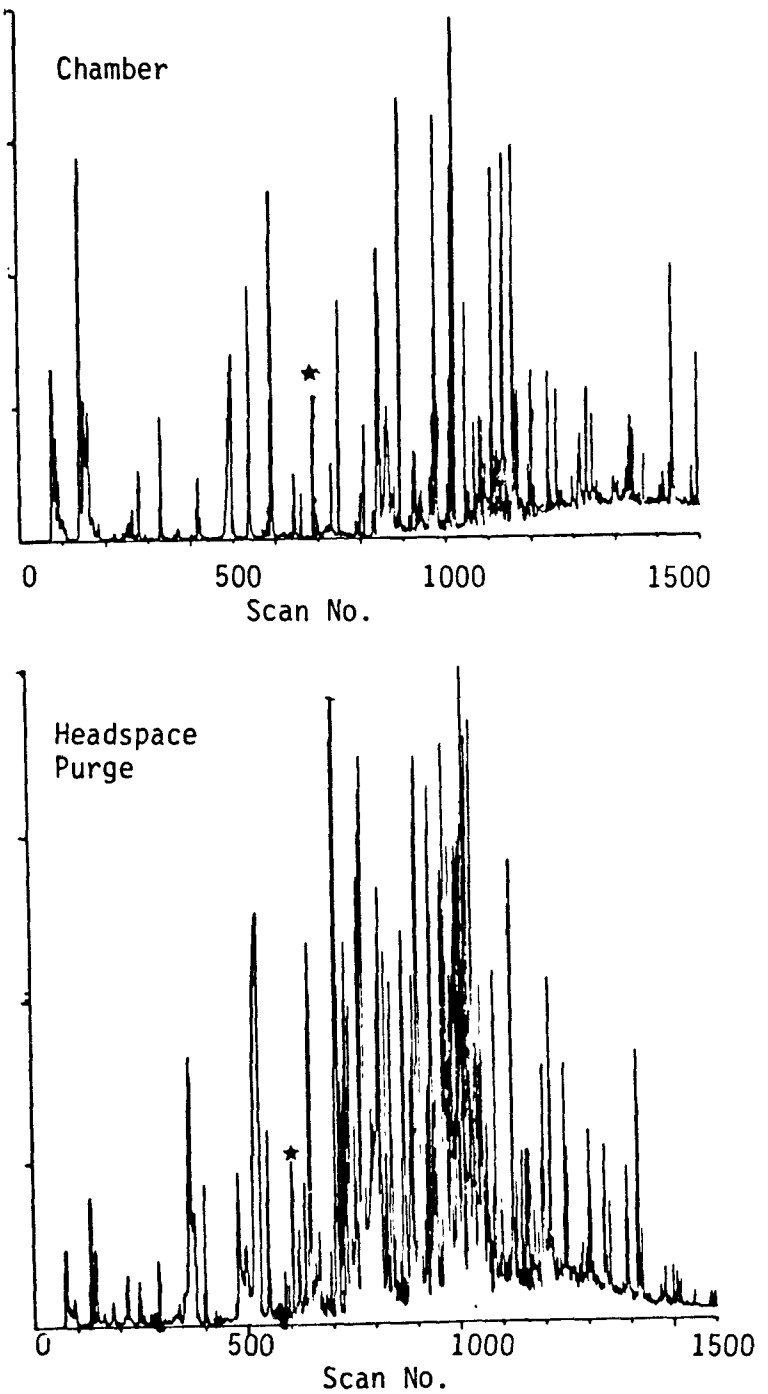


Figure 21. GC/MS chromatograms of emission samples collected from particle board (* designates external standard).

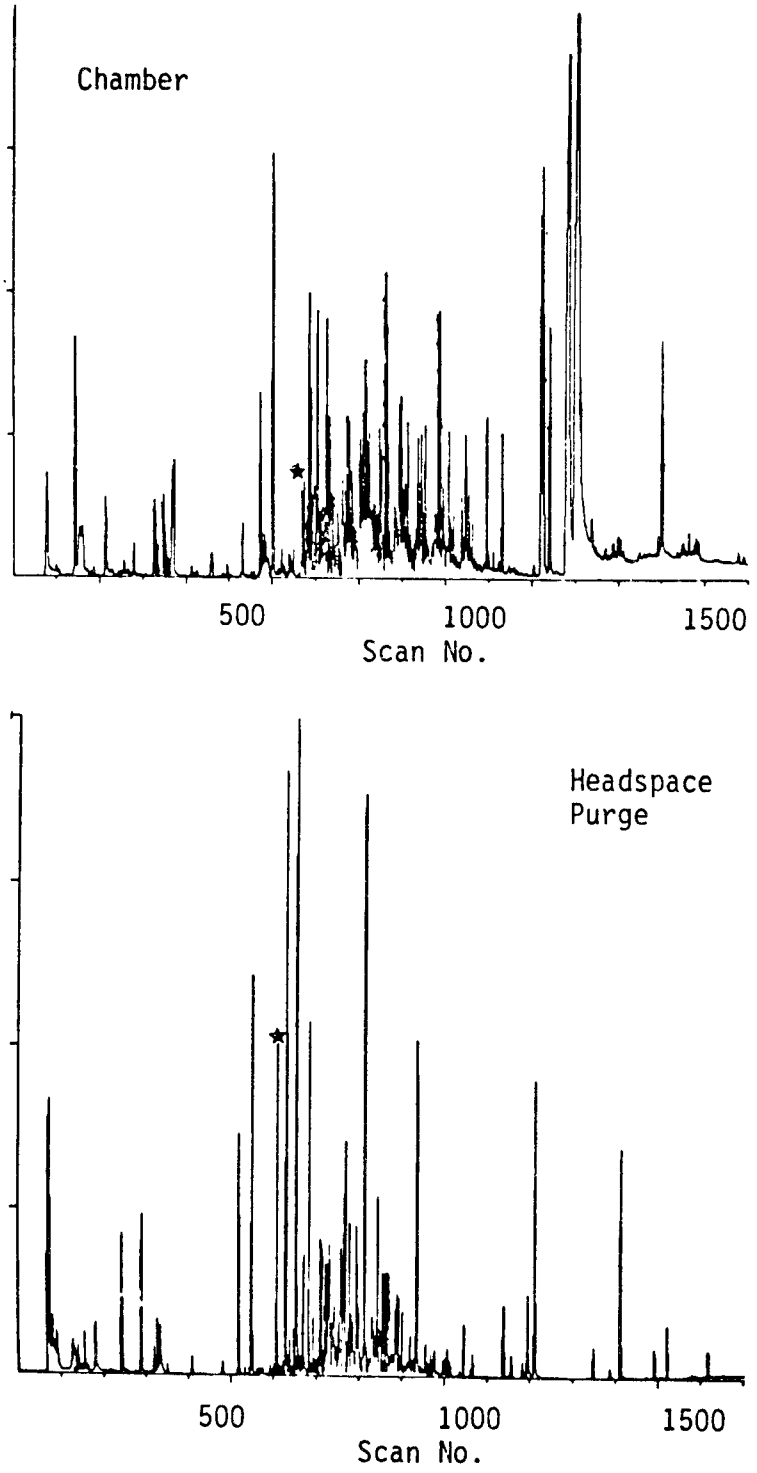
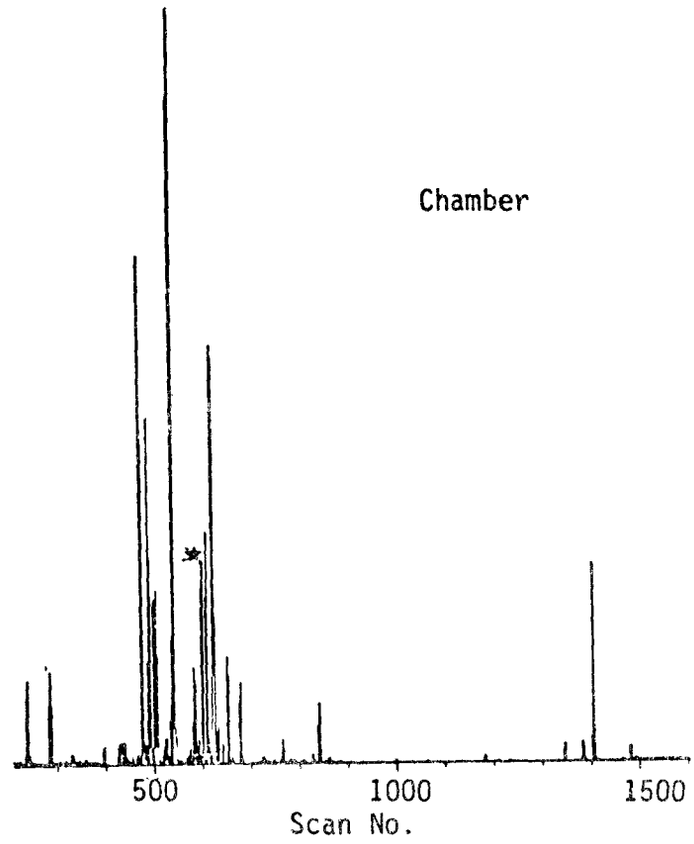


Figure 22. GC/MS chromatograms of emission samples collected from latex paint (Glidden paint) (* designates external standard).



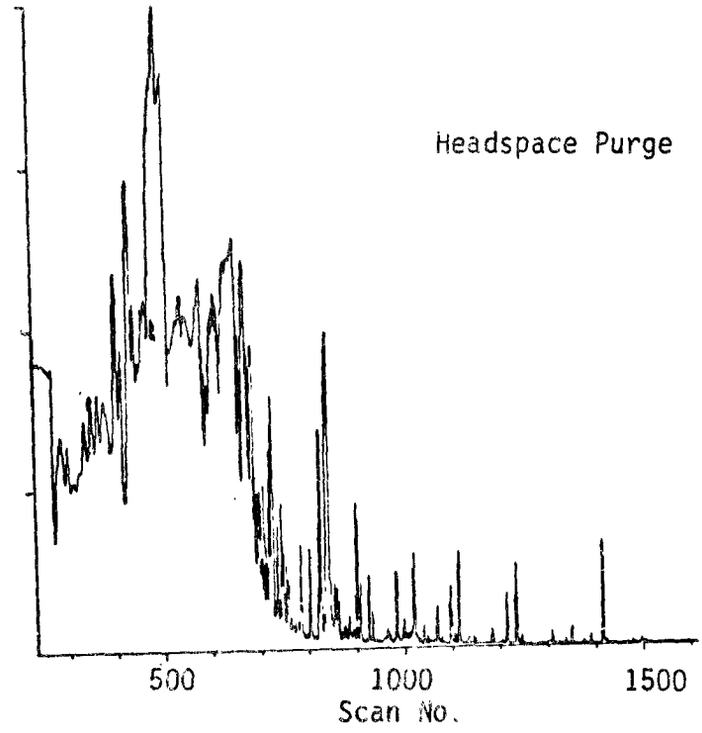


Figure 23. GC/MS chromatograms of emission samples collected from cove adhesive (* designates external standard in headspace purge is masked by high levels of sample components).

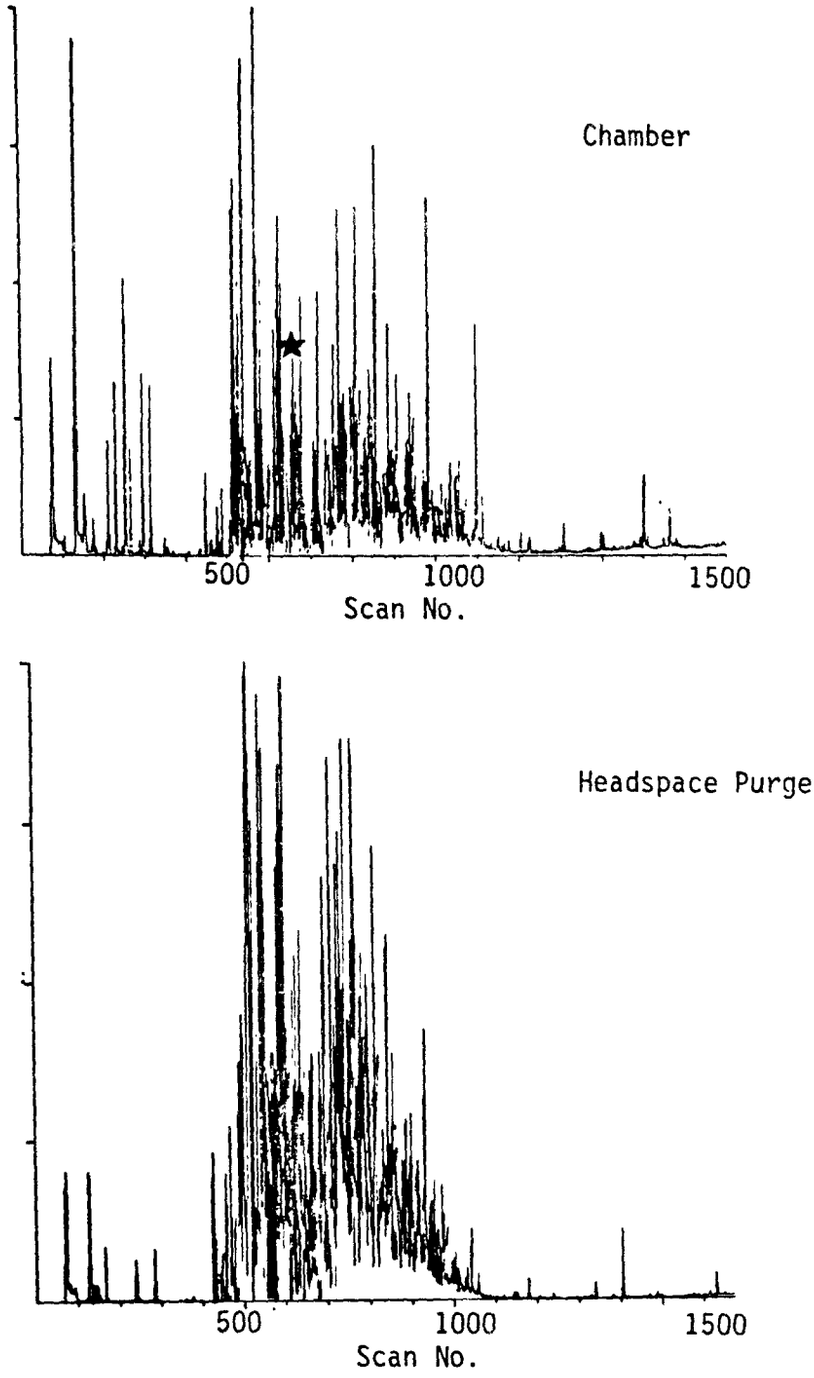


Figure 24. GC/MS chromatograms of emission samples collected from carpet adhesive (* designates external standard, external standard in headspace purge is masked by high levels of sample components).

TABLE 171. CALCULATED EMISSION RATES OF TARGET VOLATILE DURING CHAMBER EXPERIMENTS

Compound	Emission Rate ($\mu g/m^2$ hr)																	
	Vinyl Cove Molding		Black Rubber Molding		Polystyrene Foam Insulation		Linoleum Tile		Carpet		Particle Board		Cove Adhesive	Carpet Adhesive		Latex Paint (Glidden)	
Aromatic Hydrocarbons																	
Benzene	-[a]	(-)[b]	-	(-)	-	(-)	-	(-)	-	(0.92)	-	(-)	-	-	(-)	17	(7.5)
Ethylbenzene	1.8	(1.3)	1.7	(4.5)	15	(10)	0.45	(1.2)	-	(0.05)	0.14	(-)	547	211	(6.5)	12	(1.0)
m,p-Xylene	5.9	(4.7)	6.9	(6.2)	1.7	(1.5)	0.92	(2.6)	-	(0.41)	0.20	(-)	1185	717	(23)	50	(6.4)
Styrene	0.14	(0.55)	0.43	(0.33)	6.2	(4.9)	0.63	(1.1)	-	(0.41)	0.18	(0.13)	-	-	(-)	1.9	(-)
o-Xylene	1.9	(2.1)	3.9	(7.6)	0.39	(0.38)	0.89	(3.3)	0.83	(0.37)	0.08	(-)	202	301	(18)	28	(3.0)
Isopropyl benzene	0.38	(0.20)	0.33	(0.51)	1.7	(1.4)	0.41	(1.4)	-	(0.37)	0.15	(0.15)	-	53	(4.4)	8.9	(1.4)
n-Propyl benzene	0.68	(0.50)	0.72	(0.96)	0.86	(0.70)	0.84	(2.3)	-	(0.17)	0.22	(-)	-	53	(3.2)	13	(1.8)
m-Ethyl toluene	3.4	(1.8)	4.6	(3.3)	0.44	(0.73)	3.2	(7.0)	-	(2.1)	-	(0.59)	-	281	(9.6)	57	(9.1)
1,3,5-Trimethylbenzene	1.7	(0.80)	2.7	(2.1)	0.08	(0.10)	1.4	(3.1)	-	(1.5)	0.10	(-)	-	212	(12)	32	(6.0)
o-Ethyltoluene	0.41	(0.28)	2.0	(1.7)	0.07	(0.10)	1.3	(2.0)	-	(1.1)	0.07	(-)	-	97	(7.0)	18	(2.6)
1,2,4-Trimethyl benzene	2.3	(1.7)	7.1	(3.4)	0.17	(0.44)	4.7	(3.4)	.063	(2.2)	0.20	(0.17)	-	216	(10)	33	(11)
1,2,3-Trimethyl benzene	1.4	(0.33)	5.5	(2.6)	0.03	(0.12)	2.5	(7.3)	.027	(1.3)	0.06	(0.04)	-	151	(4.5)	20	(1.7)
Aliphatic Hydrocarbons																	
α-Pinene	0.19	(-)	1.4	(2.1)	-	(-)	-	(-)	-	(-)	6.8	(25)	-	-	(-)	-	(-)
n-Decane	10	(7.6)	14	(11)	-	(-)	-	(1.3)	0.23	(11)	-	(-)	-	3245	(39)	360	(78)
n-Undecane	22	(12)	29	(8.6)	-	(0.19)	1.2	(3.2)	7.1	(12)	-	(0.52)	-	2295	(7.8)	250	(33)
n-Dodecane	34	(11)	9.7	(2.0)	-	(-)	0.45	(1.3)	6.4	(4.0)	-	(1.7)	-	-		110	(-)
Oxygenated Hydrocarbons																	
n-Butyl acetate	-	(0.77)	0.42	(-)	-	(-)	-	(0.75)	-	(-)	-	(-)	-	-	(-)	-	(-)
Ethoxyethyl acetate	-	(-)	-	(-)	-	(-)	-	(-)	-	(-)	-	(-)	-	-	(-)	-	(-)
Chlorinated Hydrocarbons																	
1,1,1-Trichloroethane	0.30	(0.17)	0.11	(0.12)	-	(-)	-	(0.06)	-	(-)	-	(-)	-	-	(-)	-	(-)
Trichloroethylene	0.12	(0.05)	-	(-)	-	(-)	1.3	(3.6)	-	(-)	-	(-)	-	-	(-)	1.9	(-)
Tetrachloroethylene	0.11	(0.18)	-	(0.25)	-	(-)	-	(0.09)	-	(-)	-	(-)	-	-	(-)	289	(86)
Chlorobenzene	1.8	(-)	0.31	(-)	0.38	(0.46)	-	(-)	-	(-)	-	(-)	-	-	(-)	-	(-)
p-Dichlorobenzene	-	(0.18)	0.97	(0.51)	0.47	(0.71)	-	(0.08)	-	(-)	0.18	(0.14)	-	-	(-)	-	(-)
o-Dichlorobenzene	-	(0.04)	-	(-)	0.20	(0.17)	-	(-)	-	(-)	-	(-)	-	-	(-)	-	(-)

[a]No detectable emissions.

[b]Calculated emission rate during preliminary headspace experiments.

determinations. Results listed in Table 172 show precision is good (%RSDs less than 20%) in cases where the same experimental conditions were identical for all replicates. For cove adhesive, %RSDs varied from 19.3 to 47.3%. For this material, the replicate measurements were performed using different surface areas. This was done to test for emission suppression effects that might result from using a small chamber. The triplicate determinations did show different emission rates with the highest rates calculated for the smallest sample. Reduced emission for the larger sample could result from suppression. Alternatively, the smaller samples had more freshly cut surfaces. If the emission rate from a freshly cut surface is higher than that of an older surface the same result of highest emissions from the smallest sample would be achieved. No further experimental work was performed to resolve this question.

DISCUSSION

Data in Table 171 and Figures 11 to 19 can be used to compare the results of the preliminary headspace experiments to the results of the chamber experiments. GC/MS chromatograms and calculated emission rates for samples collected from vinyl cove molding, black rubber molding and polystyrene foam insulation showed very good agreement between the two evaluations, suggesting that neither the emission testing conditions (i.e., ventilation, chamber size, humidity, or temperature), nor sample preparation techniques (length of storage, sample size, sample size to surface area) had a significant effect on measured emission rates.

For the remaining three solid materials, namely linoleum tile, carpet, and particle board, the emission rates calculated from the chamber study were lower than those calculated during preliminary headspace experiments. The GC/MS chromatograms for linoleum tile (Figure 15) and carpet (Figure 16) show that the more volatile or early eluting compounds have disappeared to a greater extent than the less volatile compounds. A likely explanation for this is simply the aging of the materials. Chemical emissions usually decay for most solid materials over a given time after manufacture, with the more volatile components probably decaying faster. For the carpet and linoleum tile, the scouting study was performed approximately six weeks after the carpet was collected at the office building while the chamber experiments took place approximately 16 to 20 weeks after collection.

TABLE 172. % RSD FOR CALCULATED EMISSION RATES FROM THE TEST CHAMBERS

Compounds	Carpet[a] (3)[d]	Particle[a] Board (2)	Black Rubber[a] Molding (3)	Polystyrene[a,b] Insulation (3)	Carpet[a] Adhesive (3)	Linoleum[a] Tile (3)	Cove[c] Adhesive (3)
Aromatic Hydrocarbons							
Ethyl benzene	-[e]	-	-	-	3.3	-	23.6
m,p-Xylene	-	-	5.9	-	6.7	2.4	47.3
o-Xylene	-	-	7.9	-	3.6	7.9	19.3
Isopropylbenzene	-	-	-	-	6.2	14.8	-
n-Propylbenzene	-	-	-	-	3.5	7.3	-
m-Ethyltoluene	-	-	-	-	3.3	-	-
1,3,5-Trimethylbenzene	-	-	-	-	8.0	5.2	-
o-Ethyltoluene	-	-	-	-	3.8	-	-
1,2,4-Trimethylbenzene	9.5	-	-	-	6.0	3.2	-
1,2,3-Trimethylbenzene	-	-	-	-	9.2	-	-
Aliphatic Hydrocarbons							
α-Pinene	-	20.1	-	-	-	-	-
n-Decane	17.2	-	9.9	-	12.9	-	-
n-Undecane	10.8	-	5.3	-	17.3	-	-
n-Dodecane	10.8	-	4.3	-	-	-	-
Halogenated Hydrocarbons							
Chlorobenzene	-	-	-	-	-	-	-
m,p-Dichlorobenzene	-	-	-	-	-	-	-

[a] All replicates tested under identical conditions (see Table 160).
[b] Not calculated; interference with the external standard.
[c] Sample size varied for each replicate.
[d] Number of replicates.
[e] Compound below the quantifiable limit, % RSD = not calculated.

Building material aging is likely to play an important role in the emission of volatile organics into indoor air.

For the particle board, emission of all chemicals appeared to decrease in the chamber experiments compared to the preliminary headspace experiments. Since this behavior is different from that exhibited by the linoleum and carpet, we assume the explanation may also be different. In this case, reduced emission may be due to changes in temperature or humidity between the two test conditions. This would be in keeping with results from other reported emission studies for particle board that show different emission rates for formaldehyde depending upon test conditions (30).

The three solvent-based materials showed very different emissions rates between the two studies. Here, the difference is probably due to the way materials were prepared for testing. Conditions that could affect the result include the amount of material applied to the slides and the temperature, humidity, and time conditions for curing the material. Temperature and humidity conditions during testing may also effect measured emission rates. These results demonstrate that, for solvent based materials, dramatically different emission rates may be measured depending upon test conditions and that caution should be employed when reporting emission rate data as well as applying these results to indoor air quality models.

Results of our emission experiments may be compared to other similar studies. Molhave evaluated 42 building materials for volatile organic emissions and reported the distribution of emission rates for all 42 materials (2). The average emission rate (grand mean) was 250 $\mu g/m^2$ h (grand standard deviation:1170) ranging from more than 270,000 to less than 1 $\mu g/m^2$ hr. The emission rates reported here are lower than these for several reasons. First, we calculated emission rates for only selected volatile organics rather than all emitted organics. Second, Molhave tested more solvent-based materials, which generally have higher emissions. Finally, Molhave aged his solvent-based materials for only one day compared to the seven days used in this study.

Table 173 shows emission rates reported by Sheldon et al. (4,31) using a larger environmental test chamber. Identities of compounds are similar to those reported here.

TABLE 173. REPORTED EMISSION RATES USING A LARGE ENVIRONMENTAL TEST CHAMBER

Chemical	Emission Rate ($\mu g/m^2$ h)		
	Glued Carpet	Glued Wallpaper	Painted Sheetrock
Aromatic Hydrocarbons			
Ethyl benzene	4.6	-[a]	-
m,p-Xylene	9.0	1.6	-
Styrene	5.8	-	-
o-Xylene	5.8	0.4	-
Aliphatic Hydrocarbons			
n-Decane	32.7	11.4	14.4
n-Undecane	30.0	18.0	90.0
Halogenated Hydrocarbons			
1,2-Dichloroethane	10.8	18.6	
1,1,1-Trichloroethane	15.6	5.0	
Carbon tetrachloride	-	-	
Trichloroethylene	-	-	
m-Dichlorobenzene	-	-	
p-Dichlorobenzene	2.4	-	

[a]No detectable emissions.

Table 174 gives the average concentration of volatile organics measured in the new office building. These results compare well with the results of both the headspace and chamber experiments. For example, the aromatic hydrocarbons which have the highest indoor air concentrations (ethyl benzene, m-ethyltoluene, and 1,2,4-trimethylbenzene), generally show highest emission rates from all of the building materials. High emission rates for the n-alkanes are found for many of the interior materials, including the carpet, linoleum tile, all of the plastic materials and the solvent materials such as adhesives, paint, and caulk. All of these materials could contribute to the high indoor air concentrations of n-alkanes found in the office. Particle board is probably a major source of α-pinene. Finally, at the time monitoring was being performed, vinyl cove molding and cove adhesive were being applied throughout the building. It is likely these materials are major contributors to ethylbenzene, and the xylenes found in the air samples.

TABLE 174. AVERAGE CONCENTRATION ($\mu g/m^3$) OF VOLATILE ORGANICS FOUND IN THE NEW OFFICE, TRIP 1

Compound	Average Concentration ($\mu g/m^3$)			
	Secretarial Area	Office	Office	Outdoors
Aromatic Hydrocarbons				
Benzene	2.7	3.0	2.5	4.1
m,p-Xylene	41	42	43	3.8
o-Xylene	18	20	17	1.4
Styrene	2.2	2.7	2.6	0.56
Ethylbenzene	53	54	47	1.5
Isopropylbenzene	3.7	4.5	3.7	0.12
n-Propylbenzene	4.7	5.3	4.9	0.29
m-Ethyltoluene	25	31	26	1.6
o-Ethyltoluene	8.2	9.9	8.6	0.43
1,2,3-Trimethylbenzene	15	18	13	0.54
1,2,4-Trimethylbenzene	72	92	56	2.1
1,3,5-Trimethylbenzene	16	20	15	0.47
Aliphatic Hydrocarbons				
α-Pinene	15	15	12	0.12
n-Decane	420	520	370	0.91
n-Undecane	210	220	200	0.40
n-Dodecane	146	180	140	0.13
Chlorinated Hydrocarbons				
Carbon Tetrachloride	0.3	0.37	0.33	0.64
1,2-Dichloroethane	0.29	0.77	0.35	0.17
1,1,1-Trichloroethane	14	17	7.2	1.0
Trichloroethylene	0.33	0.52	0.22	0.07
Tetrachloroethylene	0.32	0.48	0.32	0.42
Chlorobenzene	0.55	0.55	0.61	0.02
p-Dichlorobenzene	0.16	0.27	0.15	0.07
Oxygenated Hydrocarbons				
n-Butylacetate	0.33	0.52	0.86	0.06
2-Ethoxyethyl acetate	0.24	0.41	0.31	0.02

SECTION 9
ESTIMATED SOURCE STRENGTHS

The inclusion of air exchange measurements in this indoor air study allowed us to estimate source strengths at each indoor location. The estimates were based on very simple indoor air models using the following equation:

$$\bar{C}_{in} = \bar{C}_{out} + \bar{S}/\bar{a}$$

where $\bar{C}$ = mean concentration ($\mu g/m^3$) averaged over all monitoring periods,

$\bar{S}$ = mean source strengths per unit volume per hour ($\mu g/h/m^3$),

$\bar{a}$ = mean air exchange rate (h^-).

This equation may be rearranged to:

$$\bar{S} = \bar{a}\ (\bar{C}_{in}-\bar{C}_{out}).$$

Monitoring data are available for all terms on the right-hand side.

The source strengths calculated in this manner should be considered rough approximations for two reasons:

1. Measured air exchange rates included infiltration from both the outside air and air in other parts of the building which were not spiked with SF_6. Measurements taken in this manner could be higher than those determined from infiltration of outdoor air only. Hence, it is possible for both air exchange rates and calculated source strengths to be overestimated.
2. In all cases, it was assumed that pollutant decay rates were zero. Since this is not always true, the calculated source strengths are probably underestimated for pollutants such as particulate mass, metals, NO_2, and formaldehyde.

Results of source strength calculations for volatile organics are given in Tables 175 and 176 for mean and maximum source strengths calculated for each target chemical for each field monitoring trip.

Trends for the source strength data are very similar to the trends noted for the concentrations of volatile organics (see Section 7). To reiterate:

1. New buildings showed high source strengths for volatile organics immediately after construction (trip 1) that decreased during subsequent field monitoring. Even the new hospital which was monitored for the first time eight months after complete showed decreases in source strengths between the first and second trip.
2. In the new buildings, the aliphatic organics had the highest source strengths. On the other hand, source strengths for these compounds were quite low in existing buildings.
3. Highest source strengths for aromatic organics were also found in the new building.
4. Source strengths for chlorinated hydrocarbons were highest in occupied office buildings.
5. There was no trend for source strengths of oxygenated compounds.

Calculated source strength for α-, β-, and γ-BHC are given in Table 177. These were the only three pesticides detected in a sufficient number of indoor and outdoor samples for meaningful calculations. Source strengths were low for all three of these compounds.

Calculated source strengths for the remaining chemicals detected during field monitoring are given in Table 178. In most cases, the mean outdoor pollutant concentration was higher than the mean indoor pollutant concentration indicating no indoor sources. For selected field monitoring trips, indoor sources for particulates, formaldehyde, carbon monoxide, and nitrosomorpholine were found.

TABLE 175. MEAN SOURCE STRENGTHS FOR VOLATILE ORGANICS CALCULATED FOR EACH FIELD MONITORING TRIP

Compound	Mean Source Strength (ug/h/m^3)									
	Martinsburg, WV			Fairfax, VA		Worcester, MA		Washington, DC	Cambridge, MA	Martinsburg, WV
	Hospital (New)			Office (New)		Nursing Home (New)		Office (Old)	Office/ School (Old)	Nursing Home (Old)
	Trip 1 (7/84)	Trip 2 (10/84)	Trip 3 (8/85)	Trip 1 (1/85)	Trip 2 (4/85)	Trip 1 (4/85)	Trip 2 (8/85)	Trip 1 (8/84)	Trip 1 (2/85)	Trip 1 (7/84)
Aromatic Hydrocarbons										
Benzene	NS[a]	NS	0.57	NS	0.53	NS	NS	NS	NS	NS
m,p-Xylene	5.8	0.20	4.0	23	3.8	11	0.87	4.0	3.2	0.50
o-Xylene	2.8	0.08	1.2	10	0.81	4.3	0.29	1.2	1.3	0.17
Styrene	0.43	0.02	0.50	1.2	0.60	1.4	0.29	0.44	0.52	0.23
Ethylbenzene	1.5	0.06	1.1	30	1.4	3.9	0.53	1.6	0.95	0.15
Isopropylbenzene	0.26	0.016	0.14	2.3	0.19	1.2	0.10	0.11	0.14	0.029
n-Propylbenzene	0.17	0.016	0.13	2.8	0.29	1.5	0.19	NS	0.18	0.030
m-Ethyltoluene	0.84	0.080	0.44	16	1.4	6.1	0.55	NS	0.79	0.18
o-Ethyltoluene	0.26	0.020	0.18	5.1	0.54	2.0	0.11	NS	0.22	0.036
1,2,5-Trimethylbenzene	0.37	0.030	0.19	10	0.74	3.5	0.18	NS	0.42	0.050
1,2,4-Trimethlybenzene	1.2	0.086	0.49	43	1.9	6.9	0.52	NS	0.86	0.23
1,2,3-Trimethylbenzene	0.25	0.014	0.26	8.7	0.81	2.6	0.19	NS	0.41	NS
Aliphatic Hydrocarbons										
α-Pinene	0.60	0.020	0.11	8.2	7.6	2.7	0.33	0.12	1.3	0.33
n-Decane	3.9	0.27	0.82	260	4.5	36	2.2	0.44	3.0	0.58
n-Undecane	3.2	0.24	0.81	1.2	10	36	2.0	0.73	3.4	0.56
n-Dodecane	0.80	0.061	0.36	91	7.2	17	0.51	0.32	1.1	0.25
Chlorinated Hydrocarbons										
1,2-Dichloroethane	NS	NS	NS	0.18	1.7	0.0020	NS	0.013	NS	NS
1,1,1-Trichloroethane	3.7	0.14	5.2	7.6	12	1.6	0.24	13	4.4	0.66
Trichloroethylene	0.86	0.020	0.060	0.18	2.6	1.2	0.27	0.19	5.2	0.04
Tetrachloroethylene	0.060	0.040	0.61	NS	0.13	0.060	0.02	0.22	1.5	0.22
p-Dichlorobenzene	0.024	0.010	2.2	0.076	0.80	1.080	0.19	0.11	0.052	0.077
Oxygenated Hydrocarbons										
n-Butylacetate	0.14	NS	0.090	0.31	2.2	0.32	0.76	0.73	0.62	0.070
2-Ethoxyethyl acetate	1.6	0.35	0.11	0.11	0.66	5.2	0.50	0.73	NS	NS

[a]No source.

TABLE 176. MAXIMUM SOURCE STRENGTH FOR VOLATILE ORGANICS CALCULATED FOR EACH FIELD MONITORING TRIP

Compound	Maximum Source Strength (ug/h/m^3)									
	Martinsburg, WV			Fairfax, VA		Worcester, MA		Washington, DC	Cambridge, MA	Martinsburg, WV
	Hospital (New)			Office (New)		Nursing Home (New)		Office (Old)	Office/ School (Old)	Nursing Home (Old)
	Trip 1 (7/84)	Trip 2 (10/84)	Trip 3 (8/85)	Trip 1 (1/85)	Trip 2 (4/85)	Trip 1 (4/85)	Trip 2 (8/85)	Trip 1 (8/84)	Trip 1 (2/85)	Trip 1 (7/84)
Aromatic Hydrocarbons										
Benzene	0.76	0.20	3.2	1.6	1.5	0.12	0.038	0.56	1.7	2.3
m,p-Xylene	24	0.84	7.1	4.1	7.9	17	2.2	14	5.4	1.6
o-Xylene	11	0.21	2.6	22	1.7	7.1	0.91	4.0	2.2	0.54
Styrene	1.8	0.25	1.3	2.3	1.3	2 8	0.57	1.7	1.1	1.8
Ethylbenzene	5.6	0.26	2.0	69	3.1	12	1.1	4.4	1.6	0.57
Isopropylbenzene	0.80	0.048	0.34	4.0	0.38	2.5	0.21	0.30	0.31	0.076
n-Propylbenzene	0.75	0.046	0.32	3.8	0.61	2.7	0.35	0.25	0.42	0.17
m-Ethyl toluene	3.6	0.23	1.1	30	2.8	11	1.0	1.4	1.8	0.68
o-Ethyl toluene	1.1	0.65	0.51	9.2	1.1	3.5	0.31	0.27	0.54	0.19
1,3,5-Trimethylbenzene	1.6	0.080	0.39	20	1.5	5.8	0.40	0.34	1.1	0.19
1,2,4-Trimethylbenzene	5.4	0.25	1.2	83	3.7	12	1.2	0.68	1.5	0.69
1,2,3-Trimethylbenzene	1.4	0.10	0.67	17	1.6	4.9	0.56	1.4	0.83	0.39
Aliphatic Hydrocarbons										
α-Pinene	2.1	0.57	0.24	1.3	17	5.0	0.82	0.44	1.9	0.99
n-Decane	20	1.6	2.2	430	8.7	59	3.5	1.1	8.1	1.6
n-Undecane	2.0	0.31	1.2	130	13	31	0.95	0.77	1.9	0.78
n-Dodecane	12	0.93	1.8	180	19	68	3.3	1.3	6.7	1.4
Chlorinated Hydrocarbons										
1,2-Dichloroethane	2.9	0.0050	0.29	0.83	8.3	0.053	0.013	0.059	0.024	0.029
1,1,1-Trichloroethane	11	0.58	15	48	40	25	0.78	43	20	4.7
Trichloroethylene	2.9	0.097	0.21	0 78	6.7	2.7	0.83	0.58	14	0.28
Tetrachloroethylene	0 32	0.16	2.4	0.18	0.34	0.47	0.15	2.1	11	0.78
p-Dichlorobenzene	0.10	0.026	4.5	0.15	1.4	2.9	0.56	0.43	0.12	0.26
Oxygenated Hydrocarbons										
n-Butylacetate	0 51	0.047	42	0 89	5.9	0.97	1.8	2.4	2.2	0.82
2-Ethoxyethyl acetate	5.3	6.2	0.55	0.66	1.3	11	1.1	2.0	NS	NS

TABLE 177. MEAN SOURCE STRENGTH FOR THE PESTICIDES α-, β-, and γ-BHC CALCULATED FOR EACH FIELD MONITORING TRIP

Location	Trip	Mean Source Strength (μg/h/m^3)		
		α-BHC	β-BHC	γ-BHC
New Buildings				
Hospital	1	NS[a]	NS	NS
	2	NS	NS	.0007
	3	NS	NS	.004
Office	1	NS	NS	NS
	2	NS	.0008	NS
Nursing Home	1	NS	.0006	NS
	2	NS	NC[b]	NS
Old Buildings				
Office	1	NC	NC	NC
Office/School	1	NS	NS	NS
Nursing Home	1	NS	NS	NS

[a]No source.
[b]Not calculated - either exchange rate or concentration data was not available.

TABLE 178. MEAN SOURCE STRENGTH FOR CHEMICAL PARAMETER CALCULATED FOR EACH FIELD MONITORING TRIP

		Mean Source Strength ($\mu g/h/m^3$)						
			Particulate					
Location	Trip	Nitrosomorpholine	IP	RP	Formaldehyde	Elements	CO	NO_2
New Buildings								
Hospital	1	NS[a]	NS	NS	NS	NS	NC[b]	NC
	2	NS	NS	NS	3.3	NS	NC	NC
	3	NS	NS	NS	NS	.00010(Br)[c]	NC	NC
Office	1	NS	.96	NS	39	NS	NC	NC
	2	NS	NS	6.8	26	NS	NC	NC
Nursing Home	1	NS	6.2	NS	NC	NS	NC	NC
	2	NS	NC	NS	NC	NC (Pb)[d]	NC	NC
Old Buildings								
Office	1	.00010	NS	NS	NS	NS	59	NS
Office/School	1	NS	NS	NS	NS	NS	NC	NC
Nursing Home	1	NS	NS	NS	20	NS	NC	NC

[a]No source.
[b]Not calculated; either exchange rate or concentration data missing.
[c]Br was only source.
[d]Pb was only source.

SECTION 10
QUALITY ASSURANCE/QUALITY CONTROL

Quality control and quality assurance activities were an integral part of this research program. The work was carried out by following those principles set forth in the U.S. Environmental Protection Agency's "Quality Assurance Handbook for Air Pollution Measurement Systems" and specifically applied to this study through the "Quality Assurance Project Plan for Monitoring In and Around Public Access Buildings."

This section summarizes quality control and quality assurance activities that took place throughout the project including:

- Preparation and revision of a quality assurance project plan;
- Performance audits using EPA GC/MS Performance Evaluation Samples and other traceable standards;
- Systems Audits including pretrip checks and progress updates;
- Communications with the EPA QA Officer; and
- Analysis of QA/QC samples.

Each of these aspects is discussed below.

QUALITY ASSURANCE PROJECT PLAN

A quality assurance project plan was prepared for this project. It discussed the technical and managerial aspects of the works and contained plans that satisfied the fourteen points specified in the EPA Publication QAMS-005/80, "Interim Guidelines for Preparing Quality Assurance Project Plans." Certain sections of the plan were revised in accordance with requests and comments from EPA. These revised sections were submitted to the EPA Quality Assurance Officer.

PERFORMANCE AUDITS

A number of internal audits were conducted to ensure that sampling equipment for use at the field sites, and analytical equipment, for use in

analysis of collected samples, were in proper working order and within calibration limits. For example, the flow rates of the filter and cartridge sampler assemblies were checked with soap film flowmeters and calibrated rotometers. Calibration and performance records of all analytical systems were checked and verified routinely.

Another aspect of the internal audit program was the distribution and analysis of EPA-provided GC/MS performance evaluation samples. These samples were prepared by a contractor to EPA, Northrop Services, and provided to RTI on a periodic basis through the EPA Quality Assurance Officer. The scheduling of the preparation and use of the samples was such that no more than 4 weeks elapsed between their preparation by gravimetric spiking on Tenax GC cartridges and their analysis by RTI. Results were compiled, checked for accuracy, and submitted to the EPA QA Officer as soon as possible after analysis of samples from a single field monitoring trip so that any apparently out-of-tolerance results could be investigated and necessary corrections made before the next set of samples was analyzed. Blank samples were also included in this program.

Accuracy and precision for the GC/MS performance evaluation samples are given in Table 179. Accuracy is evaluated as % recovery where

$$\% \text{ Recovery} = \frac{X_{found}}{X_{spiked}} \times 100\%$$

where X is the mass of each individual analyte. Precision is evaluated as standard deviation. Quantile recoveries are also given.

Overall, the results indicate a slight negative bias for all analytes (% recovery less than 100%) with standard deviations ranging from 19 to 46%. 1,2-Dichloroethane and 1,1,1-trichloroethane showed the best precision. Highest standard deviations were reported for carbon tetrachloride; however, this analyte was not detected at a significant level in any samples and quantitation data has not been presented.

No other performance evaluation samples were submitted by EPA for analysis.

SYSTEMS AUDITS

Systems audits, designed to show RTI's ability to collect samples and conduct analyses were conducted on several occasions throughout the

TABLE 179. PERCENT RECOVERY FOR GC/MS PERFORMANCE EVALUATION SAMPLES FOR VOLATILE ORGANICS[a]

Compound	Mean ± S.D.	25th Percentile	50th Percentile	75th Percentile
1,2-Dichloroethane	84 ± 20	68	78	92
1,1,1-Trichloroethane	72 ± 19	57	67	82
Benzene	81 ± 29	60	73	16
Carbon tetrachloride	91 ± 46	65	77	92
Trichloroethylene	76 ± 34	54	66	86
Tetrachloroethylene	79 ± 23	64	71	85
Chlorobenzene	90 ± 30	70	84	103
Ethylbenzene	95 ± 35	70	82	97
o-Xylene	87 ± 34	62	82	99

[a]n = 50.

project. The RTI Project Quality Assurance Officer conducted these qualitative audits by examining the written standard operating procedures for sample collection and analysis, by interviewing the responsible analyst or supervisor, and by visiting with the EPA QA Officer and the RTI Project Leadership. Details of the audits are discussed in Section 10 of the QA Project Plan.

Analytical Laboratory Systems Audits

The GC/MS, GC, and field support laboratories were visited several times during the project. The SOPs and data records were examined and discussed. These visits and interviews demonstrated that SOPs did exist, were in the hands of the responsible analysts, and were being followed. The need for updates and revision to several of these documents was noted. These updated documents were prepared.

Another aspect of the laboratory systems audit was to meet with the RTI project leader from time to time to check on the progress of scheduled analyses. Whenever scheduling difficulties were noted, goals were set for rectifying these off-schedule situations both at RTI and at subcontractor laboratories.

Field Operations Systems Audits

Prior to several of the field monitoring trips, the RTI QA Officer met with the field sampling team to survey and discuss their state of readiness for the trip. A checklist was used to assess the status. Important items covered in these systems audits included

- readiness of collection equipment and filters; calibration status of flowmeters and rotometers;
- cleanliness of formaldehyde collection materials;
- readiness of meteorological equipment; availability of infield or laboratory cross-checks for proper operation;
- readiness of continuous analyzers for carbon monoxide and oxides of nitrogen analysis;
- quality control and storage status of Tenax cartridges; and
- availability of field and laboratory control samples for all sample matrices.

Most often the field sampling team and their equipment were found to be in a state of readiness. Any exceptions noted were discussed with the Project Leader who took action to ensure that preparations were complete before sampling began.

COMMUNICATIONS WITH EPA

Quality control and quality assurance information was communicated to EPA in several ways:

- Through preparation of data reports of results of EPA GC/MS Performance Evaluation samples;
- Through meetings held with the EPA QA Officer to discuss the performance evaluation samples;
- Through walk-throughs and inspections of RTI laboratories.

QUALITY CONTROL/QUALITY ASSURANCE SAMPLES

Blanks and Controls

In an effort to assess accuracy and precision for measurement parameters, quality control samples were prepared and analyzed as described in Sections 4 and 6. Analytical results for control and blank samples are presented and discussed in Section 6. Table 180 indicates where data for specific analytical procedures can be found. This table also summarizes results for control and blank samples.

Duplicates

In an effort to assess method precision, duplicate field samples were collected and analyzed. Data in Tables 181 to 188 present results of these duplicate analyses for nitrosamines, pesticides/PCBs, particulate mass, metals, carbon monoxide, formaldehyde, radon, air exchange. Results have been given only for target chemicals that were actually detected in both samples. Precision was evaluated as percent relative mean deviation (% RMD) calculated as

$$\% \text{ RMD} = \frac{|S - \bar{X}|}{\bar{X}} \times 100\%$$

where S is either sample value of the duplicate pair and $\bar{X}$ is the mean value for the duplicate pair.

TABLE 180. SUMMARY OF ANALYTICAL RESULTS FOR CONTROL AND BLANK SAMPLES

Sample Type	Table Number		Comments
	Controls	Blanks	
Volatile Organics	19	18	Generally acceptable recoveries (75-130%), some high recoveries for n-dodecane, oxygenated compounds gave sporatic recoveries, little contamination of blanks.
Nitrosamine	24	24	Recoveries ranged from 66 to 130% for n-dimethyl nitrosamine, 43 to 85% for n-nitrosomorpholine. No contamination of blanks.
Pesticides/PCBs	33	32	Dichlorvos was not recovered. Malathion recoveries generally 40 to 50%; little contamination of blanks.
Particulate Mass	NS[a]	34	Little contamination of blanks.
Polynuclear Aromatic Hydrocarbons	NS	NR[b]	No contamination of blanks.
Metals	NS	37	Low levels of Cr, Ni, and Br found on blanks.
Formaldehyde	NA[c]	NA	Recoveries not calculated; used to generate calibration curve.
Radon	NS	41	Blanks showed little contamination.
Air Exchange	NS	NS	
Carbon Monoxide	NS	NS	
Nitrogen Dioxide	NS	NS	
Asbestos	NS	43	One sample contaminated at 238 fibers/m^3 level.

[a]No samples scheduled.
[b]Quantitative analysis not performed.
[c]Not applicable.

TABLE 181. RESULTS OF DUPLICATE NITROSAMINE SAMPLES

Sample ID	Compound	Concentration (ng/m^3) Field Sample	Duplicate	% RMD[a]
312-4	n-Nitrosomorpholine	0.24	0.19	11.6
313-6	n-Nitrosomopholine	0.29	0.33	6.5

[a]% relative mean deviation.

TABLE 182. RESULTS OF DUPLICATE PESTICIDE/PCB ANALYSIS

Sample ID	Compound	Concentration (ng/m^3) Field Sample	Duplicate	% RMD[a]
212-6	α-BHC	1.1	0.7	22.2
	Malathion	25	24	2.0
213-4	α-BHC	0.93	1.0	4.1

[a]% relative mean deviation.

TABLE 183. RESULTS OF DUPLICATE PARTICULATE MASS ANALYSIS

Sample	Concentration (mg/m^3)				% RMD[a]	
	Inhalable		Respirable		Inhalable	Respirable
113-3	4.1	4.4	4.1	7.6	3.5	29
213-3	5.9	8.3	55.5	52.8	17	2.3
612-3	10.6	15.2	14.1	15.5	18	4.7
623-3	4.9	6.7	12.6	19.9	16	22

[a]% relative mean deviation.

TABLE 184. RESULTS OF DUPLICATE METALS ANALYSIS

Sample ID	Metal	Concentration (ng/m^3) Field Sample	Duplicate	% RMD[a]
133-1	Ni	0.81	8.56	82.7
	Br	2.39	3.93	24.4
	Pb	4.73	6.71	17.3
623-1	Mn	2.18	1.72	11.8
	Ni	2.85	1.10	44.3
	Br	8.25	6.12	14.8
	Pb	23.3	14.6	22.9
313-2	Cr	18.7	44.6	40.9
	Mn	9.2	2.1	62.8
	Ni	1.07	3.70	55.1
	Br	19.9	12.8	21.7
	Pb	49.7	64.7	16.8

[a]% relative mean deviation.

TABLE 185. RESULTS OF DUPLICATE CARBON MONOXIDE ANALYSIS

Sample	Concentration (ppm) Field Sample	Duplicate	% RMD[a]
614-1	1.1	ND	100
614-2	1.1	ND	100
614-3	3.1	0.89	55.4
614-4	1.5	ND	100
614-5	3.1	1.64	30.1
614-6	1.6	ND	100

[a]% relative mean deviation.

TABLE 186. RESULTS OF DUPLICATE FORMALDEHYDE ANALYSIS

Sample	Concentration (ppb) Field Sample	Duplicate	% RMD[a]
113-3	69	73	2.8
423-3	137	140	1.1
313-3	77	84	4.3

[a]% relative mean deviation.

TABLE 187. RESULTS OF DUPLICATE RADON ANALYSIS

Sample	Concentration (pCi/L)		% RMD[a]
	Field Sample	Duplicate	
113-1	1.49	0.37	60.2
323-1	1.68	1.68	0.0
613-1	1.50	1.95	13.0

[a]% relative mean deviation.

TABLE 188. RESULTS OF DUPLICATE AIR EXCHANGE MEASUREMENTS

Sample	Air Exchange Rate (change/h) Field Sample	Duplicate	% RMD[a]
112-3	0.18	0.35	32.1
132-3	0.46	0.45	1.1
133-5	0.24	0.23	2.1
123-3	0.08	-0.10	NC[b]
121-6	0.27	0.28	1.8
412-3	0.63	0.64	0.9
413-5	0.49	0.49	0.0
422-4	0.36	0.37	1.4
423-6	0.26	0.28	3.7
612-3	0.54	0.53	1.9
613-5	0.37	0.37	0.0
313-5	0.63	0.67	3.1
512-3	0.29	0.37	12.1
513-5	0.51	0.51	0.0
212-3	0.28	0.21	14.3

[a]% relative mean deviation.
[b]Not calculable.

Most analyses showed acceptable precision (i.e., <30%). Some duplicate samples for metals and radon showed poorer precision. Duplicate results for carbon monoxide analysis showed very poor agreement especially at the 1 ppm level. This is not surprising since the instrument can show a drift of ±1 ppm. In Table 185, it is interesting to note that the trend for highest CO concentrations in sample 614-3 and 614-5 was noted for both monitors.

All samples for volatile organics were collected in triplicate using distributed air volumes. All collected samples were analyzed and the mean and standard deviations calculated for colocated samples. The % relative standard deviation for the triplicates was then calculated to assess precision, where % RSD = Standard Deviation/Mean X 100%. Table 189 gives the mean %RSD for each target volatile that was detected in more than five samples. %RSD values, which represent the 25th, 50th (median), 75th, and 90th percentile, have also been included. Results show good precision for most analytes with median %RSD values generally between 10 and 20%.

Quality Assurance Samples

Ten percent of the samples for volatile organic analysis were collected in quadruplicate. In these cases, three of the samples were analyzed at RTI and one sample was sent to an independent QA laboratory for analysis.

The QA laboratory performed quantitative analysis for fifteen of the target volatiles in these samples including 1,2-dichoroethane, 1,1,1-trichloroethane, benzene, carbon tetrachloride, trichloroethylene, tetrachloroethylene, chlorobenzene, ethylbenzene, α-pinene, 1,3,5-trimethylbenzene, n-decane, o-dichlorobenzene, o-cresol, n-undecane, and n-dodecane. Four of these compounds, carbon tetrachloride, ethylbenzene, o-dichlorobenzene, and o-cresol, were not detected in any samples. For the remaining compounds, between-laboratory variability was estimated by calculating the % relative mean deviation (%RMD) for duplicate measurements. Data for these replicate samples are given in Table 190. %RMD values show generally acceptable precision between laboratories. Levels reported by RTI were generally lower than those reported by the QA laboratory. Lowest mean %RMDs, and hence best precision, were reported for ethylbenzene and 1,3,5--trimethylbenzene. Highest mean %RMDs were reported for 1,1,1-trichloroethane and trichloroethylene.

TABLE 189. PRECISION FOR VOLATILE ORGANIC ANALYSIS

Compound	N[a]	% RSD				
		Mean	25TH Percentile	50TH Percentile	75TH Percentile	90TH Percentile
Aromatic Hydrocarbons						
Benzene	233	25	11	21	34	47
m,p-Xylene	231	17	9	15	22	29
o-Xylene	222	18	10	15	24	35
Styrene	226	28	12	21	37	57
Ethylbenzene	229	17	9	15	22	32
Isopropylbenzene	128	17	10	15	22	30
n-Propylbenzene	104	15	8	13	21	29
m-Ethyltoluene	218	16	8	14	21	29
o-Ethyltoluene	144	16	7	14	23	31
1,2,3-Trimethylbenzene	218	23	10	17	27	40
1,2,4-Trimethlybenzene	224	17	8	14	21	31
1,3,5-Trimethylbenzene	119	16	7	13	22	32
Aliphatic Hydrocarbons						
α-Pinene	69	22	12	20	28	44
n-Decane	151	20	11	16	26	35
n-Undecane	151	21	11	18	27	39
n-Dodecane	73	18	10	15	22	32
Chlorinated Hydrocarbons						
1,2-Dichloroethane	52	18	8	15	23	31
1,1,1-Trichloroethane	229	21	11	18	25	42
Trichloroethylene	113	26	12	22	34	49
Tetrachloroethylene	123	16	8	14	21	30
p-Dichlorobenzene	77	14	5	11	18	23
Chlorobenzene	7	15	12	16	17	18
Carbon tetrachloride	12	29	7	14	19	106
o-Dichlorobenzene	6	37	4	13	56	171
Oxygenated Hydrocarbons						
n-Butylacetate	73	28	15	24	36	47
2-Ethoxyethyl acetate	60	23	12	22	31	39

[a] Number of samples.

TABLE 190. BETWEEN-LABORATORY PRECISION FOR VOLATILE ORGANICS ESTIMATED USING DUPLICATE FIELD SAMPLES

	% Relative Mean Deviation										
Sample	1,2-Dichloro-ethane	1,1,1-Trichloro-ethane	Benzene	Trichloro-ethylene	Tetrachloro-ethylene	Ethylbenzene	α-Pinene	1,3,5-Tri-methylbenzene	n-Decane	n-Undecane	n-Dodecane
112.3	-[a]	22	27	31	-	-	-	-	41	48	-
113.5	-	35	39	53	-	33	-	-	26	6	-
122.3	16	36	3[b]	-	-	31	-	-	-	-	-
123.5	19	29	25[b]	-	-	2[b]	-	-	-	-	-
212.3	-	35	14	-	11	14[b]	-	-	9[b]	19	-
213.5	-	31	19	-	9	3[b]	-	-	-	21	-
312.3	-	35	35	41	1	9	-	24	42	22	4
312.5	-	30	29	79	11	8	0	21	45	38	35
412.3	-	36	40	-	-	29[b]	36[b]	35[b]	1	57[b]	59[b]
413.5	-	41	41	-	-	13[b]	29[b]	1[b]	53[b]	65[b]	47[b]
422.3	22	27	23	24	6	19	20[b]	4	23	19[b]	27[b]
423.5	-	22	21	28	29	16	16[b]	10	13[b]	21[b]	28[b]
513.5	-	22	21	7[b]	7[b]	0	22[b]	0	72	29	15
612.3	-	33	44	27	27	3[b]	13[b]	9	7	19[b]	6[b]
613.5	-	38	30	10	10	0	33[b]	3[b]	4[b]	3[b]	5[b]
Mean % RMD ± S.D.	16±9	32±6	27±12	33±22	12±9	13±11	26±10	12±12	24±22	28±19	25±21

[a]Compound not detected.
[b]Detected at a higher concentration by RTI; all others detected at a higher concentration by the QA laboratory.

SECTION 11

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APPENDIX A

Meteorological Data

NEW HOSPITAL - TRIP 1

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
7/23/84	2015	26	8.2	Variable
	2100	24	8.5	Variable
	2200	24	9.0	Variable
	2300	22	9.1	Variable
	2400	21	9.1	Variable
7/24/84	0100	20	9.1	Variable
	0200	20	9.2	Variable
	0300	20	9.3	Variable
	0400	20	9.3	Variable
	0500	20	9.4	Variable
	0600	19	9.4	Variable
	0700	20	9.5	Variable
	0800	22	9.5	Variable
	0900	26	9.0	N
	1000	29	8.4	NE
	1100	28	8.3	NE
	1200	28	8.3	NE
	1300	27	8.2	NW
	1400	30	8.0	NW
	1500	30	8.0	NE
	1600	31	8.0	NE
	1700 stopped			
	1800 stopped			
	1900	30	7.5	NW
	2000	28	7.5	N
	2100	27	7.4	NW
	2200	26	7.2	NW
	2300	25	7.1	NW
	2400	24	7.1	NW
7/25/85	0100	25	7.1	NW
	0200	25	7.1	NW
	0300	21	7.1	Variable
	0400	22	7.1	NW
	0500	21	7.2	NW
	0600	20	7.2	NW
	0700	19	7.3	NW
	0800	19	7.5	NW
	0900	22	7.8	N
	1000	24	7.1	N
	1100	25	6.8	N
	1200	26	6.8	N
	1300	26	6.5	N

(continued)

NEW HOSPITAL - TRIP 1 (concluded)

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
	1400	27	6.4	N
	1500	28	6.3	N
	1600	30	6.2	N
	1700	30	6.2	N
	1800	29	6.2	N
	1900	27	6.3	W
	2000	26	6.8	Variable
	2100	24	7.0	SE
	2200	23	7.2	Variable
	2300	21	7.8	NE
	2400	20	7.8	NE
7/26/84	0100	20	7.8	N
	0200	20	7.9	NE
	0300	19	7.9	NE
	0400	18	8.0	NE
	0500	17	8.0	N
	0600	17	8.0	NE
	0700	17	8.2	NE
	0800	No reading		NE
	0900	No reading		E
	1000	No reading		Variable
	1100	No reading		Variable
	1200	No reading		Variable
	1300	No reading		Variable
	1400	No reading		Variable
	1500	No reading		Variable
	1600	No reading		Variable
	1700	27	7.5	Variable

NEW HOSPITAL - TRIP 2

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
10/25/84	1720	17	7.0	None recorded
	1800	16	7.6	None recorded
	1900	15	8.0	None recorded
	2000	15	8.2	None recorded
	2100	14	8.3	None recorded
	2200	14	8.6	None recorded
	2300	14	8.7	None recorded
	2400	14	8.8	None recorded
10/26/84	0100	13	8.9	None recorded
	0200	13	9.0	None recorded
	0300	13	9.0	None recorded
	0400	13	9.0	None recorded
	0500	13	9.0	None recorded
	0600	13	9.0	None recorded
	0700	13	9.0	None recorded
	0800	13	9.0	None recorded
	0900	15	9.3	Variable
	1000	18	9.2	Variable
	1100	19	9.0	Variable
	1200	21	8.5	Variable
	1300	24	8.0	Variable
	1400	24	7.9	W
	1500	25	7.8	N
	1600	25	7.7	N
	1700	26	7.7	NNW
	1800	25	7.7	Variable
	1900	25	7.7	Variable
	2000	23	7.7	Variable
	2100	22	8.0	Variable
	2200	22	8.0	Variable
	2300	21	8.0	Variable
	2400	20	8.0	Variable
10/27/84	0100	20	8.2	Variable
	0200	19	8.3	Variable
	0300	18	8.6	Variable
	0400	17	8.9	Variable
	0500	16	8.9	Variable
	0600	16	9.0	Variable
	0700	15	9.0	Variable
	0800	15	9.2	None recorded
	0900	16	9.2	None recorded

(continued)

NEW HOSPITAL - TRIP 2 (concluded)

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
	1000	18	9.2	None recorded
	1100	25	8.0	None recorded
	1200	27	7.2	None recorded
	1300	32	7.0	None recorded
	1400	30	6.8	None recorded
	1500	30	6.8	None recorded
	1600	30	6.8	None recorded
	1700	28	6.8	None recorded
	1800	26	6.9	None recorded
	1900	24	7.0	None recorded
	2100	23	7.8	Variable
	2200	21	7.8	Variable
	2300	20	7.9	Variable
	2400	19	8.0	Variable
10/28/84	0100	18	8.0	Variable
	0200	17	8.0	Variable
	0300	17	7.9	Variable
	0400	16	7.9	Variable
	0500	16	8.0	Variable
	0600	17	8.0	Variable
	0700	17	8.0	Variable
	0800	16	8.2	Variable
	0900	18	8.3	Variable
	1000	21	8.1	Variable
	1100	23	8.0	Variable
	1200	24	7.8	Variable
	1300	25	7.8	Variable
	1400	26	7.5	Variable

NEW HOSPITAL - TRIP 3

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
8/11/85	1600	35	8.0	NE
	1700	35	5.4	NW
	1800	35	5.5	Variable
	1900	31	5.5	
	2000	26	6.0	SE
	2100	25	6.3	SE
	2200	23	7.3	SE
	2300	21	7.5	Variable
	2400	21	7.5	Variable
8/13/85	0100	20	7.5	Variable
	0200	19.8	8.0	N
	0300	18	8.3	N
	0400	17	8.5	Variable
	0500	16.5	9.0	Variable
	0600	16	9.0	Variable
	0700	16	9.0	N
	0800			
	0900	18	8.9	Variable
	1000	24	8.4	Variable
	1100	26	7.5	Variable
	1200	31	7.2	Variable
	1300	34	7.2	Variable
	1400	26	7.0	Variable
	1500	36	7.0	E
	1600	36	7.0	Variable
	1700	35	7.0	Variable
	1800	35	7.0	Variable
	1900	34	7.0	E
	2000	31	7.2	E
	2100	29	7.7	Variable
	2200	28	7.7	Variable
	2300	27	7.8	SE
	2400	26	8.0	Variable
8/14/85	0100	25	8.0	Variable
	0200	25	8.2	Variable
	0300	24	8.4	Variable
	0400	23	8.5	Variable
	0500	23	8.5	Variable
	0600	23	8.6	Variable
	0700	23	8.8	Variable
	0800	24	8.9	Variable

(continued)

NEW HOSPITAL - TRIP 3 (continued)

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
	0900	26	8.7	Variable
	1000	30	8.0	Variable
	1100	34	7.5	Variable
	1200	35	7.5	Variable
	1300	36	7.1	Variable
	1400	35	6.9	Variable
	1500	37	6.7	Variable
	1600	37	6.7	Variable
	1700	36	6.7	E
	1800	36	6.7	E
	1900	33	7.0	E
	2000	30	7.3	E
	2100	30	7.5	Variable
	2200	25	7.7	Variable
	2300	22	9.0	Variable
	2400	22	9.0	Variable
8/15/85	0100	22	9.1	Variable
	0200	22	9.2	Variable
	0300	21	9.2	Variable
	0400	21	9.2	Variable
	0500	21	9.2	Variable
	0600	21	9.2	Variable
	0700	20	9.2	Variable
	0800	21	9.2	Variable
	0900	24	9.0	Variable
	1000	27	8.3	Variable
	1100	31	7.8	Variable
	1200	33	7.3	Variable
	1300	34	7.1	Variable
	1400	35	7.0	Variable
	1500	35	7.0	Variable
	1600	35	7.0	Variable

OLD HOME - TRIP 1

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
7/28/84	0900	15	8.8	NE
	1000	20	8.1	NE
	1100	21	7.9	NE
	1200	22	7.9	NE
	1300	23	7.8	NE
	1400	24	7.5	NE
	1500	24	7.3	ENE
	1600	25	7.2	ENE
	1700	26	7.5	E
	1800	26	7.5	E
	1900	24	7.5	E
	2000	23	7.5	SE
	2100	20	7.8	SE
	2200	18	8.3	No reading
	2300	17	8.8	No reading
	2400	15	9.0	No reading
	2400	15	9.0	No reading
7/29/84	0100	15	9.1	No reading
	0200	14	9.2	No reading
	0300	14	9.3	No reading
	0400	13	9.3	No reading
	0500	13	9.3	No reading
	0600	13	9.3	No reading
	0700	13	9.3	Variable
	0800	15	9.2	N
	1800	24	7.5	E
	1900	23	7.8	SE
	2000	22	7.9	SE
	2100	20	8.0	S
	2200	20	8.2	SE
	2300	20	8.5	Variable
	2400	19	9.0	Variable
7/30/84	0100	18	9.1	Variable
	0200	18	9.1	Variable
	0300	17	9.2	Variable
	0400	17	9.3	Variable
	0500	No reading	No reading	No reading
	0600	No reading	No reading	No reading
	0700	No reading	No reading	No reading
	0800	No reading	No reading	No reading
	0900	20	9.6	NW
	1000	24	9.0	NW
	1100	25	8.5	N

(continued)

OLD HOME - TRIP 1 (concluded)

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
	1200	24	8.0	N
	1300	25	8.0	N
	1400	25	7.8	N
	1500	26	7.5	N
	1600	28	7.3	N
	1700	27	7.3	N

OLD OFFICE - TRIP 1

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
7/31/84	1900	29	7.5	S
	2000	27	7.8	S
	2100	26	7.9	S
	2200	25	8.0	S
	2300	25	8.2	Variable
	2400	25	8.5	Variable
8/1/84	0100	24	8.6	Variable
	0200	23	8.8	Variable
	0300	23	9.2	Variable
	0400	23	9.4	Variable
	0500	22	9.5	Variable
	0600	21	9.5	W
	0700	23	9.4	NW
	0800	24	9.2	Variable
	0900	25	9.0	Variable
	1000	25	9.0	Variable
	1100	30	8.5	Variable
	1200	32	8.0	Variable
	1300	33	8.0	Variable
	1400	32	7.9	Variable
	1500	34	7.8	S
	1600	33	7.8	S
	1700	31	7.8	S
	1800	30	8.0	S
	1900	30	8.0	S
	2000	29	8.1	S
	2100	29	8.2	S
	2200	28	8.5	NW
	2300	26	9.0	W
	2400	25	9.8	W
8/2/84	0100	25	9.9	W
	0200	25	9.9	Variable
	0300	25	9.9	Variable
	0400	25	9.9	S
	0500	25	9.8	W
	0600	25	9.8	W
	0700	25	9.8	W
	0800	25	9.8	S
	0900	26	9.8	Variable
	1000	28	9.7	Variable
	1100	32	9.0	Variable

(continued)

OLD OFFICE - TRIP 1 (continued)

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
	1200	33	8.5	Variable
	1300	35	8.4	Variable
	1400	35	8.0	Variable
	1500	34	7.6	S
	1600	30	7.5	S
	1700	28	7.6	NW
	1800	28	8.9	N
	1900	28	8.9	NE
	2000	26	8.9	NE
	2100	26	9.0	NE
	2200	25	9.0	NE
	2300	25	9.0	N
	2400	25	9.0	N
8/3/84	0100	25	9.5	Variable
	0200	24	9.6	Variable
	0300	24	9.7	Variable
	0400	23	9.7	Variable
	0500	23	9.7	Variable
	0600	23	9.7	N
	0700	23	9.7	N
	0800	24	9.7	W
	0900	24	9.7	Variable
	1000	26	9.6	Variable
	1100	28	8.5	N
	1200	30	8.3	N
	1300	30	8.2	N
	1400	31	8.1	N
	1500	35	8.0	Variable
	1600	29	8.1	Variable
	1700	26	9.0	Variable
	1800	27	9.0	Variable
	1900	28	9.0	Variable
	2000	27	9.0	Variable
	2100	26	9.0	Variable
	2200	26	9.0	Variable
	2300	24	9.6	Variable
	2400	23	9.6	Variable
8/4/84	0100	23	9.6	Variable
	0200	23	9.6	N
	0300	23	9.6	N
	0400	23	9.6	N
	0500	23	9.6	N

(continued)

OLD OFFICE - TRIP 1 (concluded)

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
	0600	23	9.6	N
	0700	23	9.6	N
	0800	24	9.5	N

NEW OFFICE - TRIP 1

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
1/25/85	1300	5		W
	1400	5	7.0	W
	1500	5	7.0	NW
	1600	4	7.0	W
	1700	3	6.8	W
	1800	3	7.5	Variable
	1900	0	8.0	NW
	2000	-4	9.8	NW
	2100	-5	8.8	NW
	2200	-6	8.3	NW
	2300	-6	8.3	NW
	2400	-8	8.3	NW
1/26/85	0100	-8	8.8	NW
	0200	-6	9.5	N
	0300	-7	9.3	N
	0400	-8	9.0	N
	0500	-8	8.9	N
	0600	-8	8.8	N
	0700	-8	8.8	N
	0800	-8	8.5	N
	0900	-8	8.5	N
	1000	-8	8.5	N
	1100	-8	8.4	N
	1200	-7	8.3	N
	1300	-6	8.0	N
	1400	-6	8.0	N
	1500	-5	8.0	N
	1600	-5	7.9	N
	1700	-6	8.0	NW
	1800	-7	8.0	NW
	1900	-8	8.0	NW
	2000	-9	8.0	NW
	2100	-9	8.0	NW
	2200	-10	8.0	NW
	2300	-10	8.1	NW
	2400	-10	8.2	NW
7/27/85	0100	-13	8.3	No reading
	0200	-13	8.3	No reading
	0300	-13	8.5	No reading
	0400	-13	8.6	No reading
	0500	-11	8.6	SW
	0600	-11	8.6	SW

(continued)

NEW OFFICE - TRIP 1 (concluded)

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
	0700	-10	8.5	SW
	0800	-10	8.5	SW
	0900	-9	8.5	SW
	1000	-6	8.4	SW
	1100	-3	8.0	W
	1200	-2	7.8	W
	1300	-2	7.5	W
	1400	-1	7.5	W
	1500	0	7.5	S
	1600	-1	7.5	E
	1700	-2	7.5	E
	1800	-3	4.2	Variable
	1900	-4	4.2	Variable
	2000	-5	4.2	Variable
	2100	-5	4.2	Variable
	2200	-5	4.3	Variable
	2300	-7	4.3	Variable
	2400	-6.5	4.5	Variable
4/28/85	0100	-6.5	4.6	Variable
	0200	-6	4.6	Variable
	0300	-6	4.6	Variable
	0400	-6.5	4.6	Variable
	0600	-6	4.6	Variable
	0700	-5	4.8	Variable
	0800	-3	8.5	N
	0900	-2	8.5	N
	1000	0	8.4	N
	1100	0	8.1	N
	1200	0	8.0	N
	1300	1	8.0	N
	1400	1	8.0	N
	1500	stopped		
	1600	0	8.0	N
	1700	0	8.0	N

NEW OFFICE - TRIP 2

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
4/23/85	1100	27	6.0	SE
	1200	29	6.3	SE
	1300	30	6.3	SE
	1400	29	6.2	SE
	1500	28	6.2	SE
	1600	28	6.3	SE
	1700	27	6.4	SE
	1800	25	6.5	SE
	1900	23	6.8	SE
	2000	21	7	SE
	2100	19	7.5	SE
	2200	18	8.1	SE
	2300	15	8.6	SE
	2400	13	9.3	E
4/24/85	0100	13	9.5	E
	0200	13	9.5	E
	0300	13	9.5	E
	0400	12	9.5	E
	0500	11	9.5	E
	0600	11	9.5	E
	0700	12	9.5	E
	0800	12	9.4	E
	0900	13	9.4	E
	1000	14	9.3	E
	1100	15	9.2	E
	1200	16	9.1	E
	1300	16	9.0	E
	1400	16	8.9	E
	1500	16	8.9	E
	1600	16	9.0	E
	1700	15	9.0	E
	1800	14	8.9	NE
	1900	14	9.0	NE
	2000	13	9.0	NE
	2100	12	9.0	NE
	2200	12	9.0	NE
	2300	12	9.0	NE
	2400	12	9.3	NE
4/25/85	0100	11	9.6	E
	0200	10	9.8	E
	0300	10	9.8	E
	0400	10	9.8	N
	0500	10	9.9	N

(continued)

NEW OFFICE - TRIP 2 (concluded)

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
	0600	10	9.9	N
	0700	10	9.9	N
	0800	11	9.9	N
	0900	13	9.9	N
	1000	17	9.8	N
	1100	19	9.4	N
	1200	21	9.0	N
	1300	21	8.6	N
	1400	22	8.2	N
	1500	21	8.0	N
	1600	21	8.0	N
	1700	21	7.9	N
	1800	20	7.9	N
	1900	19	8.0	N
	2000	18	8.0	Variable
	2100	13	8.5	Variable
	2200	11	8.8	Variable
	2300	10	9.2	Variable
	2400	15	9.0	Variable
4/26/85	0100	11	8.8	Variable
	0200	9	9.0	Variable
	0300	9	9.0	Variable
	0400	9	9.1	Variable
	0500	9	9.1	Variable
	0600	10	9.0	Variable

OLD SCHOOL/OFFICE - TRIP 1

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
2/25/85	1300	12	5.0	NE
	1400	10	5.5	NE
	1500	9	5.5	NE
	1600	8	5.5	NE
	1700	7	5.7	N
	1800	7	5.7	N
	1900	6	5.8	N
	2000	6	6.0	N
	2100	4	5.8	N
	2200	3	5.8	N
	2300	4	6.0	NE
	2400	4	6.5	NE
2/26/85	0100	4	6.8	W
	0200	3	7.0	W
	0300	2	7.1	W
	0400	2	7.2	W
	0500	1	7.5	W
	0600	1	7.5	W
	0700	2	7.5	W
	0800	3	7.6	W
	0900	5	7.6	W
	1000	6	7.6	W
	1100	8	7.5	W
	1200	8	7.5	W
	1300	9	7.4	W
	1400	9	7.4	W
	1500	7	7.4	W
	1600	7	7.4	W
	1700	6	7.5	W
	1800	6	7.5	W
	1900	5	7.6	W
	2000	5	7.7	W
	2100	5	8.1	SW
	2200	4	8.5	SW
	2300	4	9.0	Variable
	2400	4	9.0	Variable
2/27/85	0100	4	9.0	
	0200	4	9.1	SE
	0300	5	9.1	SE
	0400	5	9.2	SE
	0500	5	9.2	SE
	0600	5	9.3	SE
	0700	6	9.3	SE

(continued)

OLD SCHOOL/OFFICE - TRIP 1 (concluded)

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
	0800	7	9.3	SE
	0900	8	9.3	SE
	1000	9	9.0	SE
	1100	10	9.0	SE
	1200	11	8.8	SE
	1300	10	8.1	SE
	1400	10	8.0	SE
	1500	8	7.7	SE
	1600	6	7.6	SE
	1700	3	7.2	SE
	1800	2	7.2	SE
	1900	0	7.3	SE
	2000	-1	7.4	SE
	2100	-2	7.5	SE
	2200	-3	7.5	NE
	2300	-3	7.4	Variable
	2400	-5	7.1	Variable
2/28/85	0100	-6	7.1	Variable
	0200	-7	7.1	Variable
	0300	-8	7.1	Variable
	0400	-8	7.1	Variable
	0500	-9	7.0	Variable
	0600	-9	7.0	Variable
	0700	-9	7.1	Variable
	0800	-8	7.0	Variable
	0900	-7	7.0	Variable
	1000	-5	6.7	Variable
	1100	-3	6.5	Variable
	1200	-2	6.0	Variable
	1300	1	5.9	Variable
	1400	3	5.8	Variable
	1500	4	5.8	Variable
	1600	4	5.7	Variable
	1700	3	5.6	Variable

NEW NURSING HOME - TRIP 1

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
4/1/85	1700	3	9.0	NW
	1800	4	9.0	N
	1900	3	9.1	W
	2000	2	9.2	W
	2100	2	9.5	W
	2200	2	9.5	NW
	2300	No reading		
	2400	No reading		
4/2/85	0100	No reading		
	0200	No reading		
	0300	No reading		
	0400	No reading		
	0500	No reading		
	0600	No reading		
	0700	No reading		
	0800	No reading		
	0900	3	9.0	NW
	1000	4	8.9	NW
	1100	4	8.9	NW
	1200	5	8.5	NW
	1300	5	8.1	NW
	1400	5	7.9	NW
	1500	4	8.0	NW
	1600	3	8.5	NW
	1700	2	9.0	NW
	1800	3	8.8	NW
	1900	3	8.5	NW
	2000	2	8.5	NW
	2100	1	8.6	NW
	2200	0	8.6	NW
	2300	0	8.7	NW
	2400	-1	8.8	NW
4/3/85	0100	-2	9.0	NW
	0200	-3	9.0	NW
	0300	-4	9.0	NW
	0400	-4	9.0	NW
	0500	-3	9.0	NW
	0600	-2	9.0	NW
	0700	-1	9.0	NW
	0800	0	8.8	NW
	0900	4	8.5	NW
	1000	5	8.0	NW
	1100	5	7.9	NW

(continued)

NEW NURSING HOME - TRIP 1 (concluded)

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
	1200	5	7.8	NW
	1300	5	7.8	NW
	1400	5	7.9	NW
	1500	5	7.9	NW
	1600	4	8.0	NW
	1700	3	8.4	NW
	1800	2	9.0	NW
	1900	0	9.5	NW
	2000	0	10	NW
	2100	1	10	NW
	2200	2	10	NW
	2300	3	10	NW
	2400	4	10	NW
4/4/85	0100	4	10	NW
	0200	3	10	NW
	0300	3	9.9	NW
	0400	4	9.5	NNW
	0500	3	9.3	NNW
	0600	3	9.2	NW
	0700	4	9.2	NW
	0800	5	9.0	NW
	0900	5	8.6	NW
	1000	7	8.3	NW
	1100	8	8.1	NW
	1200	8	8.0	NW
	1300	9	8.0	NW
	1400	10	7.6	NW
	1500	11	7.5	NW
	1600	11	7.4	NW

NEW NURSING HOME - TRIP 2

Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
8/6/85	0830			
	0900	23	9.8	SW
	1000	23	9.1	SW
	1100	20	9.0	SW
	1200	20	8.5	SW
	1300	20	8.5	SW
	1400	20	8.5	SW
	1500	21	8.5	SW
	1600	21	8.5	SW
	1700	19	8.5	SW
	1800	25	8.5	SW
	1900	24	8.5	SW
	2000	23	8.5	SW
	2100	22	8.7	SW
	2200	19	9.3	SW
	2300	20	9.6	SW
	2400	20	9.7	W
8/7/85	0100	20	9.9	W
	0200	20	9.9	W
	0300	19	10	W
	0400	18	10	W
	0500	18	10	W
	0600	18	10	W
	0700	18	10	W
	0800 OFF			
8/8/85	0700 Restarted	19	10	W
	0800	19	10	W
	0900	20	10	Variable
	1000	21	10	Variable
	1100	20	10	S
	1200	22	10	S
	1300	24	9.8	Variable
	1400	25	9.5	Variable
	1500	27	8.5	Variable
	1600	28	8.2	SW
	1700	28	8.2	SW
	1800	27	8.4	SW
	1900	24	8.5	W
	2000	22	9.0	W
	2100	21	9.5	W
	2200	21	9.8	W
	2300	20	9.9	W
	[illegible]	20	9.9	NW

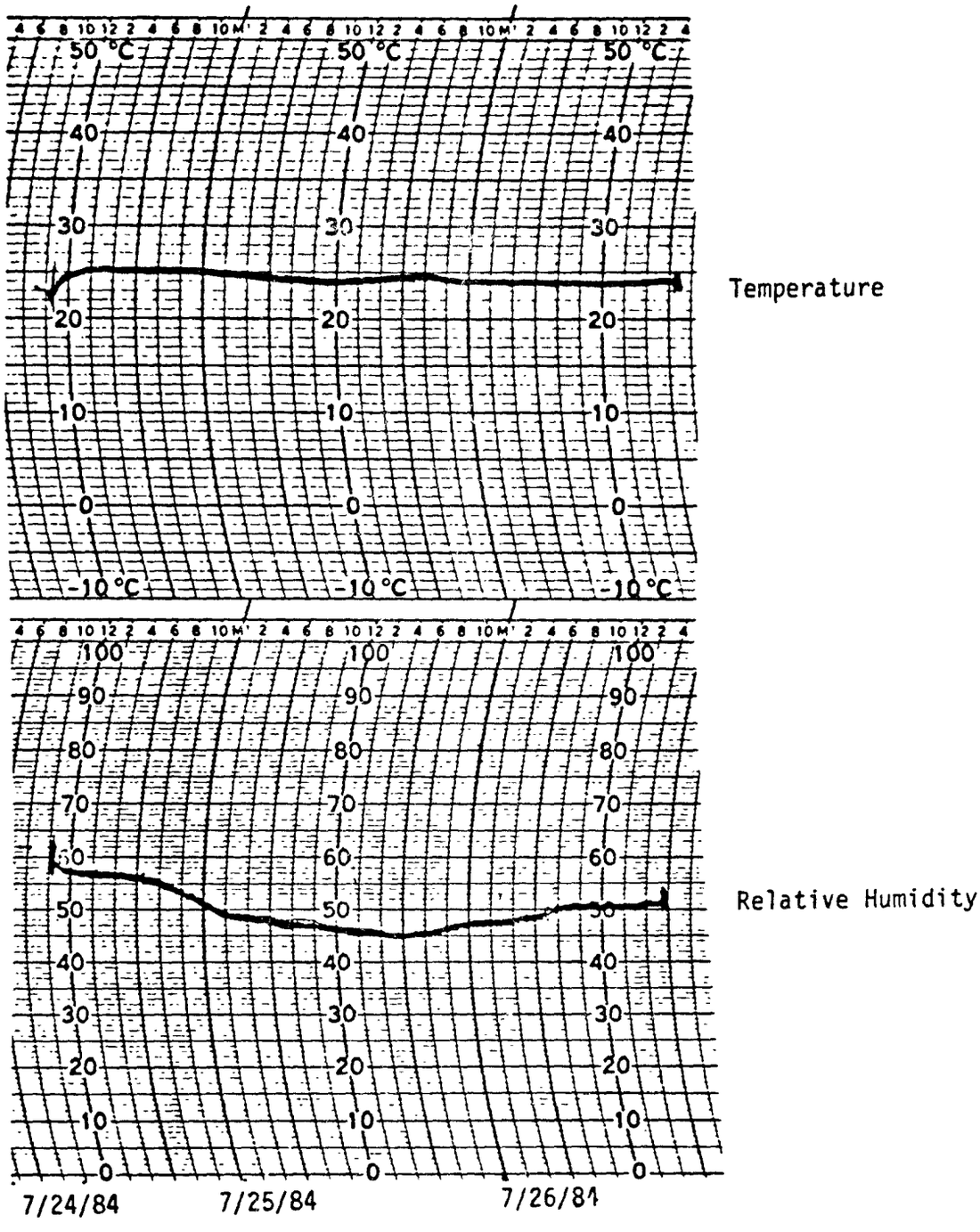
(continued)

NEW NURSING HOME - TRIP 2 (concluded)

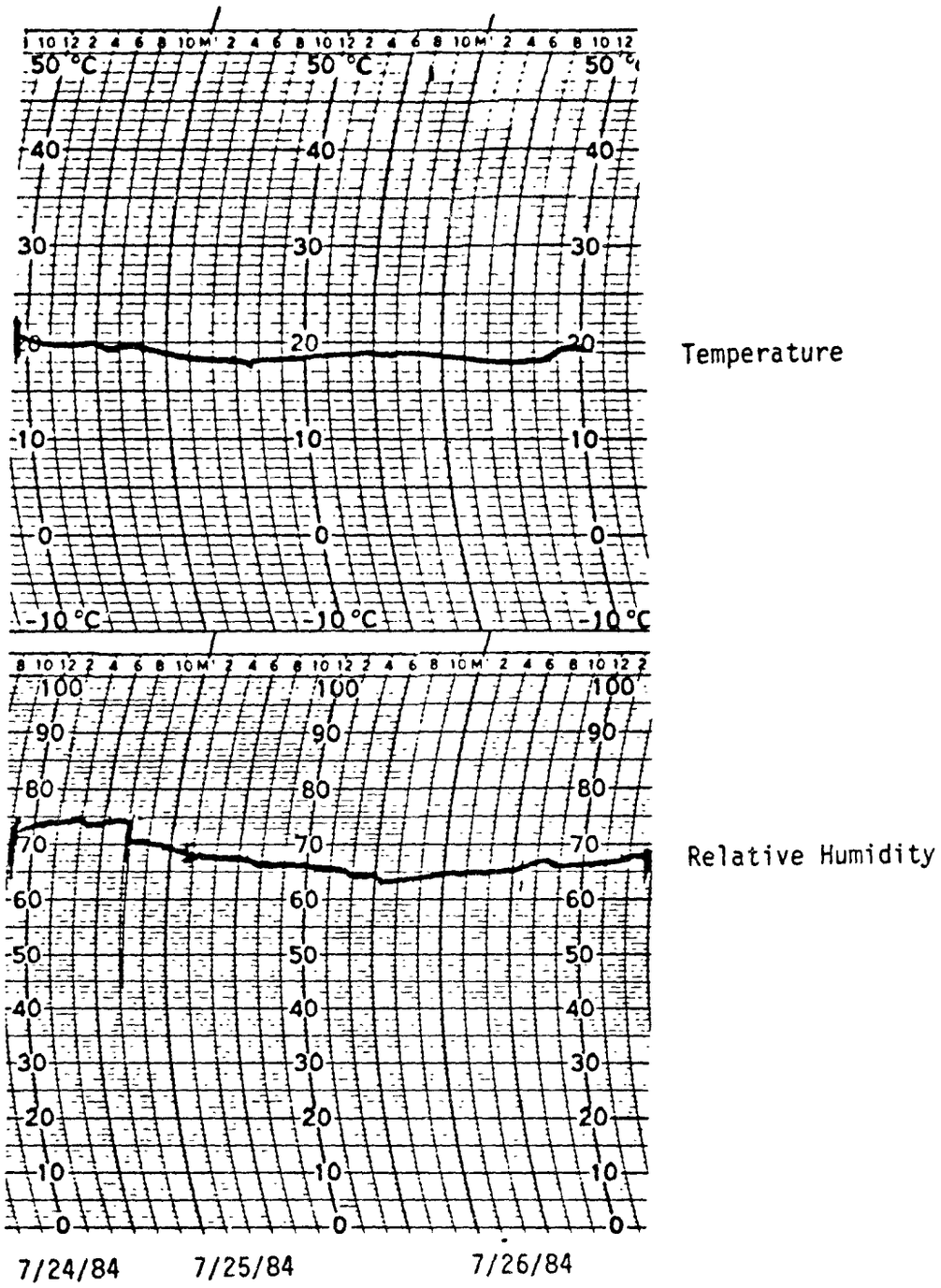
Date	Start Hour	Temperature (°C)	Average Wind Speed (km)	Average Wind Direction
8/9/85	0100	19	9.9	W
	0200	19	9.8	NW
	0300	19	9.8	NW
	0400	19	9.8	Variable
	0500	18	9.8	Variable
	0600	18	9.8	Variable
	0700	19	9.7	Variable
	0800	21	9.6	Variable
	0900	26	8.5	Variable
	1000	29	7.7	Variable
	1100	30	7.5	Variable
	1200	33	7.5	Variable
	1300	33	7.3	Variable
	1400	31	7.0	Variable
	1500	32	7.0	Variable
	1600	34	7.2	Variable
	1700	33	7.2	W
	1800	29	7.2	NW
	1900	27	7.2	N
	2000	26	7.3	N

APPENDIX B

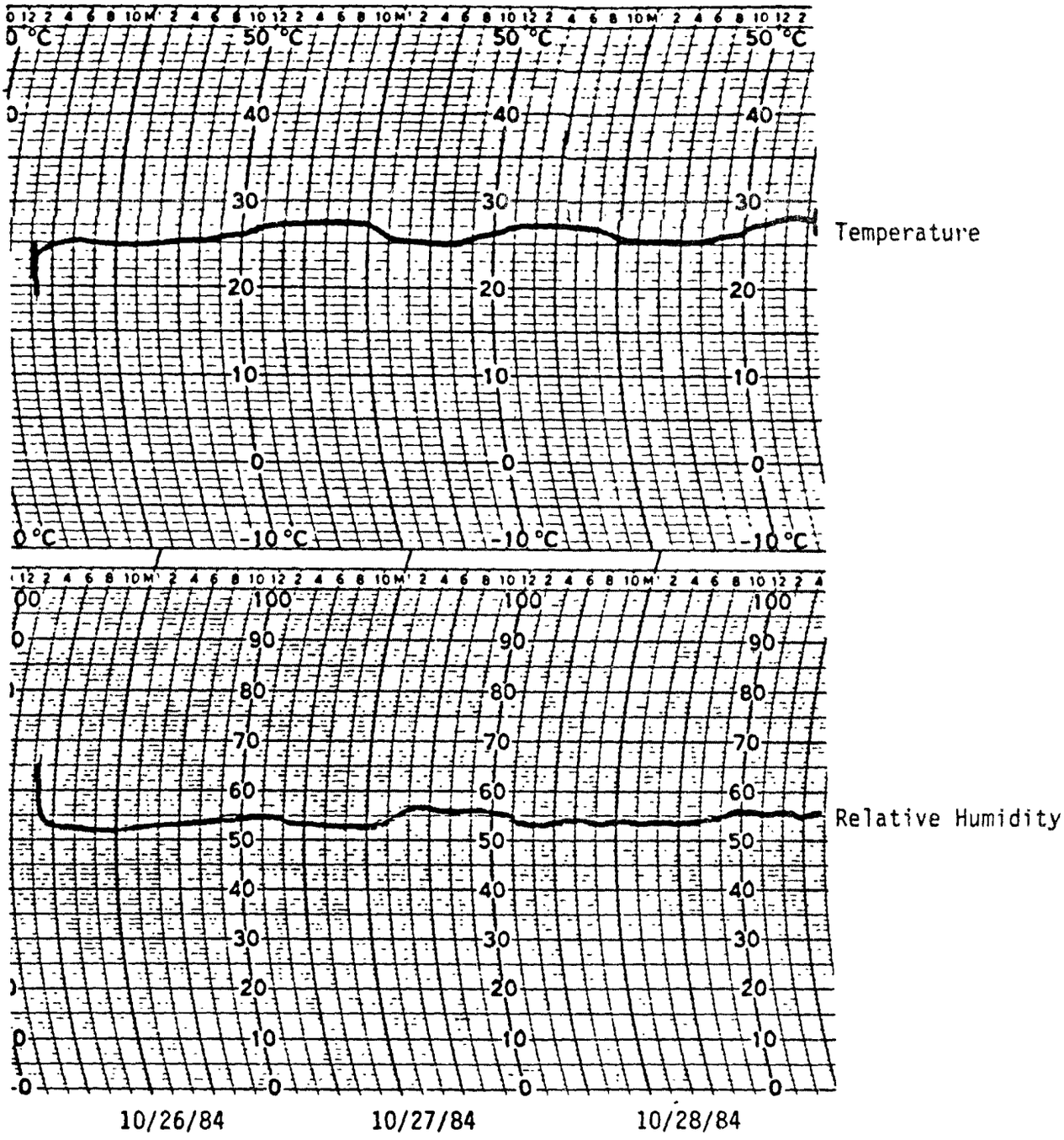
Temperature and Relative Humidity Data for Indoor Monitoring Sites



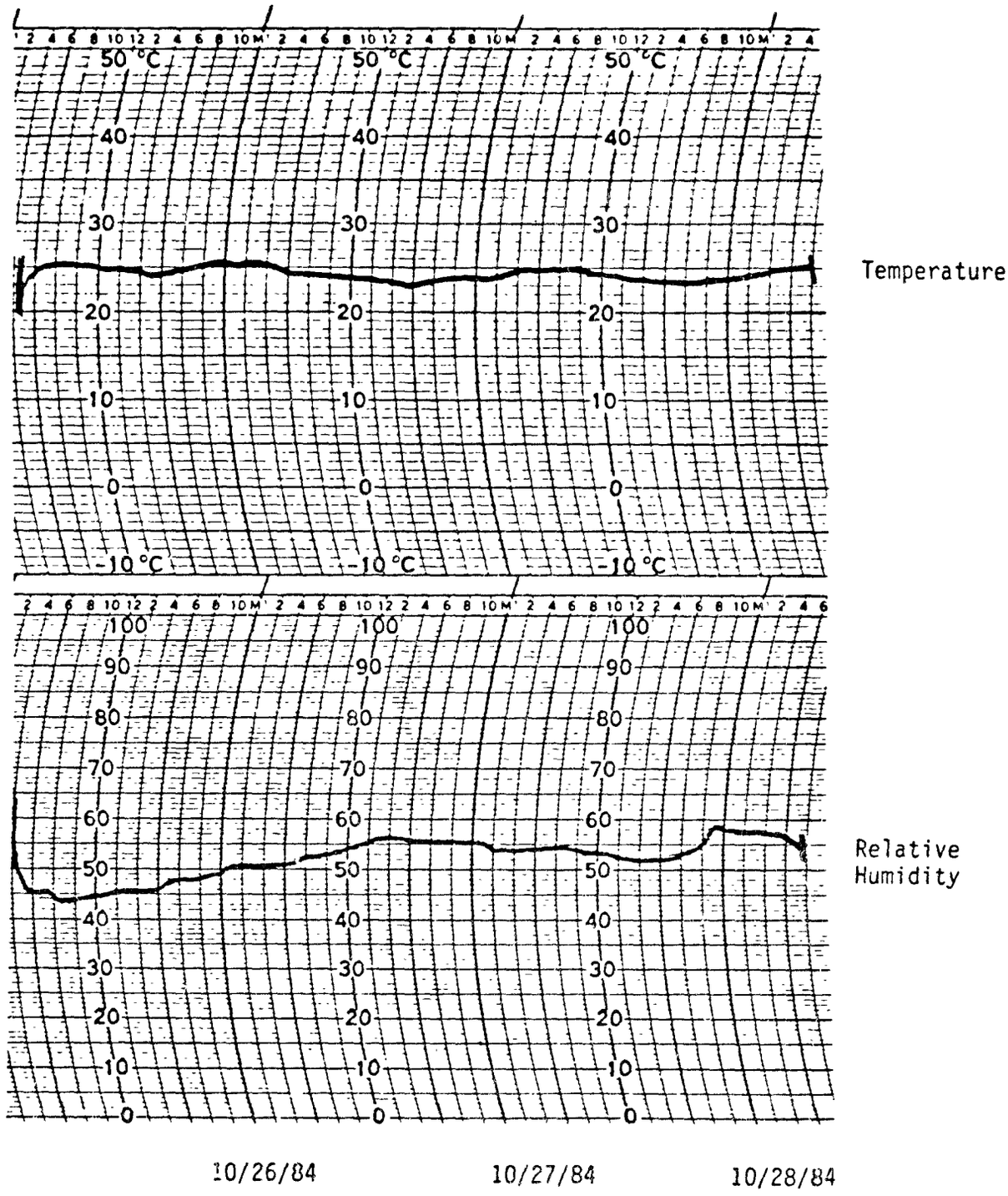
New Hospital - Trip 1 - Nurses' Station



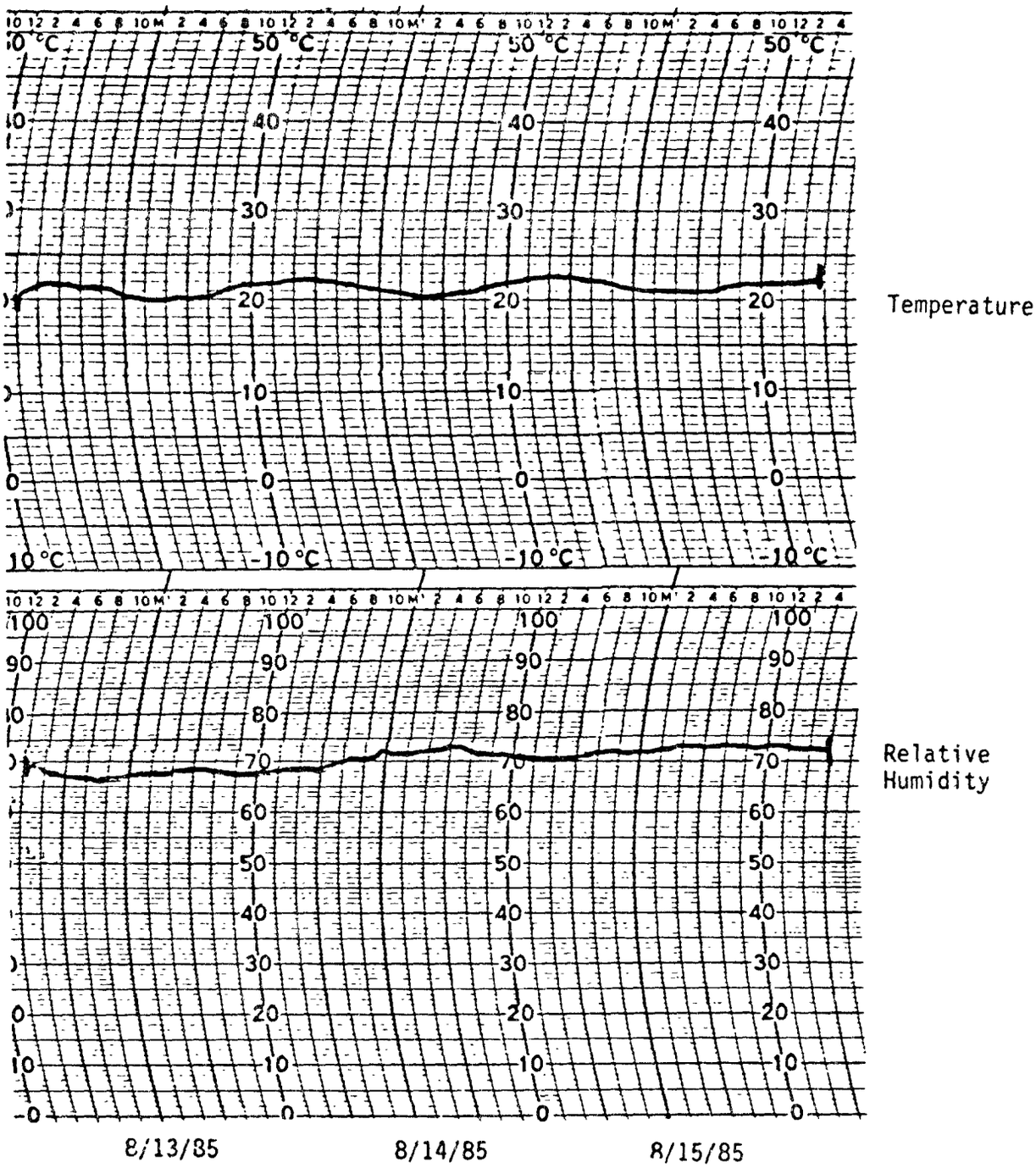
New Hospital - Trip 1 - Visitors' Lounge



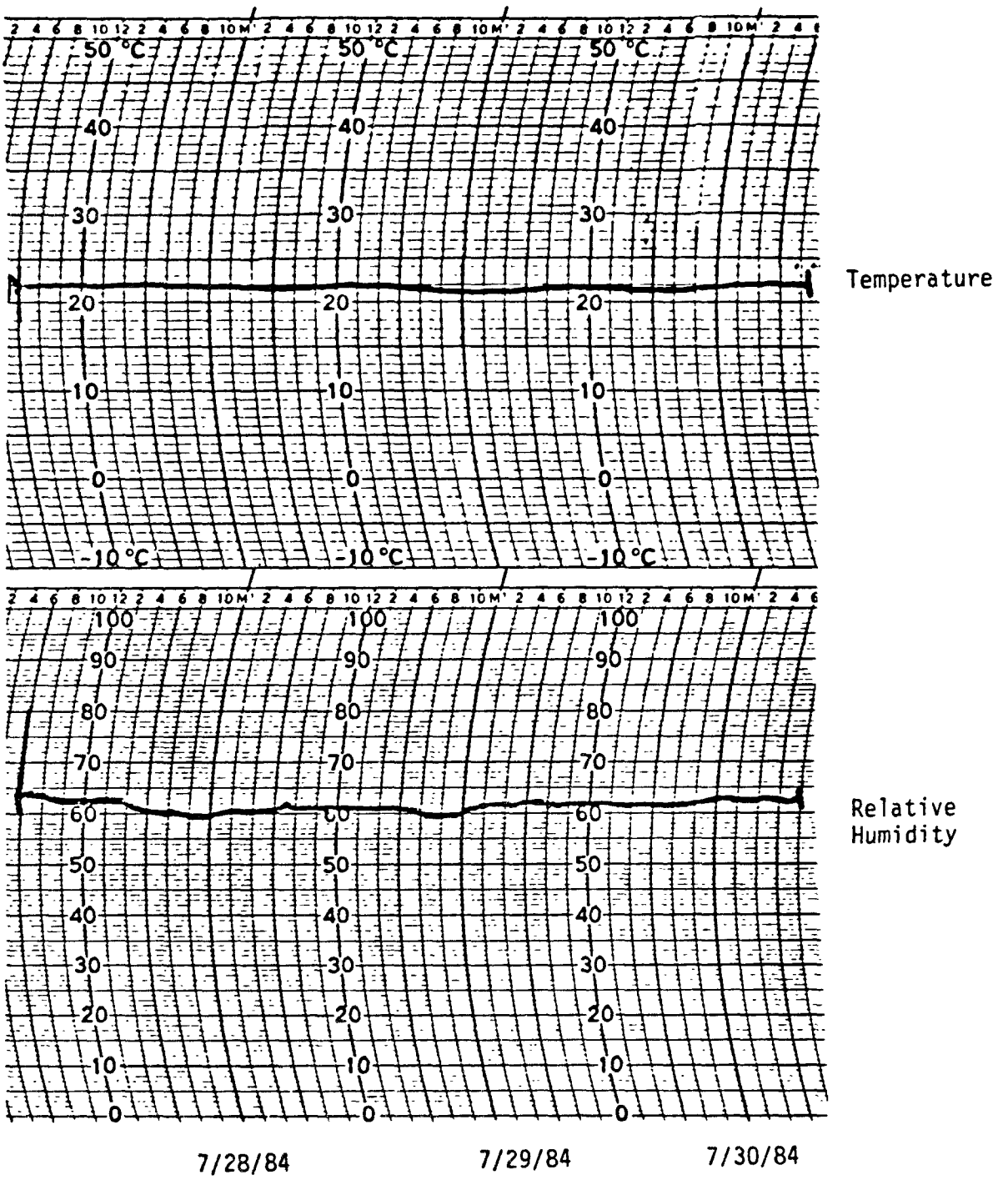
New Hospital - Trip 2 - Visitors' Lounge



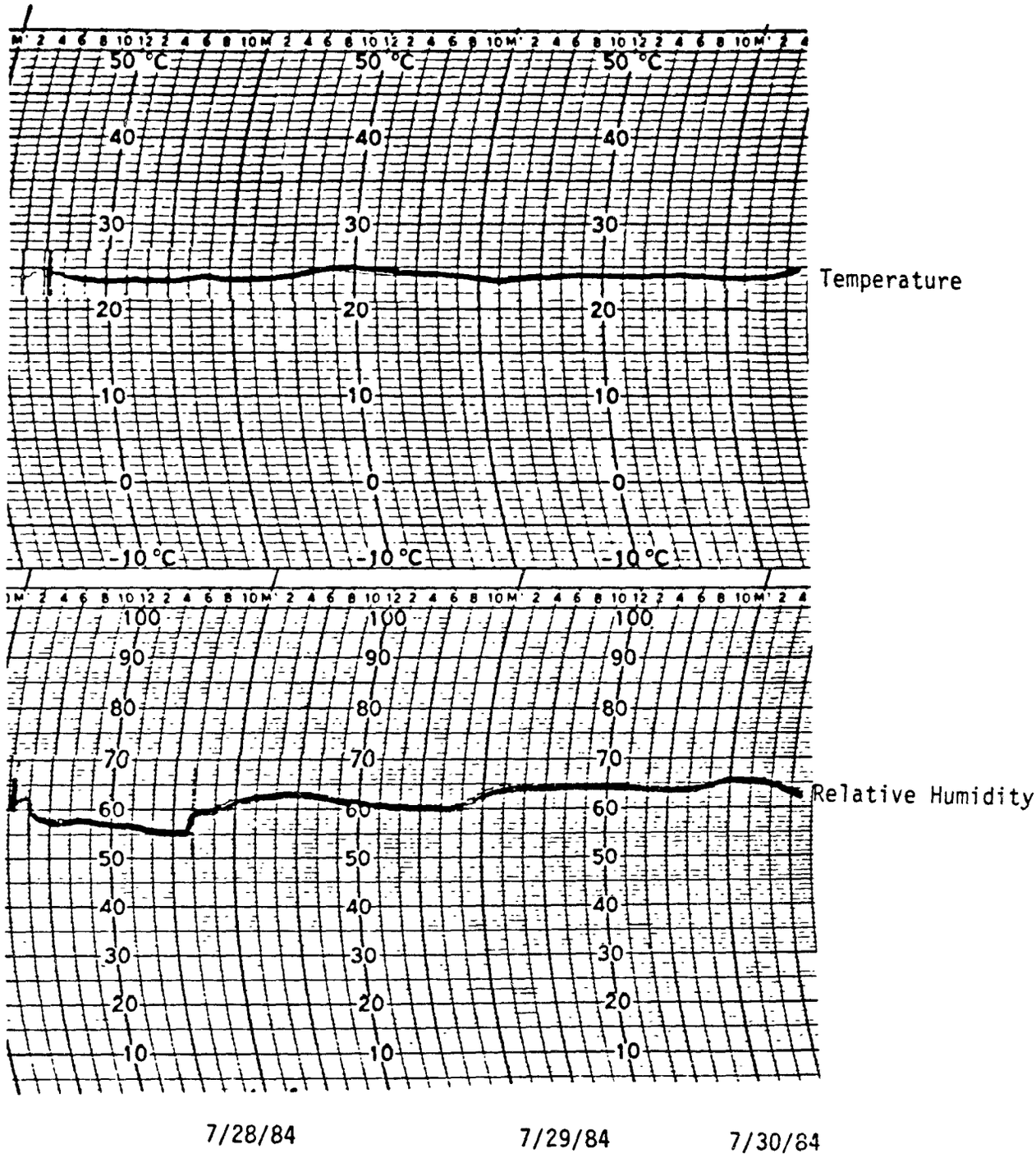
New Hospital - Trip 2 - Nurses' Station



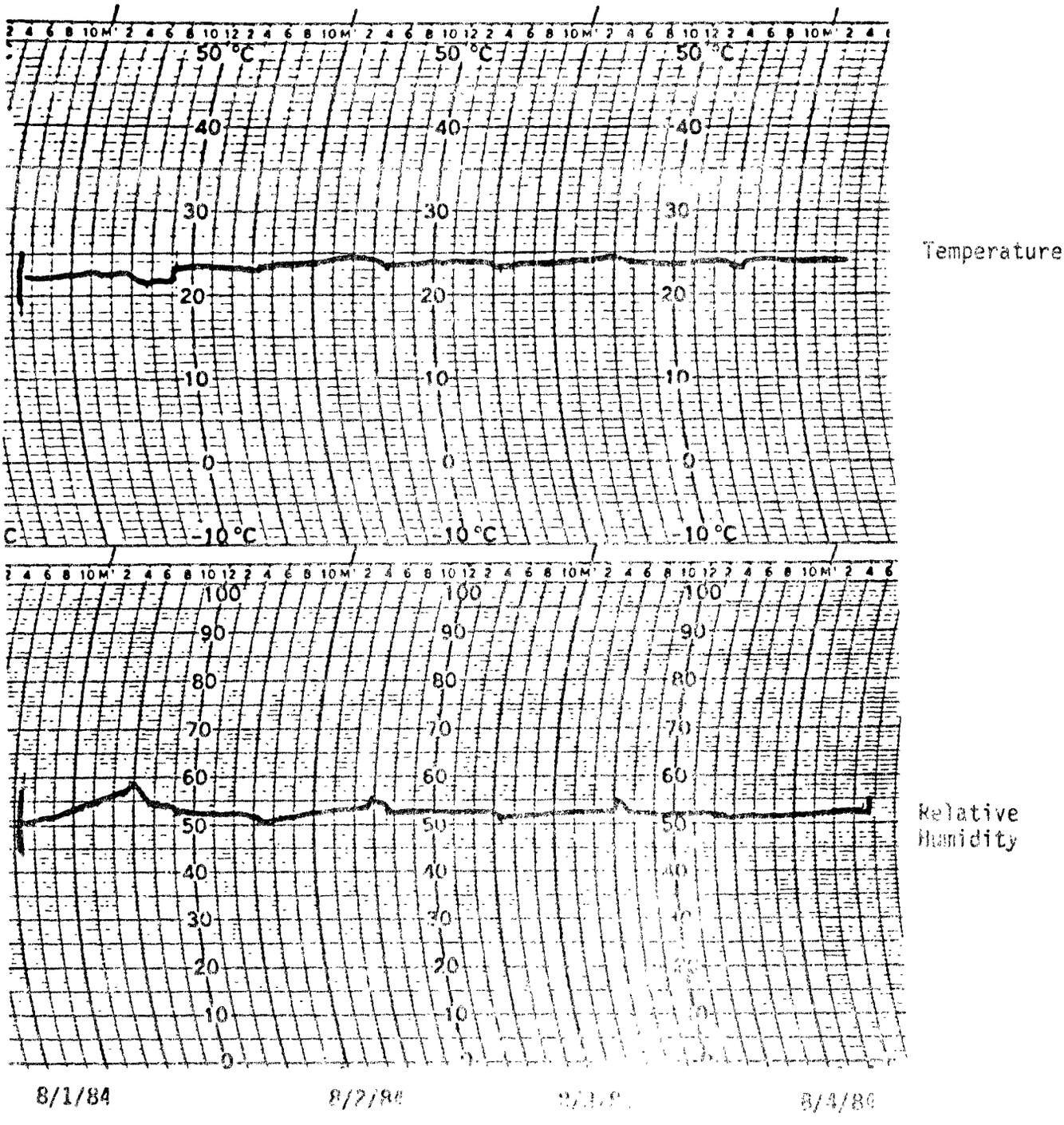
New Hospital - Trip 3 - Visitors' Lounge



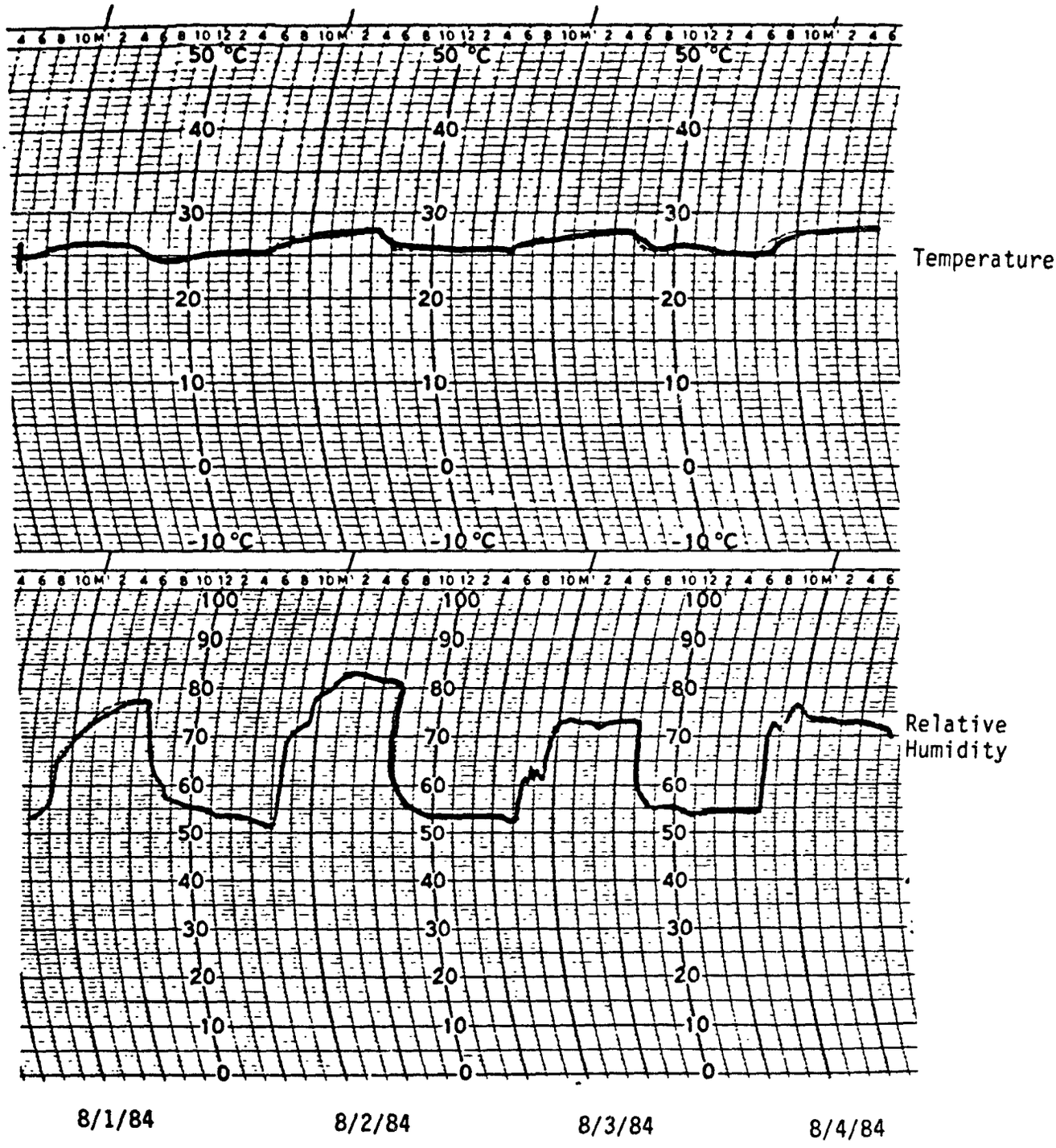
Existing Nursing Home - Occupied Apartment



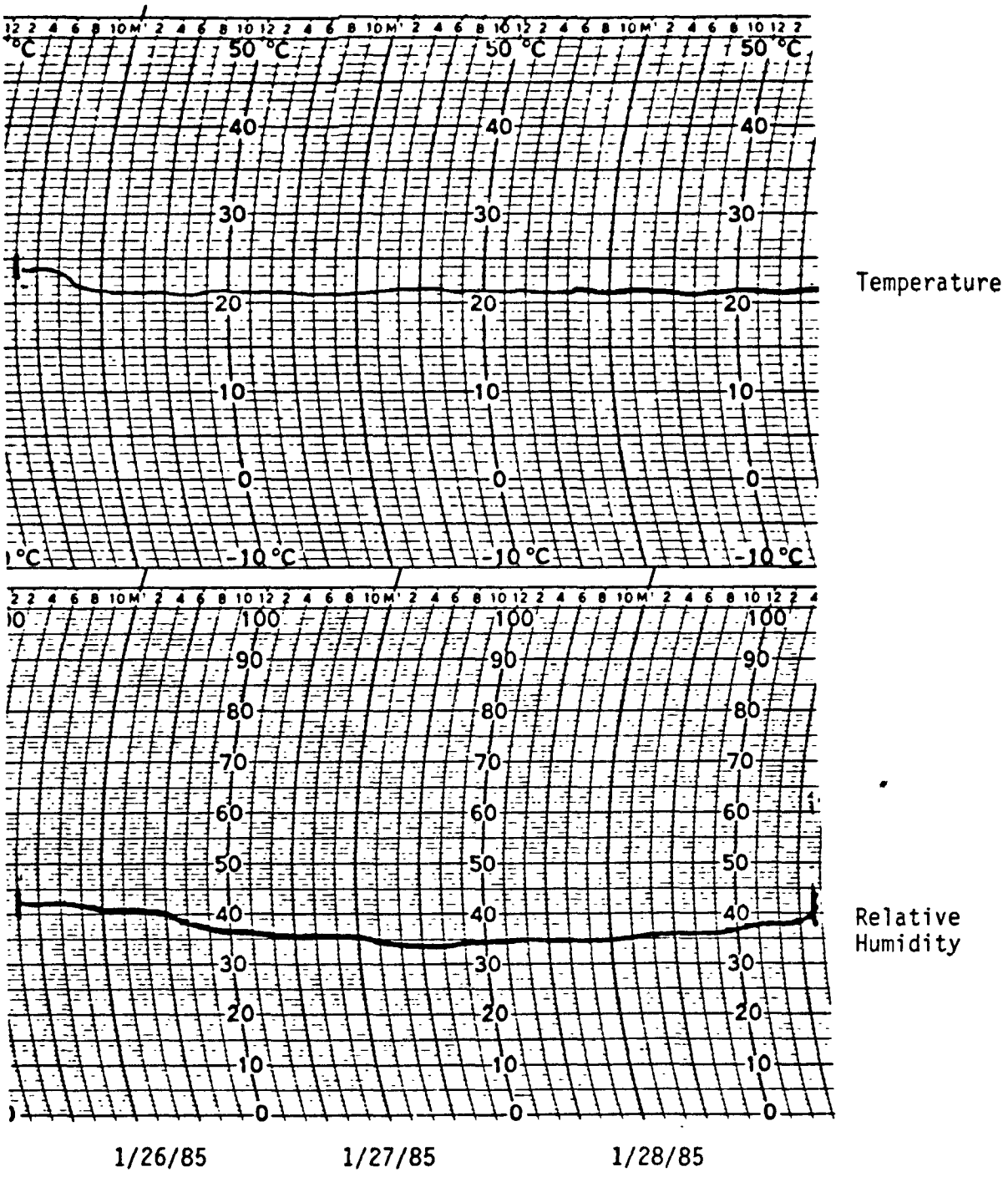
Existing Nursing Home - Unoccupied Apartment



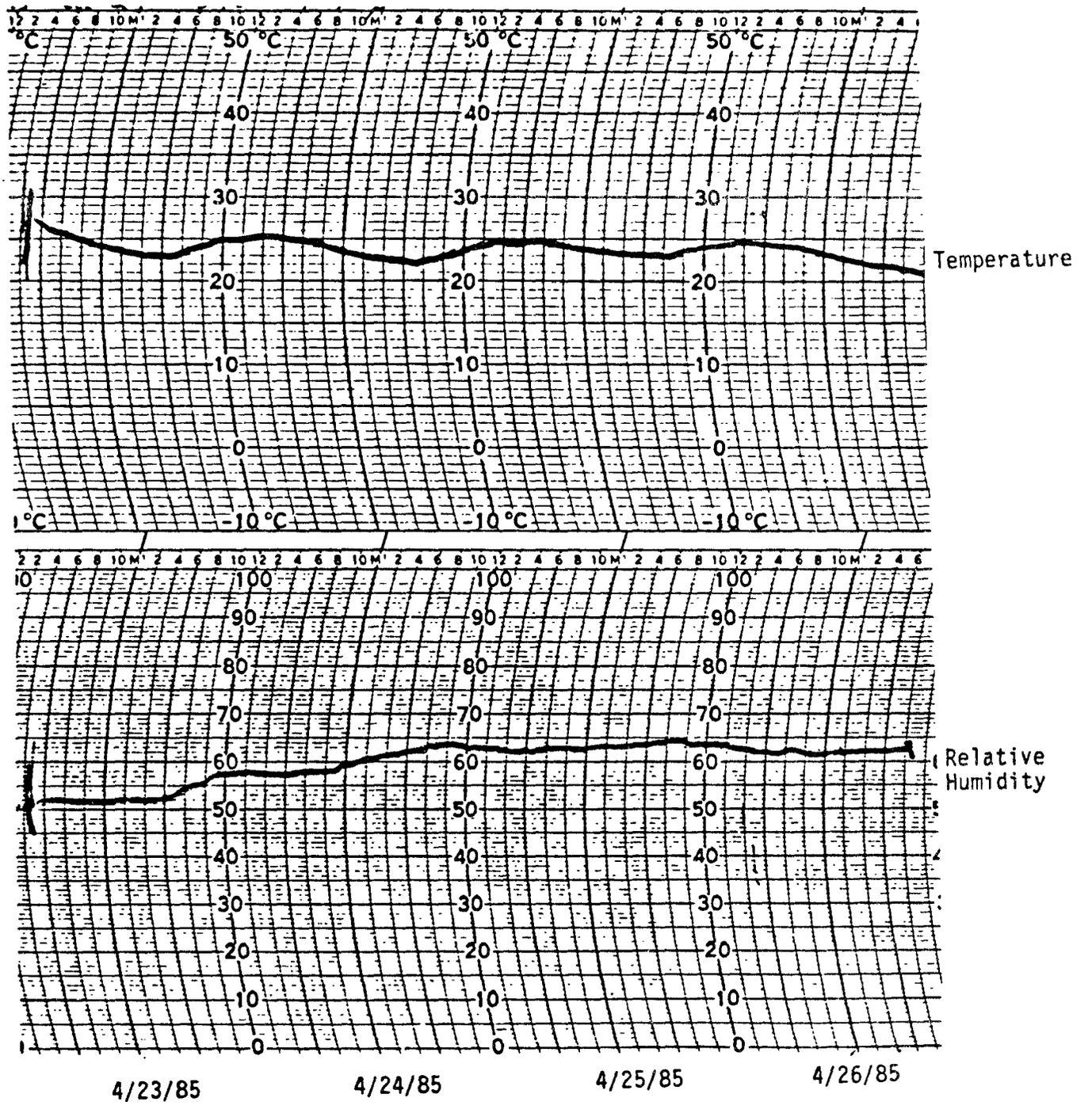
Existing Office Building - 5th Floor



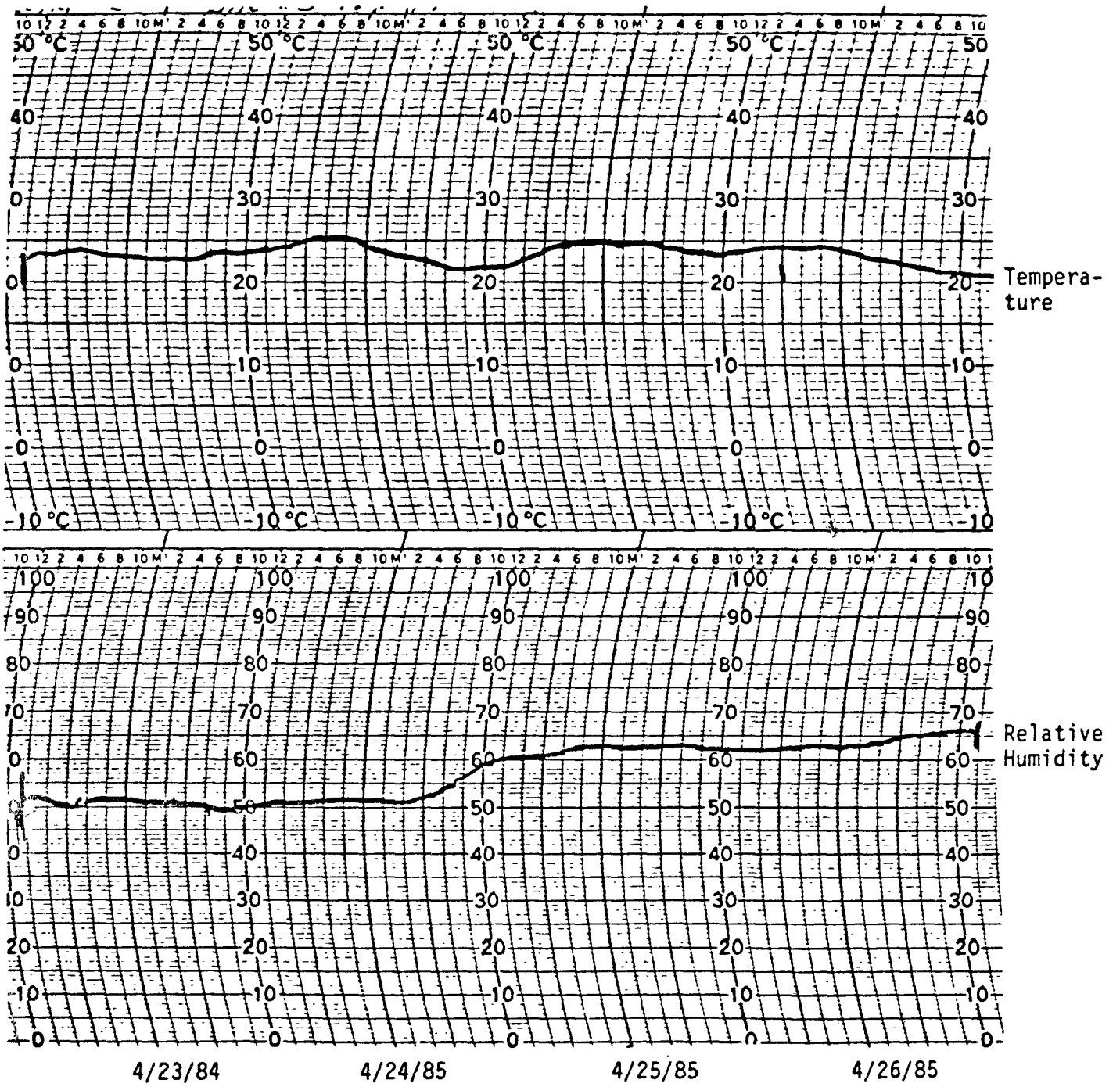
Existing Office Building - 8th Floor Hallway



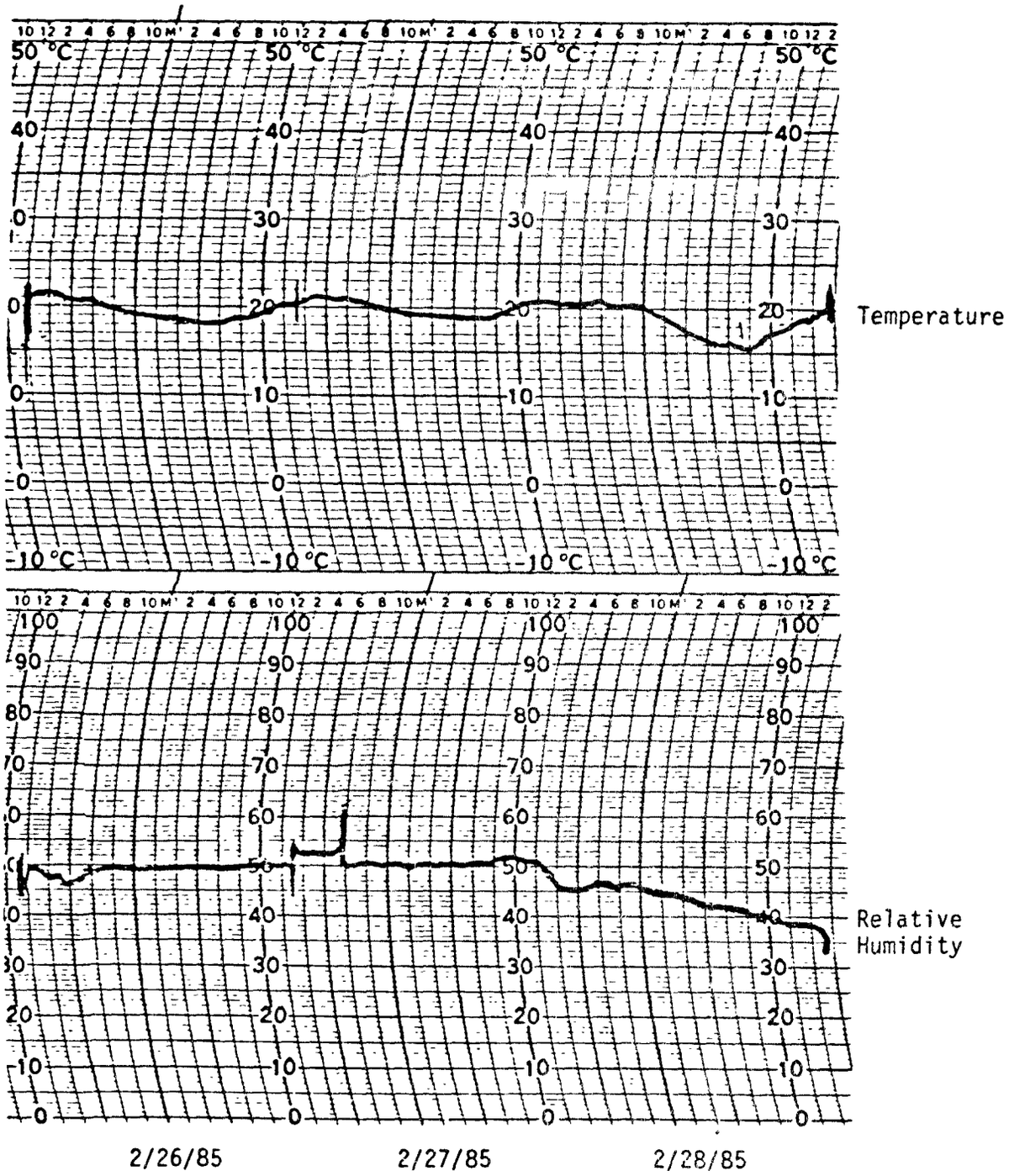
New Office Building - Trip 1 - Office R-1



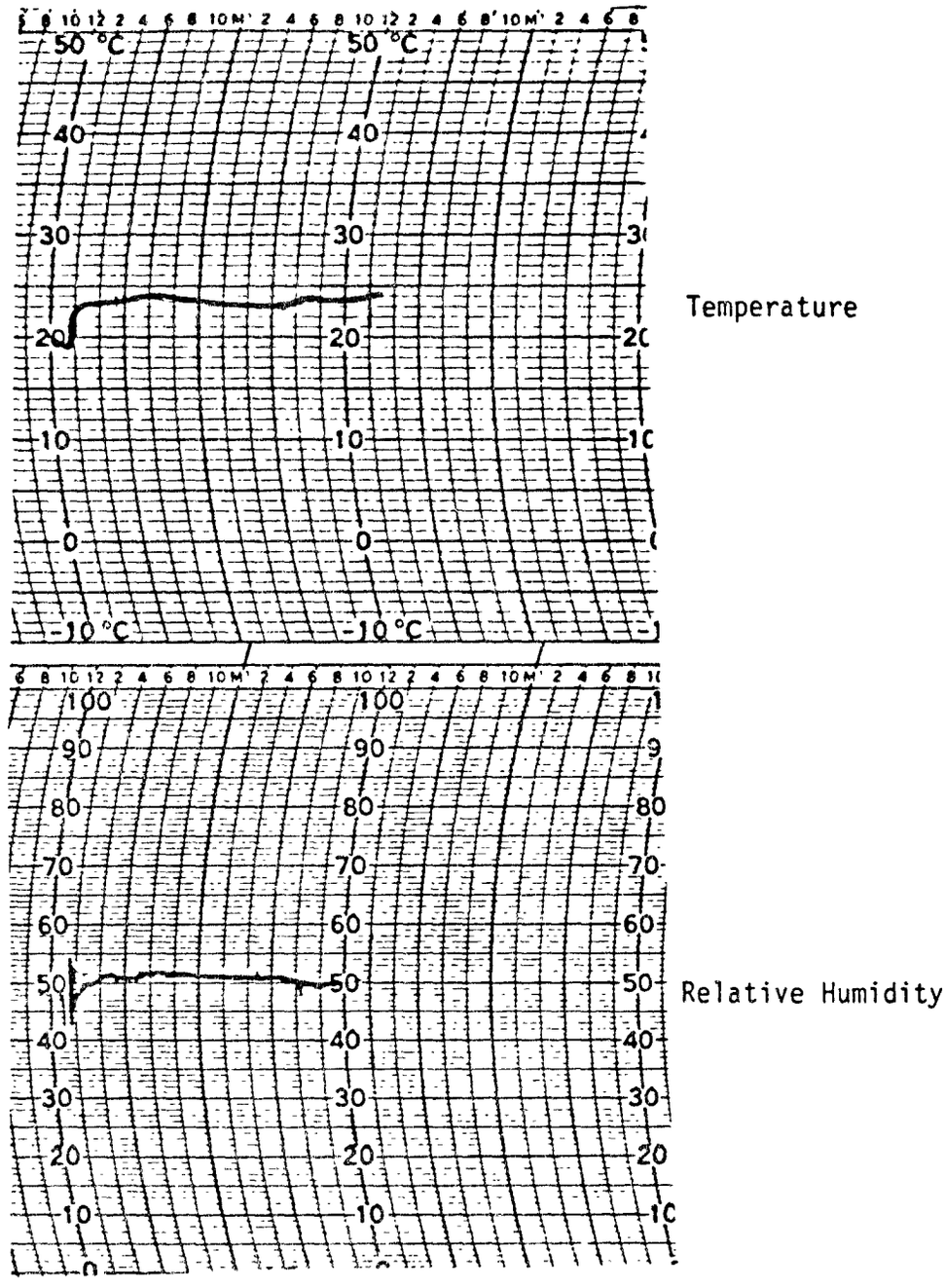
New Office Building - Trip 2 - Office R-1



New Office Building - Trip 2 - Office R-7

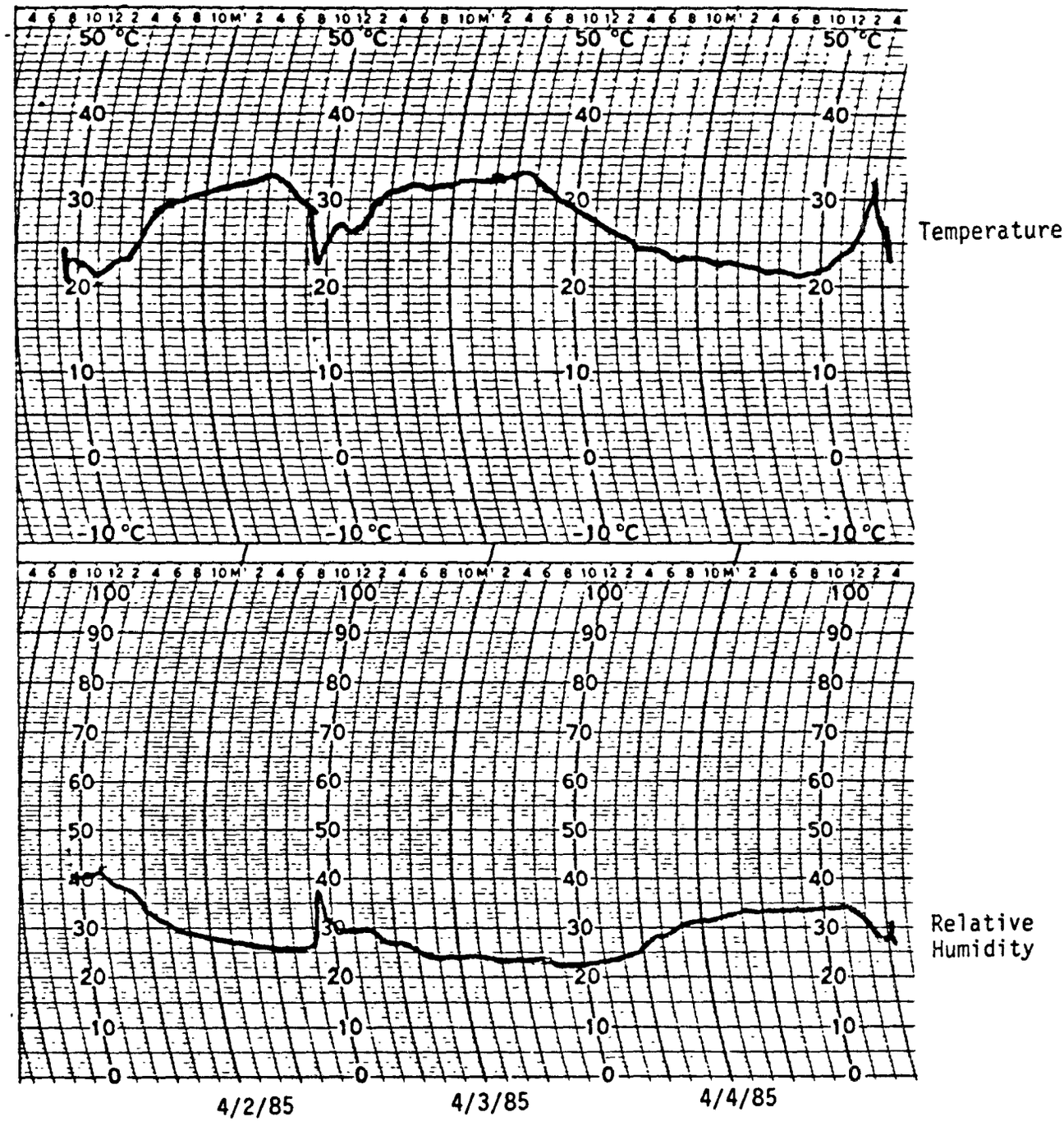


Existing School/Office - Third Floor Office

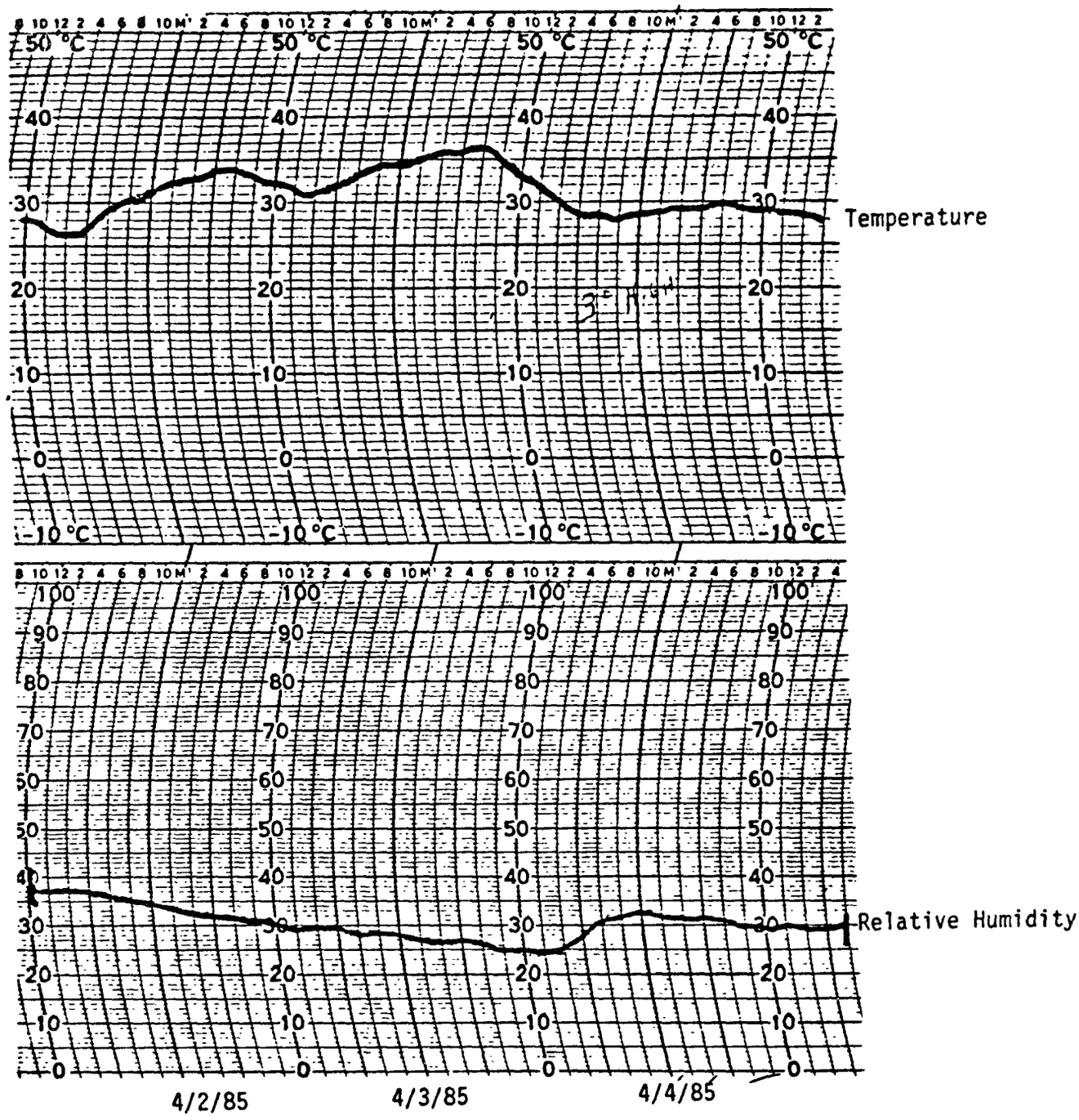


2/26/85

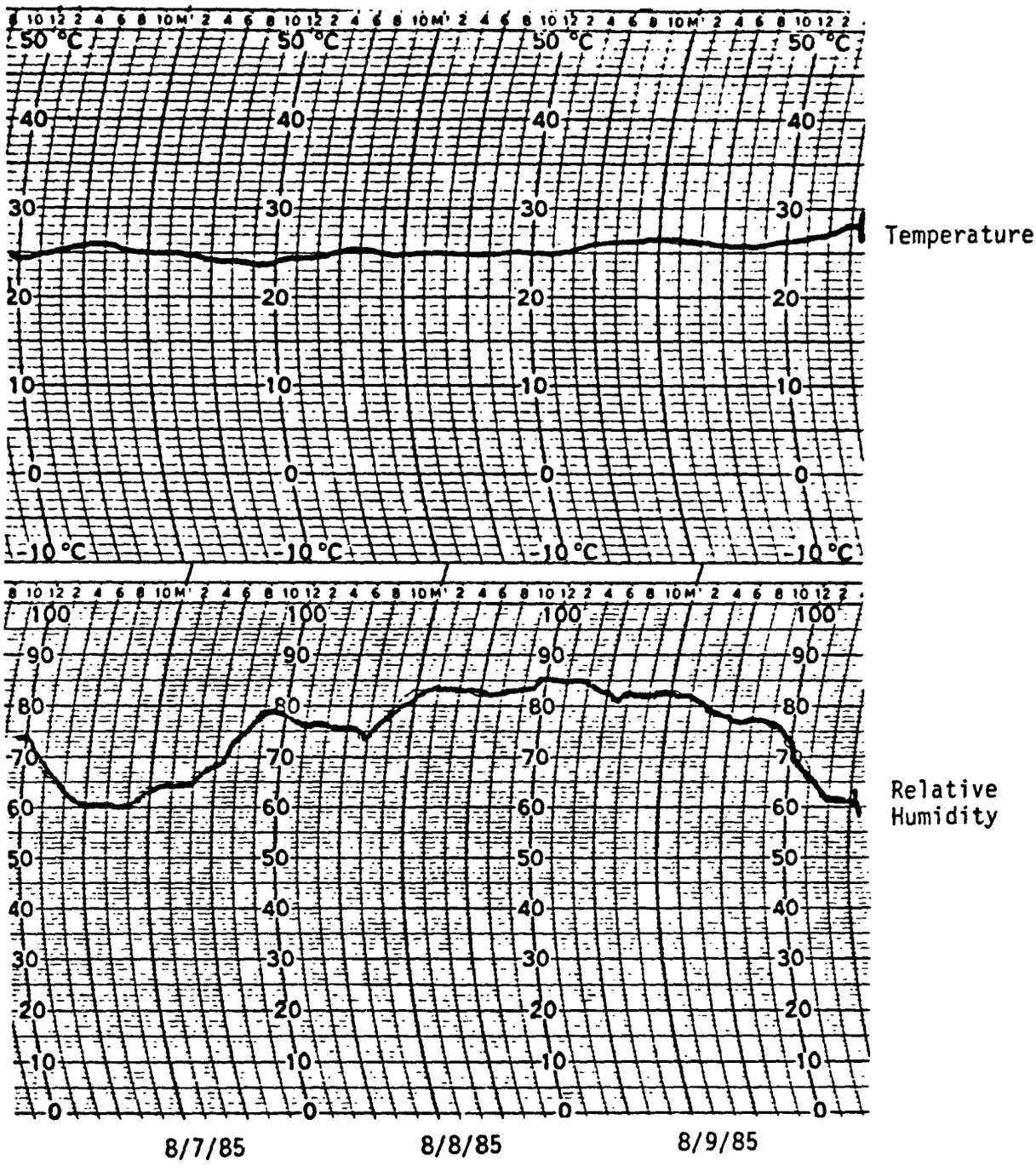
Existing School/Office - Second Floor Office



New Nursing Home - Trip 1, Day Room



New Nursing Home - Trip 1 - Patient's Room



New Nursing Home - Trip 2 - Patient's Room

APPENDIX C

Building Survey Reports

BUILDING MATERIALS, ACTIVITIES & OPERATIONS ANALYSIS
TO SUPPORT INDOOR AIR QUALITY RESEARCH BY THE
ENVIRONMENTAL PROTECTION AGENCY
NIBS PROJECT NO. 74A

A REPORT OF
BUILDING OPERATIONS ANALYSIS OF THE U. S. VETERANS ADMINISTRATION
HOSPITAL AND DOMICILIARY FACILITY, MARTINSBURG, WEST VIRGINIA
FOR THE
NATIONAL INSTITUTE OF BUILDING SCIENCES

18 JUNE 1984

BUILDING OPERATIONS ANALYSIS

INTRODUCTION

FACILITIES

1. 357 Bed Replacement Hospital, Veterans Administration Medical Center, Martinsburg, West Virginia. Construction completed in 1984, but not as yet occupied.
2. 200 Bed Domiciliary unit, Veterans Administration Medical Center, Martinsburg, West Virginia. Construction completed and occupied in 1980.

PROPOSED INDOOR AIR QUALITY TESTING

It is the understanding of Pierce Architecture that the U. S. Environmental Protection Agency (EPA) and it's contractor, Research Triangle Institute (RTI), intend to monitor the indoor air in specified spaces and the outdoor air at the Hospital and Domiciliary facilities. Indoor spaces to be monitored in the Hospital include a patient care room, a nurses' station and a lounge, each served by a common outside air intake. These spaces would be monitored on multiple occasions to reflect conditions prior to initial occupancy and at varying stages after occupancy.

Indoor spaces to be monitored at the Domiciliary include a single living unit, a multiple living unit, and a lounge, each served by a common outside air intake. The Domiciliary is to be monitored only once.

BASIS OF THIS REPORT

The analysis prepared by Pierce Architecture is intended to identify the buildings' design and operations which are expected to have an appreciable effect on the air movement in the spaces to be monitored, and is in response to data needs indicated in the RTI prepared Building Questionnaire, dated March 1983 and revised May 1983, Form #2. Specifically included is that data sought by questions 3a, 3b, 4, 5 and 6 of Part A, and 1a, 1b, 2a, 2c, 3, 4, 5a, 5b, 6a, 6b, 6c, 6d, 6e, 7, 9 and 10 of Part B; as expressed in a meeting between representatives of the EPA, RTI, National Institute of Building Sciences (NIBS) and Pierce Architecture on 14 March 1984; and as expressed by representatives of the above organizations at the building sites on 29 May 1984.

The basis of the analysis has been:

1. Drawings and Specifications for the 357 Bed Replacement Hospital dated 4 June 1980, prepared for the Veterans Administration by Gates/LBC&W/BMA Architects and Engineers.
2. Drawings and Specifications for the 200 Bed Domiciliary and 120 Bed Nursing Home dated 14 June 1978, prepared for the Veterans Administration by Gates/LBC&W/BMA Architects and Engineers.
3. Observations of the facilities by Pierce Architecture representatives on 29 May 1984.
4. Information provided by the Veterans Administration staff to representatives of Pierce Architecture on 29 May 1984.
5. References have also been drawn from the "Identification of Building Products, Materials and Systems" and "Information Sources" reports previously prepared by Pierce Architecture for NIBS.

BUILDING OPERATIONS ANALYSIS FOR 357 BED REPLACEMENT HOSPITAL FOR VETERANS ADMINISTRATION MEDICAL CENTER, MARTINSBURG, WEST VIRGINIA.

The Fifth Floor, Block "A", a typical patient room area, has been suggested for the indoor air monitoring site. This area was selected by the EPA and RTI representatives because it is the most recently completed typical floor. The Third Floor, Block "A" is of similar layout, but has an adjacent accessable roof area which could be used for equipment isolation. The Building Operations Analysis was made of the Fifth Floor locations, but Third Floor conditions could be considered similar. Day Room 5A103 is representative of a "lounge" occupancy. Rooms 5A110, 5A112, 5A114, and 5A115 are one patient bed rooms, rooms 5A106, 5A109, 5A117 and 5A119 are two patient bed rooms, and room 5A121 is a four patient bed room, all having a North window orientation. Nurses' Station 5A116 is also within this block; however, it is an interior space with no outside walls or windows. All of these spaces are, as are the corresponding spaces on the Third Floor, Block "A", served by Air Handling Unit 19 located in the Penthouse.

DESCRIPTION OF THE FACILITY

The building is in excess of 580,000 square feet in floor area. The patient room floors, three through six, form a "tee" above a two story plus basement ancilliary base. Block "A", typical for each of the patient room floors, represents an area of approximately 15,700 square feet. The patient room floors have a constant ceiling height of 8 feet, thus producing an approximate volume of 125,600 cubic feet in Block "A". With a typical floor to floor height of 14 feet in the patient room tower, the floor construction, structure, duct and piping space and ceiling construction represents a thickness of 6 feet.

The primary mechanical equipment is located in a Penthouse above the Sixth Floor. The outside air intake for Block "A" is on the West side of the Penthouse. Plumbing vents penetrate the adjacent roof area, and toilet exhaust vents are located some 150 feet to the West. There is no attached garage facility.

MATERIALS

Exterior wall surfaces at the patient room tower are:
Face brick (ASTM C216, grade SW, type FBS) - approximately 64.2% of wall area. (Milliken Brick Company, Mohave Blend specified)
Mortar type S. (Portland cement, lime, sand, no admixtures)
Anodized aluminum pivoted windows with neoprene, vinyl, butyl, silicone weatherstripping and stops - approximately 25.8% of wall area. Double glazed to U factor of 0.55. The air infiltration rate is specified not to exceed 0.07 CFM per linear foot of perimeter. (Note: policy of Hospital is to maintain windows in closed position, except for cleaning and smoke evacuation)
Elastomeric sealants are used at joints between masonry and windows.
Anodized aluminum panels - approximately 10% of wall area.

Exterior wall surfaces at the Penthouse (outside air intake) are:
Face brick and mortar - approximately 84.3% of wall area.
Anodized aluminum louver with aluminum screens - approximately 15.7% of wall area. (Note: bottom of louver is approximately 12 feet above adjacent roof deck.)
Anodized aluminum flashing, with flurocarbon, bitumen, felt.
Elastomeric sealants and flashing.
Elastomeric roofing membrane, with synthetic rubber adhesive, stone ballast.

General construction:
Structural frame is steel and concrete composite construction.
Steel beams have sprayed cementitious fiber fireproofing exposed in the space above ceilings.
Galvanized steel air supply and return duct work has [illegible], foil faced mineral fiber insulation.
Typical non-fire rated interior partitions in Block "A", floors three through six are gypsum wall board on steel studs, extending 4 inches above the ceiling line.

Primary interior finish surfaces are:
Vinyl asbestos tile floor covering, with vinyl base.
Carpet (nylon with polypropylene and jute backing and adhesive) at Nurses' Station.
Ceramic tile floors and wainscot at Baths.
Paint (enamel and alkyd) on gypsum board.
Metal door frames (steel, zinc coating, enamel).
Wood doors (wood veneer over mineral core, polyurethane varnish finish). Note: Patient Room doors are normally left open, although doors have closers with hold-open devices. Day Room doors are normally closed.
Vinyl wall covering (fiberglass backing and adhesive) at Day Room.

Acoustical panel ceilings (mineral fibers with paper facing) in lay-in suspension system (steel, zinc coating, baked enamel).
Aluminum grilles and diffusers.
Counters and countertops (plastic laminate and particle board).
Draperies on steel track (baked enamel).Note: draperies are installed at the Day Room only at this time.
Furniture (vinyl and wood)
Acrovyn (vinyl) guard rail at Corridors.
Nurse server and lockers (steel, baked enamel) at Patient Rooms.

MECHANICAL SYSTEMS

Steam is supplied from a campus central plant, and converted to hot water within the Hospital Building to serve the HVAC systems. Primary fuel is #2 fuel oil. Domestic hot water is heated by heat exchangers in the steam supply. Chilled water for the HVAC systems is supplied from a campus central plant. Emergency power is provided from a campus central plant.

Air handler no. 19, located in the Penthouse, mixes outside and return air, uses bag type filters, and moves air across coils to downfeed areas of floors one through six, Block "A". Total capacity of AHU 19 is 38,200 CFM, of which 10,880 is exhausted. Mixing boxes are provided at each room to blend hot and cold air as demanded by room thermostats. Additional heating is provided along exterior walls by fan/hot water coil units, utilizing room air. These units have disposable filters. Bathrooms are provided with exhaust fans, drawing air from the Patient Rooms.

Design conditions are:

ROOM	ROOM VOLUME	MIX BOX DESIGN	AIR CHANGES/HOUR
Day Room	5,24 cu ft	31[illegible]-610 cfm	3.7-7.275
One Patient Room	960 cu ft	80-120 cfm	5-7.5
Two Patient Room	1576 cu ft	120-150 cfm	4.68-5.85
Four Patient Room	3176 cu ft	270-310 cfm	4.4-5.925
Nurses' Station	2768 cu ft	250 cfm	5.4

Note: the mixing boxes are rated in minimum and maximum CFM, and vary by the ratio of hot to cold air being supplied. Field measurements would be required to determine the actual air exchange rate at any given time for a given room. Actual air exchange rate is a product of the mechanical ventilation and the uncontrolled air infiltration rates. The designed air exchange rate can be derived from the following formulae:

CFM x 60/volume of room = air changes per hour

The Nurses' Station is open on three sides to the "racetrack" corridor system, although a 42 inch high counter and a short valence at the ceiling define the perimeter of the space. The valence plus a return air grille within the Nurses' Station space could to some degree contain air within that space, however some turbulance could be expected from the more negative pressure in the corridor system and occupant activity.

There is no additional filtration or air cleaning at the patient room areas, although during occupancy, such devices as "smoke eaters" could be temporarily located in spaces such as the Day Room. By policy, the Hospital administration intends to restrict smoking to the Day Rooms and other Lounges.

The Fifth and Third Floors are insulated only at the exterior walls. The exterior wall insulation is specified to have an "R" value of 6.25. Some evidence of internal wall moisture was observed at the site, and reports of alledged frosting on the exterior surface of the Penthouse walls would support that observation. Such internal moisture spotting could have effects on the practical value of the insulation.

BUILDING OPERATIONS ANALYSIS FOR 200 BED DOMICILIARY UNIT. VETERANS ADMINISTRATION MEDICAL CENTER, MARTINSBURG, WEST VIRGINIA

Unit "A", typical of the four buildings comprising the Domiciliary Living Units, was suggested as the location for the indoor air monitoring. Multiple Living Unit 121, Two Bedroom Unit 119, and Lounge C5 were examined as candidates representative of the requested spaces. It is understood that the actual rooms to be monitored will be designated by the Domiciliary Administration at the time of the monitoring activities. Each of the above spaces is served by an air handler located in Mechanical Room 142. The outside air intale for this unit faces Northwest.

DESCRIPTION OF THE FACILITY

Unit "A" contains approximately 20,250 square feet of floor area in a single story building. The air handling unit in room 142 serves approximately 8,900 square feet. The ceiling height is a constant 8 feet, with the exception of a 2 feet recessed coffer, approximately 10 feet square, with skylights at each of four lounges. Thus, air handling unit 142 serves a volume of approximately 71,400 cubic feet. Living Units open into the Lounge and/or a Corridor.

MATERIALS

Exterior wall surfaces at Living Units are:
Face brick (ASTM C216, grade SW, type FBS) - approximately 48% of wall area.
Mortar type S (Portland cement, lime, sand, no admixtures).
Anodized aluminum sliding windows wtih neoprene, vinyl, butyl, silicone weatherstripping and stops - approximately 12% of wall area, double glazed to U factor of 0.55. Note: policy of the Administration is to maintain windows in a closed position.
Elastomeric sealants.
Plaster - approximately 7% of wall area.(Portland cement, lime, sand, water)
Cement asbestos panels - approximately 33% of wall area.
Anodized aluminum flashing, with flurocarbon, bitumen and felt.

Exterior surfaces at outside air intale are:
Face brick and mortar - approximately 48% of wall area.
Anodized aluminum louver with aluminum screens - approximately 6% of wall area.
Steel doors and frames - approximately 12% of wall area. (Zinc coating and enamel paint)

Cement asbestos panels - approximately 34% of wall area.
Anodized aluminum flashing with flurocarbon, bitumen and felt.
Earth (topsoil, crushed stone and sand)

General construction:
The structural frame is steel, exposed in spaces above ceilings and in Mechanical Rooms. Galvanized steel duct work has external, foil faced mineral fiber insulation. Typical interior partitions are gypsum wall board on steel studs, extending 4 inches above the ceiling line. Unit "A" is divided into two fire and smoke areas, separated by a gypsum wall board on steel studs partition extending to the underside of the roof deck.

Interior surfaces are:
Vinyl asbestos tile floor covering, with vinyl base; individual "throw" rugs at living units placed by the occupants.
Carpet at Lounge.(nylon, polypropylene and jute backing, adhesive)
Ceramic tile floors and wainscot at Baths.
Paint on gypsum board.(Enamel and alkyd)
Metal door frames.(steel with zinc coating and enamel paint finish)
Wood doors.(Wood veneer on mineral core and polyurethane varnish finish)
Vinyl wall covering on approximately 75% of wall surfaces at Multiple Living Unit and Lounge.(Fiberglass backing and adhesive)
Acoustical panel ceilings (mineral fiber with paper backing) in lay-in suspension system (Steel with zinc coating and baked enamel finish).
Gypsum wall board ceilings at skylight coffers.
Aluminum air supply diffusers and return air grilles.
Draperies on steel track with baked enamel finish.
Furniture (Vinyl and wood)
Kitchen appliances (electric) at Multiple Living Unit.(Baked enamel finish on steel range, oven, sink, refrigerator)
Cabinets.(Plastic laminate, wood particle board, polyurethane varnish)

MECHANICAL SYSTEMS

Steam is supplied from a campus central plant, and converted to hot water within the Domiciliary to serve the HVAC systems. Primary fuel is #2 fuel oil.
Domestic hot water is developed from heat exchangers in the steam supply. Chilled water for the HVAC system is provided from a campus central plant.

The air handler at Mechanical Room 142 is located on the Ground Floor, mixing outside and return air, using bag type filters, moving air across coils to distribute horizontally within the attic space. Total capacity of AHU 142 is approximately 2,215 CFM, of which approximately 1,395 is exhausted. Additional heating and cooling is provided along exterior walls by a fan/hot water coil unit, utilizing room air. These units have disposable filters. Bathrooms and kitchen areas are provided with exhaust fans, drawing air from living units.

Design conditions are:

ROOM	ROOM VOLUME	AIR SUPPLY	AIR CHANGES/HOUR
Multiple Living			
Living 121	1946.5 cu ft	75 cfm	2.3
Bedroom 122	1655.3 cu ft	75 cfm	2.7
Two Bed Room 119	1636.5 cu ft	60 cfm	2.2
Lounge C5	2440 cu ft	160 cfm	3.9

Note that the Lounge is open to corridors on two sides and to an Entrance Vestibule on the third side. Air is supplied at the Vestibule and corridors. Also, the interior entrance to Mechanical Room No. 142 is from the Lounge.

There is no additional filtration or air cleaning at the Living Units, although such devices as "smoke eaters" could be located temporarily in the Lounges. By policy, the Domiciliary Administration intends to restrict smoking to the Lounges.

Both the exterior wall insulation and the roof insulation are specified to have an "R" value of 6.25.

BUILDING OPERATIONS ANALYSIS: Fair Oaks Corporate Center

INTRODUCTION

FACILITY

Building "B", Fair Oaks Corporate Center, Fairfax County, Virginia, Construction Scheduled to be completed by end of 1984, are occupied immediately thereafter.

PROPOSED INDOOR AIR QUALITY TESTING

It is the understanding of Pierce Architecture that the U.S. Environmental Protection Agency (EPA) and its contractor, Research Triangle Institute (RTI) intend to monitor the indoor air in specified spaces and the outdoor air at this facility. Indoor spaces to be monitored include private offices, large group offices, and small conference rooms, all located in a common area of the building. These spaces would be monitored on multiple occasions to reflect conditions prior to initial occupancy and at varying stages after occupancy.

BASIS OF THIS REPORT

The analysis prepared by Pierce Architecture is to identify the building's design and operations which are expected to have an appreciable effect on the air movement in the spaces to be monitored and is in response to data needs indicated in the RTI Building Questionnaire, dated March 1983, and revised May 1983, Form #2. Specifically, that data sought by questions 3a, 3b, 4, 5, and 6 of Part A, and 1a, 1b, 2a, 2c, 3, 4, 5a, 5b, 6a, 6b, 6c, 6d, 6e, 7, 9, and 10 of Part B; as expressed in a meeting between representatives of EPA, RTI, National Institute of Building Sciences (NIBS) and Pierce Architecture on 14 March 1984; and as expressed by representatives of RTI at the building site on 20 November 1984.

The basis of the analysis has been:

1. Architectural drawings dated 1 February 1984, prepared by Wilkes, Faulkner, Jenkins & Blass, Architects. (No specifications were available for review.)

2. Interior design drawings and specifications dated 26 June 1984, prepared by Interior Design Dimensions.

3. Mechanical drawing dated 26 June 1984, prepared by Shefferman & Bigelson Company, Mechanical Engineers. (No specifications were available for review.)

4. Information provided by the property owner and manager, Rouse & Associates to representatives of Pierce Architecture on 20 November 1984, at the building site.

5. Information provided by the future tenant, Fairfax County Government to representatives of Pierce Architecture on 20 November 1984.

6. Observations of the facilities by Pierce Architecture representatives on 20 November 1984.

7. References have also been drawn from the "Identification of Building Products, Materials and Systems" and "Information Sources" reports previously prepared by Pierce Architecture for NIBS.

BUILDINGS OPERATIONS ANALYSIS FOR BUILDING "B"

FAIR OAKS CORPORATE CENTER, FAIRFAX COUNTY, VIRGINIA.

DESCRIPTION OF THE FACILITY

Building "B" is one of five single-story buildings in close proximity, forming a portion of the Fair Oaks Corporate Center.

The building is in excess of 32,000 square feet of floor area. The "West" wing, suggested for the indoor air monitoring site and contained within a single smoke separation zone from the balance of the building, has an area of approximately 7,900 square feet. The building has a constant ceiling height of 9 feet, producing an approximate volume of 71,100 cubic feet in the West wing. The roof structure slopes on a 2 in 12 pitch, with

an average height of 6-1/2 feet between the ceiling and the roof deck, for an approximate volume of 51,350 cubic feet above the West wing.

The heating, ventilating, and air-conditioning (HVAC) system consists of multiple small capacity electric heat pumps, located throughout the building. Each serves an area of 1,500 to 2,000 square feet, has an individual outside air intake, and has a return air intake located in a corridor partition or ceiling. As a result of the limited capacity, no single HVAC unit supplies all of the types of spaces intended for the indoor air testing. The West wing has been suggested for the testing site, as it does contain the desired space tenant occupant activities, and the HVAC units' outside air intakes are in close proximity. HVAC units No. 10 and 12 have outside air intakes through the roof, and No. 11 is located in a building perimeter soffit.

It has been observed and noted to the EPA and RTI representatives that some soffit air intakes are located near a soffit mounted toilet exhaust grille (not the case with No. 11). It has also been pointed out that exhaust fans for the large conference room (not in the West wing), which contains a cooking demonstration center, distribute return air directly into the plenum above the ceiling, and could be subjected to drift into the return air of several HVAC units serving other areas.

MATERIALS

General construction:

- Structural frame is lightweight steel trusses and joists on steel or concrete columns.
- Floors are concrete slab on grade.
- Typical exterior walls are brick and block, with gypsum board and expanded polystyrene insulation (R value = 8) surface applied on the interior.

- Typical interior partitions are gypsum board on steel studs, terminating at the ceiling.

- Galvanized steel air supply and return ducts, located in the plenum above ceilings, have external, foil faced insulation, specification unknown.

Exterior surfaces are:

- Oversized face brick masonry (specification unknown), with concrete block backup. (Mortar type unknown).

- Anodized aluminum fixed windows, representing approximately 50 percent of wall area. Double glazed to U factor of 0.55. Material of glazing stops and sealants unknown.

- Exterior grade gypsum board soffits.

- Fascias are thin coat portland cement plaster with acrylic mesh backing bonded to expanded polystyrene insulation (R value = 8) exposed to plenum above ceilings.

- Roofing is steel panels with flurocarbon, paint finish, with Kraft paper backed insulation (R value = 16) exposed to the plenum above ceilings. Flashings are steel with flurocarbon paint finish.

Interior finish surfaces are:

- Carpet, specified to be "Wellco Sturbridge Ice Rose" or "Wellco Bristol Spring Mauve," at typical areas (24 oz Oleasent fiber, without pad, adhesive applied, type of adhesive unknown).

- Vinyl tile flooring at service areas (type of adhesive unknown).

- Vinyl base (type of adhesive unknown).

- Flat latex paint at gypsum board wall surfaces.

- Ceramic tile floors and walls at toilets.

- Acoustical panel ceilings (mineral fibers with paper facing) in lay-in suspension system (steel, zinc coating, enamel) throughout.

- Metal door frames (steel, zinc coating, enamel paint finish).

- Wood doors (wood veneer over mineral core, varnish finish).

- Acrylic eggcrate ceiling return air grilles.

- Aluminum wall grilles and ceiling diffusers.

- Plastic laminate on particle board cabinets and countertops, where located (not in every room).
- Furnishings unknown.

MECHANICAL SYSTEMS

HVAC units are electric heat pumps, with roof mounted condensing units. Filters are disposable fiberglass panels. Capacities of typical units in the suggested test area are:

Unit No. 10 - 2,400 CFM (interior zone)
Unit No. 11 - 1,960 CFM (perimeter zone)

Representative design conditions in the suggested test area are: (actual conditions may vary)

Room No.	Potential Use	Room Volume (ft^3)	CFM Supplied	Air Charges/hour
103	private office	1008	150 cfm	8.9
104	private office	864	120 cfm	8.6
108	group office or conference	3276	420 cfm	7.7
109	group office	6552	760 cfm	7.0
116	storage	432	50 cfm	6.9

CFM × 60/volume of room = air charges per hour.

Typical makeup of air is composed of 25 percent outside air and 75 percent return air. Note that the future tenant, the Fairfax County Government, has a "no smoking" policy in its facilities.

BUILDING MATERIALS, ACTIVITIES, & OPERATIONS ANALYSIS TO SUPPORT INDOOR AIR QUALITY RESEARCH BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY

NATIONAL INSTITUTE OF BUILDING SCIENCES PROJECT NO. 61

BUILDING OPERATIONS ANALYSIS
FOR THE BELFER CENTER
JOHN F. KENNEDY SCHOOL OF GOVERNMENT
HARVARD UNIVERSITY
CAMBRIDGE, MASSACHUSETTS

DRAFT REPORT
FEBRUARY 1, 1985

BUILDING OPERATIONS ANALYSIS

INTRODUCTION

FACILITY

The Belfer Center, John F. Kennedy School of Government, Harvard University, Cambridge, Massachusetts. Construction work was completed and the facility occupied in September 1984. The building is an addition to a facility completed in 1978. It serves as an office building, with seminar and lecture room spaces.

PROPOSED INDOOR AIR QUALITY TESTING

It is understood that the U.S. Environmental Protection Agency (EPA) and it's contractor, Research Triangle Institute (RTI), intend to monitor the indoor air in designated spaces and the outdoor air at this facility. Indoor spaces to be monitored include private offices and small conference rooms, all located in a common area of the building.

See the attached floor plans for references to room numbers (note: room numbers on the attached do not match the existing signage within the building). Based on the January 25, 1985 meetings at the site, the designated indoor spaces are Office Room 125 (currently being converted from a Lobby), Conference Room 224 (also being converted from a Lobby), and Office Room 316. These spaces are served by air handling equipment located in Mechanical Room G11, at the Ground Floor. The outdoor air would be tested at the ground level air-intake louvers for this unit, located adjacent to Room G9.

BASIS OF THIS REPORT

This analysis is to identify the building's design and operations which are expected to have an appreciable effect on the air movement in the spaces to be monitored, and is in response to data needs indicated in the RTI Building Questionnaire, dated March 1983 and revised May 1983, Form #2. Specifically, that data sought by questions 3a, 3b, 4, 5 and 6 of Part A, and 1a, 1b, 2a, 2c, 3, 4, 5a, 5b, 6a, 6b, 6c, 6d, 6e, 7, 9 and 10 of Part B; as expressed in a meeting between representatives of the EPA, RTI, National Institute of Building Sciences (NIBS) and Pierce Architecture on 14 March 1984; and as expressed by representatives of the EPA and RTI at the Building site on 25 January 1985.

BUILDING OPERATIONS ANALYSIS
BELFER CENTER, JFK SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY

This analysis is based on:

1. Architectural drawings and specifications dated 29 September 1982, prepared by The Architectural Resources, Cambridge, Massachusetts.

2. Mechanical drawings and specifications dated 29 September 1982, prepared by Sippican Consultants, Boston, Massachusetts.

3. Information provided by the physical plant staff to representatives of Pierce Architecture on 25 January 1985, at the building site.

4. Observations of the physical facilities by Pierce Architecture representatives on 25 January 1985.

5. References of material components and building activities have also been drawn from the "Building Activities and Information Sources Identification for Office Buildings" reports previously prepared by Pierce Architecture for the National Institute of Building Sciences.

BUILDING OPERATIONS ANALYSIS
BELFER CENTER, JFK SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY

DESCRIPTION OF THE FACILITY

The Belfer Center is a five story building of staggered levels, generally "L" shaped in plan, with two story lecture rooms at the apex of the "L".

The floor plan is divided into three zones (each leg of the "L" and the central Lecture Room spaces), separated by partitions extending through the suspended ceilings to the deck above. Air is supplied to and returned from the central spaces by air handling units serving both legs, creating a potential for cross mixing of air from one leg (zone) to the other. The spaces designated for testing are contained within a single leg.

The building contains approximately 42,000 gross square feet of area and 456,730 cubic feet of volume. Ceiling heights vary throughout the building, and are stepped in the tiered floor Lecture Rooms.

Toilet exhausts and emergency generator exhausts are located at the roof level, and therefore should not affect the ground level air intakes.

Landscaped planters are located in front of each of the two ground level air intake louvers.

The building is attached to an adjacent part of the School of Government which was constructed several years earlier. There is no attached garage.

Micro computers and printers are in abundant use throughout the offices.

MATERIALS

General Construction:

- Structural frame is composite steel and concrete decks, supported by steel columns. Cementitious fire proofing has been sprayed on columns and beams.
- Typical exterior walls are brick, with metal studs, gypsum wall board and latex paint finish, and fiberglass batt insulation (R value = 19).
- Typical interior partitions are gypsum board and latex paint finish, metal studs, and fiberglass batt acoustical insulation, extending to the suspended ceiling.

Exterior surfaces are:

- Brick, covering approximately 40% of the wall surface.
- Gray tempered glass, in anodized aluminum frames, fixed, except for a small operable sash in each of the original office spaces, the total covering approximately 60% of the wall surface.
- Roofing is an "inverted roofing membrane assembly", placing stone ballast over fiberglass plank insulation over asphalted felts.

BUILDING OPERATIONS ANALYSIS
BELFER CENTER, JFK SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY

Interior finish surfaces are:

- Carpet, type and material not known, over rubberized hair and jute pad.
- Vinyl base, adhesive applied (type of adhesive unknown).
- Flat latex paint at gypsum board wall surfaces.
- Ceramic tile floors and walls at toilets.
- Acoustical panel ceilings (mineral fibers with paper facing) in lay-in suspension system (steel, zinc coating, baked enamel apint finish) throughout.
- Metal door frames (steel, zinc coating, enamel paint finish).
- Aluminum ceiling supply and return air grilles.
- Plywood window sills and unit ventilator covers, with polyurethane varnish.
- Plastic laminate on plywood study carrels and Lecture Room desks.
- Aluminum venitian blinds.

Mechanical systems:

The air handling equipment is supplied with steam and chilled water from a campus central plant. Air handling unit SAF-2, which serves the designated test areas, has a designed capacity of 11,745 cfm, and utilizes 23.3% fresh air. Filters are throw away type of woven glass fiber.

Generally, interior spaces and large exterior spaces are supplied by a variable air volume (VAV) system. Perimeter spaces are conditioned by fan coil units utilizing available room air. Typically, perimeter offices have openable windows, with no other source of air supply for ventilation.

Ductwork is galvanized steel with internal fiberglass acoustical insulation. Flexible duct connections to diffusers are metal with fiberglass insulation and polyethylene vapor barrier.

The following conditions will exist during the normal daytime working hours:

- Both air handling units will be operating.
- The dampers at branches of the main duct will be held in the open position allowing the supply fans to reach the VAV boxes in the zones.
- The VAV boxes will modulate to provide enough supply air to maintain the space that they are cooling at the selected daytime operating temperature. In the absence of a substantial cooling load the VAV boxes will supply 20% minimum flow of supply air into the space.
- The toilet exhaust fans will be on.

BUILDING OPERATIONS ANALYSIS
BELFER CENTER, JFK SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY

The following conditions will exist [illegible] **hours without** [illegible]

- **Both air handling units will be off**
- [illegible]
- **The VAV boxes will be off,**
- **The toilet exhaust fans will be off**
- **The outside air** [illegible] **closed position.**

Supply and Return Air Controls Regulator

- **With outside air at** [illegible] **conditions, the outside air damper is set to 85** [illegible] **outside air and the exhaust damper is closed. The return air damper is completely open as the outside air temperature increases. The outside air damper gradually opens to maintain 55 degrees F supply air temperature. Return and exhaust dampers modulate.** [illegible] **gingly, the outside air damper closes at 82 degrees F.** [illegible] **outside air damper and the exhaust air damper** [illegible] **supply fan is off.**

Design conditions in the [illegible]

- **Office 125** [illegible] **floor area of newly** [illegible] **room is approximately 126 square feet. The ceiling height is 9' 5 1/4", providing a volume of approximately 1192 cubic feet. Air supply on maximum demand is 40 cfm of introduced air from the VAV system and 300 cfm of recirculated air from within the office through the perimeter fan coil unit. Windows in this space are fixed. With the door closed, the design air changes per hour via the mechanical ventilation system would range** [illegible] **demand.** [illegible] **of introduced air** [illegible]

- **Conference Room 224** [illegible] **floor area of newly** [illegible] **room is approximately 126 square feet. The ceiling height is 18' 5", providing a volume of approximately 2,331 cubic feet.** [illegible] **supply is 300 cfm from the perimeter fan coil unit,** [illegible] **from the VAV system. Windows in this space are fixed.** [illegible] **closed, the design air changes per** [illegible] **zero.**

- **Office 316** [illegible] **square feet. The ceiling height is** [illegible] **approximately 1139 cubic feet.** [illegible] **supply is** [illegible] **perimeter fan coil unit. Windows in this space are** [illegible] **thus air changes** [illegible] **windows.**

National Institute of
BUILDING SCIENCES

1015 Fifteenth Street, N.W.
Suite 700
Washington, D.C. 20005
(202) 347-5710

February 7, 1985

Dr. Robert H. Jungers
U.S. Environmental Protection Agency
RT-2
Box 56-3
Apex, North Carolina 27502

Dear Bob:

Upon re-review of the building operation analysis report for the Belfer Center, I found that additional information about the way the building's systems actually operate would probably help you and RTI design the monitoring program for that building. Revised page BOA5.5 and new page BOA5.6 which contain the new material are enclosed. Please susbtitute them for old page BOA5.5 in the copies attached to my February 4, 1985 letter to you.

If you have any questions please give me a call.

Sincerely yours,

David

David A. Harris, AIA
Vice President for Technology

Enclosures

cc: Lance Wallace, Linda Sheldon, and Al Pierce (with enclosures)

The following conditions will exist during normal night and weekend hours without scheduled activities:

- Both air handling units will be off.
- The dampers in the ductwork will be closed.
- The VAV boxes will be off.
- The toilet exhaust fans will be off.
- The outside air exhaust air dampers will go to the normal fully closed position.

Supply and Return Air Controls Economizer

- With the outside air at winter design temperature, the outside air intake damper is set to 8% outside air (the minimum allowed per the mechanical drawings) and the damper controlling the exhaust is closed. The return air damper, which controls the amount of the building's indoor air to be recirculated, is completely open. As the outside air temperature increases, the outside air damper gradually opens to maintain the supply air temperature at 55 degrees F. Return and exhaust dampers modulate to provide consistent air flow into and out of the building. Correspondingly, at summer design temperatures, the outside air intake damper closes at 82 degrees F. The outside air damper and the exhaust air damper are completely closed when their respective supply fans are off.

Design conditions in the designated test areas are:

Office 125 - floor area of this newly created room, which is not a part of the architect's and the engineer's original design, is approximately 126 square feet. The ceiling height is 9' 5-1/4", providing a volume of approximately 1197 cubic feet. Air supply on maximum demand is 40 cfm of introduced air from the VAV system and 300 cfm of recirculated air from within the room through the perimeter fan coil unit. Windows in this space are fixed.

With the door closed, the design air changes per hour via the mechanical ventilation system, would range from 0.4 to 2.0, depending upon demand (CFM of introduced air x 60/volume of room = air changes per hour). The number of air changes per hour of outside air at winter design temperature would be approximately 8% of the air change rates noted above, the remainder is recirculated building air from the VAV system. As the outside temperature increases, the percentage of outside air in each air change would increase to a maximum of nealy 100% if the economizer cycle is operating and the outside temperature is optimal. If outside temperature is too warm to permit operation of the economizer cycle, the cooling cycle limits the introduction of outside air as for winter temperatures.

- Conference Room 224 - the floor area of this newly created room, which, just as room 125, is not a part of the architect's and the engineer's original design, is approximately 126 square feet. The ceiling height is 18'-5", providing a room volume of approximately 2,331 cubic feet. Air supply is 300 cfm of recirculated room air through the perimeter fan coil unit, with no air supplied from the VAV system. Windows in this space are fixed.

  With the door closed, the design air changes per hour via the mechanical ventilation system would be zero. Any actual air changes would be the result of infiltration/exfiltration between adjacent interior spaces and room 224 (primarily through the door when it is open), and between the outside and room 224 through the exterior envelope.

- Office 316 - the area of room is approximately 141 square feet. The ceiling height is 8'-5-1/2", providing a room volume of approximately 1199 cubic feet. Air supply is 200 cfm of recirculated room air through the perimeter fan coil unit. Windows in this space have an operable section.

  Actual air changes in this room, resulting from infiltration through the operable window sections, the fixed window sections, and other parts of the adjacent exterior envelope, would vary based on the amount and length of time the windows are open, the direction and velocity of the wind, the outside temperature, whether or not the door to the room is open, and occupant activity. Air changes in the room resulting from operation of the HVAC system would depend primarily on the outside temperature, demand for air delivery to the adjacent space, whether or not the door to the adjacent space is open, and occupant activity.

BUILDING MATERIALS, ACTIVITIES & OPERATIONS ANALYSES TO SUPPORT INDOOR AIR Quality RESEARCH BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

BUILDING OPERATIONS ANALYSIS OF THE SAINT FRANCIS HOME, WORCESTER, MASSACHUSETTS

A DRAFT REPORT TO THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
BY THE
NATIONAL INSITUTE OF BUILDING SCIENCES
26 MARCH 1985

BUILDING OPERATIONS ANALYSIS
ST. FRANCIS HOME

INTRODUCTION

FACILITY

St. Francis Home, 37 Thorne Street, Worcester, Massachusetts. Construction work on an 80 bed facility is nearing completion, with occupancy expected in late April 1985. Generally, there are three types of resident rooms: one bed, two bed and three bed rooms. The building is an addition to a facility constructed in two previous phases, completed in 1904 and 1929 respectively. It will provide housing for the elderly and covered parking below the occupied floors for 42 automobiles.

PROPOSED INDOOR AIR QUALITY TESTING

It is the understood that the U. S. Environmental Protection Agency (EPA) and it's contractor, Research Triangle Institute (RTI), intend to monitor the indoor air in specified spaces and the outdoor air at this facility. Indoor spaces to be monitored include a one bed resident room similar to Resident Room 208; Solarium 269; and a Work Area comprised of Lobby 261, Business Office 257, and Gift Shop 256. Air is supplied to the Work Area by a unit ventilator located above the ceiling of Office 258. Air is supplied to the Corridor outside Resident Room 208 by a unit ventilator located above the corridor ceiling at the West end. The outside air would be tested at the air-intake louvers for these units.

BASIS OF THIS REPORT

A draft of this report was prepared by Pierce Architecture, for the National Institute of Building Sciences (NIBS). The purpose of the building operations analyssis is to identify the aspects of the building's design and operations which are expected to have an appreciable effect on the air movement in the spaces to be monitored. The analysis also responds to data needs indicated in the RTI Building Questionnaire, dated March 1983 and revised May 1983, Form #2. Specifically, that data sought by questions 3a, 3b, 4, 5 and 6 of Part A, and 1a, 1b, 2a, 2c, 3, 4, 5a, 5b, 6a, 6b, 6c, 6d, 6e, 7, 9 and 10 of Part B; as expressed in a meeting among representatives of the EPA, RTI, NIBS and Pierce Architecture on 14 March 1984; and as expressed by representatives of the EPA via telephone on 14 March 1985.

BUILDING OPERATIONS ANALYSIS
ST. FRANCIS HOME

The basis of the analysis has been:

1. Architectural drawings and specifications prepared by O. E. Nault and Sons, Inc., 34 Cedar Street, Worcester, Massachusetts 01609.
2. Mechanical drawings and specifications prepared by Burke Engineering Associates, 721 Plesant Street, Worcester, Massachusetts.
3. Information provided by the physical plant staff to representatives of Pierce Architecture on 18 March 1985 at the building site.
4. Observations of the facilities by Pierce Architecture representatives on 18 March 1985.
5. References of material components and building activities have also been drawn from the "Building Materials Description" and "Building Activities and Information Sources Identification for Homes for the Elderly" reports previously prepared by Pierce Architecture for the National Institute of Building Sciences.

BUILDING OPERATIONS ANALYSIS
ST. FRANCIS HOME

DESCRIPTION OF THE FACILITY

The new section provides two floors, consisting of resident rooms and supporting services, above a one story parking garage. It parallels the major axis of the original facility, separated by approximately 35 feet, and adjoins an earlier wing to form an "H" in the overall plan. Each floor of the new addition is approximately 13,940 square feet, providing approximately 27,880 gross square feet of occupied space. The spaces to be tested are located on the Second Floor, the first level above the garage. This floor is divided into two smoke separation zones. The zone containing the Work Area and the Solarium is approximately 3,890 square feet, and has a volume of approximately 33,445 cubic feet below the suspended ceiling. The volume between the suspended ceiling and the underside of the floor above is approximately 12,585 cubic feet. The zone containing Resident Room 208 has a floor area of approximately 10,050 square feet, with a volume of approximately 85,425 cubic feet below the ceiling, and approximately 35,500 cubic feet between the ceiling and the underside of the floor above.

The heating and ventilating systems in the new facility are served by gas fired hot water boilers located in the original building. No cooling (air conditioning) exists in this facility. Fin tube convection heat is provided in all resident rooms and offices; fresh and/or recirculated air is supplied only to corridors and the Work Area Lobby. Toilet and utility rooms are mechanically exhausted.

Domestic hot water is supplied from gas fired heaters in the original building.

Diesel emergency generators are located near the Southwest corner of the original facility, with exhausts remote from the new building's outside air-intakes.

Nourishment centers (kitchenettes) are located at the Nursing Station, and are open to the Corridor serving the Resident Rooms. Primary cooking and dining facilities, as well as laundry facilities, are located in the original building.

The parking garage, located immediately below the test areas, is open to the exterior at approximately 55% of the perimeter wall area.

BUILDING OPERATIONS ANALYSIS
ST. FRANCIS HOME

MATERIALS

The structural frame is constructed of ASTM Standard A-36 steel columns and beams, with steel bar joists supporting a galvanized steel deck with concrete topping. The steel is prime painted with a Tnemec 99-6 coating; cementitious fireproofing has been sprayed on beams and columns exposed in the space between suspended ceilings and deck above, over the Corridor areas. The steel columns are wrapped in gypsum board at the finished spaces and encased in concrete at the garage. The steel bar joists are located above suspended ceilings.

Typical exterior walls (representing approximately 80% of the wall area) are galvanized steel studs, faced on the exterior with acrylic stucco backed with a vinyl mesh over rigid expanded polystyrene board, mounted on gypsum board sheathing. The interior finish is fire retardant gypsum board. Glass fiber batt insulation with aluminum foil backing is contained within the stud cavity.

Windows (representing approximately 20% of the wall area) are openable vinyl clad wood sliding windows with nylon insect screens, and have wood sills on the interior side.

Roofing is single ply rubber, laid over urethane insulation faced with Kraft paper, adhesive applied to gypsum sheathing board mounted on the galvanized steel deck. Asphalt shingles over an asphalted glass fiber sheet are located on a small "Mansard" roof fascia.

The parking garage floor is bituminous concrete (asphalt paving) over gravel. The ceiling of the garage is gypsum board with a Portland Cement coating with aluminum foil backed glass fiber batt insulation above.

Typical interior partitions are gypsum wall board on steel studs, extending through the ceiling to the deck above at corridors, and terminating 4 inches above the ceiling between resident rooms. A vinyl base has been adhesively applied.

Ceilings are acoustical panel (mineral fibers with paper facing) in an exposed lay-in suspension system (steel, zinc coating, baked enamel) throughout, except for a concealed spline suspension system at the Solarium. Ceiling diffusers are painted aluminum.

Painting is: latex at gypsum board; enamel at wood trim and metal doors; epoxy over sealer on gypsum board at toilets and utility rooms.

Metal door frames (steel, zinc coating, enamel paint finish), with wood doors (wood veneer over mineral core, varnish finish).

Exterior louvers are extruded aluminum with bird screens.

BUILDING OPERATIONS ANALYSIS
ST. FRANCIS HOME

Unit heaters and fin tube convection heaters have a galvanized steel casing, painted.

Casework is particleboard, with laminated plastic over plywood doors and end panels.

Nourishment kitchens at the nurse stations include refrigerator, sink, two electric burners, and possibly an oven. The kitchen unit cabinets are porcelain enamel on steel.

No window coverings (curtains, draperies, blinds, etc.) were installed at the time of this site visit. Tracks for privacy curtains are installed between beds at two and three bed Resident Rooms.

Furnishings include laminated plastic covered plywood tables, chests and desks; wood framed chairs with vinyl encased cushions of 60% urethane foam and 40% resin treated polyester; and urethane foam mattresses.

Two electrically controlled hydraulically operated elevators are located in the new building. Although the elevators are adjacent, one opens to the Lobby Office and the other to the Corridor.

Piping materials include: copper for water and waste; chrome plated brass fittings at fixtures; galvanized steel vents; cast iron for soil; polyvinylchloride covers at valves and fittings; glass fiber insulation.

Heating piping is galvanized steel, with cast iron fittings.

Lighting fixtures are predominantly fluorescent, using recessed troffers with acrylic diffuser lenses and standard straight lamps. In Resident Rooms and Toilets circuline fluorescent lamps are used. The Solarium is the only area to be monitored where recessed can type incandescent lights are used.

A water fire sprinklering system is provided throughout the facility, utilizing concealed sprinkler heads.

BUILDING OPERATIONS ANALYSIS
ST. FRANCIS HOME

DESCRIPTION OF DESIGNATED TEST ROOMS

Resident Room 208 (a one bed room):

This room has an area of approximately 267 square feet, and a volume of 2269 cubic feet. It contains one nominal 6 ft. x 5 ft. window, with maximum opening of nominal 3 ft. x 5 ft. There is an adjoining Toilet of approximately 36 square feet in floor area and a volume of approximately 306 cubic feet.

Finish flooring is vinyl tile, applied with H. B. Fuller #722 latex adhesive.

In Resident Rooms numerous services (TV control system, reading light, nurse call system, telephone, emergency power, etc.) are clustered in hospital type "headwall" style. The headwall has an adhesive applied vinyl fabric finish, identification of other materials not available.

The door to the Corridor has a closer, without a hold-open device. A transportable wedge door stop is being used during the construction work. Thus Resident Room doors that were open during the site visit will be closed during normal operation unless they are held open by door stops, chairs, or other makeshift methods.

Work Area (Lobby 261, Business Office 257, and Gift Shop 256):

As indicated, three rooms are considered in the analysis of this area: Lobby 261 is an interior space of approximately 760 square feet in floor area and 6,840 cubic feet in volume. Business Office 257 contains approximately 515 square feet of floor area and approximately 4,378 cubic feet in volume. This space has two nominal 6 ft. x 5 ft. windows, with maximum nominal opening of 3 ft. x 5 ft. each. Gift Shop 256 contains approximately 195 square feet of floor area, a volume of approximately 1,658 cubic feet, and has one nominal 6 ft. x 5 ft. window, with maximum nominal opening of 3 ft. x 5 ft.

Finish flooring is Antron II carpet with copper static control filament, installed with H. B. Fuller #722 latex adhesive.

A partition of tempered glass in steel frames separates the Lobby from the Business Office and the Gift Shop, with one door opening to each space.

[illegible]

[illegible]

This space [illegible] connecting [illegible] to an exterior b[illegible] ing. It contains approximately 511 square feet [illegible] an approximate volume of 4,344 cubic feet.

Openings [illegible] building glass [illegible] with an approxima[illegible] and height of approximately 6 ft.8 inches [illegible] imately 9 ft. 6 [illegible] ft. 8 inches), one pair [illegible] doors to the lobby, and a single door to a stair[illegible]

The finish [illegible] in Portland Cement grout.

Interior [illegible] sive applied vinyl fabric over gypsum wall board [illegible] in approximately equal areas.

By policy [illegible] this space will be designated as a smoking area.

MECHANICAL [illegible]

The two zones of [illegible] are served by separate unit ventilators. Each unit, [illegible] draws fresh air directly from the outside through [illegible] approximately 12 inches x 60 inches in size. One ventilator [illegible] the West balcony door. The other located on the South face of [illegible] building wall, facing the original building and is approximately [illegible] above one of the open wall sections of the parking garage. [illegible] ventilators, which are located above the ceilings of the [illegible] the office, utilize an automatic damper to adjust the amount [illegible] recirculated air, as signaled by an area thermostat. [illegible] ilator then blows tempered air (thermostatically controlled) [illegible] or lobby space. The West unit, serving the Resident[illegible] has a rated capacity of 1,500 cfm while the East unit, [illegible] has a rated capacity of 750 cfm. With continuous [illegible] operation of toilet and utility room exhaust fans, minimal air [illegible] recirculated through the unit ventilator. Thus, outside air is [illegible] them for the major portions of make-up air.

The unit [illegible] glass fiber throwaway filters. Fresh air ducts to the unit [illegible] are insulated with glass fiber blanket insulation adhered [illegible] fire resistive adhesive.

BUILDING OPERATIONS ANALYSIS
ST. FRANCIS HOME

Cabinet unit heaters are located near the exterior doors to offset the additional heat loss at those areas. These units are hot water type, with a small recirculating fan.

The Resident Rooms, Business Office and Gift Shop, and the Solarium are heated using fin tube convection heaters, controlled by an individual room thermostat which regulates the flow of hot water through the fin tube. The source of fresh air is that provided by the unit ventilators into the Corridor or Lobby. Such air may be drawn into rooms by the toilet or utility exhaust fans (when present). Air from the unit ventilators can enter these rooms through open doorways or by infiltration around and under doors.

In Resident's Room 208, the toilet exhaust fan is designed to draw 45 cfm of air into the room, producing approximately 1.05 air changes per hour (cfm x 60/volume of room = air changes per hour). This air can come from infiltration around door to the corridor, through open windows, by infiltration through the exterior wall, or a combination of these routes.

Neither the Business Office nor the Gift Shop have air supplied direct to them, nor is there a toilet or utility exhaust to draw air from the Lobby. These spaces, except at times when the windows are open, depend on drift through open doorways or infiltration around closed doors for air change (ventilation).

The Lobby has a controllable mechanical exhaust, with rated capacity of 600 cfm. During operation, the unit ventilator serving the Lobby would operate on 80% fresh air.

The Solarium depends on infiltration or the opening of doors or windows for outside air. Very little ventilation is expected during periods when the windows and doors are closed.

APPENDIX D

Volatile Organic Data

HOSPITAL (NEW), TRIP 1, VISITORS LOUNGE, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.67	T	T	0.58	0.14
BENZENE	0.38	1.07	1.35	0.93	0.53
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.83	1.58	1.79	1.73	0.08
ISOPROPYLBENZENE	0.22	0.19	0.24	0.22	0.13
M-CRESOL	N	N	N	0.13	0.47
M-DICHLOROBENZENE	N	N	N	0.01	0.48
M-ETHYLTOLUENE	0.63	0.49	0.62	0.58	0.13
M-XYLENE	9.17	7.02	7.08	7.76	0.16
N-BUTYLACETATE	T	T	T	0.23	0.16
N-DECANE	2.51	1.78	1.96	2.09	0.18
N-DODECANE	1.18	T	T	0.83	0.37
N-PROPYLBENZENE	T	T	T	0.12	0.16
N-UNDECANE	3.71	2.35	2.32	2.79	0.28
P-DICHLOROBENZENE	T	N	N	0.05	0.17
STYRENE	0.36	0.45	0.96	0.59	0.54
TETRACHLOROETHYLENE	T	T	T	0.20	0.25
TRICHLOROETHYLENE	0.44	0.55	0.56	0.52	0.12
O-CRESOL	T	N	N	0.10	0.29
O-DICHLOROBENZENE	0.09	T	T	0.10	0.26
O-ETHYLTOLUENE	0.21	0.16	0.20	0.19	0.15
O-XYLENE	4.31	3.28	3.29	3.63	0.16
1,1,1-TRICHLOROETHANE	4.27	5.67	4.31	4.75	0.17
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	10.09	10.92	9.30	10.10	0.08
1,2,3-TRIMETHYLBENZENE	0.47	0.37	0.47	0.44	0.13
1,2,4-TRIMETHLYBENZENE	0.89	0.71	0.88	0.83	0.13
1,3,5-TRIMETHYLBENZENE	0.28	T	T	0.23	0.20
2-ETHOXYETHYLACETATE	2.88	2.62	2.77	2.76	0.05

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

High = ~20 L sample volume
Medium = ~15 L sample volume
Low = ~10 L sample volume

HOSPITAL (NEW), TRIP 1, VISITORS LOUNGE, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.66	0.16
BENZENE	0.99	0.91	1.63	1.18	0.34
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.64	2.99	3.78	3.14	0.19
ISOPROPYLBENZENE	0.30	0.36	0.44	0.36	0.20
M-CRESOL	N	N	N	0.13	0.40
M-DICHLOROBENZENE	N	N	N	0.05	0.30
M-ETHYLTOLUENE	0.65	0.79	0.88	0.77	0.15
M-XYLENE	10.04	12.65	15.48	12.72	0.21
N-BUTYLACETATE	T	T	T	0.33	0.28
N-DECANE	2.30	2.65	3.08	2.67	0.15
N-DODECANE	0.73	1.24	T	0.94	0.28
N-PROPYLBENZENE	T	T	T	0.17	0.16
N-UNDECANE	2.57	3.58	3.28	3.14	0.16
P-DICHLOROBENZENE	N	N	N	0.06	0.20
STYRENE	0.97	0.74	1.41	1.04	0.33
TETRACHLOROETHYLENE	T	T	T	0.31	0.20
TRICHLOROETHYLENE	0.45	0.61	0.67	0.58	0.19
O-CRESOL	T	T	N	0.14	0.20
O-DICHLOROBENZENE	T	T	T	0.12	0.20
O-ETHYLTOLUENE	0.21	0.25	0.28	0.25	0.14
O-XYLENE	4.66	5.52	6.60	5.59	0.17
1,1,1-TRICHLOROETHANE	2.82	3.94	4.54	3.77	0.23
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.95	2.27	3.03	2.42	0.23
1,2,3-TRIMETHYLBENZENE	0.42	0.53	0.55	0.50	0.14
1,2,4-TRIMETHLYBENZENE	0.85	1.10	1.21	1.05	0.17
1,3,5-TRIMETHYLBENZENE	T	T	T	0.30	0.14
2-ETHOXYETHYLACETATE	2.69	2.71	2.30	2.57	0.09

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, VISITORS LOUNGE, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.50	0.21
BENZENE	1.43	1.73	3.18	2.11	0.44
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.36	2.25	1.73	1.78	0.25
ISOPROPYLBENZENE	0.18	0.31	0.24	0.25	0.27
M-CRESOL	N	N	N	0.09	0.87
M-DICHLOROBENZENE	N	N	N	0.03	0.13
M-ETHYLTOLUENE	0.55	0.85	0.67	0.69	0.22
M-XYLENE	4.44	7.38	6.02	5.95	0.25
N-BUTYLACETATE	T	T	T	0.24	0.18
N-DECANE	1.86	2.91	2.17	2.31	0.23
N-DODECANE	T	1.13	T	0.79	0.37
N-PROPYLBENZENE	T	T	T	0.16	0.24
N-UNDECANE	2.03	3.99	2.27	2.76	0.39
P-DICHLOROBENZENE	N	N	N	0.06	0.18
STYRENE	1.02	1.35	0.75	1.04	0.29
TETRACHLOROETHYLENE	T	T	T	0.31	0.22
TRICHLOROETHYLENE	0.55	0.73	0.78	0.69	0.18
O-CRESOL	N	N	N	0.09	0.06
O-DICHLOROBENZENE	T	T	T	0.09	0.21
O-ETHYLTOLUENE	0.19	0.27	0.22	0.22	0.18
O-XYLENE	2.12	3.27	2.72	2.71	0.21
1,1,1-TRICHLOROETHANE	3.67	5.34	4.59	4.54	0.18
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.14	0.22
1,2,3-TRIMETHYLBENZENE	0.38	0.57	0.49	0.48	0.20
1,2,4-TRIMETHLYBENZENE	0.80	1.19	1.00	1.00	0.20
1,3,5-TRIMETHYLBENZENE	T	T	T	0.27	0.23
2-ETHOXYETHYLACETATE	2.01	2.24	2.16	2.14	0.05

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, VISITORS LOUNGE, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.57	0.23
BENZENE	1.17	1.62	1.95	1.58	0.25
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.08	1.75	2.26	2.03	0.13
ISOPROPYLBENZENE	0.30	0.27	0.37	0.31	0.15
M-CRESOL	N	N	N	0.07	0.87
M-DICHLOROBENZENE	N	N	N	0.05	0.71
M-ETHYLTOLUENE	0.94	0.80	1.00	0.91	0.11
M-XYLENE	7.66	6.09	7.65	7.13	0.13
N-BUTYLACETATE	T	N	T	0.17	0.53
N-DECANE	4.30	3.53	4.65	4.16	0.14
N-DODECANE	0.75	T	T	0.93	0.25
N-PROPYLBENZENE	T	T	T	0.20	0.04
N-UNDECANE	3.53	2.87	3.94	3.45	0.16
P-DICHLOROBENZENE	T	N	N	0.07	0.20
STYRENE	0.43	0.87	1.11	0.80	0.43
TETRACHLOROETHYLENE	T	T	T	0.36	0.14
TRICHLOROETHYLENE	0.53	0.52	0.64	0.56	0.11
O-CRESOL	T	N	N	0.13	0.42
O-DICHLOROBENZENE	0.15	T	T	0.16	0.21
O-ETHYLTOLUENE	0.31	0.29	0.31	0.30	0.05
O-XYLENE	3.44	2.83	3.61	3.29	0.12
1,1,1-TRICHLOROETHANE	6.00	5.98	6.49	6.16	0.05
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.10	0.09
1,2,3-TRIMETHYLBENZENE	0.62	0.53	0.65	0.60	0.11
1,2,4-TRIMETHLYBENZENE	1.43	1.14	1.44	1.34	0.13
1,3,5-TRIMETHYLBENZENE	0.40	T	T	0.37	0.13
2-ETHOXYETHYLACETATE	1.25	1.25	1.87	1.46	0.24

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, VISITORS LOUNGE, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.64	0.07
BENZENE	1.37	1.34	1.78	1.49	0.16
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.79	1.43	1.63	1.62	0.11
ISOPROPYLBENZENE	0.24	0.21	0.26	0.24	0.11
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.04	0.40
M-ETHYLTOLUENE	0.98	0.78	0.93	0.90	0.12
M-XYLENE	6.27	4.96	5.84	5.69	0.12
N-BUTYLACETATE	T	T	T	0.26	0.33
N-DECANE	3.75	2.80	3.74	3.43	0.16
N-DODECANE	0.88	T	T	0.78	0.13
N-PROPYLBENZENE	T	T	T	0.19	0.09
N-UNDECANE	3.56	2.60	3.63	3.27	0.18
P-DICHLOROBENZENE	T	N	N	0.06	0.13
STYRENE	0.59	0.68	0.63	0.63	0.08
TETRACHLOROETHYLENE	T	T	N	0.21	0.28
TRICHLOROETHYLENE	0.57	0.48	0.60	0.55	0.11
O-CRESOL	N	N	N	0.06	0.12
O-DICHLOROBENZENE	0.13	T	T	0.12	0.06
O-ETHYLTOLUENE	0.30	0.25	0.29	0.28	0.10
O-XYLENE	2.69	2.19	2.59	2.49	0.11
1,1,1-TRICHLOROETHANE	5.33	4.59	5.23	5.05	0.08
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.09	0.24
1,2,3-TRIMETHYLBENZENE	0.62	0.50	0.57	0.56	0.11
1,2,4-TRIMETHLYBENZENE	1.39	1.15	1.35	1.30	0.10
1,3,5-TRIMETHYLBENZENE	0.38	T	T	0.35	0.10
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, VISITORS LOUNGE, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.58	0.15
BENZENE	1.26	1.39	2.00	1.55	0.26
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.18	2.32	2.96	2.49	0.17
ISOPROPYLBENZENE	0.28	0.30	0.41	0.33	0.20
M-CRESOL	N	N	N	0.18	0.84
M-DICHLOROBENZENE	N	N	N	0.05	0.35
M-ETHYLTOLUENE	1.19	1.25	1.49	1.31	0.12
M-XYLENE	7.57	7.35	9.17	8.03	0.12
N-BUTYLACETATE	T	T	T	0.27	0.36
N-DECANE	6.22	6.38	8.46	7.02	0.18
N-DODECANE	0.81	T	T	0.99	0.38
N-PROPYLBENZENE	0.25	T	T	0.28	0.11
N-UNDECANE	4.23	4.30	6.11	4.88	0.22
P-DICHLOROBENZENE	T	T	N	0.10	0.13
STYRENE	0.62	0.75	1.00	0.79	0.24
TETRACHLOROETHYLENE	T	T	T	0.31	0.03
TRICHLOROETHYLENE	0.45	0.58	0.50	0.51	0.13
O-CRESOL	T	N	N	0.11	0.21
O-DICHLOROBENZENE	T	T	T	0.13	0.24
O-ETHYLTOLUENE	0.37	0.40	0.48	0.42	0.13
O-XYLENE	3.29	3.33	4.23	3.62	0.15
1,1,1-TRICHLOROETHANE	3.84	4.07	3.92	3.94	0.03
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.10	0.20
1,2,3-TRIMETHYLBENZENE	0.65	0.71	1.01	0.79	0.25
1,2,4-TRIMETHLYBENZENE	1.73	1.79	2.19	1.90	0.13
1,3,5-TRIMETHYLBENZENE	0.45	0.48	T	0.50	0.12
2-ETHOXYETHYLACETATE	1.51	1.40	2.25	1.72	0.27

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, NURSES STATION, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.72	0.90	T	0.82	0.12
BENZENE	0.84	1.50	1.59	1.31	0.31
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.25	1.92	1.72	1.63	0.21
ISOPROPYLBENZENE	0.18	0.32	0.29	0.26	0.28
M-CRESOL	T	T	T	0.35	0.31
M-DICHLOROBENZENE	N	N	N	0.01	0.45
M-ETHYLTOLUENE	0.62	0.92	0.85	0.79	0.20
M-XYLENE	5.44	6.95	5.72	6.04	0.13
N-BUTYLACETATE	T	T	T	0.43	0.73
N-DECANE	1.57	1.97	1.81	1.78	0.11
N-DODECANE	0.69	0.84	T	0.91	0.30
N-PROPYLBENZENE	T	T	T	0.18	0.28
N-UNDECANE	2.24	2.89	2.96	2.70	0.15
P-DICHLOROBENZENE	T	N	N	0.08	0.36
STYRENE	0.45	0.98	1.30	0.91	0.47
TETRACHLOROETHYLENE	T	T	T	0.23	0.20
TRICHLOROETHYLENE	0.73	1.02	0.93	0.89	0.17
O-CRESOL	T	T	N	0.12	0.20
O-DICHLOROBENZENE	0.11	0.16	T	0.16	0.30
O-ETHYLTOLUENE	0.19	0.30	0.25	0.25	0.24
O-XYLENE	2.42	3.02	2.55	2.66	0.12
1,1,1-TRICHLOROETHANE	4.32	6.23	5.69	5.42	0.18
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	9.63	10.90	10.41	10.32	0.06
1,2,3-TRIMETHYLBENZENE	0.42	0.54	0.59	0.52	0.17
1,2,4-TRIMETHLYBENZENE	0.87	1.24	1.10	1.07	0.18
1,3,5-TRIMETHYLBENZENE	0.25	0.35	T	0.31	0.17
2-ETHOXYETHYLACETATE	1.33	2.51	1.96	1.93	0.30

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, NURSES STATION, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.09	T	T	0.89	0.29
BENZENE	0.79	1.00	1.85	1.21	0.46
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.81	1.65	2.38	1.95	0.20
ISOPROPYLBENZENE	0.26	0.24	0.35	0.28	0.21
M-CRESOL	T	N	N	0.31	0.34
M-DICHLOROBENZENE	T	N	N	0.07	0.42
M-ETHYLTOLUENE	1.04	0.78	1.11	0.98	0.18
M-XYLENE	7.04	6.06	8.85	7.32	0.19
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	2.61	2.04	3.00	2.55	0.19
N-DODECANE	1.31	T	T	1.09	0.21
N-PROPYLBENZENE	T	T	T	0.18	0.33
N-UNDECANE	2.92	2.26	3.20	2.79	0.17
P-DICHLOROBENZENE	T	N	T	0.10	0.42
STYRENE	0.82	1.06	1.31	1.06	0.23
TETRACHLOROETHYLENE	T	T	T	0.36	0.24
TRICHLOROETHYLENE	0.76	0.75	1.16	0.89	0.26
O-CRESOL	T	N	N	0.13	0.25
O-DICHLOROBENZENE	0.16	T	T	0.17	0.29
O-ETHYLTOLUENE	0.29	0.27	0.35	0.31	0.13
O-XYLENE	3.31	2.62	4.03	3.32	0.21
1,1,1-TRICHLOROETHANE	3.68	3.39	5.37	4.15	0.26
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.73	2.01	2.09	1.94	0.10
1,2,3-TRIMETHYLBENZENE	0.65	0.46	0.83	0.65	0.29
1,2,4-TRIMETHLYBENZENE	1.25	0.94	1.41	1.20	0.20
1,3,5-TRIMETHYLBENZENE	0.33	T	T	0.34	0.21
2-ETHOXYETHYLACETATE	1.53	1.49	2.33	1.79	0.27

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, NURSES STATION, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.71	0.13
BENZENE	2.68	2.22	2.40	2.43	0.10
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.19	1.41	1.54	1.38	0.13
ISOPROPYLBENZENE	0.19	0.21	0.27	0.23	0.18
M-CRESOL	T	N	N	0.22	0.56
M-DICHLOROBENZENE	N	N	N	0.04	0.87
M-ETHYLTOLUENE	0.63	0.76	0.95	0.78	0.21
M-XYLENE	4.05	4.85	5.06	4.66	0.11
N-BUTYLACETATE	T	T	T	0.42	0.49
N-DECANE	1.42	1.67	2.04	1.71	0.18
N-DODECANE	T	T	T	0.54	0.24
N-PROPYLBENZENE	T	T	T	0.18	0.26
N-UNDECANE	1.43	1.88	2.31	1.87	0.23
P-DICHLOROBENZENE	N	N	N	0.06	0.42
STYRENE	0.46	0.68	0.66	0.60	0.20
TETRACHLOROETHYLENE	T	T	T	0.37	0.07
TRICHLOROETHYLENE	1.10	1.14	1.15	1.13	0.02
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.11	0.23
O-ETHYLTOLUENE	0.20	0.24	0.30	0.25	0.21
O-XYLENE	1.79	2.06	2.21	2.02	0.10
1,1,1-TRICHLOROETHANE	5.59	5.76	6.56	5.97	0.09
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.14	0.22
1,2,3-TRIMETHYLBENZENE	0.48	0.51	0.59	0.52	0.11
1,2,4-TRIMETHLYBENZENE	0.84	1.00	1.27	1.04	0.21
1,3,5-TRIMETHYLBENZENE	T	T	T	0.30	0.21
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, NURSES STATION, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.72	0.04
BENZENE	1.07	1.42	1.86	1.45	0.27
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.56	1.75	1.64	1.65	0.06
ISOPROPYLBENZENE	0.25	0.30	0.29	0.28	0.09
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	T	T	T	0.11	0.47
M-ETHYLTOLUENE	0.91	1.08	1.04	1.01	0.09
M-XYLENE	4.56	5.79	5.34	5.23	0.12
N-BUTYLACETATE	T	T	T	0.33	0.16
N-DECANE	3.48	4.20	3.78	3.82	0.09
N-DODECANE	T	T	T	0.64	0.10
N-PROPYLBENZENE	T	T	T	0.22	0.09
N-UNDECANE	2.59	3.19	2.78	2.85	0.11
P-DICHLOROBENZENE	N	T	N	0.08	0.30
STYRENE	1.60	0.56	0.76	0.97	0.57
TETRACHLOROETHYLENE	T	T	T	0.35	0.16
TRICHLOROETHYLENE	0.71	0.98	0.90	0.86	0.16
O-CRESOL	T	N	N	0.10	0.09
O-DICHLOROBENZENE	0.15	0.20	T	0.18	0.17
O-ETHYLTOLUENE	0.28	0.35	0.31	0.31	0.12
O-XYLENE	2.04	2.58	2.33	2.31	0.12
1,1,1-TRICHLOROETHANE	4.88	7.27	6.85	6.33	0.20
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.09	0.11
1,2,3-TRIMETHYLBENZENE	0.49	0.60	0.60	0.56	0.11
1,2,4-TRIMETHLYBENZENE	1.25	1.53	1.41	1.40	0.10
1,3,5-TRIMETHYLBENZENE	0.36	T	T	0.39	0.09
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 1, NURSES STATION, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.00	T	T	0.81	0.37
BENZENE	1.12	1.85	1.75	1.57	0.25
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.48	1.71	1.23	1.47	0.16
ISOPROPYLBENZENE	0.25	0.30	T	0.25	0.17
M-CRESOL	N	T	N	0.20	0.64
M-DICHLOROBENZENE	N	N	N	0.04	0.27
M-ETHYLTOLUENE	1.09	1.20	0.83	1.04	0.18
M-XYLENE	5.24	5.78	3.89	4.97	0.20
N-BUTYLACETATE	T	T	T	0.29	0.13
N-DECANE	3.03	3.57	2.09	2.90	0.26
N-DODECANE	0.89	T	T	0.68	0.33
N-PROPYLBENZENE	T	T	T	0.21	0.16
N-UNDECANE	3.02	3.44	2.09	2.85	0.24
P-DICHLOROBENZENE	T	N	N	0.08	0.11
STYRENE	0.66	0.81	1.32	0.93	0.37
TETRACHLOROETHYLENE	T	T	T	0.21	0.10
TRICHLOROETHYLENE	0.88	1.06	0.73	0.89	0.18
O-CRESOL	T	N	N	0.09	0.23
O-DICHLOROBENZENE	0.12	T	T	0.14	0.09
O-ETHYLTOLUENE	0.33	0.37	0.26	0.32	0.18
O-XYLENE	2.19	2.45	1.66	2.10	0.19
1,1,1-TRICHLOROETHANE	6.36	6.79	4.41	5.86	0.22
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.11	0.11
1,2,3-TRIMETHYLBENZENE	0.59	0.63	0.45	0.56	0.16
1,2,4-TRIMETHLYBENZENE	1.46	1.62	1.10	1.39	0.19
1,3,5-TRIMETHYLBENZENE	0.43	0.46	T	0.38	0.25
2-ETHOXYETHYLACETATE	0.88	1.00	T	0.88	0.14

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 1, NURSES STATION, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.81	T	T	0.88	0.08
BENZENE	1.77	1.58	2.88	2.08	0.34
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.06	2.68	2.72	2.49	0.15
ISOPROPYLBENZENE	0.34	0.41	0.42	0.39	0.11
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.06	0.33
M-ETHYLTOLUENE	1.61	1.85	2.01	1.82	0.11
M-XYLENE	5.72	7.03	7.58	6.78	0.14
N-BUTYLACETATE	T	T	T	0.38	0.40
N-DECANE	8.07	8.75	9.37	8.73	0.07
N-DODECANE	T	T	T	0.81	0.11
N-PROPYLBENZENE	0.35	0.43	T	0.40	0.12
N-UNDECANE	4.92	5.19	5.14	5.08	0.03
P-DICHLOROBENZENE	T	T	N	0.10	0.05
STYRENE	0.84	2.06	1.08	1.33	0.49
TETRACHLOROETHYLENE	T	T	T	0.45	0.18
TRICHLOROETHYLENE	0.96	1.22	1.56	1.25	0.24
O-CRESOL	N	T	N	0.12	0.41
O-DICHLOROBENZENE	0.12	T	T	0.14	0.08
O-ETHYLTOLUENE	0.51	0.58	0.61	0.57	0.10
O-XYLENE	2.56	3.03	3.20	2.93	0.11
1,1,1-TRICHLOROETHANE	4.55	6.38	6.76	5.90	0.20
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.92	1.01	1.27	1.07	0.17
1,2,4-TRIMETHLYBENZENE	2.33	2.55	2.75	2.54	0.08
1,3,5-TRIMETHYLBENZENE	0.62	0.72	0.75	0.70	0.10
2-ETHOXYETHYLACETATE	1.55	1.56	1.24	1.45	0.12

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HOSPITAL (NEW), TRIP 1, PATIENT ROOM, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.74	0.85	T	0.70	0.26
BENZENE	1.14	1.74	1.44	1.44	0.21
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.24	2.33	1.49	2.02	0.23
ISOPROPYLBENZENE	0.37	0.44	0.34	0.38	0.14
M-CRESOL	T	T	N	0.24	0.15
M-DICHLOROBENZENE	N	N	N	0.01	0.49
M-ETHYLTOLUENE	1.18	1.33	0.94	1.15	0.17
M-XYLENE	8.68	8.93	5.28	7.63	0.27
N-BUTYLACETATE	T	T	T	0.27	0.47
N-DECANE	2.31	2.65	1.58	2.18	0.25
N-DODECANE	1.03	1.23	T	1.05	0.17
N-PROPYLBENZENE	0.25	T	T	0.24	0.15
N-UNDECANE	3.02	3.39	2.18	2.86	0.22
P-DICHLOROBENZENE	T	T	N	0.08	0.15
STYRENE	0.80	1.27	0.71	0.93	0.33
TETRACHLOROETHYLENE	0.27	T	T	0.28	0.18
TRICHLOROETHYLENE	1.61	1.55	1.73	1.63	0.06
O-CRESOL	T	T	N	0.12	0.07
O-DICHLOROBENZENE	0.16	0.23	0.25	0.21	0.23
O-ETHYLTOLUENE	0.22	0.41	0.30	0.31	0.31
O-XYLENE	3.90	4.01	2.44	3.45	0.26
1,1,1-TRICHLOROETHANE	5.19	5.71	3.57	4.82	0.23
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	10.50	10.04	6.70	9.08	0.23
1,2,3-TRIMETHYLBENZENE	0.58	0.67	0.62	0.62	0.07
1,2,4-TRIMETHLYBENZENE	1.48	1.68	1.17	1.44	0.18
1,3,5-TRIMETHYLBENZENE	0.44	0.52	T	0.44	0.20
2-ETHOXYETHYLACETATE	2.74	3.63	1.83	2.73	0.33

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HOSPITAL (NEW), TRIP 1, PATIENT ROOM, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.76	T	T	0.59	0.28
BENZENE	1.09	0.64	0.71	0.81	0.30
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.43	2.09	1.36	1.96	0.28
ISOPROPYLBENZENE	0.41	0.32	0.31	0.34	0.16
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	2.10
M-ETHYLTOLUENE	1.38	0.98	1.20	1.19	0.17
M-XYLENE	10.03	10.37	6.20	8.87	0.26
N-BUTYLACETATE	N	T	N	0.05	1.73
N-DECANE	2.90	2.56	1.75	2.41	0.25
N-DODECANE	1.04	T	T	0.71	0.40
N-PROPYLBENZENE	0.29	T	T	0.22	0.26
N-UNDECANE	3.27	2.60	1.86	2.58	0.27
P-DICHLOROBENZENE	T	N	N	0.08	0.15
STYRENE	1.11	0.98	0.88	0.99	0.12
TETRACHLOROETHYLENE	0.40	T	T	0.32	0.21
TRICHLOROETHYLENE	1.47	1.17	1.76	1.47	0.20
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	0.15	T	T	0.15	0.12
O-ETHYLTOLUENE	0.41	0.28	0.27	0.32	0.24
O-XYLENE	4.75	3.63	2.53	3.63	0.31
1,1,1-TRICHLOROETHANE	3.85	3.19	2.28	3.11	0.25
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	2.34	2.15	1.62	2.04	0.18
1,2,3-TRIMETHYLBENZENE	0.73	0.54	0.48	0.58	0.22
1,2,4-TRIMETHLYBENZENE	1.74	1.42	1.25	1.47	0.17
1,3,5-TRIMETHYLBENZENE	0.51	T	T	0.39	0.27
2-ETHOXYETHYLACETATE	2.98	1.25	1.09	1.77	0.59

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 1, PATIENT ROOM, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.53	0.15
BENZENE	1.33	2.76	2.72	2.27	0.36
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.73	2.07	1.73	1.84	0.11
ISOPROPYLBENZENE	0.33	0.36	0.37	0.35	0.07
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.03	0.41
M-ETHYLTOLUENE	1.20	1.22	1.23	1.22	0.02
M-XYLENE	6.82	6.47	5.33	6.21	0.13
N-BUTYLACETATE	T	T	T	0.35	0.39
N-DECANE	2.68	2.56	2.17	2.47	0.11
N-DODECANE	0.90	T	T	0.76	0.23
N-PROPYLBENZENE	0.24	T	T	0.27	0.09
N-UNDECANE	3.10	2.83	2.46	2.80	0.12
P-DICHLOROBENZENE	T	N	T	0.09	0.51
STYRENE	0.94	3.25	2.78	2.32	0.53
TETRACHLOROETHYLENE	T	T	T	0.36	0.08
TRICHLOROETHYLENE	1.50	1.67	2.74	1.97	0.34
O-CRESOL	T	N	N	0.10	0.09
O-DICHLOROBENZENE	0.11	T	T	0.15	0.31
O-ETHYLTOLUENE	0.34	0.35	0.36	0.35	0.02
O-XYLENE	3.07	2.84	2.35	2.75	0.13
1,1,1-TRICHLOROETHANE	4.52	5.13	4.04	4.56	0.12
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.14	0.06
1,2,3-TRIMETHYLBENZENE	0.56	0.59	0.62	0.59	0.05
1,2,4-TRIMETHLYBENZENE	1.60	1.56	1.55	1.57	0.02
1,3,5-TRIMETHYLBENZENE	0.44	0.45	T	0.43	0.04
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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HOSPITAL (NEW), TRIP 1, PATIENT ROOM, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.60	0.27
BENZENE	1.08	1.46	1.38	1.31	0.15
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.76	1.91	1.48	1.71	0.13
ISOPROPYLBENZENE	0.32	0.42	0.33	0.36	0.15
M-CRESOL	N	N	N	0.18	0.26
M-DICHLOROBENZENE	T	N	N	0.06	0.46
M-ETHYLTOLUENE	1.31	2.02	1.20	1.51	0.30
M-XYLENE	5.97	6.66	4.71	5.78	0.17
N-BUTYLACETATE	T	T	T	0.36	0.37
N-DECANE	4.32	5.71	3.10	4.38	0.30
N-DODECANE	0.89	1.13	T	0.88	0.30
N-PROPYLBENZENE	0.26	T	T	0.28	0.14
N-UNDECANE	3.44	4.60	2.62	3.56	0.28
P-DICHLOROBENZENE	T	N	N	0.09	0.22
STYRENE	0.97	1.01	0.88	0.96	0.07
TETRACHLOROETHYLENE	T	T	T	0.35	0.19
TRICHLOROETHYLENE	1.11	1.28	1.83	1.41	0.27
O-CRESOL	N	N	N	0.09	0.27
O-DICHLOROBENZENE	0.22	0.26	T	0.22	0.18
O-ETHYLTOLUENE	0.41	0.48	0.35	0.41	0.16
O-XYLENE	2.79	2.99	2.17	2.65	0.16
1,1,1-TRICHLOROETHANE	5.58	8.50	4.79	6.29	0.31
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.10	0.22
1,2,3-TRIMETHYLBENZENE	0.66	0.89	0.58	0.71	0.23
1,2,4-TRIMETHLYBENZENE	1.79	2.26	1.58	1.87	0.19
1,3,5-TRIMETHYLBENZENE	0.50	0.64	T	0.53	0.19
2-ETHOXYETHYLACETATE	1.85	1.64	T	1.46	0.35

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, PATIENT ROOM, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.69	T	T	0.66	0.29
BENZENE	1.06	1.43	1.47	1.32	0.17
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.57	1.78	1.10	1.48	0.24
ISOPROPYLBENZENE	0.30	0.43	0.24	0.32	0.30
M-CRESOL	N	N	N	0.15	0.17
M-DICHLOROBENZENE	N	N	N	0.03	0.16
M-ETHYLTOLUENE	1.19	1.37	0.93	1.17	0.19
M-XYLENE	5.50	6.45	3.90	5.28	0.24
N-BUTYLACETATE	T	T	T	0.26	0.31
N-DECANE	2.70	3.54	2.02	2.75	0.28
N-DODECANE	0.82	1.16	T	0.85	0.36
N-PROPYLBENZENE	0.24	T	T	0.24	0.21
N-UNDECANE	7.27	3.67	2.06	4.33	0.62
P-DICHLOROBENZENE	N	N	N	0.07	0.65
STYRENE	1.26	0.90	0.68	0.95	0.31
TETRACHLOROETHYLENE	T	T	N	0.18	0.22
TRICHLOROETHYLENE	0.97	1.23	1.39	1.20	0.17
O-CRESOL	T	N	N	0.09	0.17
O-DICHLOROBENZENE	0.14	T	T	0.16	0.10
O-ETHYLTOLUENE	0.36	0.41	0.28	0.35	0.19
O-XYLENE	2.41	2.84	1.72	2.32	0.24
1,1,1-TRICHLOROETHANE	4.11	5.08	3.30	4.16	0.21
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.56	0.70	0.49	0.58	0.18
1,2,4-TRIMETHLYBENZENE	1.61	1.20	1.25	1.35	0.16
1,3,5-TRIMETHYLBENZENE	0.47	0.54	T	0.45	0.22
2-ETHOXYETHYLACETATE	1.13	1.38	T	0.92	0.66

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, PATIENT ROOM, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.81	T	T	0.74	0.18
BENZENE	1.74	1.93	1.79	1.82	0.05
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.64	3.03	2.06	2.58	0.19
ISOPROPYLBENZENE	0.47	0.53	0.50	0.50	0.06
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	T	0.07	0.84
M-ETHYLTOLUENE	2.15	2.36	1.90	2.14	0.11
M-XYLENE	8.25	9.04	5.87	7.72	0.21
N-BUTYLACETATE	T	T	T	0.29	0.29
N-DECANE	9.22	9.52	6.34	8.36	0.21
N-DODECANE	1.05	T	T	0.88	0.22
N-PROPYLBENZENE	0.46	0.51	T	0.46	0.11
N-UNDECANE	5.46	5.67	3.65	4.93	0.22
P-DICHLOROBENZENE	T	T	T	0.14	0.21
STYRENE	0.86	1.40	1.42	1.23	0.26
TETRACHLOROETHYLENE	0.42	T	T	0.44	0.14
TRICHLOROETHYLENE	1.48	1.57	2.58	1.88	0.33
O-CRESOL	T	N	N	0.14	0.08
O-DICHLOROBENZENE	0.15	0.20	T	0.18	0.15
O-ETHYLTOLUENE	0.66	0.72	0.58	0.65	0.11
O-XYLENE	3.45	4.02	2.65	3.37	0.20
1,1,1-TRICHLOROETHANE	4.73	5.86	4.02	4.87	0.19
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.12	0.32
1,2,3-TRIMETHYLBENZENE	1.11	1.15	0.94	1.06	0.10
1,2,4-TRIMETHLYBENZENE	2.92	3.10	2.50	2.84	0.11
1,3,5-TRIMETHYLBENZENE	0.82	0.89	0.67	0.79	0.14
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, OUTDOORS, PERIOD 1

CONCENTRATION (NG/L)

COMPOUND	HIGH	MEDIUM	LOW	MEAN	RPD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.10	0.28
BENZENE	0.71	1.18	1.21	1.04	0.27
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.13	0.84	0.85	0.94	0.18
ISOPROPYLBENZENE	T	T	T	0.06	0.03
M-CRESOL	N	N	N	0.01	1.73
M-DICHLOROBENZENE	N	N	N	0.00	1.21
M-ETHYLTOLUENE	0.29	0.23	T	0.25	0.15
M-XYLENE	3.56	2.37	2.70	2.88	0.21
N-BUTYLACETATE	T	T	N	0.19	0.16
N-DECANE	N	N	N	0.05	0.88
N-DODECANE	N	N	N	0.01	1.73
N-PROPYLBENZENE	T	N	N	0.05	0.08
N-UNDECANE	N	N	N	0.10	0.22
P-DICHLOROBENZENE	N	N	N	0.03	0.04
STYRENE	0.19	0.63	T	0.35	0.71
TETRACHLOROETHYLENE	T	N	N	0.11	0.02
TRICHLOROETHYLENE	T	T	N	0.09	0.05
O-CRESOL	N	N	N	0.01	1.73
O-DICHLOROBENZENE	N	T	N	0.03	0.65
O-ETHYLTOLUENE	0.09	0.06	0.06	0.07	0.22
O-XYLENE	1.03	0.70	0.76	0.83	0.21
1,1,1-TRICHLOROETHANE	1.04	0.91	0.83	0.92	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	16.56	12.61	13.65	14.28	0.14
1,2,3-TRIMETHYLBENZENE	0.20	0.17	0.41	0.26	0.50
1,2,4-TRIMETHLYBENZENE	0.29	0.20	T	0.24	0.20
1,3,5-TRIMETHYLBENZENE	T	N	N	0.05	0.38
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, OUTDOORS, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.06	0.36
BENZENE	1.66	1.67	3.36	2.23	0.44
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.25	0.25	0.33	0.28	0.15
ISOPROPYLBENZENE	T	N	T	0.06	0.37
M-CRESOL	N	N	N	0.04	1.73
M-DICHLOROBENZENE	N	N	N	0.02	0.21
M-ETHYLTOLUENE	0.22	T	T	0.19	0.17
M-XYLENE	0.69	0.53	0.78	0.67	0.19
N-BUTYLACETATE	T	N	N	0.07	0.87
N-DECANE	T	N	N	0.19	0.18
N-DODECANE	N	N	N	0.04	0.87
N-PROPYLBENZENE	N	N	N	0.05	0.23
N-UNDECANE	N	N	N	0.15	0.09
P-DICHLOROBENZENE	N	N	N	0.05	0.04
STYRENE	0.63	0.92	0.94	0.83	0.21
TETRACHLOROETHYLENE	T	T	T	0.27	0.10
TRICHLOROETHYLENE	T	T	T	0.11	0.24
O-CRESOL	N	N	N	0.01	1.73
O-DICHLOROBENZENE	T	T	T	0.07	0.05
O-ETHYLTOLUENE	0.06	0.02	0.06	0.05	0.52
O-XYLENE	0.24	T	T	0.23	0.24
1,1,1-TRICHLOROETHANE	1.41	0.80	0.98	1.06	0.29
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.80	1.03	1.05	0.96	0.15
1,2,3-TRIMETHYLBENZENE	0.44	0.79	1.03	0.75	0.39
1,2,4-TRIMETHLYBENZENE	0.19	T	T	0.17	0.16
1,3,5-TRIMETHYLBENZENE	N	N	N	0.03	0.37
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, OUTDOORS, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.02	1.73
BENZENE	2.24	2.25	4.33	2.94	0.41
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.23	0.25	0.37	0.29	0.26
ISOPROPYLBENZENE	T	N	N	0.03	0.17
M-CRESOL	N	N	N	0.11	0.30
M-DICHLOROBENZENE	N	N	N	0.04	0.04
M-ETHYLTOLUENE	T	T	T	0.21	0.13
M-XYLENE	0.52	0.55	0.74	0.60	0.20
N-BUTYLACETATE	N	N	T	0.13	1.73
N-DECANE	N	N	N	0.10	0.90
N-DODECANE	N	N	N	0.16	0.09
N-PROPYLBENZENE	N	N	N	0.06	0.14
N-UNDECANE	N	N	N	0.12	1.00
P-DICHLOROBENZENE	N	N	N	0.06	0.08
STYRENE	0.37	0.45	0.74	0.52	0.37
TETRACHLOROETHYLENE	T	T	T	0.30	0.29
TRICHLOROETHYLENE	T	T	T	0.17	0.58
O-CRESOL	N	N	N	0.03	0.43
O-DICHLOROBENZENE	T	T	N	0.05	0.07
O-ETHYLTOLUENE	0.06	0.06	0.08	0.07	0.14
O-XYLENE	0.19	T	T	0.22	0.10
1,1,1-TRICHLOROETHANE	1.04	0.84	1.60	1.16	0.34
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.08	0.07
1,2,3-TRIMETHYLBENZENE	0.28	0.34	0.23	0.28	0.19
1,2,4-TRIMETHLYBENZENE	0.22	0.22	T	0.22	0.02
1,3,5-TRIMETHYLBENZENE	N	N	N	0.04	0.12
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 1, OUTDOORS, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.01	1.73
BENZENE	1.49	2.18	3.44	2.37	0.42
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.20	0.18	T	0.17	0.16
ISOPROPYLBENZENE	T	T	N	0.04	0.11
M-CRESOL	N	N	N	0.10	0.12
M-DICHLOROBENZENE	N	N	N	0.03	0.26
M-ETHYLTOLUENE	T	T	N	0.10	0.20
M-XYLENE	0.27	0.34	0.25	0.29	0.16
N-BUTYLACETATE	T	N	N	0.09	0.98
N-DECANE	N	N	N	0.12	0.41
N-DODECANE	N	N	N	0.08	0.30
N-PROPYLBENZENE	N	N	N	0.03	0.11
N-UNDECANE	N	N	N	0.12	0.30
P-DICHLOROBENZENE	N	N	N	0.04	0.28
STYRENE	0.60	0.37	0.51	0.49	0.24
TETRACHLOROETHYLENE	T	T	T	0.22	0.10
TRICHLOROETHYLENE	N	N	N	0.03	0.40
O-CRESOL	N	N	N	0.02	0.21
O-DICHLOROBENZENE	T	T	T	0.09	0.07
O-ETHYLTOLUENE	0.04	0.11	0.02	0.06	0.79
O-XYLENE	T	T	N	0.11	0.14
1,1,1-TRICHLOROETHANE	0.60	0.89	T	0.65	0.33
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.07	0.71
1,2,3-TRIMETHYLBENZENE	0.25	0.59	0.54	0.46	0.40
1,2,4-TRIMETHLYBENZENE	T	0.42	T	0.20	0.98
1,3,5-TRIMETHYLBENZENE	N	N	N	0.01	1.24
2-ETHOXYETHYLACETATE	N	N	N	0.01	1.73

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, OUTDOORS, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.20	0.43
BENZENE	1.82	1.92	1.80	1.85	0.04
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.81	0.51	0.62	0.65	0.23
ISOPROPYLBENZENE	T	T	T	0.08	0.19
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.04	0.42
M-ETHYLTOLUENE	0.66	0.39	0.45	0.50	0.29
M-XYLENE	2.19	1.38	1.50	1.69	0.26
N-BUTYLACETATE	T	N	N	0.09	0.95
N-DECANE	T	N	N	0.23	0.11
N-DODECANE	N	N	N	0.03	1.73
N-PROPYLBENZENE	T	N	N	0.10	0.30
N-UNDECANE	T	N	N	0.22	0.10
P-DICHLOROBENZENE	T	N	N	0.05	0.26
STYRENE	0.90	0.58	1.37	0.95	0.42
TETRACHLOROETHYLENE	T	T	N	0.17	0.24
TRICHLOROETHYLENE	T	T	N	0.08	0.16
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.04	0.32
O-ETHYLTOLUENE	0.19	0.11	0.12	0.14	0.31
O-XYLENE	0.70	0.43	0.50	0.54	0.26
1,1,1-TRICHLOROETHANE	1.64	1.56	1.08	1.42	0.21
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.32	0.30	0.22	0.28	0.20
1,2,4-TRIMETHLYBENZENE	0.73	0.42	0.47	0.54	0.31
1,3,5-TRIMETHYLBENZENE	T	N	N	0.12	0.43
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 1, OUTDOORS, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.40	1.57	3.38	2.12	0.52
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.49	0.45	0.41	0.45	0.09
ISOPROPYLBENZENE	T	T	N	0.06	0.11
M-CRESOL	N	N	N	0.15	0.62
M-DICHLOROBENZENE	N	N	N	0.03	0.23
M-ETHYLTOLUENE	0.40	T	T	0.34	0.15
M-XYLENE	1.02	0.89	0.85	0.92	0.10
N-BUTYLACETATE	T	T	T	0.21	0.32
N-DECANE	T	N	N	0.27	0.18
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	N	N	0.09	0.14
N-UNDECANE	T	N	N	0.20	0.08
P-DICHLOROBENZENE	T	N	N	0.09	0.15
STYRENE	0.34	0.57	0.86	0.59	0.45
TETRACHLOROETHYLENE	0.47	T	T	0.41	0.16
TRICHLOROETHYLENE	T	T	T	0.20	0.61
O-CRESOL	N	N	N	0.04	0.47
O-DICHLOROBENZENE	T	T	T	0.08	0.12
O-ETHYLTOLUENE	0.13	0.10	0.09	0.11	0.17
O-XYLENE	0.36	T	T	0.34	0.07
1,1,1-TRICHLOROETHANE	1.54	1.45	1.25	1.41	0.10
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.10	0.42
1,2,3-TRIMETHYLBENZENE	0.62	0.46	0.40	0.49	0.23
1,2,4-TRIMETHLYBENZENE	0.37	0.31	0.29	0.32	0.12
1,3,5-TRIMETHYLBENZENE	N	N	N	0.04	0.64
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, VISITORS LOUNGE, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.05	0.92
BENZENE	1.52	2.98	3.44	2.65	0.38
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.07	2.18	1.87	1.71	0.34
ISOPROPYLBENZENE	0.12	0.24	T	0.18	0.32
M-CRESOL	T	T	N	0.25	0.49
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.07	1.81	1.71	1.53	0.26
M-XYLENE	3.62	6.45	6.15	5.41	0.29
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	5.38	9.29	7.83	7.50	0.26
N-DODECANE	T	N	N	0.18	0.27
N-PROPYLBENZENE	0.22	0.41	T	0.32	0.29
N-UNDECANE	3.30	5.28	4.64	4.41	0.23
P-DICHLOROBENZENE	T	T	N	0.08	0.23
STYRENE	0.56	3.16	0.94	1.56	0.90
TETRACHLOROETHYLENE	0.52	0.90	0.85	0.76	0.27
TRICHLOROETHYLENE	0.21	0.40	0.37	0.33	0.31
O-CRESOL	N	N	N	0.03	0.96
O-DICHLOROBENZENE	T	N	N	0.03	0.20
O-ETHYLTOLUENE	0.30	0.53	0.46	0.43	0.27
O-XYLENE	0.78	1.37	1.26	1.13	0.28
1,1,1-TRICHLOROETHANE	3.65	5.92	5.56	5.04	0.24
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.40	0.79	0.68	0.62	0.32
1,2,4-TRIMETHLYBENZENE	1.16	2.01	1.78	1.65	0.26
1,3,5-TRIMETHYLBENZENE	0.37	0.58	T	0.46	0.24
2-ETHOXYETHYLACETATE	N	N	N	0.02	1.73

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, VISITORS LOUNGE, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.90	3.17	2.58	2.55	0.25
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.20	1.81	2.28	1.76	0.31
ISOPROPYLBENZENE	0.12	0.18	T	0.17	0.26
M-CRESOL	T	N	N	0.09	1.73
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.83	1.27	1.59	1.23	0.31
M-XYLENE	3.42	5.37	6.70	5.16	0.32
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	2.43	4.00	3.75	3.39	0.25
N-DODECANE	T	N	N	0.17	0.23
N-PROPYLBENZENE	0.19	T	T	0.27	0.25
N-UNDECANE	2.10	3.49	2.88	2.82	0.25
P-DICHLOROBENZENE	T	N	N	0.07	0.20
STYRENE	1.13	1.08	1.44	1.22	0.16
TETRACHLOROETHYLENE	0.67	0.97	1.29	0.98	0.32
TRICHLOROETHYLENE	0.16	T	T	0.19	0.18
O-CRESOL	T	N	N	0.04	1.73
O-DICHLOROBENZENE	T	N	N	0.02	0.23
O-ETHYLTOLUENE	0.24	0.40	0.40	0.35	0.27
O-XYLENE	0.93	1.46	1.84	1.41	0.33
1,1,1-TRICHLOROETHANE	5.81	9.64	7.65	7.70	0.25
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.61	0.85	T	0.68	0.23
1,2,3-TRIMETHYLBENZENE	0.39	0.62	0.60	0.54	0.25
1,2,4-TRIMETHLYBENZENE	0.94	1.53	1.56	1.34	0.26
1,3,5-TRIMETHYLBENZENE	0.32	T	T	0.37	0.14
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, VISITORS LOUNGE, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.14	0.21
BENZENE	1.75	1.70	1.85	1.77	0.04
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.33	0.93	0.93	1.06	0.21
ISOPROPYLBENZENE	0.18	T	T	0.15	0.17
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.18	1.00	0.89	1.02	0.14
M-XYLENE	4.14	3.05	2.97	3.39	0.19
N-BUTYLACETATE	T	T	T	0.34	0.21
N-DECANE	3.02	2.33	2.27	2.54	0.17
N-DODECANE	T	T	N	0.40	0.19
N-PROPYLBENZENE	0.26	T	T	0.22	0.16
N-UNDECANE	2.93	2.27	2.28	2.49	0.15
P-DICHLOROBENZENE	T	T	N	0.11	0.10
STYRENE	0.62	0.64	1.09	0.78	0.34
TETRACHLOROETHYLENE	0.56	T	T	0.46	0.21
TRICHLOROETHYLENE	0.31	0.38	T	0.33	0.13
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.04	0.21
O-ETHYLTOLUENE	0.33	0.26	0.25	0.28	0.15
O-XYLENE	1.46	1.02	1.02	1.17	0.22
1,1,1-TRICHLOROETHANE	9.91	8.40	7.44	8.59	0.15
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	10.23	7.62	7.24	8.36	0.20
1,2,3-TRIMETHYLBENZENE	0.50	0.44	0.41	0.45	0.10
1,2,4-TRIMETHLYBENZENE	1.30	1.05	1.02	1.12	0.14
1,3,5-TRIMETHYLBENZENE	0.38	T	T	0.32	0.17
2-ETHOXYETHYLACETATE	T	T	T	0.22	0.15

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 2, VISITORS LOUNGE, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.09	0.97
BENZENE	2.31	2.67	2.20	2.39	0.10
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.76	0.52	0.28	0.52	0.47
ISOPROPYLBENZENE	0.17	T	T	0.11	0.57
M-CRESOL	T	T	N	0.29	0.56
M-DICHLOROBENZENE	N	N	N	0.01	0.59
M-ETHYLTOLUENE	0.82	0.48	T	0.50	0.61
M-XYLENE	2.40	1.61	0.85	1.62	0.48
N-BUTYLACETATE	T	T	N	0.11	0.10
N-DECANE	2.15	1.04	T	1.19	0.75
N-DODECANE	T	N	N	0.24	0.91
N-PROPYLBENZENE	0.19	T	N	0.12	0.51
N-UNDECANE	2.28	1.12	T	1.27	0.74
P-DICHLOROBENZENE	T	N	N	0.05	0.57
STYRENE	1.82	1.09	0.63	1.18	0.51
TETRACHLOROETHYLENE	0.39	T	N	0.24	0.63
TRICHLOROETHYLENE	T	T	T	0.10	0.05
O-CRESOL	T	N	N	0.10	0.78
O-DICHLOROBENZENE	T	T	T	0.04	0.17
O-ETHYLTOLUENE	0.21	0.11	0.06	0.13	0.60
O-XYLENE	0.81	0.51	T	0.53	0.51
1,1,1-TRICHLOROETHANE	2.93	1.82	0.71	1.82	0.61
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.18	0.60
1,2,3-TRIMETHYLBENZENE	0.57	0.33	0.19	0.36	0.53
1,2,4-TRIMETHLYBENZENE	0.83	0.46	0.22	0.50	0.60
1,3,5-TRIMETHYLBENZENE	0.28	T	N	0.17	0.73
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 2, VISITORS LOUNGE, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.22	0.16
A-PINENE	N	N	N	0.12	0.04
BENZENE	1.92	2.20	2.08	2.07	0.07
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.61	0.63	0.47	0.57	0.15
ISOPROPYLBENZENE	0.10	T	T	0.10	0.09
M-CRESOL	T	N	N	0.13	0.43
M-DICHLOROBENZENE	N	N	N	0.01	0.14
M-ETHYLTOLUENE	0.55	0.58	0.53	0.55	0.04
M-XYLENE	1.82	2.05	1.63	1.83	0.12
N-BUTYLACETATE	T	T	N	0.21	0.34
N-DECANE	1.87	1.92	1.74	1.84	0.05
N-DODECANE	T	T	N	0.36	0.05
N-PROPYLBENZENE	T	T	T	0.13	0.07
N-UNDECANE	2.00	2.17	1.77	1.98	0.10
P-DICHLOROBENZENE	T	T	N	0.09	0.09
STYRENE	1.78	0.94	0.58	1.10	0.56
TETRACHLOROETHYLENE	0.36	T	T	0.34	0.10
TRICHLOROETHYLENE	0.29	T	T	0.24	0.27
O-CRESOL	T	N	N	0.07	0.06
O-DICHLOROBENZENE	T	T	N	0.04	0.09
O-ETHYLTOLUENE	0.15	0.17	0.14	0.15	0.10
O-XYLENE	0.59	0.70	0.53	0.61	0.14
1,1,1-TRICHLOROETHANE	2.95	1.94	2.11	2.34	0.23
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.91	0.96	0.77	0.88	0.11
1,2,3-TRIMETHYLBENZENE	0.32	0.44	0.35	0.37	0.17
1,2,4-TRIMETHLYBENZENE	0.58	0.69	0.54	0.61	0.13
1,3,5-TRIMETHYLBENZENE	T	T	T	0.17	0.11
2-ETHOXYETHYLACETATE	T	T	T	0.25	0.07

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 2, VISITORS LOUNGE, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.34	0.16
A-PINENE	T	N	N	0.19	0.17
BENZENE	2.11	2.99	3.45	2.85	0.24
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.82	0.92	0.97	0.90	0.09
ISOPROPYLBENZENE	0.14	T	T	0.16	0.10
M-CRESOL	T	T	N	0.31	0.27
M-DICHLOROBENZENE	N	N	N	0.01	0.69
M-ETHYLTOLUENE	0.74	0.85	0.82	0.80	0.07
M-XYLENE	2.78	3.20	2.99	2.99	0.07
N-BUTYLACETATE	T	T	N	0.17	0.11
N-DECANE	1.34	1.79	T	1.48	0.18
N-DODECANE	0.70	T	T	0.82	0.28
N-PROPYLBENZENE	T	T	T	0.19	0.13
N-UNDECANE	1.53	2.30	1.55	1.79	0.24
P-DICHLOROBENZENE	T	T	N	0.10	0.08
STYRENE	0.99	1.27	2.00	1.42	0.37
TETRACHLOROETHYLENE	T	T	T	0.30	0.13
TRICHLOROETHYLENE	T	T	T	0.15	0.24
O-CRESOL	T	T	N	0.16	0.11
O-DICHLOROBENZENE	T	T	T	0.05	0.25
O-ETHYLTOLUENE	0.18	0.23	0.20	0.20	0.13
O-XYLENE	0.83	0.96	0.86	0.88	0.07
1,1,1-TRICHLOROETHANE	3.06	3.95	2.73	3.25	0.19
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.36	T	T	0.43	0.24
1,2,3-TRIMETHYLBENZENE	0.39	0.58	0.48	0.48	0.19
1,2,4-TRIMETHLYBENZENE	0.64	0.87	0.72	0.75	0.16
1,3,5-TRIMETHYLBENZENE	0.25	T	T	0.28	0.19
2-ETHOXYETHYLACETATE	T	T	T	0.34	0.14

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 2, NURSES STATION, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	.	N	N	0.00	0.00
A-PINENE	.	T	N	0.21	0.39
BENZENE	.	2.32	2.98	2.65	0.18
BROMODICHLOROETHANE	.	N	N	0.00	0.00
ETHYLBENZENE	.	2.00	1.71	1.86	0.11
ISOPROPYLBENZENE	.	0.26	T	0.23	0.19
M-CRESOL	.	N	N	0.21	0.80
M-DICHLOROBENZENE	.	N	N	0.00	0.00
M-ETHYLTOLUENE	.	1.87	1.33	1.60	0.24
M-XYLENE	.	6.59	5.17	5.88	0.17
N-BUTYLACETATE	.	N	T	0.19	0.36
N-DECANE	.	8.74	6.32	7.53	0.23
N-DODECANE	.	N	N	0.00	0.00
N-PROPYLBENZENE	.	0.40	T	0.36	0.14
N-UNDECANE	.	5.28	3.18	4.23	0.35
P-DICHLOROBENZENE	.	T	N	0.13	0.25
STYRENE	.	0.55	2.15	1.35	0.84
TETRACHLOROETHYLENE	.	1.02	0.82	0.92	0.15
TRICHLOROETHYLENE	.	0.52	0.45	0.48	0.10
O-CRESOL	.	N	N	0.00	0.00
O-DICHLOROBENZENE	.	N	N	0.02	0.28
O-ETHYLTOLUENE	.	0.53	0.40	0.47	0.20
O-XYLENE	.	1.43	1.08	1.26	0.19
1,1,1-TRICHLOROETHANE	.	5.25	4.38	4.81	0.13
1,1,2,2-TETRACHLOROETHANE	.	N	N	0.00	0.00
1,2-DICHLOROETHANE	.	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	.	0.69	0.58	0.64	0.12
1,2,4-TRIMETHLYBENZENE	.	2.15	1.54	1.84	0.23
1,3,5-TRIMETHYLBENZENE	.	0.59	T	0.53	0.16
2-ETHOXYETHYLACETATE	.	N	N	0.00	0.00

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HOSPITAL (NEW), TRIP 2, NURSES STATION, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.35	1.77	1.84	1.65	0.16
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.92	1.21	1.09	1.41	0.32
ISOPROPYLBENZENE	0.20	T	T	0.14	0.40
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.99	0.96	0.75	0.90	0.14
M-XYLENE	5.18	3.55	3.11	3.94	0.28
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	3.26	2.55	1.54	2.45	0.35
N-DODECANE	T	N	N	0.09	1.02
N-PROPYLBENZENE	0.27	T	T	0.22	0.23
N-UNDECANE	1.98	1.71	T	1.55	0.34
P-DICHLOROBENZENE	T	T	N	0.09	0.35
STYRENE	0.64	0.66	0.81	0.71	0.13
TETRACHLOROETHYLENE	1.24	0.83	T	0.91	0.33
TRICHLOROETHYLENE	0.33	T	T	0.22	0.43
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.30
O-ETHYLTOLUENE	0.34	0.27	0.22	0.28	0.22
O-XYLENE	1.58	1.10	0.90	1.20	0.29
1,1,1-TRICHLOROETHANE	9.59	8.32	6.81	8.24	0.17
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.04	0.72	T	0.74	0.39
1,2,3-TRIMETHYLBENZENE	0.40	0.39	0.33	0.37	0.10
1,2,4-TRIMETHLYBENZENE	1.33	1.12	0.92	1.12	0.19
1,3,5-TRIMETHYLBENZENE	0.38	T	T	0.30	0.27
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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HOSPITAL (NEW), TRIP 2, NURSES STATION, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.13	0.18
BENZENE	1.65	4.91	2.76	3.11	0.53
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.84	0.81	0.73	0.79	0.08
ISOPROPYLBENZENE	0.15	T	T	0.13	0.12
M-CRESOL	T	N	N	0.13	1.01
M-DICHLOROBENZENE	N	N	N	0.00	0.37
M-ETHYLTOLUENE	0.87	0.77	0.67	0.77	0.13
M-XYLENE	2.80	2.24	2.32	2.45	0.12
N-BUTYLACETATE	T	T	T	0.52	0.28
N-DECANE	1.45	1.32	T	1.28	0.15
N-DODECANE	T	N	N	0.19	0.25
N-PROPYLBENZENE	T	T	T	0.18	0.09
N-UNDECANE	1.28	T	T	1.04	0.23
P-DICHLOROBENZENE	T	T	T	0.16	0.11
STYRENE	0.57	3.03	1.37	1.66	0.76
TETRACHLOROETHYLENE	0.40	0.70	T	0.47	0.42
TRICHLOROETHYLENE	0.29	0.36	T	0.33	0.11
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.03	0.41
O-ETHYLTOLUENE	0.26	0.23	0.20	0.23	0.13
O-XYLENE	0.97	0.77	0.76	0.83	0.14
1,1,1-TRICHLOROETHANE	5.25	5.34	5.34	5.31	0.01
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	9.11	8.92	8.00	8.68	0.07
1,2,3-TRIMETHYLBENZENE	0.46	0.64	0.48	0.53	0.19
1,2,4-TRIMETHLYBENZENE	1.06	0.91	0.81	0.92	0.14
1,3,5-TRIMETHYLBENZENE	0.30	T	T	0.24	0.20
2-ETHOXYETHYLACETATE	T	T	N	0.26	0.16

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HOSPITAL (NEW), TRIP 2, NURSES STATION, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	N	0.22	0.39
BENZENE	1.36	2.53	4.08	2.66	0.51
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.64	0.76	0.66	0.69	0.10
ISOPROPYLBENZENE	0.15	T	T	0.15	0.05
M-CRESOL	T	N	N	0.18	0.92
M-DICHLOROBENZENE	N	N	N	0.01	0.92
M-ETHYLTOLUENE	0.61	0.52	0.50	0.54	0.10
M-XYLENE	2.10	2.35	2.09	2.18	0.07
N-BUTYLACETATE	T	T	T	0.21	0.14
N-DECANE	1.16	1.12	T	1.10	0.07
N-DODECANE	T	N	N	0.22	0.14
N-PROPYLBENZENE	T	T	T	0.15	0.06
N-UNDECANE	1.16	T	T	1.07	0.07
P-DICHLOROBENZENE	T	N	N	0.08	0.05
STYRENE	0.64	0.73	1.70	1.02	0.57
TETRACHLOROETHYLENE	0.34	T	T	0.35	0.16
TRICHLOROETHYLENE	0.26	N	T	0.15	0.89
O-CRESOL	N	N	N	0.02	1.06
O-DICHLOROBENZENE	T	T	T	0.05	0.23
O-ETHYLTOLUENE	0.18	0.17	0.16	0.17	0.06
O-XYLENE	0.84	0.85	0.80	0.83	0.03
1,1,1-TRICHLOROETHANE	4.12	5.72	3.48	4.44	0.26
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.33	T	T	0.35	0.08
1,2,3-TRIMETHYLBENZENE	0.29	0.49	0.45	0.41	0.26
1,2,4-TRIMETHLYBENZENE	0.69	0.69	0.64	0.67	0.04
1,3,5-TRIMETHYLBENZENE	T	T	T	0.18	0.13
2-ETHOXYETHYLACETATE	T	T	T	0.38	0.09

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 2, NURSES STATION, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.11	0.39
BENZENE	0.97	1.63	2.44	1.68	0.44
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.35	0.41	0.40	0.39	0.08
ISOPROPYLBENZENE	T	T	T	0.07	0.07
M-CRESOL	T	N	N	0.13	0.70
M-DICHLOROBENZENE	N	N	N	0.00	0.45
M-ETHYLTOLUENE	0.35	0.39	T	0.36	0.08
M-XYLENE	1.13	1.30	1.33	1.25	0.09
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	0.77	T	T	0.75	0.08
N-DODECANE	T	N	N	0.11	0.80
N-PROPYLBENZENE	T	T	N	0.10	0.10
N-UNDECANE	0.72	T	T	0.71	0.15
P-DICHLOROBENZENE	T	T	N	0.10	0.07
STYRENE	0.45	0.95	0.94	0.78	0.37
TETRACHLOROETHYLENE	0.28	T	T	0.31	0.07
TRICHLOROETHYLENE	0.18	T	T	0.21	0.15
O-CRESOL	N	N	N	0.02	0.88
O-DICHLOROBENZENE	T	N	N	0.03	0.22
O-ETHYLTOLUENE	0.10	0.12	0.10	0.11	0.10
O-XYLENE	0.43	0.49	0.47	0.46	0.06
1,1,1-TRICHLOROETHANE	2.02	2.52	2.52	2.36	0.12
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.72	0.74	0.83	0.76	0.08
1,2,3-TRIMETHYLBENZENE	0.26	0.38	0.41	0.35	0.23
1,2,4-TRIMETHLYBENZENE	0.43	0.49	0.46	0.46	0.06
1,3,5-TRIMETHYLBENZENE	T	T	N	0.11	0.03
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, NURSES STATION, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.11	0.28
BENZENE	1.02	2.14	1.92	1.69	0.35
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.43	0.64	0.47	0.51	0.22
ISOPROPYLBENZENE	T	T	T	0.09	0.29
M-CRESOL	N	N	N	0.10	1.00
M-DICHLOROBENZENE	N	N	N	0.02	0.33
M-ETHYLTOLUENE	0.32	0.45	T	0.38	0.17
M-XYLENE	1.47	2.06	1.56	1.70	0.19
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	T	T	T	0.51	0.29
N-DODECANE	T	N	N	0.19	0.08
N-PROPYLBENZENE	T	T	N	0.11	0.24
N-UNDECANE	T	T	T	0.53	0.26
P-DICHLOROBENZENE	T	N	N	0.06	0.19
STYRENE	0.26	1.21	0.62	0.70	0.69
TETRACHLOROETHYLENE	T	T	T	0.25	0.13
TRICHLOROETHYLENE	0.16	T	T	0.18	0.21
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.04	0.31
O-ETHYLTOLUENE	0.09	0.13	0.12	0.11	0.18
O-XYLENE	0.52	0.73	0.60	0.62	0.17
1,1,1-TRICHLOROETHANE	3.01	3.53	2.89	3.14	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.38	T	T	0.36	0.12
1,2,3-TRIMETHYLBENZENE	0.17	0.27	0.29	0.24	0.25
1,2,4-TRIMETHLYBENZENE	0.36	0.54	0.41	0.44	0.22
1,3,5-TRIMETHYLBENZENE	T	T	N	0.11	0.17
2-ETHOXYETHYLACETATE	T	T	N	0.24	0.14

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, PATIENT ROOM, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.07	0.91
BENZENE	1.71	2.45	1.90	2.02	0.19
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.62	2.68	1.53	1.95	0.33
ISOPROPYLBENZENE	0.20	0.32	T	0.23	0.34
M-CRESOL	T	N	T	0.22	0.68
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.43	2.31	1.26	1.67	0.34
M-XYLENE	5.49	9.41	5.50	6.80	0.33
N-BUTYLACETATE	N	T	T	0.27	0.78
N-DECANE	10.24	15.17	7.58	11.00	0.35
N-DODECANE	T	N	N	0.12	0.87
N-PROPYLBENZENE	0.32	0.51	T	0.37	0.34
N-UNDECANE	5.64	7.52	3.62	5.59	0.35
P-DICHLOROBENZENE	T	T	N	0.12	0.37
STYRENE	0.74	0.92	0.75	0.80	0.12
TETRACHLOROETHYLENE	0.64	1.09	T	0.78	0.34
TRICHLOROETHYLENE	0.47	1.07	0.43	0.66	0.54
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.03	0.38
O-ETHYLTOLUENE	0.45	0.63	0.37	0.48	0.27
O-XYLENE	1.08	1.74	0.97	1.27	0.33
1,1,1-TRICHLOROETHANE	3.94	7.97	3.46	5.12	0.48
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.52	0.38	0.53	0.47	0.18
1,2,4-TRIMETHLYBENZENE	1.77	2.74	1.48	2.00	0.33
1,3,5-TRIMETHYLBENZENE	0.50	0.75	T	0.56	0.31
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, PATIENT ROOM, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	T	N	0.15	0.80
BENZENE	1.27	1.68	0.92	1.29	0.29
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.12	1.77	1.20	1.36	0.26
ISOPROPYLBENZENE	0.14	0.23	T	0.17	0.36
M-CRESOL	T	N	N	0.09	1.73
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.94	1.32	0.63	0.96	0.36
M-XYLENE	3.20	4.70	2.61	3.50	0.31
N-BUTYLACETATE	0.47	T	T	0.49	0.21
N-DECANE	2.52	4.04	1.81	2.79	0.41
N-DODECANE	T	T	N	0.16	1.07
N-PROPYLBENZENE	0.19	T	T	0.22	0.34
N-UNDECANE	1.91	2.83	T	1.93	0.46
P-DICHLOROBENZENE	T	T	N	0.08	0.57
STYRENE	0.66	1.11	0.43	0.73	0.47
TETRACHLOROETHYLENE	0.84	1.30	0.92	1.02	0.24
TRICHLOROETHYLENE	0.28	0.48	T	0.29	0.64
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	T	N	0.02	1.14
O-ETHYLTOLUENE	0.25	0.38	0.20	0.28	0.34
O-XYLENE	0.96	1.42	1.07	1.15	0.21
1,1,1-TRICHLOROETHANE	6.40	7.91	4.70	6.33	0.25
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.60	1.09	T	0.73	0.44
1,2,3-TRIMETHYLBENZENE	0.39	0.55	0.23	0.39	0.41
1,2,4-TRIMETHLYBENZENE	1.04	1.50	0.78	1.11	0.33
1,3,5-TRIMETHYLBENZENE	0.29	T	T	0.31	0.41
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, PATIENT ROOM, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	.	N	0.00	0.00
A-PINENE	N	.	N	0.04	1.41
BENZENE	N	.	2.30	1.11	1.52
BROMODICHLOROETHANE	N	.	N	0.00	0.00
ETHYLBENZENE	0.89	.	0.78	0.84	0.10
ISOPROPYLBENZENE	0.16	.	T	0.15	0.07
M-CRESOL	N	.	N	0.00	0.00
M-DICHLOROBENZENE	N	.	N	0.00	0.00
M-ETHYLTOLUENE	0.96	.	0.75	0.85	0.17
M-XYLENE	2.88	.	2.57	2.73	0.08
N-BUTYLACETATE	T	.	N	0.24	0.33
N-DECANE	1.40	.	T	1.23	0.19
N-DODECANE	T	.	N	0.26	0.23
N-PROPYLBENZENE	0.20	.	T	0.19	0.02
N-UNDECANE	1.30	.	T	1.13	0.21
P-DICHLOROBENZENE	0.29	.	T	0.27	0.10
STYRENE	0.49	.	0.76	0.63	0.31
TETRACHLOROETHYLENE	1.20	.	1.06	1.13	0.09
TRICHLOROETHYLENE	N	.	T	0.14	1.51
O-CRESOL	0.41	.	N	0.21	1.41
O-DICHLOROBENZENE	T	.	N	0.03	0.39
O-ETHYLTOLUENE	0.26	.	0.22	0.24	0.11
O-XYLENE	1.05	.	0.90	0.97	0.11
1,1,1-TRICHLOROETHANE	N	.	5.98	2.89	1.52
1,1,2,2-TETRACHLOROETHANE	N	.	N	0.00	0.00
1,2-DICHLOROETHANE	N	.	5.95	2.98	1.41
1,2,3-TRIMETHYLBENZENE	0.43	.	0.49	0.46	0.09
1,2,4-TRIMETHLYBENZENE	1.08	.	0.90	0.99	0.13
1,3,5-TRIMETHYLBENZENE	0.31	.	T	0.27	0.18
2-ETHOXYETHYLACETATE	N	.	T	0.14	1.41

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, PATIENT ROOM, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.20	0.33
BENZENE	1.91	2.02	2.65	2.19	0.18
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.73	0.68	0.59	0.67	0.11
ISOPROPYLBENZENE	0.22	0.20	T	0.19	0.14
M-CRESOL	N	T	N	0.29	0.69
M-DICHLOROBENZENE	N	N	N	0.01	0.56
M-ETHYLTOLUENE	0.81	0.60	0.68	0.70	0.15
M-XYLENE	1.78	2.30	1.93	2.00	0.13
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	1.30	T	T	1.05	0.22
N-DODECANE	T	T	N	0.29	0.29
N-PROPYLBENZENE	0.23	T	T	0.20	0.14
N-UNDECANE	1.55	T	T	1.13	0.32
P-DICHLOROBENZENE	T	T	N	0.10	0.14
STYRENE	0.67	0.88	0.66	0.74	0.16
TETRACHLOROETHYLENE	0.73	0.73	T	0.70	0.06
TRICHLOROETHYLENE	0.42	0.34	T	0.33	0.24
O-CRESOL	T	N	N	0.10	0.62
O-DICHLOROBENZENE	T	T	N	0.05	0.13
O-ETHYLTOLUENE	0.23	0.19	0.20	0.21	0.10
O-XYLENE	1.08	0.90	0.81	0.93	0.15
1,1,1-TRICHLOROETHANE	4.89	3.97	3.32	4.06	0.19
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.48	T	T	0.40	0.20
1,2,3-TRIMETHYLBENZENE	0.11	0.48	0.52	0.37	0.61
1,2,4-TRIMETHLYBENZENE	0.89	0.76	0.82	0.83	0.08
1,3,5-TRIMETHYLBENZENE	0.26	T	T	0.23	0.09
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 2, PATIENT ROOM, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.22	0.18
A-PINENE	T	N	N	0.13	0.06
BENZENE	1.14	2.16	4.85	2.72	0.71
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.49	0.81	0.48	0.59	0.31
ISOPROPYLBENZENE	0.12	T	T	0.12	0.22
M-CRESOL	N	N	N	0.17	0.40
M-DICHLOROBENZENE	N	N	N	0.01	1.28
M-ETHYLTOLUENE	0.55	0.58	0.41	0.51	0.17
M-XYLENE	1.53	1.86	1.46	1.62	0.13
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	0.88	T	T	0.74	0.29
N-DODECANE	T	N	N	0.16	0.29
N-PROPYLBENZENE	T	T	T	0.14	0.16
N-UNDECANE	0.80	T	T	0.66	0.29
P-DICHLOROBENZENE	T	T	N	0.09	0.11
STYRENE	0.35	4.61	0.85	1.94	1.20
TETRACHLOROETHYLENE	0.60	0.67	T	0.62	0.07
TRICHLOROETHYLENE	0.32	0.38	T	0.32	0.17
O-CRESOL	N	N	N	0.04	0.34
O-DICHLOROBENZENE	T	T	T	0.06	0.28
O-ETHYLTOLUENE	0.16	0.17	0.10	0.14	0.25
O-XYLENE	0.61	0.72	0.57	0.63	0.12
1,1,1-TRICHLOROETHANE	2.45	3.14	1.99	2.53	0.23
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.92	0.94	1.03	0.96	0.06
1,2,3-TRIMETHYLBENZENE	0.33	0.34	0.61	0.42	0.38
1,2,4-TRIMETHLYBENZENE	0.64	0.70	0.43	0.59	0.23
1,3,5-TRIMETHYLBENZENE	T	T	N	0.17	0.19
2-ETHOXYETHYLACETATE	0.44	T	T	0.40	0.17

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, PATIENT ROOM, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.46	0.21
A-PINENE	T	N	N	0.13	0.28
BENZENE	1.21	1.74	0.92	1.29	0.33
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.51	0.64	0.57	0.57	0.12
ISOPROPYLBENZENE	0.13	T	T	0.14	0.11
M-CRESOL	N	T	N	0.19	0.50
M-DICHLOROBENZENE	N	N	N	0.01	1.33
M-ETHYLTOLUENE	0.52	0.63	0.69	0.61	0.14
M-XYLENE	1.68	1.93	1.91	1.84	0.07
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	0.65	T	T	0.75	0.16
N-DODECANE	0.69	T	T	0.70	0.12
N-PROPYLBENZENE	T	T	T	0.16	0.14
N-UNDECANE	0.85	T	T	0.90	0.06
P-DICHLOROBENZENE	T	T	N	0.09	0.11
STYRENE	0.54	1.95	0.49	0.99	0.84
TETRACHLOROETHYLENE	0.50	T	T	0.54	0.12
TRICHLOROETHYLENE	0.36	0.35	T	0.29	0.39
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.04	0.10
O-ETHYLTOLUENE	0.15	0.19	0.24	0.19	0.22
O-XYLENE	0.66	0.79	0.79	0.75	0.10
1,1,1-TRICHLOROETHANE	3.04	3.19	3.05	3.09	0.03
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.36	T	T	0.36	0.08
1,2,3-TRIMETHYLBENZENE	0.28	0.33	0.21	0.28	0.22
1,2,4-TRIMETHLYBENZENE	0.60	0.78	0.84	0.74	0.17
1,3,5-TRIMETHYLBENZENE	T	T	T	0.21	0.07
2-ETHOXYETHYLACETATE	0.42	T	T	0.49	0.19

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, OUTDOORS, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.08	2.50	1.52	1.70	0.43
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.49	0.55	0.37	0.47	0.20
ISOPROPYLBENZENE	T	T	N	0.03	0.88
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.43	0.47	0.40	0.43	0.08
M-XYLENE	1.32	1.59	1.25	1.39	0.13
N-BUTYLACETATE	T	0.69	T	0.41	0.60
N-DECANE	N	N	N	0.00	0.00
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	T	N	0.10	0.17
N-UNDECANE	N	N	N	0.00	0.00
P-DICHLOROBENZENE	N	N	N	0.03	0.44
STYRENE	0.12	0.84	T	0.36	1.16
TETRACHLOROETHYLENE	0.48	T	T	0.46	0.17
TRICHLOROETHYLENE	0.16	0.36	N	0.19	0.80
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	1.73
O-ETHYLTOLUENE	0.13	0.13	0.11	0.12	0.10
O-XYLENE	0.47	0.51	T	0.45	0.16
1,1,1-TRICHLOROETHANE	3.08	5.58	2.51	3.72	0.44
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.06	0.23	0.09	0.13	0.68
1,2,4-TRIMETHLYBENZENE	0.41	0.48	0.44	0.44	0.08
1,3,5-TRIMETHYLBENZENE	T	N	N	0.08	0.22
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, OUTDOORS, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.61	2.31	2.33	2.08	0.20
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.31	0.42	0.30	0.34	0.19
ISOPROPYLBENZENE	T	T	N	0.04	0.20
M-CRESOL	N	N	N	0.09	0.26
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.25	0.34	T	0.28	0.20
M-XYLENE	0.80	1.11	0.80	0.91	0.20
N-BUTYLACETATE	0.55	1.01	1.71	1.09	0.54
N-DECANE	T	T	N	0.21	0.22
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	T	N	0.07	0.24
N-UNDECANE	N	N	N	0.10	0.26
P-DICHLOROBENZENE	N	N	N	0.02	0.09
STYRENE	0.24	0.51	0.56	0.44	0.39
TETRACHLOROETHYLENE	0.26	T	T	0.26	0.20
TRICHLOROETHYLENE	T	T	N	0.10	0.16
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.22
O-ETHYLTOLUENE	0.08	0.12	0.08	0.09	0.23
O-XYLENE	0.28	0.39	T	0.31	0.25
1,1,1-TRICHLOROETHANE	2.85	3.54	2.44	2.95	0.19
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.26	1.43	1.10	1.26	0.13
1,2,3-TRIMETHYLBENZENE	0.17	0.30	0.25	0.24	0.27
1,2,4-TRIMETHLYBENZENE	0.28	0.37	0.26	0.30	0.19
1,3,5-TRIMETHYLBENZENE	T	N	N	0.06	0.25
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, OUTDOORS, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.26	2.67	2.24	2.05	0.35
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.56	0.57	0.49	0.54	0.09
ISOPROPYLBENZENE	T	T	T	0.06	0.14
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	1.11
M-ETHYLTOLUENE	0.36	0.58	0.43	0.46	0.24
M-XYLENE	1.70	1.71	1.43	1.61	0.10
N-BUTYLACETATE	T	T	T	0.24	0.11
N-DECANE	N	N	N	0.08	1.00
N-DODECANE	N	N	N	0.03	0.89
N-PROPYLBENZENE	T	T	N	0.12	0.09
N-UNDECANE	N	N	N	0.09	0.05
P-DICHLOROBENZENE	N	N	N	0.03	0.09
STYRENE	0.21	0.72	0.48	0.47	0.55
TETRACHLOROETHYLENE	T	T	T	0.24	0.05
TRICHLOROETHYLENE	T	T	T	0.11	0.21
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.02	0.74
O-ETHYLTOLUENE	0.15	0.16	0.14	0.15	0.05
O-XYLENE	0.57	0.58	0.51	0.56	0.07
1,1,1-TRICHLOROETHANE	6.15	6.21	5.67	6.01	0.05
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	9.81	10.03	8.68	9.51	0.08
1,2,3-TRIMETHYLBENZENE	0.12	0.40	0.56	0.36	0.62
1,2,4-TRIMETHLYBENZENE	0.61	0.63	0.51	0.58	0.11
1,3,5-TRIMETHYLBENZENE	T	T	N	0.13	0.20
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, OUTDOORS, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.51	3.91	4.27	3.23	0.47
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.19	0.59	0.37	0.38	0.53
ISOPROPYLBENZENE	T	T	T	0.05	0.52
M-CRESOL	N	N	N	0.12	0.48
M-DICHLOROBENZENE	N	N	N	0.01	0.69
M-ETHYLTOLUENE	0.16	0.49	T	0.29	0.61
M-XYLENE	0.48	1.44	0.69	0.87	0.58
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	N	T	N	0.16	0.71
N-DODECANE	N	N	N	0.02	1.73
N-PROPYLBENZENE	T	T	N	0.09	0.47
N-UNDECANE	N	N	N	0.13	0.64
P-DICHLOROBENZENE	N	N	N	0.04	0.57
STYRENE	0.30	1.32	3.98	1.87	1.02
TETRACHLOROETHYLENE	T	T	T	0.26	0.64
TRICHLOROETHYLENE	T	T	T	0.13	0.53
O-CRESOL	N	N	N	0.04	0.35
O-DICHLOROBENZENE	N	N	N	0.02	0.37
O-ETHYLTOLUENE	0.05	0.15	0.06	0.09	0.66
O-XYLENE	0.17	0.52	T	0.30	0.61
1,1,1-TRICHLOROETHANE	0.92	2.87	1.46	1.75	0.58
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	T	0.38	0.44
1,2,3-TRIMETHYLBENZENE	0.23	0.52	0.54	0.43	0.40
1,2,4-TRIMETHLYBENZENE	0.17	0.54	T	0.31	0.64
1,3,5-TRIMETHYLBENZENE	N	T	N	0.06	0.87
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 2, OUTDOORS, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	0.74	2.05	2.21	1.67	0.49
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.19	0.31	T	0.22	0.35
ISOPROPYLBENZENE	T	T	N	0.03	0.28
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	0.11
M-ETHYLTOLUENE	T	T	T	0.13	0.28
M-XYLENE	0.44	0.84	0.44	0.57	0.40
N-BUTYLACETATE	T	T	T	0.23	0.25
N-DECANE	N	N	N	0.00	0.00
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	N	N	N	0.05	0.26
N-UNDECANE	N	N	N	0.00	0.00
P-DICHLOROBENZENE	N	N	N	0.03	0.22
STYRENE	0.18	0.88	0.48	0.51	0.69
TETRACHLOROETHYLENE	T	T	N	0.23	0.20
TRICHLOROETHYLENE	T	T	N	0.11	0.96
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.06	0.04
O-ETHYLTOLUENE	0.04	0.07	0.04	0.05	0.32
O-XYLENE	0.16	0.26	T	0.19	0.30
1,1,1-TRICHLOROETHANE	1.56	2.12	1.19	1.62	0.29
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.15	1.06	0.97	1.06	0.09
1,2,3-TRIMETHYLBENZENE	0.24	0.18	0.21	0.21	0.15
1,2,4-TRIMETHLYBENZENE	0.14	0.18	T	0.14	0.29
1,3,5-TRIMETHYLBENZENE	N	N	N	0.02	1.13
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 2, OUTDOORS, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.86	3.83	3.74	3.14	0.36
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.26	0.43	0.38	0.35	0.25
ISOPROPYLBENZENE	N	N	N	0.03	0.33
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.92
M-ETHYLTOLUENE	T	T	T	0.18	0.34
M-XYLENE	0.61	1.16	0.72	0.83	0.35
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	N	N	N	0.10	0.30
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	N	N	N	0.06	0.29
N-UNDECANE	N	N	N	0.02	1.73
P-DICHLOROBENZENE	N	N	N	0.03	0.33
STYRENE	0.62	0.78	0.86	0.75	0.17
TETRACHLOROETHYLENE	T	T	N	0.17	0.37
TRICHLOROETHYLENE	N	T	N	0.07	0.56
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.02	0.33
O-ETHYLTOLUENE	0.05	0.08	0.04	0.05	0.33
O-XYLENE	0.21	0.36	T	0.27	0.31
1,1,1-TRICHLOROETHANE	2.49	3.87	2.67	3.01	0.25
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.51	0.72	T	0.59	0.19
1,2,3-TRIMETHYLBENZENE	0.15	0.46	0.23	0.28	0.57
1,2,4-TRIMETHLYBENZENE	0.14	0.23	T	0.17	0.31
1,3,5-TRIMETHYLBENZENE	N	N	N	0.03	0.82
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 3, VISITORS LOUNGE, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.20	0.11
BENZENE	2.93	2.97	3.17	3.03	0.04
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	5.61	5.75	5.83	5.73	0.02
ISOPROPYLBENZENE	0.17	0.20	T	0.18	0.07
M-CRESOL	T	T	T	0.61	0.14
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.17	1.18	1.13	1.16	0.02
M-XYLENE	18.17	21.37	20.43	19.99	0.08
N-BUTYLACETATE	T	T	1.00	0.53	0.78
N-DECANE	1.35	T	T	1.13	0.19
N-DODECANE	1.39	T	T	1.08	0.31
N-PROPYLBENZENE	0.35	T	T	0.31	0.15
N-UNDECANE	2.26	1.57	1.83	1.89	0.19
P-DICHLOROBENZENE	3.61	3.33	3.39	3.44	0.04
STYRENE	1.13	1.18	1.22	1.17	0.04
TETRACHLOROETHYLENE	0.78	0.78	0.87	0.81	0.06
TRICHLOROETHYLENE	0.20	T	T	0.22	0.08
O-CRESOL	T	T	N	0.13	0.33
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.39	0.39	0.35	0.38	0.07
O-XYLENE	4.30	4.12	4.17	4.20	0.02
1,1,1-TRICHLOROETHANE	3.54	3.69	3.61	3.61	0.02
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.01	1.73
1,2,3-TRIMETHYLBENZENE	0.48	0.46	0.43	0.46	0.05
1,2,4-TRIMETHLYBENZENE	1.64	1.48	1.62	1.58	0.05
1,3,5-TRIMETHYLBENZENE	0.78	0.65	0.61	0.68	0.13
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 3, VISITORS LOUNGE, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	MEAN	RSD
A-EPICHLOROHYDRIN	.	N	0.00	0.00
A-PINENE	.	N	0.15	0.00
BENZENE	.	7.15	7.15	0.00
BROMODICHLOROETHANE	.	N	0.00	0.00
ETHYLBENZENE	.	2.67	2.67	0.00
ISOPROPYLBENZENE	.	0.30	0.30	0.00
M-CRESOL	.	T	0.96	0.00
M-DICHLOROBENZENE	.	N	0.00	0.00
M-ETHYLTOLUENE	.	1.78	1.78	0.00
M-XYLENE	.	8.81	8.81	0.00
N-BUTYLACETATE	.	T	0.41	0.00
N-DECANE	.	1.41	1.41	0.00
N-DODECANE	.	N	0.00	0.00
N-PROPYLBENZENE	.	0.44	0.44	0.00
N-UNDECANE	.	1.70	1.70	0.00
P-DICHLOROBENZENE	.	2.74	2.74	0.00
STYRENE	.	2.37	2.37	0.00
TETRACHLOROETHYLENE	.	T	0.59	0.00
TRICHLOROETHYLENE	.	T	0.12	0.00
O-CRESOL	.	T	0.30	0.00
O-DICHLOROBENZENE	.	N	0.00	0.00
O-ETHYLTOLUENE	.	0.52	0.52	0.00
O-XYLENE	.	2.81	2.81	0.00
1,1,1-TRICHLOROETHANE	.	15.07	15.07	0.00
1,1,2,2-TETRACHLOROETHANE	.	T	0.59	0.00
1,2-DICHLOROETHANE	.	0.81	0.81	0.00
1,2,3-TRIMETHYLBENZENE	.	0.67	0.67	0.00
1,2,4-TRIMETHLYBENZENE	.	1.83	1.83	0.00
1,3,5-TRIMETHYLBENZENE	.	T	0.44	0.00
2-ETHOXYETHYLACETATE	.	N	0.00	0.00

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HOSPITAL (NEW), TRIP 3, VISITORS LOUNGE, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	N	0.25	0.27
BENZENE	1.08	0.96	0.75	0.93	0.18
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.95	1.59	1.50	1.68	0.14
ISOPROPYLBENZENE	0.35	0.26	0.27	0.29	0.17
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.33	1.13	0.97	1.14	0.16
M-XYLENE	6.37	6.03	5.31	5.90	0.09
N-BUTYLACETATE	0.46	T	T	0.51	0.11
N-DECANE	2.04	1.46	T	1.40	0.48
N-DODECANE	0.97	N	T	0.44	1.11
N-PROPYLBENZENE	0.35	T	T	0.32	0.14
N-UNDECANE	2.57	2.38	1.50	2.15	0.26
P-DICHLOROBENZENE	6.24	6.62	6.11	6.32	0.04
STYRENE	1.33	1.26	1.15	1.25	0.07
TETRACHLOROETHYLENE	0.97	0.93	0.80	0.90	0.10
TRICHLOROETHYLENE	T	0.44	N	0.16	1.57
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.08	0.16
O-ETHYLTOLUENE	0.49	0.53	0.44	0.49	0.09
O-XYLENE	2.43	2.05	1.86	2.12	0.14
1,1,1-TRICHLOROETHANE	3.07	2.81	2.25	2.71	0.15
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	2.61	2.32	2.04	2.32	0.12
1,2,3-TRIMETHYLBENZENE	0.84	0.79	0.62	0.75	0.16
1,2,4-TRIMETHLYBENZENE	1.27	1.24	1.03	1.18	0.11
1,3,5-TRIMETHYLBENZENE	1.19	0.79	0.62	0.87	0.34
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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HOSPITAL (NEW), TRIP 3, VISITORS LOUNGE, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.18	0.16
BENZENE	5.12	5.29	4.42	4.94	0.09
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	5.73	4.45	4.85	5.01	0.13
ISOPROPYLBENZENE	0.68	0.51	0.58	0.59	0.14
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	T	T	T	0.13	0.57
M-ETHYLTOLUENE	3.30	2.99	2.72	3.00	0.10
M-XYLENE	15.00	14.67	14.47	14.71	0.02
N-BUTYLACETATE	0.95	0.91	0.92	0.93	0.02
N-DECANE	4.03	4.23	2.04	3.43	0.35
N-DODECANE	1.31	N	N	0.44	1.73
N-PROPYLBENZENE	0.78	0.58	0.68	0.68	0.14
N-UNDECANE	3.64	3.58	N	2.41	0.87
P-DICHLOROBENZENE	8.35	7.37	6.50	7.41	0.12
STYRENE	3.74	3.21	3.30	3.42	0.08
TETRACHLOROETHYLENE	2.82	2.55	2.23	2.53	0.12
TRICHLOROETHYLENE	T	N	N	0.06	0.28
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	0.15	T	T	0.13	0.22
O-ETHYLTOLUENE	1.17	1.75	0.97	1.30	0.31
O-XYLENE	5.73	4.67	4.66	5.02	0.12
1,1,1-TRICHLOROETHANE	21.43	24.71	23.35	23.16	0.07
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	2.18	1.17	0.97	1.44	0.45
1,2,3-TRIMETHYLBENZENE	1.94	1.90	1.17	1.67	0.26
1,2,4-TRIMETHLYBENZENE	2.70	2.89	2.49	2.70	0.07
1,3,5-TRIMETHYLBENZENE	0.73	0.80	0.68	0.74	0.08
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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HOSPITAL (NEW), TRIP 3, VISITORS LOUNGE, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	.	0.27	0.12
BENZENE	2.01	1.74	2.04	1.93	0.09
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.59	1.49	1.13	1.40	0.17
ISOPROPYLBENZENE	0.34	0.33	0.24	0.30	0.18
M-CRESOL	N	N	.	0.00	0.00
M-DICHLOROBENZENE	N	N	.	0.00	0.00
M-ETHYLTOLUENE	1.65	1.29	.	1.47	0.17
M-XYLENE	5.51	5.41	4.71	5.21	0.08
N-BUTYLACETATE	T	N	N	0.16	0.42
N-DECANE	3.91	3.21	.	3.56	0.14
N-DODECANE	1.19	N	.	0.60	1.41
N-PROPYLBENZENE	0.27	T	.	0.30	0.12
N-UNDECANE	3.73	2.27	.	3.00	0.35
P-DICHLOROBENZENE	N	10.20	.	5.10	1.41
STYRENE	1.33	1.23	0.96	1.17	0.16
TETRACHLOROETHYLENE	1.13	1.17	1.01	1.10	0.08
TRICHLOROETHYLENE	T	T	N	0.08	0.49
O-CRESOL	N	N	.	0.00	0.00
O-DICHLOROBENZENE	0.18	0.19	.	0.19	0.05
O-ETHYLTOLUENE	0.56	0.80	.	0.68	0.24
O-XYLENE	2.12	2.04	1.58	1.92	0.15
1,1,1-TRICHLOROETHANE	5.04	5.44	4.78	5.09	0.07
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	3.56	4.77	3.50	3.94	0.18
1,2,3-TRIMETHYLBENZENE	0.66	0.76	.	0.71	0.10
1,2,4-TRIMETHLYBENZENE	1.52	1.58	.	1.55	0.02
1,3,5-TRIMETHYLBENZENE	1.36	1.26	.	1.31	0.05
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 3, VISITORS LOUNGE, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	.	0.00	0.00
A-PINENE	N	.	0.00	0.00
BENZENE	9.75	.	9.75	0.00
BROMODICHLOROETHANE	N	.	0.00	0.00
ETHYLBENZENE	1.93	.	1.93	0.00
ISOPROPYLBENZENE	T	.	0.23	0.00
M-CRESOL	N	.	0.00	0.00
M-DICHLOROBENZENE	N	.	0.00	0.00
M-ETHYLTOLUENE	2.27	.	2.27	0.00
M-XYLENE	8.34	.	8.34	0.00
N-BUTYLACETATE	N	.	0.02	0.00
N-DECANE	13.37	.	13.37	0.00
N-DODECANE	1.65	.	1.65	0.00
N-PROPYLBENZENE	T	.	0.32	0.00
N-UNDECANE	5.90	.	5.90	0.00
P-DICHLOROBENZENE	12.77	.	12.77	0.00
STYRENE	1.67	.	1.67	0.00
TETRACHLOROETHYLENE	3.55	.	3.55	0.00
TRICHLOROETHYLENE	T	.	0.19	0.00
O-CRESOL	N	.	0.00	0.00
O-DICHLOROBENZENE	0.25	.	0.25	0.00
O-ETHYLTOLUENE	1.55	.	1.55	0.00
O-XYLENE	2.61	.	2.61	0.00
1,1,1-TRICHLOROETHANE	88.17	.	88.17	0.00
1,1,2,2-TETRACHLOROETHANE	N	.	0.00	0.00
1,2-DICHLOROETHANE	6.08	.	6.08	0.00
1,2,3-TRIMETHYLBENZENE	1.88	.	1.88	0.00
1,2,4-TRIMETHLYBENZENE	3.58	.	3.58	0.00
1,3,5-TRIMETHYLBENZENE	1.54	.	1.54	0.00
2-ETHOXYETHYLACETATE	N	.	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 3, NURSES STATION, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.46	0.33
BENZENE	1.91	1.93	2.50	2.11	0.16
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.01	4.77	5.88	5.55	0.12
ISOPROPYLBENZENE	0.22	0.20	T	0.20	0.12
M-CRESOL	T	T	T	0.47	0.10
M-DICHLOROBENZENE	1.57	N	N	0.52	1.73
M-ETHYLTOLUENE	1.17	0.98	0.96	1.04	0.11
M-XYLENE	19.33	19.35	21.23	19.97	0.05
N-BUTYLACETATE	T	T	T	0.37	0.16
N-DECANE	1.35	T	T	0.83	0.56
N-DODECANE	1.75	1.31	T	1.34	0.29
N-PROPYLBENZENE	0.31	T	T	0.28	0.11
N-UNDECANE	1.88	1.57	T	1.59	0.18
P-DICHLOROBENZENE	4.30	3.66	4.12	4.03	0.08
STYRENE	0.76	0.65	0.88	0.76	0.15
TETRACHLOROETHYLENE	0.81	0.78	0.79	0.79	0.02
TRICHLOROETHYLENE	0.21	T	T	0.20	0.15
O-CRESOL	T	N	N	0.05	0.99
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.40	0.33	0.35	0.36	0.11
O-XYLENE	4.39	3.79	4.04	4.07	0.07
1,1,1-TRICHLOROETHANE	2.94	2.78	2.94	2.88	0.03
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.01	1.73
1,2,3-TRIMETHYLBENZENE	0.40	0.33	0.35	0.36	0.11
1,2,4-TRIMETHLYBENZENE	1.55	1.35	1.46	1.46	0.07
1,3,5-TRIMETHYLBENZENE	0.63	0.46	T	0.51	0.21
2-ETHOXYETHYLACETATE	T	N	T	0.21	0.33

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 3, NURSES STATION, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.16	0.46
BENZENE	2.29	2.39	2.60	2.43	0.06
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.33	1.18	1.47	1.33	0.11
ISOPROPYLBENZENE	0.25	0.22	T	0.22	0.11
M-CRESOL	T	T	N	0.28	0.10
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.99	0.88	0.78	0.88	0.11
M-XYLENE	4.43	4.41	4.71	4.52	0.04
N-BUTYLACETATE	T	T	T	0.37	0.08
N-DECANE	1.53	T	T	1.05	0.45
N-DODECANE	1.18	T	N	0.64	0.93
N-PROPYLBENZENE	0.30	T	T	0.29	0.00
N-UNDECANE	1.53	T	N	0.73	1.05
P-DICHLOROBENZENE	2.66	2.43	2.55	2.55	0.05
STYRENE	0.59	0.59	0.69	0.62	0.09
TETRACHLOROETHYLENE	0.59	T	T	0.59	0.00
TRICHLOROETHYLENE	0.23	T	T	0.19	0.18
O-CRESOL	N	N	N	0.05	1.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.34	0.29	0.29	0.31	0.09
O-XYLENE	1.67	1.76	1.67	1.70	0.03
1,1,1-TRICHLOROETHANE	15.89	17.17	17.01	16.69	0.04
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.79	0.81	1.18	0.92	0.24
1,2,3-TRIMETHYLBENZENE	0.30	0.29	0.29	0.29	0.00
1,2,4-TRIMETHLYBENZENE	1.26	1.15	1.14	1.19	0.06
1,3,5-TRIMETHYLBENZENE	0.49	T	T	0.42	0.16
2-ETHOXYETHYLACETATE	T	N	N	0.15	0.34

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 3, NURSES STATION, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.10	0.89
BENZENE	0.82	0.83	0.58	0.74	0.19
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.46	1.46	1.24	1.39	0.09
ISOPROPYLBENZENE	0.31	0.26	0.27	0.28	0.09
M-CRESOL	N	N	.	0.00	0.00
M-DICHLOROBENZENE	N	N	.	0.00	0.00
M-ETHYLTOLUENE	1.06	0.93	.	0.99	0.10
M-XYLENE	5.18	4.83	4.87	4.96	0.04
N-BUTYLACETATE	0.51	0.96	T	0.68	0.36
N-DECANE	1.42	T	.	0.94	0.72
N-DODECANE	N	T	.	0.33	1.41
N-PROPYLBENZENE	0.31	T	T	0.28	0.09
N-UNDECANE	2.30	1.32	.	1.81	0.38
P-DICHLOROBENZENE	6.86	6.09	.	6.48	0.08
STYRENE	0.84	0.79	0.80	0.81	0.03
TETRACHLOROETHYLENE	1.02	0.99	0.97	0.99	0.02
TRICHLOROETHYLENE	T	T	N	0.06	1.36
O-CRESOL	N	N	.	0.00	0.00
O-DICHLOROBENZENE	T	T	.	0.08	0.20
O-ETHYLTOLUENE	0.49	0.40	.	0.44	0.14
O-XYLENE	1.90	1.79	1.77	1.82	0.04
1,1,1-TRICHLOROETHANE	3.69	3.67	2.96	3.44	0.12
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	2.79	2.78	2.30	2.62	0.11
1,2,3-TRIMETHYLBENZENE	0.66	0.53	.	0.60	0.16
1,2,4-TRIMETHLYBENZENE	1.27	1.10	.	1.19	0.10
1,3,5-TRIMETHYLBENZENE	0.53	0.46	.	0.50	0.10
2-ETHOXYETHYLACETATE	0.62	T	N	0.44	0.53

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 3, NURSES STATION, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	N	0.47	0.42
BENZENE	1.78	1.35	1.70	1.61	0.14
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.80	3.43	2.91	3.38	0.13
ISOPROPYLBENZENE	0.59	0.51	0.39	0.49	0.20
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	2.10	1.97	1.46	1.84	0.18
M-XYLENE	11.22	10.66	10.00	10.63	0.06
N-BUTYLACETATE	1.39	1.20	1.12	1.24	0.11
N-DECANE	3.61	3.28	2.04	2.98	0.28
N-DODECANE	1.80	1.31	N	1.04	0.90
N-PROPYLBENZENE	0.59	0.51	T	0.53	0.10
N-UNDECANE	2.73	3.36	1.55	2.55	0.36
P-DICHLOROBENZENE	7.80	8.18	7.77	7.92	0.03
STYRENE	1.56	1.31	1.26	1.38	0.12
TETRACHLOROETHYLENE	3.12	2.92	2.62	2.89	0.09
TRICHLOROETHYLENE	T	T	N	0.12	0.50
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	0.20	T	T	0.18	0.16
O-ETHYLTOLUENE	0.93	0.80	0.97	0.90	0.10
O-XYLENE	4.78	4.09	3.98	4.28	0.10
1,1,1-TRICHLOROETHANE	19.34	21.93	23.83	21.70	0.10
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	2.05	1.68	1.17	1.63	0.27
1,2,3-TRIMETHYLBENZENE	1.02	0.88	0.78	0.89	0.14
1,2,4-TRIMETHLYBENZENE	2.28	2.24	2.01	2.17	0.07
1,3,5-TRIMETHYLBENZENE	0.63	1.02	0.97	0.88	0.24
2-ETHOXYETHYLACETATE	N	N	T	0.10	1.73

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 3, NURSES STATION, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.06	1.73
A-PINENE	T	N	N	0.18	0.71
BENZENE	1.22	1.50	1.13	1.28	0.15
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.12	0.97	0.75	0.95	0.20
ISOPROPYLBENZENE	0.25	0.31	T	0.25	0.27
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.99	0.99	0.71	0.90	0.18
M-XYLENE	4.44	3.99	3.38	3.94	0.14
N-BUTYLACETATE	T	T	T	0.27	0.58
N-DECANE	3.39	1.99	T	2.01	0.68
N-DODECANE	1.14	N	T	0.56	1.03
N-PROPYLBENZENE	T	T	T	0.20	0.24
N-UNDECANE	2.75	1.61	1.75	2.04	0.30
P-DICHLOROBENZENE	11.82	12.93	11.61	12.12	0.06
STYRENE	0.71	0.71	0.57	0.66	0.12
TETRACHLOROETHYLENE	1.39	1.21	1.02	1.21	0.15
TRICHLOROETHYLENE	0.20	T	N	0.16	0.46
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	0.20	0.19	T	0.18	0.12
O-ETHYLTOLUENE	0.57	0.47	0.40	0.48	0.18
O-XYLENE	1.67	1.51	1.27	1.48	0.14
1,1,1-TRICHLOROETHANE	6.07	5.77	4.68	5.50	0.13
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	4.71	4.53	3.96	4.40	0.09
1,2,3-TRIMETHYLBENZENE	0.72	0.04	0.38	0.38	0.89
1,2,4-TRIMETHLYBENZENE	1.49	1.44	1.07	1.33	0.17
1,3,5-TRIMETHYLBENZENE	0.57	0.51	T	0.46	0.28
2-ETHOXYETHYLACETATE	T	N	N	0.10	0.48

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 3, PATIENT ROOM, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.29	0.30
A-PINENE	T	T	N	0.34	0.39
BENZENE	2.14	2.04	2.31	2.16	0.06
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	5.37	5.85	6.13	5.79	0.07
ISOPROPYLBENZENE	0.22	0.25	0.28	0.25	0.12
M-CRESOL	T	T	N	0.32	0.81
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.23	1.38	1.32	1.31	0.06
M-XYLENE	17.27	20.31	22.45	20.01	0.13
N-BUTYLACETATE	0.42	T	T	0.44	0.07
N-DECANE	1.10	1.13	T	1.06	0.10
N-DODECANE	1.89	1.64	T	1.59	0.21
N-PROPYLBENZENE	0.31	0.38	T	0.35	0.11
N-UNDECANE	1.76	1.82	1.70	1.76	0.04
P-DICHLOROBENZENE	3.52	3.96	3.77	3.75	0.06
STYRENE	0.79	0.94	1.04	0.92	0.13
TETRACHLOROETHYLENE	1.19	1.32	1.32	1.28	0.06
TRICHLOROETHYLENE	0.29	0.29	T	0.31	0.09
O-CRESOL	N	N	N	0.06	0.26
O-DICHLOROBENZENE	T	T	N	0.03	0.87
O-ETHYLTOLUENE	0.40	0.44	0.47	0.44	0.09
O-XYLENE	4.14	4.72	4.62	4.49	0.07
1,1,1-TRICHLOROETHANE	3.50	2.99	3.16	3.21	0.08
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.44	0.50	0.47	0.47	0.07
1,2,4-TRIMETHLYBENZENE	1.57	1.74	1.85	1.72	0.08
1,3,5-TRIMETHYLBENZENE	0.57	0.69	0.66	0.64	0.10
2-ETHOXYETHYLACETATE	T	T	N	0.23	0.34

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 3, PATIENT ROOM, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.18	0.54
A-PINENE	T	N	N	0.23	0.43
BENZENE	2.60	2.88	3.28	2.92	0.12
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.80	1.75	1.98	1.84	0.07
ISOPROPYLBENZENE	0.34	0.29	0.31	0.31	0.08
M-CRESOL	T	T	T	0.48	0.28
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.21	1.09	1.25	1.19	0.07
M-XYLENE	5.83	5.99	6.87	6.23	0.09
N-BUTYLACETATE	0.51	T	T	0.60	0.14
N-DECANE	2.52	1.82	T	1.97	0.25
N-DODECANE	N	1.24	N	0.41	1.73
N-PROPYLBENZENE	0.34	T	T	0.37	0.10
N-UNDECANE	1.75	1.31	T	1.54	0.14
P-DICHLOROBENZENE	2.52	2.63	2.81	2.65	0.05
STYRENE	1.02	0.95	1.15	1.04	0.10
TETRACHLOROETHYLENE	1.21	1.17	1.25	1.21	0.03
TRICHLOROETHYLENE	0.27	0.34	T	0.29	0.13
O-CRESOL	T	N	N	0.06	0.89
O-DICHLOROBENZENE	T	N	N	0.02	1.73
O-ETHYLTOLUENE	0.39	0.36	0.42	0.39	0.07
O-XYLENE	2.23	2.34	2.60	2.39	0.08
1,1,1-TRICHLOROETHANE	18.18	21.49	25.47	21.71	0.17
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.02	1.02	0.94	0.99	0.05
1,2,3-TRIMETHYLBENZENE	0.39	0.36	0.42	0.39	0.07
1,2,4-TRIMETHLYBENZENE	1.44	1.51	1.63	1.53	0.06
1,3,5-TRIMETHYLBENZENE	0.63	0.51	T	0.59	0.11
2-ETHOXYETHYLACETATE	T	T	N	0.23	0.08

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 3, PATIENT ROOM, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.52	0.42
A-PINENE	T	N	N	0.23	0.31
BENZENE	1.18	0.70	1.47	1.12	0.35
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.87	2.01	2.05	1.98	0.05
ISOPROPYLBENZENE	0.40	0.47	0.36	0.41	0.14
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.34	1.34	1.43	1.37	0.04
M-XYLENE	6.56	6.91	7.59	7.02	0.07
N-BUTYLACETATE	0.56	0.84	T	0.69	0.21
N-DECANE	1.65	T	T	1.00	0.58
N-DODECANE	1.07	T	T	0.68	0.49
N-PROPYLBENZENE	0.40	0.40	T	0.42	0.06
N-UNDECANE	1.96	1.81	T	1.71	0.19
P-DICHLOROBENZENE	6.92	7.18	8.30	7.47	0.10
STYRENE	1.16	1.21	1.34	1.24	0.07
TETRACHLOROETHYLENE	2.50	2.68	2.86	2.68	0.07
TRICHLOROETHYLENE	T	T	N	0.09	0.37
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	0.13	T	T	0.12	0.22
O-ETHYLTOLUENE	0.58	0.54	0.54	0.55	0.05
O-XYLENE	2.63	2.75	3.12	2.84	0.09
1,1,1-TRICHLOROETHANE	3.55	3.86	4.42	3.94	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	2.86	3.36	3.84	3.35	0.15
1,2,3-TRIMETHYLBENZENE	0.62	0.74	0.71	0.69	0.09
1,2,4-TRIMETHLYBENZENE	1.59	1.72	1.84	1.72	0.07
1,3,5-TRIMETHYLBENZENE	0.71	0.87	0.80	0.80	0.10
2-ETHOXYETHYLACETATE	0.89	T	T	0.68	0.27

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

HOSPITAL (NEW), TRIP 3, PATIENT ROOM, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.55	0.62
A-PINENE	T	N	T	0.32	0.48
BENZENE	1.43	2.37	1.89	1.90	0.25
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.03	4.16	4.47	4.22	0.05
ISOPROPYLBENZENE	0.58	0.58	0.68	0.62	0.09
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	2.09	1.82	2.43	2.11	0.14
M-XYLENE	11.36	12.19	14.56	12.70	0.13
N-BUTYLACETATE	1.24	1.72	1.12	1.36	0.23
N-DECANE	3.50	2.99	4.37	3.93	0.16
N-DODECANE	.	1.39	2.82	2.10	0.48
N-PROPYLBENZENE	0.58	0.66	0.68	0.64	0.08
N-UNDECANE	.	2.77	3.88	3.33	0.24
P-DICHLOROBENZENE	7.23	7.52	9.51	8.37	0.19
STYRENE	1.70	1.97	1.94	1.87	0.08
TETRACHLOROETHYLENE	4.22	4.60	5.24	4.69	0.11
TRICHLOROETHYLENE	T	T	N	0.14	0.51
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	0.19	T	0.29	0.24	0.28
O-ETHYLTOLUENE	0.87	0.88	1.46	1.07	0.31
O-XYLENE	4.76	5.04	5.63	5.14	0.09
1,1,1-TRICHLOROETHANE	18.28	23.03	30.24	23.85	0.25
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	2.14	2.77	1.46	2.12	0.31
1,2,3-TRIMETHYLBENZENE	1.02	.	1.36	1.19	0.20
1,2,4-TRIMETHLYBENZENE	2.27	2.46	2.98	2.57	0.14
1,3,5-TRIMETHYLBENZENE	0.68	1.17	0.78	0.87	0.30
2-ETHOXYETHYLACETATE	1.12	1.09	T	1.06	0.07

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 3, PATIENT ROOM, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.13	1.73
A-PINENE	T	T	N	0.26	0.51
BENZENE	1.69	2.22	2.31	2.07	0.16
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.31	1.34	1.22	1.29	0.05
ISOPROPYLBENZENE	0.35	0.34	0.30	0.33	0.09
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	1.22
M-ETHYLTOLUENE	1.40	1.40	1.10	1.30	0.13
M-XYLENE	5.58	5.48	5.59	5.55	0.01
N-BUTYLACETATE	0.55	0.98	0.80	0.78	0.28
N-DECANE	4.22	2.88	2.54	3.21	0.28
N-DODECANE	1.43	1.24	N	0.89	0.87
N-PROPYLBENZENE	0.30	T	T	0.26	0.20
N-UNDECANE	3.17	3.26	3.42	3.29	0.04
P-DICHLOROBENZENE	11.07	12.82	13.93	12.61	0.11
STYRENE	0.87	0.99	1.05	0.97	0.10
TETRACHLOROETHYLENE	2.58	2.75	3.13	2.82	0.10
TRICHLOROETHYLENE	0.30	0.36	0.45	0.37	0.20
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	0.22	0.30	0.29	0.27	0.17
O-ETHYLTOLUENE	0.73	0.63	0.56	0.64	0.14
O-XYLENE	2.32	2.31	2.21	2.28	0.03
1,1,1-TRICHLOROETHANE	6.49	7.68	9.77	7.98	0.21
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	4.15	4.70	5.47	4.77	0.14
1,2,3-TRIMETHYLBENZENE	0.83	0.85	0.67	0.78	0.13
1,2,4-TRIMETHLYBENZENE	1.93	1.78	1.68	1.80	0.07
1,3,5-TRIMETHYLBENZENE	0.87	0.72	0.69	0.76	0.13
2-ETHOXYETHYLACETATE	T	T	N	0.18	0.47

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 3, OUTDOORS, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.08	0.51
BENZENE	2.54	1.87	2.43	2.28	0.16
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.68	1.27	1.33	1.42	0.16
ISOPROPYLBENZENE	0.13	T	T	0.12	0.21
M-CRESOL	T	T	T	0.42	0.43
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.19	0.89	0.97	1.02	0.16
M-XYLENE	5.04	3.92	4.78	4.58	0.13
N-BUTYLACETATE	0.42	T	T	0.37	0.20
N-DECANE	T	N	N	0.05	6.13
N-DODECANE	T	N	N	0.06	1.73
N-PROPYLBENZENE	0.27	T	T	0.24	0.18
N-UNDECANE	T	T	N	0.31	0.26
P-DICHLOROBENZENE	0.31	T	T	0.28	0.11
STYRENE	N	0.38	0.53	0.30	0.90
TETRACHLOROETHYLENE	0.53	T	T	0.47	0.11
TRICHLOROETHYLENE	T	N	N	0.05	0.51
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.35	0.32	0.35	0.34	0.06
O-XYLENE	1.46	1.14	1.33	1.31	0.12
1,1,1-TRICHLOROETHANE	1.48	1.04	1.10	1.21	0.20
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.01	1.73
1,2,3-TRIMETHYLBENZENE	0.27	0.19	0.27	0.24	0.18
1,2,4-TRIMETHLYBENZENE	1.53	1.24	1.39	1.39	0.10
1,3,5-TRIMETHYLBENZENE	0.44	T	T	0.42	0.09
2-ETHOXYETHYLACETATE	N	N	N	0.01	1.73

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 3, OUTDOORS, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	0.69	0.90	1.49	1.03	0.40
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.38	0.29	0.48	0.38	0.25
ISOPROPYLBENZENE	T	N	N	0.02	1.73
M-CRESOL	T	T	T	0.49	0.20
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.48	0.36	0.58	0.47	0.23
M-XYLENE	0.91	0.72	1.06	0.90	0.19
N-BUTYLACETATE	N	N	T	0.12	0.94
N-DECANE	N	N	N	0.00	0.00
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	N	N	0.09	0.16
N-UNDECANE	N	N	N	0.08	1.25
P-DICHLOROBENZENE	T	T	T	0.24	0.53
STYRENE	0.14	T	0.38	0.22	0.62
TETRACHLOROETHYLENE	T	T	T	0.24	0.35
TRICHLOROETHYLENE	N	N	N	0.00	0.00
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.14	0.14	0.19	0.16	0.18
O-XYLENE	0.38	0.72	T	0.50	0.39
1,1,1-TRICHLOROETHANE	0.55	0.83	1.30	0.89	0.42
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	0.72	1.06	0.66	0.67
1,2,3-TRIMETHYLBENZENE	0.10	0.07	0.19	0.12	0.53
1,2,4-TRIMETHLYBENZENE	0.46	0.34	0.45	0.42	0.17
1,3,5-TRIMETHYLBENZENE	T	T	T	0.16	0.18
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 3, OUTDOORS, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	MEAN	RSD
A-EPICHLOROHYDRIN	.	N	0.00	0.00
A-PINENE	.	N	0.00	0.00
BENZENE	.	0.89	0.89	0.00
BROMODICHLOROETHANE	.	N	0.00	0.00
ETHYLBENZENE	.	0.59	0.59	0.00
ISOPROPYLBENZENE	.	N	0.00	0.00
M-CRESOL	.	N	0.00	0.00
M-DICHLOROBENZENE	.	N	0.00	0.00
M-ETHYLTOLUENE	.	0.42	0.42	0.00
M-XYLENE	.	N	0.00	0.00
N-BUTYLACETATE	.	1.06	1.06	0.00
N-DECANE	.	N	0.00	0.00
N-DODECANE	.	N	0.00	0.00
N-PROPYLBENZENE	.	T	0.17	0.00
N-UNDECANE	.	N	0.00	0.00
P-DICHLOROBENZENE	.	T	0.25	0.00
STYRENE	.	0.25	0.25	0.00
TETRACHLOROETHYLENE	.	T	0.42	0.00
TRICHLOROETHYLENE	.	N	0.00	0.00
O-CRESOL	.	N	0.00	0.00
O-DICHLOROBENZENE	.	N	0.00	0.00
O-ETHYLTOLUENE	.	0.17	0.17	0.00
O-XYLENE	.	0.68	0.68	0.00
1,1,1-TRICHLOROETHANE	.	2.84	2.84	0.00
1,1,2,2-TETRACHLOROETHANE	.	N	0.00	0.00
1,2-DICHLOROETHANE	.	3.73	3.73	0.00
1,2,3-TRIMETHYLBENZENE	.	0.08	0.08	0.00
1,2,4-TRIMETHLYBENZENE	.	0.65	0.65	0.00
1,3,5-TRIMETHYLBENZENE	.	T	0.17	0.00
2-ETHOXYETHYLACETATE	.	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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HOSPITAL (NEW), TRIP 3, OUTDOORS, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	MEAN	RSD
A-EPICHLOROHYDRIN	.	N	0.00	0.00
A-PINENE	.	N	0.00	0.00
BENZENE	.	1.47	1.47	0.00
BROMODICHLOROETHANE	.	N	0.00	0.00
ETHYLBENZENE	.	0.57	0.57	0.00
ISOPROPYLBENZENE	.	N	0.00	0.00
M-CRESOL	.	N	0.00	0.00
M-DICHLOROBENZENE	.	N	0.00	0.00
M-ETHYLTOLUENE	.	T	0.22	0.00
M-XYLENE	.	1.67	1.67	0.00
N-BUTYLACETATE	.	T	0.60	0.00
N-DECANE	.	N	0.00	0.00
N-DODECANE	.	N	0.00	0.00
N-PROPYLBENZENE	.	N	0.05	0.00
N-UNDECANE	.	N	0.00	0.00
P-DICHLOROBENZENE	.	T	0.23	0.00
STYRENE	.	0.35	0.35	0.00
TETRACHLOROETHYLENE	.	T	0.31	0.00
TRICHLOROETHYLENE	.	N	0.00	0.00
O-CRESOL	.	N	0.00	0.00
O-DICHLOROBENZENE	.	N	0.03	0.00
O-ETHYLTOLUENE	.	0.15	0.15	0.00
O-XYLENE	.	0.49	0.49	0.00
1,1,1-TRICHLOROETHANE	.	1.86	1.86	0.00
1,1,2,2-TETRACHLOROETHANE	.	N	0.00	0.00
1,2-DICHLOROETHANE	.	1.60	1.60	0.00
1,2,3-TRIMETHYLBENZENE	.	0.03	0.03	0.00
1,2,4-TRIMETHLYBENZENE	.	0.35	0.35	0.00
1,3,5-TRIMETHYLBENZENE	.	T	0.16	0.00
2-ETHOXYETHYLACETATE	.	N	0.06	0.00

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (OLD), TRIP 1, UNOCCUPIED APARTMENT, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.64	0.30
BENZENE	2.33	3.13	4.47	3.31	0.33
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.79	1.05	1.37	1.07	0.27
ISOPROPYLBENZENE	0.12	T	T	0.15	0.15
M-CRESOL	T	T	T	0.56	0.13
M-DICHLOROBENZENE	N	N	N	0.02	0.27
M-ETHYLTOLUENE	0.80	1.09	1.00	0.96	0.15
M-XYLENE	2.38	3.20	3.97	3.18	0.25
N-BUTYLACETATE	T	T	T	0.23	0.19
N-DECANE	1.26	1.57	1.87	1.57	0.19
N-DODECANE	T	T	T	0.45	0.24
N-PROPYLBENZENE	T	T	T	0.21	0.14
N-UNDECANE	1.01	1.31	1.55	1.29	0.21
P-DICHLOROBENZENE	0.22	T	T	0.28	0.17
STYRENE	0.95	1.26	1.45	1.22	0.21
TETRACHLOROETHYLENE	0.59	0.76	0.87	0.74	0.19
TRICHLOROETHYLENE	0.19	T	0.48	0.30	0.52
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.08	0.15
O-ETHYLTOLUENE	0.23	0.31	0.29	0.27	0.15
O-XYLENE	0.40	1.02	1.25	0.89	0.49
1,1,1-TRICHLOROETHANE	2.36	2.99	6.21	3.86	0.54
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.09	0.29
1,2,3-TRIMETHYLBENZENE	0.46	0.61	0.96	0.68	0.38
1,2,4-TRIMETHLYBENZENE	0.87	1.11	1.17	1.05	0.15
1,3,5-TRIMETHYLBENZENE	T	T	T	0.24	0.15
2-ETHOXYETHYLACETATE	0.61	T	T	0.56	0.09

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (OLD), TRIP 1, UNOCCUPIED APARTMENT, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.56	0.20
BENZENE	2.56	3.03	3.21	2.94	0.11
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.71	0.69	0.76	0.72	0.05
ISOPROPYLBENZENE	T	T	T	0.10	0.21
M-CRESOL	T	T	T	0.56	0.41
M-DICHLOROBENZENE	N	N	N	0.04	0.72
M-ETHYLTOLUENE	0.51	0.50	0.65	0.55	0.15
M-XYLENE	1.91	1.91	2.21	2.01	0.09
N-BUTYLACETATE	T	T	T	0.43	0.10
N-DECANE	1.33	1.29	1.94	1.52	0.24
N-DODECANE	T	T	T	0.41	0.22
N-PROPYLBENZENE	T	T	T	0.12	0.12
N-UNDECANE	1.23	T	T	1.22	0.11
P-DICHLOROBENZENE	T	T	T	0.20	0.11
STYRENE	1.14	1.16	1.14	1.14	0.01
TETRACHLOROETHYLENE	1.05	0.95	1.09	1.03	0.07
TRICHLOROETHYLENE	0.56	T	T	0.37	0.48
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.07	0.42
O-ETHYLTOLUENE	0.16	0.16	0.19	0.17	0.10
O-XYLENE	0.57	0.58	0.69	0.61	0.11
1,1,1-TRICHLOROETHANE	6.17	2.49	3.69	4.12	0.46
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.10	0.21
1,2,3-TRIMETHYLBENZENE	0.46	0.47	0.52	0.49	0.07
1,2,4-TRIMETHLYBENZENE	0.48	0.48	0.58	0.52	0.11
1,3,5-TRIMETHYLBENZENE	T	N	N	0.10	0.19
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (OLD), TRIP 1, UNOCCUPIED APARTMENT, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.77	0.15
BENZENE	2.13	2.92	3.72	2.92	0.27
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.66	0.80	0.81	0.76	0.11
ISOPROPYLBENZENE	T	T	T	0.10	0.20
M-CRESOL	T	T	T	0.57	0.28
M-DICHLOROBENZENE	N	N	N	0.01	0.62
M-ETHYLTOLUENE	0.69	0.87	0.99	0.85	0.17
M-XYLENE	1.93	2.33	2.51	2.26	0.13
N-BUTYLACETATE	T	N	N	0.11	0.12
N-DECANE	1.53	2.03	2.60	2.05	0.26
N-DODECANE	T	T	T	0.37	0.08
N-PROPYLBENZENE	T	T	T	0.17	0.13
N-UNDECANE	1.03	1.10	T	1.10	0.06
P-DICHLOROBENZENE	T	T	T	0.21	0.12
STYRENE	0.65	0.77	0.86	0.76	0.14
TETRACHLOROETHYLENE	0.60	0.68	T	0.67	0.10
TRICHLOROETHYLENE	T	T	T	0.10	0.14
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.04	0.16
O-ETHYLTOLUENE	0.22	0.25	0.28	0.25	0.13
O-XYLENE	0.70	0.82	0.88	0.80	0.11
1,1,1-TRICHLOROETHANE	1.64	1.77	1.76	1.72	0.04
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.08	0.15
1,2,3-TRIMETHYLBENZENE	0.46	0.95	1.03	0.81	0.38
1,2,4-TRIMETHLYBENZENE	0.76	0.87	0.96	0.87	0.12
1,3,5-TRIMETHYLBENZENE	T	T	T	0.20	0.10
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (OLD), TRIP 1, UNOCCUPIED APARTMENT, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.68	0.15
BENZENE	2.37	2.50	2.83	2.57	0.09
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.71	0.53	0.88	0.71	0.25
ISOPROPYLBENZENE	T	T	T	0.09	0.15
M-CRESOL	T	T	T	0.55	0.28
M-DICHLOROBENZENE	N	N	N	0.03	0.51
M-ETHYLTOLUENE	0.55	0.53	0.72	0.60	0.17
M-XYLENE	1.88	1.65	2.46	2.00	0.21
N-BUTYLACETATE	T	T	N	0.21	0.06
N-DECANE	1.30	1.21	2.22	1.57	0.36
N-DODECANE	T	T	T	0.41	0.23
N-PROPYLBENZENE	T	T	T	0.14	0.20
N-UNDECANE	1.05	1.09	1.62	1.25	0.25
P-DICHLOROBENZENE	T	T	T	0.21	0.17
STYRENE	0.87	0.70	0.98	0.85	0.17
TETRACHLOROETHYLENE	0.74	0.66	0.95	0.78	0.19
TRICHLOROETHYLENE	T	T	T	0.12	0.24
O-CRESOL	0.75	0.77	0.90	0.80	0.10
O-DICHLOROBENZENE	T	N	T	0.04	0.29
O-ETHYLTOLUENE	0.17	0.17	0.12	0.15	0.19
O-XYLENE	0.62	0.65	0.83	0.70	0.16
1,1,1-TRICHLOROETHANE	1.36	1.21	1.57	1.38	0.13
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.07	0.26
1,2,3-TRIMETHYLBENZENE	0.43	0.45	0.61	0.50	0.20
1,2,4-TRIMETHLYBENZENE	0.62	0.53	0.73	0.62	0.16
1,3,5-TRIMETHYLBENZENE	T	T	T	0.13	0.19
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (OLD), TRIP 1, UNOCCUPIED APARTMENT, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	.	N	N	0.00	0.00
A-PINENE	.	T	T	0.73	0.02
BENZENE	.	1.69	3.44	2.57	0.48
BROMODICHLOROETHANE	.	N	N	0.00	0.00
ETHYLBENZENE	.	1.04	1.15	1.09	0.07
ISOPROPYLBENZENE	.	T	T	0.14	0.12
M-CRESOL	.	T	T	0.83	0.06
M-DICHLOROBENZENE	.	N	N	0.04	0.23
M-ETHYLTOLUENE	.	0.86	1.20	1.03	0.23
M-XYLENE	.	2.86	3.58	3.22	0.16
N-BUTYLACETATE	.	N	T	0.19	1.41
N-DECANE	.	T	T	1.13	0.24
N-DODECANE	.	T	N	0.27	0.05
N-PROPYLBENZENE	.	T	T	0.25	0.15
N-UNDECANE	.	T	T	1.00	0.10
P-DICHLOROBENZENE	.	T	T	0.33	0.20
STYRENE	.	1.38	1.71	1.55	0.15
TETRACHLOROETHYLENE	.	0.97	1.18	1.08	0.14
TRICHLOROETHYLENE	.	T	T	0.18	0.57
O-CRESOL	.	T	T	0.25	0.01
O-DICHLOROBENZENE	.	T	T	0.09	0.05
O-ETHYLTOLUENE	.	0.26	0.34	0.30	0.18
O-XYLENE	.	0.96	1.19	1.07	0.15
1,1,1-TRICHLOROETHANE	.	6.37	8.66	7.51	0.22
1,1,2,2-TETRACHLOROETHANE	.	N	N	0.00	0.00
1,2-DICHLOROETHANE	.	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	.	0.56	0.76	0.66	0.22
1,2,4-TRIMETHLYBENZENE	.	0.92	1.24	1.08	0.21
1,3,5-TRIMETHYLBENZENE	.	T	T	0.29	0.14
2-ETHOXYETHYLACETATE	.	N	N	0.00	0.00

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NURSING HOME (OLD), TRIP 1, UNOCCUPIED APARTMENT, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.58	0.56
BENZENE	2.13	12.35	3.27	5.92	0.95
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.99	1.10	1.62	1.24	0.27
ISOPROPYLBENZENE	0.13	T	T	0.15	0.30
M-CRESOL	0.82	4.30	T	1.84	1.16
M-DICHLOROBENZENE	T	T	N	0.09	0.88
M-ETHYLTOLUENE	0.69	0.83	1.21	0.91	0.29
M-XYLENE	2.87	3.44	5.50	3.94	0.35
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	1.00	1.20	1.72	1.30	0.28
N-DODECANE	T	T	T	0.33	0.16
N-PROPYLBENZENE	T	T	T	0.23	0.22
N-UNDECANE	0.89	T	T	1.02	0.24
P-DICHLOROBENZENE	0.25	T	T	0.31	0.21
STYRENE	2.28	3.60	1.55	2.48	0.42
TETRACHLOROETHYLENE	0.67	0.83	1.13	0.88	0.26
TRICHLOROETHYLENE	T	T	1.05	0.47	1.05
O-CRESOL	T	1.27	T	0.58	1.05
O-DICHLOROBENZENE	T	0.26	T	0.14	0.79
O-ETHYLTOLUENE	0.21	0.24	0.35	0.26	0.28
O-XYLENE	1.00	1.28	1.93	1.40	0.34
1,1,1-TRICHLOROETHANE	1.51	1.03	3.56	2.03	0.66
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.08	0.42
1,2,3-TRIMETHYLBENZENE	0.60	1.13	0.60	0.78	0.39
1,2,4-TRIMETHLYBENZENE	0.69	0.81	1.12	0.88	0.25
1,3,5-TRIMETHYLBENZENE	0.30	T	T	0.25	0.25
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (OLD), TRIP 1, TV LOUNGE, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.68	0.20
BENZENE	2.06	3.02	3.51	2.86	0.26
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.67	1.08	0.92	0.89	0.23
ISOPROPYLBENZENE	T	T	T	0.13	0.23
M-CRESOL	T	T	T	0.57	0.59
M-DICHLOROBENZENE	N	N	N	0.04	0.15
M-ETHYLTOLUENE	0.83	1.27	1.00	1.04	0.21
M-XYLENE	2.00	3.18	2.76	2.64	0.23
N-BUTYLACETATE	0.42	T	T	0.48	0.12
N-DECANE	1.41	2.43	2.17	2.00	0.26
N-DODECANE	1.20	T	T	0.83	0.41
N-PROPYLBENZENE	T	T	T	0.22	0.25
N-UNDECANE	1.31	1.89	1.71	1.63	0.18
P-DICHLOROBENZENE	0.29	0.45	T	0.36	0.22
STYRENE	0.74	1.27	1.02	1.01	0.26
TETRACHLOROETHYLENE	0.69	1.02	0.90	0.87	0.19
TRICHLOROETHYLENE	T	T	T	0.18	0.26
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.06	0.23
O-ETHYLTOLUENE	0.23	0.38	0.30	0.30	0.23
O-XYLENE	0.72	1.11	0.91	0.91	0.21
1,1,1-TRICHLOROETHANE	1.52	2.13	1.96	1.87	0.17
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.06	0.13
1,2,3-TRIMETHYLBENZENE	0.47	0.71	0.58	0.59	0.20
1,2,4-TRIMETHLYBENZENE	0.89	1.39	1.12	1.13	0.22
1,3,5-TRIMETHYLBENZENE	T	T	T	0.29	0.29
2-ETHOXYETHYLACETATE	T	T	T	0.42	0.22

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (OLD), TRIP 1, TV LOUNGE, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.91	T	T	0.85	0.06
BENZENE	2.33	2.79	2.83	2.65	0.10
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.63	0.66	0.73	0.68	0.08
ISOPROPYLBENZENE	T	T	T	0.11	0.04
M-CRESOL	T	N	N	0.34	0.24
M-DICHLOROBENZENE	N	N	N	0.02	0.35
M-ETHYLTOLUENE	0.81	0.87	0.88	0.86	0.04
M-XYLENE	1.92	1.97	2.09	1.99	0.05
N-BUTYLACETATE	0.69	T	T	0.56	0.22
N-DECANE	2.70	2.80	2.99	2.83	0.05
N-DODECANE	1.92	1.54	1.64	1.70	0.12
N-PROPYLBENZENE	T	T	T	0.18	0.04
N-UNDECANE	3.14	3.07	3.09	3.10	0.01
P-DICHLOROBENZENE	0.31	T	T	0.31	0.04
STYRENE	0.76	0.86	0.89	0.84	0.08
TETRACHLOROETHYLENE	1.16	1.22	1.39	1.25	0.09
TRICHLOROETHYLENE	T	T	T	0.17	0.28
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.05	0.15
O-ETHYLTOLUENE	0.34	0.35	0.37	0.35	0.04
O-XYLENE	0.64	0.66	0.71	0.67	0.05
1,1,1-TRICHLOROETHANE	1.82	1.86	2.60	2.09	0.21
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.10	0.11
1,2,3-TRIMETHYLBENZENE	0.86	0.96	1.12	0.98	0.13
1,2,4-TRIMETHLYBENZENE	1.25	1.25	1.31	1.27	0.03
1,3,5-TRIMETHYLBENZENE	T	T	T	0.28	0.06
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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NURSING HOME (OLD), TRIP 1, TV LOUNGE, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.34	T	T	1.10	0.19
BENZENE	2.52	2.55	3.06	2.71	0.11
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.94	0.70	0.78	0.80	0.15
ISOPROPYLBENZENE	0.15	T	T	0.13	0.15
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.34
M-ETHYLTOLUENE	1.21	1.05	1.16	1.14	0.07
M-XYLENE	2.95	2.20	2.52	2.56	0.15
N-BUTYLACETATE	0.73	T	T	0.63	0.33
N-DECANE	2.95	2.63	3.05	2.88	0.08
N-DODECANE	1.79	1.26	T	1.44	0.21
N-PROPYLBENZENE	0.27	T	T	0.24	0.12
N-UNDECANE	3.03	2.28	2.58	2.63	0.14
P-DICHLOROBENZENE	0.35	T	T	0.31	0.09
STYRENE	0.81	0.70	0.81	0.77	0.08
TETRACHLOROETHYLENE	1.08	0.78	0.84	0.90	0.18
TRICHLOROETHYLENE	T	T	T	0.09	0.11
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.04	0.18
O-ETHYLTOLUENE	0.52	0.41	0.42	0.45	0.13
O-XYLENE	1.09	0.81	0.89	0.93	0.15
1,1,1-TRICHLOROETHANE	1.59	1.19	1.38	1.38	0.14
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	1.44	1.15	1.60	1.40	0.17
1,2,4-TRIMETHLYBENZENE	2.00	1.48	1.66	1.71	0.15
1,3,5-TRIMETHYLBENZENE	0.49	T	T	0.41	0.18
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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NURSING HOME (OLD), TRIP 1, TV LOUNGE, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.14	1.17	T	1.08	0.12
BENZENE	1.93	2.09	2.48	2.17	0.13
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.57	0.59	0.75	0.64	0.16
ISOPROPYLBENZENE	T	T	T	0.10	0.20
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	1.15
M-ETHYLTOLUENE	0.59	0.81	0.63	0.68	0.18
M-XYLENE	1.68	1.72	1.90	1.76	0.07
N-BUTYLACETATE	N	T	T	0.20	1.07
N-DECANE	2.29	2.60	2.63	2.51	0.07
N-DODECANE	T	T	T	0.65	0.10
N-PROPYLBENZENE	T	T	T	0.14	0.04
N-UNDECANE	1.87	1.90	1.79	1.85	0.03
P-DICHLOROBENZENE	0.30	T	T	0.30	0.05
STYRENE	0.67	1.15	0.76	0.86	0.30
TETRACHLOROETHYLENE	1.06	1.12	0.99	1.06	0.06
TRICHLOROETHYLENE	T	T	T	0.11	0.12
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	T	0.04	0.27
O-ETHYLTOLUENE	0.24	0.25	0.21	0.23	0.08
O-XYLENE	0.58	0.61	0.66	0.62	0.07
1,1,1-TRICHLOROETHANE	1.40	1.34	1.23	1.32	0.06
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.87	1.01	0.61	0.83	0.25
1,2,4-TRIMETHLYBENZENE	0.79	0.82	0.78	0.79	0.03
1,3,5-TRIMETHYLBENZENE	T	T	N	0.17	0.16
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (OLD), TRIP 1, TV LOUNGE, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.48	1.13	T	1.20	0.20
BENZENE	2.81	2.54	2.23	2.53	0.11
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.85	0.99	0.87	0.90	0.08
ISOPROPYLBENZENE	0.14	T	T	0.13	0.09
M-CRESOL	T	T	T	0.66	0.27
M-DICHLOROBENZENE	N	N	N	0.01	0.18
M-ETHYLTOLUENE	1.25	1.11	0.93	1.09	0.14
M-XYLENE	2.69	2.97	2.59	2.75	0.07
N-BUTYLACETATE	3.45	1.80	1.62	2.29	0.44
N-DECANE	1.63	1.45	T	1.42	0.16
N-DODECANE	1.00	T	T	0.73	0.34
N-PROPYLBENZENE	0.26	T	T	0.24	0.08
N-UNDECANE	1.43	1.41	T	1.30	0.16
P-DICHLOROBENZENE	0.37	0.41	T	0.38	0.07
STYRENE	1.20	1.08	1.07	1.12	0.06
TETRACHLOROETHYLENE	1.09	1.31	1.13	1.18	0.10
TRICHLOROETHYLENE	0.21	T	N	0.14	0.47
O-CRESOL	1.21	1.50	1.12	1.28	0.15
O-DICHLOROBENZENE	T	T	T	0.06	0.09
O-ETHYLTOLUENE	0.33	0.35	0.32	0.33	0.05
O-XYLENE	1.21	1.12	0.91	1.08	0.14
1,1,1-TRICHLOROETHANE	3.15	2.55	1.94	2.55	0.24
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.02	1.73
1,2,3-TRIMETHYLBENZENE	0.61	0.67	0.65	0.64	0.05
1,2,4-TRIMETHLYBENZENE	1.20	1.32	1.18	1.24	0.06
1,3,5-TRIMETHYLBENZENE	0.31	T	T	0.30	0.12
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (OLD), TRIP 1, TV LOUNGE, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.30	1.20	T	1.24	0.05
BENZENE	1.38	2.51	2.25	2.05	0.29
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.19	1.18	1.27	1.21	0.04
ISOPROPYLBENZENE	0.15	T	T	0.16	0.12
M-CRESOL	T	T	T	0.66	0.27
M-DICHLOROBENZENE	N	T	N	0.04	1.15
M-ETHYLTOLUENE	0.84	0.97	0.95	0.92	0.08
M-XYLENE	4.06	3.95	4.43	4.15	0.06
N-BUTYLACETATE	0.81	1.00	1.02	0.94	0.13
N-DECANE	2.10	2.00	2.10	2.07	0.03
N-DODECANE	0.95	T	T	0.97	0.03
N-PROPYLBENZENE	T	T	T	0.23	0.07
N-UNDECANE	1.80	1.70	1.70	1.74	0.03
P-DICHLOROBENZENE	0.40	0.45	T	0.45	0.12
STYRENE	0.93	1.07	1.35	1.12	0.20
TETRACHLOROETHYLENE	1.40	1.40	1.39	1.40	0.00
TRICHLOROETHYLENE	T	T	T	0.22	0.11
O-CRESOL	1.60	1.60	1.70	1.64	0.04
O-DICHLOROBENZENE	T	T	T	0.11	0.74
O-ETHYLTOLUENE	0.28	0.31	0.31	0.30	0.06
O-XYLENE	1.39	1.49	1.59	1.49	0.07
1,1,1-TRICHLOROETHANE	1.58	1.82	1.66	1.69	0.07
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.06	0.07
1,2,3-TRIMETHYLBENZENE	0.64	0.73	0.72	0.70	0.07
1,2,4-TRIMETHLYBENZENE	0.97	1.06	1.05	1.03	0.05
1,3,5-TRIMETHYLBENZENE	T	T	T	0.27	0.12
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (OLD), TRIP 1, OCCUPIED APARTMENT, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.69	T	T	0.54	0.31
BENZENE	2.97	3.52	2.84	3.11	0.12
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.05	1.07	0.84	0.99	0.13
ISOPROPYLBENZENE	0.19	0.19	T	0.18	0.14
M-CRESOL	1.54	T	N	0.79	0.85
M-DICHLOROBENZENE	T	N	T	0.07	0.82
M-ETHYLTOLUENE	1.03	1.06	0.76	0.95	0.17
M-XYLENE	3.10	3.20	2.44	2.91	0.14
N-BUTYLACETATE	T	T	T	0.31	0.50
N-DECANE	1.59	1.56	T	1.47	0.12
N-DODECANE	T	T	N	0.34	0.90
N-PROPYLBENZENE	0.22	T	T	0.21	0.13
N-UNDECANE	1.44	1.13	T	1.16	0.22
P-DICHLOROBENZENE	0.33	T	T	0.29	0.17
STYRENE	1.15	1.34	1.02	1.17	0.13
TETRACHLOROETHYLENE	0.76	0.82	T	0.72	0.17
TRICHLOROETHYLENE	0.30	0.37	T	0.30	0.23
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.06	0.16
O-ETHYLTOLUENE	0.32	0.28	0.22	0.27	0.18
O-XYLENE	1.03	1.05	0.78	0.95	0.16
1,1,1-TRICHLOROETHANE	3.35	4.77	2.94	3.69	0.26
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.09	0.03
1,2,3-TRIMETHYLBENZENE	0.57	0.74	0.41	0.58	0.28
1,2,4-TRIMETHLYBENZENE	1.12	1.03	0.76	0.97	0.19
1,3,5-TRIMETHYLBENZENE	T	T	T	0.23	0.17
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (OLD), TRIP 1, OCCUPIED APARTMENT, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.75	T	T	0.59	0.25
BENZENE	4.25	5.20	4.10	4.52	0.13
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.09	1.21	0.96	1.09	0.12
ISOPROPYLBENZENE	0.14	T	T	0.14	0.14
M-CRESOL	T	N	N	0.37	0.32
M-DICHLOROBENZENE	N	N	N	0.02	0.61
M-ETHYLTOLUENE	0.80	0.87	0.64	0.77	0.15
M-XYLENE	3.38	3.54	2.78	3.23	0.12
N-BUTYLACETATE	T	T	T	0.39	0.39
N-DECANE	1.99	2.21	2.15	2.11	0.05
N-DODECANE	T	T	T	0.49	0.08
N-PROPYLBENZENE	T	T	T	0.18	0.15
N-UNDECANE	1.56	1.76	T	1.52	0.18
P-DICHLOROBENZENE	T	T	T	0.20	0.24
STYRENE	1.37	1.45	1.26	1.36	0.07
TETRACHLOROETHYLENE	1.34	1.44	1.32	1.37	0.05
TRICHLOROETHYLENE	0.21	T	0.80	0.41	0.83
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.06	0.51
O-ETHYLTOLUENE	0.24	0.25	0.19	0.23	0.16
O-XYLENE	0.96	1.00	0.75	0.90	0.15
1,1,1-TRICHLOROETHANE	3.20	3.01	7.97	4.73	0.59
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.10	0.01
1,2,3-TRIMETHYLBENZENE	0.62	0.80	0.56	0.66	0.19
1,2,4-TRIMETHLYBENZENE	0.76	0.75	0.55	0.69	0.17
1,3,5-TRIMETHYLBENZENE	T	T	N	0.14	0.23
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (OLD), TRIP 1, OCCUPIED APARTMENT, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.93	T	T	0.80	0.33
BENZENE	2.79	3.30	2.71	2.93	0.11
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.91	0.95	0.64	0.84	0.20
ISOPROPYLBENZENE	0.12	T	T	0.11	0.29
M-CRESOL	T	N	T	0.33	0.25
M-DICHLOROBENZENE	N	N	N	0.01	0.23
M-ETHYLTOLUENE	1.03	1.03	0.67	0.91	0.23
M-XYLENE	2.80	2.98	1.98	2.59	0.21
N-BUTYLACETATE	N	N	N	0.11	0.51
N-DECANE	2.03	2.46	2.17	2.22	0.10
N-DODECANE	T	T	N	0.30	0.37
N-PROPYLBENZENE	T	T	T	0.18	0.25
N-UNDECANE	1.33	1.46	T	1.26	0.19
P-DICHLOROBENZENE	0.24	T	T	0.21	0.27
STYRENE	0.79	1.00	0.61	0.80	0.24
TETRACHLOROETHYLENE	0.86	0.86	T	0.75	0.26
TRICHLOROETHYLENE	T	T	N	0.11	0.20
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.04	0.06
O-ETHYLTOLUENE	0.29	0.31	0.20	0.27	0.22
O-XYLENE	0.96	1.01	0.65	0.87	0.22
1,1,1-TRICHLOROETHANE	2.11	2.13	1.40	1.88	0.22
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.08	0.17
1,2,3-TRIMETHYLBENZENE	0.83	1.03	0.84	0.90	0.13
1,2,4-TRIMETHLYBENZENE	0.99	1.07	0.70	0.92	0.21
1,3,5-TRIMETHYLBENZENE	T	T	T	0.22	0.29
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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NURSING HOME (OLD), TRIP 1, OCCUPIED APARTMENT, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.19	T	T	0.93	0.34
BENZENE	3.94	4.10	3.23	3.76	0.12
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.10	1.14	0.72	0.98	0.24
ISOPROPYLBENZENE	0.15	T	T	0.14	0.12
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	1.09
M-ETHYLTOLUENE	0.95	0.86	0.59	0.80	0.24
M-XYLENE	3.32	3.34	2.20	2.96	0.22
N-BUTYLACETATE	T	T	T	0.22	0.16
N-DECANE	2.38	2.29	2.05	2.24	0.08
N-DODECANE	T	T	N	0.41	0.40
N-PROPYLBENZENE	T	T	T	0.19	0.20
N-UNDECANE	1.63	1.40	T	1.38	0.18
P-DICHLOROBENZENE	0.26	T	T	0.22	0.23
STYRENE	1.25	1.50	0.91	1.22	0.24
TETRACHLOROETHYLENE	1.21	1.16	T	1.05	0.23
TRICHLOROETHYLENE	T	T	T	0.14	0.16
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.05	0.14
O-ETHYLTOLUENE	0.28	0.27	0.20	0.25	0.18
O-XYLENE	1.03	1.06	0.69	0.93	0.22
1,1,1-TRICHLOROETHANE	4.68	4.60	2.94	4.07	0.24
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	1.15	1.39	1.61	1.38	0.17
1,2,4-TRIMETHLYBENZENE	0.85	0.81	0.50	0.72	0.26
1,3,5-TRIMETHYLBENZENE	T	T	N	0.16	0.21
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (OLD), TRIP 1, OCCUPIED APARTMENT, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.08	T	T	0.83	0.43
BENZENE	2.69	3.23	2.72	2.88	0.11
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.19	1.19	0.91	1.10	0.15
ISOPROPYLBENZENE	0.18	0.20	T	0.16	0.25
M-CRESOL	1.46	T	T	1.03	0.38
M-DICHLOROBENZENE	N	N	N	0.02	0.79
M-ETHYLTOLUENE	1.13	1.18	0.78	1.03	0.21
M-XYLENE	3.48	3.63	2.74	3.28	0.15
N-BUTYLACETATE	T	1.14	T	0.61	0.80
N-DECANE	1.35	1.24	T	1.13	0.26
N-DODECANE	T	N	N	0.21	0.38
N-PROPYLBENZENE	0.25	T	T	0.23	0.18
N-UNDECANE	1.09	1.11	T	1.00	0.17
P-DICHLOROBENZENE	0.32	T	T	0.31	0.15
STYRENE	1.42	1.55	1.46	1.47	0.05
TETRACHLOROETHYLENE	1.02	1.06	T	0.92	0.22
TRICHLOROETHYLENE	0.22	T	T	0.17	0.29
O-CRESOL	1.26	0.85	0.80	0.97	0.26
O-DICHLOROBENZENE	T	T	T	0.07	0.21
O-ETHYLTOLUENE	0.32	0.34	0.23	0.29	0.20
O-XYLENE	1.29	1.21	0.94	1.15	0.16
1,1,1-TRICHLOROETHANE	6.81	7.88	5.69	6.79	0.16
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.61	0.78	0.56	0.65	0.18
1,2,4-TRIMETHLYBENZENE	1.15	1.14	0.83	1.04	0.18
1,3,5-TRIMETHYLBENZENE	T	0.46	T	0.30	0.48
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (OLD), TRIP 1, OCCUPIED APARTMENT, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.13	T	T	0.92	0.31
BENZENE	3.11	4.32	4.48	3.97	0.19
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.98	1.79	1.44	1.73	0.16
ISOPROPYLBENZENE	0.27	0.26	T	0.24	0.16
M-CRESOL	1.03	1.50	T	1.07	0.38
M-DICHLOROBENZENE	N	N	N	0.02	0.89
M-ETHYLTOLUENE	1.29	1.21	0.91	1.14	0.17
M-XYLENE	6.53	5.88	4.72	5.71	0.16
N-BUTYLACETATE	0.46	T	T	0.38	0.27
N-DECANE	1.72	1.81	T	1.60	0.18
N-DODECANE	T	T	N	0.36	0.31
N-PROPYLBENZENE	0.30	T	T	0.27	0.15
N-UNDECANE	1.35	1.32	T	1.21	0.18
P-DICHLOROBENZENE	0.31	T	T	0.29	0.12
STYRENE	1.80	1.75	1.48	1.68	0.10
TETRACHLOROETHYLENE	1.33	1.16	0.93	1.14	0.18
TRICHLOROETHYLENE	T	T	0.56	0.35	0.56
O-CRESOL	T	T	N	0.28	0.29
O-DICHLOROBENZENE	T	T	T	0.10	0.65
O-ETHYLTOLUENE	0.35	0.35	0.29	0.33	0.11
O-XYLENE	2.01	1.85	1.51	1.79	0.14
1,1,1-TRICHLOROETHANE	2.46	2.23	3.94	2.88	0.32
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.07	0.14
1,2,3-TRIMETHYLBENZENE	0.90	1.27	0.67	0.95	0.32
1,2,4-TRIMETHLYBENZENE	1.14	1.16	0.92	1.07	0.12
1,3,5-TRIMETHYLBENZENE	T	T	T	0.36	0.23
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (OLD), TRIP 1, OUTDOORS, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.73	2.41	2.75	2.30	0.23
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	T	T	T	0.12	0.30
ISOPROPYLBENZENE	N	N	N	0.01	0.16
M-CRESOL	N	N	N	0.12	0.24
M-DICHLOROBENZENE	N	N	N	0.01	0.86
M-ETHYLTOLUENE	T	N	N	0.06	0.21
M-XYLENE	0.16	0.19	0.24	0.20	0.19
N-BUTYLACETATE	T	T	T	0.36	0.49
N-DECANE	T	T	T	0.46	0.32
N-DODECANE	N	N	N	0.10	0.23
N-PROPYLBENZENE	N	N	N	0.02	0.08
N-UNDECANE	N	N	N	0.16	0.10
P-DICHLOROBENZENE	N	N	N	0.03	0.14
STYRENE	0.19	0.21	0.37	0.26	0.38
TETRACHLOROETHYLENE	0.43	T	T	0.42	0.06
TRICHLOROETHYLENE	T	N	T	0.08	0.38
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.03	0.33
O-ETHYLTOLUENE	0.02	0.02	0.02	0.02	0.09
O-XYLENE	T	N	N	0.07	0.16
1,1,1-TRICHLOROETHANE	1.39	1.24	1.86	1.49	0.22
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.07	0.07
1,2,3-TRIMETHYLBENZENE	0.26	0.39	0.36	0.34	0.19
1,2,4-TRIMETHLYBENZENE	T	N	N	0.05	0.15
1,3,5-TRIMETHYLBENZENE	N	N	N	0.00	0.00
2-ETHOXYETHYLACETATE	N	N	N	0.05	0.20

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (OLD), TRIP 1, OUTDOORS, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.22	0.17
BENZENE	2.35	2.75	3.75	2.95	0.24
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.53	0.52	0.74	0.60	0.21
ISOPROPYLBENZENE	T	T	T	0.07	0.25
M-CRESOL	N	N	N	0.12	0.40
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.84	0.84	1.09	0.92	0.15
M-XYLENE	1.67	1.63	2.23	1.84	0.18
N-BUTYLACETATE	N	N	N	0.08	0.31
N-DECANE	0.78	T	T	0.96	0.32
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	T	T	0.17	0.18
N-UNDECANE	T	N	N	0.24	0.18
P-DICHLOROBENZENE	T	T	N	0.10	0.08
STYRENE	0.73	0.33	0.54	0.53	0.37
TETRACHLOROETHYLENE	T	T	T	0.42	0.15
TRICHLOROETHYLENE	T	N	N	0.06	0.18
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.18
O-ETHYLTOLUENE	0.22	0.23	0.29	0.25	0.16
O-XYLENE	0.61	0.59	0.81	0.67	0.17
1,1,1-TRICHLOROETHANE	1.37	1.16	1.56	1.36	0.15
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.06	0.30
1,2,3-TRIMETHYLBENZENE	0.53	0.74	1.08	0.78	0.36
1,2,4-TRIMETHLYBENZENE	0.93	0.91	1.10	0.98	0.11
1,3,5-TRIMETHYLBENZENE	T	T	T	0.24	0.15
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (OLD), TRIP 1, OUTDOORS, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.61	1.96	2.72	2.10	0.27
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.18	0.20	0.28	0.22	0.24
ISOPROPYLBENZENE	N	N	N	0.02	0.18
M-CRESOL	T	N	N	0.26	0.26
M-DICHLOROBENZENE	N	N	N	0.01	0.83
M-ETHYLTOLUENE	T	T	T	0.13	0.12
M-XYLENE	0.35	0.42	0.50	0.42	0.18
N-BUTYLACETATE	T	T	T	0.23	0.44
N-DECANE	T	T	1.76	1.06	0.58
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	N	N	N	0.04	0.18
N-UNDECANE	N	N	N	0.18	0.47
P-DICHLOROBENZENE	N	N	N	0.04	0.10
STYRENE	0.17	0.22	0.41	0.27	0.49
TETRACHLOROETHYLENE	0.36	T	T	0.32	0.14
TRICHLOROETHYLENE	T	T	N	0.07	0.02
O-CRESOL	N	N	N	0.04	0.47
O-DICHLOROBENZENE	T	N	N	0.02	0.19
O-ETHYLTOLUENE	0.03	0.04	0.04	0.04	0.12
O-XYLENE	T	T	T	0.15	0.12
1,1,1-TRICHLOROETHANE	1.12	0.90	1.01	1.01	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.07	0.18
1,2,3-TRIMETHYLBENZENE	0.29	0.28	0.27	0.28	0.03
1,2,4-TRIMETHLYBENZENE	0.12	T	T	0.10	0.16
1,3,5-TRIMETHYLBENZENE	N	N	N	0.01	0.59
2-ETHOXYETHYLACETATE	N	N	N	0.07	0.25

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (OLD), TRIP 1, OUTDOORS, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.07	0.92
BENZENE	2.89	7.04	2.97	4.30	0.55
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.92	0.82	1.07	0.94	0.13
ISOPROPYLBENZENE	T	T	T	0.09	0.27
M-CRESOL	T	T	N	0.28	0.58
M-DICHLOROBENZENE	T	0.33	N	0.16	0.99
M-ETHYLTOLUENE	0.98	T	1.46	0.89	0.70
M-XYLENE	2.37	1.96	2.94	2.42	0.20
N-BUTYLACETATE	T	T	1.14	0.49	1.14
N-DECANE	N	N	N	0.00	0.00
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	0.26	T	T	0.27	0.11
N-UNDECANE	N	N	N	0.07	0.87
P-DICHLOROBENZENE	T	T	T	0.23	0.12
STYRENE	0.61	3.27	0.60	1.49	1.03
TETRACHLOROETHYLENE	0.78	0.62	0.92	0.77	0.20
TRICHLOROETHYLENE	T	T	T	0.10	0.15
O-CRESOL	T	T	N	0.08	0.91
O-DICHLOROBENZENE	0.24	0.26	T	0.20	0.43
O-ETHYLTOLUENE	0.26	0.91	0.37	0.52	0.67
O-XYLENE	0.91	0.81	1.08	0.93	0.15
1,1,1-TRICHLOROETHANE	1.22	0.89	1.34	1.15	0.20
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.09	0.08
1,2,3-TRIMETHYLBENZENE	0.48	0.87	0.72	0.69	0.29
1,2,4-TRIMETHLYBENZENE	0.98	N	1.52	0.84	0.92
1,3,5-TRIMETHYLBENZENE	T	T	T	0.30	0.28
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (OLD), TRIP 1, OUTDOORS, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.65	2.46	6.39	3.50	0.73
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.74	0.61	0.61	0.65	0.11
ISOPROPYLBENZENE	T	T	T	0.07	0.07
M-CRESOL	N	N	N	0.16	0.23
M-DICHLOROBENZENE	N	N	N	0.03	0.49
M-ETHYLTOLUENE	T	T	T	0.20	0.03
M-XYLENE	2.58	2.25	2.11	2.31	0.10
N-BUTYLACETATE	T	T	T	0.39	0.21
N-DECANE	N	N	N	0.03	1.73
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	N	N	0.05	0.51
N-UNDECANE	N	N	N	0.03	1.73
P-DICHLOROBENZENE	T	T	N	0.13	0.14
STYRENE	0.30	0.42	1.20	0.64	0.77
TETRACHLOROETHYLENE	0.49	T	T	0.42	0.15
TRICHLOROETHYLENE	T	T	T	0.18	0.21
O-CRESOL	N	N	N	0.03	0.33
O-DICHLOROBENZENE	T	T	T	0.08	0.60
O-ETHYLTOLUENE	0.06	0.06	0.05	0.06	0.11
O-XYLENE	0.94	0.80	0.77	0.84	0.10
1,1,1-TRICHLOROETHANE	1.56	1.49	1.19	1.41	0.14
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.05	0.17
1,2,3-TRIMETHYLBENZENE	0.34	1.49	3.52	1.78	0.90
1,2,4-TRIMETHLYBENZENE	0.22	T	T	0.17	0.26
1,3,5-TRIMETHYLBENZENE	N	N	N	0.05	0.38
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE (OLD), TRIP 1, 3RD FLOOR HALLWAY, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.41	0.16
BENZENE	4.52	3.12	4.28	3.97	0.19
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.77	5.67	8.21	6.88	0.19
ISOPROPYLBENZENE	0.56	0.51	0.72	0.60	0.18
M-CRESOL	T	1.65	T	1.14	0.43
M-DICHLOROBENZENE	N	N	N	0.03	0.43
M-ETHYLTOLUENE	4.54	3.93	3.00	3.82	0.20
M-XYLENE	19.44	17.35	25.89	20.89	0.21
N-BUTYLACETATE	2.86	3.22	5.97	4.02	0.42
N-DECANE	2.30	1.95	2.75	2.33	0.17
N-DODECANE	1.46	1.14	T	1.35	0.14
N-PROPYLBENZENE	0.89	0.80	1.17	0.95	0.20
N-UNDECANE	2.98	2.44	3.23	2.88	0.14
P-DICHLOROBENZENE	0.60	0.54	0.76	0.64	0.18
STYRENE	1.92	1.54	2.29	1.91	0.20
TETRACHLOROETHYLENE	4.37	3.80	5.49	4.55	0.19
TRICHLOROETHYLENE	0.93	0.53	0.82	0.76	0.27
O-CRESOL	1.05	1.05	1.16	1.09	0.06
O-DICHLOROBENZENE	T	T	T	0.06	0.17
O-ETHYLTOLUENE	1.21	1.06	1.49	1.25	0.17
O-XYLENE	5.83	4.99	7.31	6.05	0.19
1,1,1-TRICHLOROETHANE	19.00	16.64	24.11	19.92	0.19
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.10	0.31
1,2,3-TRIMETHYLBENZENE	1.40	1.34	1.78	1.51	0.16
1,2,4-TRIMETHLYBENZENE	4.86	4.22	5.94	5.01	0.17
1,3,5-TRIMETHYLBENZENE	1.34	1.25	1.70	1.43	0.17
2-ETHOXYETHYLACETATE	3.02	2.76	2.89	2.89	0.05

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OFFICE (OLD), TRIP 1, 3RD FLOOR HALLWAY, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.35	0.02
BENZENE	5.44	2.58	3.26	3.76	0.40
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	10.11	8.32	10.79	9.74	0.13
ISOPROPYLBENZENE	0.69	0.55	0.69	0.65	0.12
M-CRESOL	T	1.10	T	0.78	0.35
M-DICHLOROBENZENE	N	N	N	0.04	0.96
M-ETHYLTOLUENE	4.86	4.35	5.31	4.84	0.10
M-XYLENE	21.29	23.16	30.81	25.09	0.20
N-BUTYLACETATE	1.07	1.08	1.29	1.15	0.11
N-DECANE	1.93	1.59	1.99	1.84	0.12
N-DODECANE	1.00	T	T	0.97	0.12
N-PROPYLBENZENE	1.01	0.86	1.07	0.98	0.11
N-UNDECANE	2.19	1.91	2.27	2.13	0.09
P-DICHLOROBENZENE	0.50	0.42	0.54	0.49	0.12
STYRENE	1.90	1.23	1.47	1.53	0.22
TETRACHLOROETHYLENE	1.81	1.47	1.79	1.69	0.11
TRICHLOROETHYLENE	1.39	0.75	0.83	0.99	0.35
O-CRESOL	0.40	N	N	0.19	0.92
O-DICHLOROBENZENE	T	T	T	0.08	0.23
O-ETHYLTOLUENE	1.32	1.14	1.40	1.29	0.10
O-XYLENE	8.75	7.58	9.46	8.60	0.11
1,1,1-TRICHLOROETHANE	27.13	32.32	45.93	35.13	0.28
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.05	0.34
1,2,3-TRIMETHYLBENZENE	1.43	1.07	1.37	1.29	0.15
1,2,4-TRIMETHLYBENZENE	4.72	4.59	5.56	4.96	0.11
1,3,5-TRIMETHYLBENZENE	1.57	1.38	1.68	1.54	0.10
2-ETHOXYETHYLACETATE	3.68	3.45	4.39	3.84	0.13

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OFFICE (OLD), TRIP 1, 3RD FLOOR HALLWAY, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.52	0.24
BENZENE	6.33	4.79	5.24	5.46	0.15
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	8.63	7.43	7.71	7.92	0.08
ISOPROPYLBENZENE	0.78	0.67	0.68	0.71	0.08
M-CRESOL	T	T	T	0.63	0.32
M-DICHLOROBENZENE	N	N	N	0.05	0.65
M-ETHYLTOLUENE	7.10	6.05	6.39	6.51	0.08
M-XYLENE	23.78	22.12	22.77	22.89	0.04
N-BUTYLACETATE	3.63	3.19	9.20	5.34	0.63
N-DECANE	2.65	2.26	2.09	2.33	0.12
N-DODECANE	1.56	1.14	T	1.29	0.18
N-PROPYLBENZENE	1.44	1.21	1.24	1.30	0.10
N-UNDECANE	3.20	2.39	2.45	2.68	0.17
P-DICHLOROBENZENE	0.74	0.59	0.64	0.66	0.11
STYRENE	2.63	2.06	2.97	2.55	0.18
TETRACHLOROETHYLENE	8.19	7.03	6.89	7.37	0.10
TRICHLOROETHYLENE	0.88	0.81	0.47	0.72	0.31
O-CRESOL	1.29	1.00	0.95	1.08	0.17
O-DICHLOROBENZENE	T	T	N	0.05	0.10
O-ETHYLTOLUENE	1.97	1.62	1.68	1.76	0.11
O-XYLENE	8.79	7.47	7.41	7.89	0.10
1,1,1-TRICHLOROETHANE	30.00	27.90	27.20	28.37	0.05
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.10	0.14
1,2,3-TRIMETHYLBENZENE	2.01	1.59	1.75	1.78	0.12
1,2,4-TRIMETHLYBENZENE	7.39	6.36	2.82	5.52	0.43
1,3,5-TRIMETHYLBENZENE	2.15	1.76	1.86	1.93	0.11
2-ETHOXYETHYLACETATE	3.84	3.58	3.65	3.69	0.04

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OFFICE (OLD), TRIP 1, 3RD FLOOR HALLWAY, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	N	0.27	0.23
BENZENE	4.72	4.89	5.50	5.04	0.08
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	12.38	11.91	13.12	12.47	0.05
ISOPROPYLBENZENE	1.06	1.00	1.05	1.04	0.03
M-CRESOL	T	T	T	0.58	0.10
M-DICHLOROBENZENE	N	T	N	0.04	0.56
M-ETHYLTOLUENE	7.66	7.50	8.33	7.83	0.06
M-XYLENE	25.48	32.03	34.79	30.77	0.16
N-BUTYLACETATE	1.41	1.64	2.42	1.82	0.29
N-DECANE	2.90	2.39	2.59	2.63	0.10
N-DODECANE	1.57	1.25	1.33	1.38	0.12
N-PROPYLBENZENE	1.63	1.49	1.59	1.57	0.05
N-UNDECANE	3.47	3.09	3.04	3.20	0.07
P-DICHLOROBENZENE	0.73	0.67	0.73	0.71	0.05
STYRENE	1.91	1.86	1.95	1.90	0.02
TETRACHLOROETHYLENE	3.60	3.22	3.69	3.50	0.07
TRICHLOROETHYLENE	0.61	0.35	0.38	0.45	0.31
O-CRESOL	T	N	N	0.12	0.17
O-DICHLOROBENZENE	T	T	T	0.09	0.16
O-ETHYLTOLUENE	2.17	1.93	2.07	2.06	0.06
O-XYLENE	11.30	10.73	11.97	11.33	0.05
1,1,1-TRICHLOROETHANE	31.98	39.48	44.27	38.58	0.16
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.06	0.18
1,2,3-TRIMETHYLBENZENE	1.88	1.84	1.87	1.86	0.01
1,2,4-TRIMETHLYBENZENE	6.56	7.46	7.93	7.32	0.10
1,3,5-TRIMETHYLBENZENE	2.52	2.30	2.42	2.41	0.04
2-ETHOXYETHYLACETATE	5.11	2.84	4.50	4.15	0.28

N = BELOW THE LIMIT OF DETECTION
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OFFICE (OLD), TRIP 1, 3RD FLOOR HALLWAY, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.62	0.25
BENZENE	9.69	8.53	11.63	9.95	0.16
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	12.30	9.67	14.12	12.03	0.19
ISOPROPYLBENZENE	1.06	0.79	1.14	1.00	0.18
M-CRESOL	0.91	T	N	0.51	0.69
M-DICHLOROBENZENE	N	N	N	0.00	3.26
M-ETHYLTOLUENE	9.71	6.92	10.98	9.21	0.23
M-XYLENE	37.34	30.50	46.68	38.17	0.21
N-BUTYLACETATE	3.05	3.53	3.51	3.36	0.08
N-DECANE	3.48	2.28	3.88	3.21	0.26
N-DODECANE	1.66	T	T	1.35	0.32
N-PROPYLBENZENE	1.81	1.37	2.05	1.74	0.20
N-UNDECANE	3.71	2.33	3.66	3.23	0.24
P-DICHLOROBENZENE	0.89	0.62	0.95	0.82	0.21
STYRENE	3.00	5.91	3.10	4.00	0.41
TETRACHLOROETHYLENE	7.83	6.06	8.88	7.59	0.19
TRICHLOROETHYLENE	0.97	0.76	0.99	0.91	0.15
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.07	0.09
O-ETHYLTOLUENE	2.60	1.83	2.74	2.39	0.20
O-XYLENE	13.32	9.31	14.56	12.40	0.22
1,1,1-TRICHLOROETHANE	62.91	52.94	72.84	62.90	0.16
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	2.85	1.87	2.71	2.48	0.21
1,2,4-TRIMETHLYBENZENE	10.01	7.08	11.33	9.47	0.23
1,3,5-TRIMETHYLBENZENE	2.79	2.01	2.97	2.59	0.20
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE (OLD), TRIP 1, 3RD FLOOR HALLWAY, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	.	0.00	0.00
A-PINENE	N	N	.	0.12	0.38
BENZENE	5.90	3.99	.	4.95	0.27
BROMODICHLOROETHANE	N	N	.	0.00	0.00
ETHYLBENZENE	9.64	6.61	.	8.13	0.26
ISOPROPYLBENZENE	1.25	0.77	.	1.01	0.34
M-CRESOL	1.02	T	.	0.90	0.20
M-DICHLOROBENZENE	N	N	.	0.00	2.31
M-ETHYLTOLUENE	8.63	5.89	.	7.26	0.27
M-XYLENE	27.38	20.88	.	24.13	0.19
N-BUTYLACETATE	2.07	N	.	1.04	1.41
N-DECANE	3.69	2.19	.	2.94	0.36
N-DODECANE	1.32	1.81	.	1.56	0.22
N-PROPYLBENZENE	1.87	1.16	.	1.52	0.33
N-UNDECANE	3.41	1.96	.	2.68	0.38
P-DICHLOROBENZENE	0.67	N	.	0.34	1.41
STYRENE	2.49	1.32	.	1.90	0.43
TETRACHLOROETHYLENE	1.89	1.19	.	1.54	0.32
TRICHLOROETHYLENE	0.65	0.40	.	0.53	0.34
O-CRESOL	T	N	.	0.05	1.41
O-DICHLOROBENZENE	0.13	N	.	0.07	1.41
O-ETHYLTOLUENE	2.10	1.38	.	1.74	0.29
O-XYLENE	9.89	6.69	.	8.29	0.27
1,1,1-TRICHLOROETHANE	25.42	23.42	.	24.42	0.06
1,1,2,2-TETRACHLOROETHANE	N	N	.	0.00	0.00
1,2-DICHLOROETHANE	N	N	.	0.08	0.17
1,2,3-TRIMETHYLBENZENE	1.93	T	.	0.96	1.41
1,2,4-TRIMETHLYBENZENE	7.74	5.22	.	6.48	0.28
1,3,5-TRIMETHYLBENZENE	2.41	1.59	.	2.00	0.29
2-ETHOXYETHYLACETATE	N	0.67	.	0.34	1.41

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (OLD), TRIP 1, 5TH FLOOR HALLWAY, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	.	N	N	0.00	0.00
A-PINENE	.	T	N	0.30	0.13
BENZENE	.	3.28	3.66	3.47	0.08
BROMODICHLOROETHANE	.	N	N	0.00	0.00
ETHYLBENZENE	.	5.31	5.55	5.43	0.03
ISOPROPYLBENZENE	.	0.55	0.46	0.50	0.12
M-CRESOL	.	N	T	0.69	1.41
M-DICHLOROBENZENE	.	N	N	0.02	1.63
M-ETHYLTOLUENE	.	3.87	3.82	3.85	0.01
M-XYLENE	.	16.87	16.76	16.82	0.00
N-BUTYLACETATE	.	N	T	0.16	1.41
N-DECANE	.	1.84	T	1.67	0.14
N-DODECANE	.	T	T	1.00	0.09
N-PROPYLBENZENE	.	N	0.85	0.46	1.17
N-UNDECANE	.	2.42	2.12	2.27	0.09
P-DICHLOROBENZENE	.	0.72	0.68	0.70	0.04
STYRENE	.	2.12	T	1.11	1.29
TETRACHLOROETHYLENE	.	N	N	0.00	0.00
TRICHLOROETHYLENE	.	0.41	0.42	0.42	0.02
O-CRESOL	.	N	N	0.10	1.41
O-DICHLOROBENZENE	.	T	N	0.06	0.21
O-ETHYLTOLUENE	.	0.71	0.32	0.51	0.55
O-XYLENE	.	5.02	5.11	5.07	0.01
1,1,1-TRICHLOROETHANE	.	21.24	20.63	20.93	0.02
1,1,2,2-TETRACHLOROETHANE	.	N	N	0.00	0.00
1,2-DICHLOROETHANE	.	N	N	0.04	1.41
1,2,3-TRIMETHYLBENZENE	.	1.48	7.95	4.71	0.97
1,2,4-TRIMETHLYBENZENE	.	5.00	4.42	4.71	0.09
1,3,5-TRIMETHYLBENZENE	.	1.15	1.35	1.25	0.11
2-ETHOXYETHYLACETATE	.	2.49	1.87	2.18	0.20

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (OLD), TRIP 1, 5TH FLOOR HALLWAY, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.87	T	T	0.79	0.15
BENZENE	4.47	4.96	5.55	4.99	0.11
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	18.22	23.50	36.59	26.10	0.36
ISOPROPYLBENZENE	0.93	0.91	1.51	1.12	0.30
M-CRESOL	T	N	T	0.42	0.70
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	4.98	4.19	8.08	5.75	0.36
M-XYLENE	33.57	49.92	84.49	55.99	0.46
N-BUTYLACETATE	2.04	2.24	3.35	2.54	0.28
N-DECANE	2.25	1.77	3.24	2.42	0.31
N-DODECANE	1.65	T	1.83	1.36	0.49
N-PROPYLBENZENE	1.01	0.96	1.62	1.20	0.31
N-UNDECANE	4.25	2.38	5.38	4.00	0.38
P-DICHLOROBENZENE	0.57	0.47	0.92	0.65	0.36
STYRENE	2.35	2.41	3.88	2.88	0.30
TETRACHLOROETHYLENE	2.50	3.08	3.78	3.12	0.20
TRICHLOROETHYLENE	0.92	0.78	1.14	0.95	0.19
O-CRESOL	N	N	N	0.03	0.94
O-DICHLOROBENZENE	T	N	T	0.05	0.30
O-ETHYLTOLUENE	1.38	1.16	2.13	1.55	0.33
O-XYLENE	13.43	17.81	27.75	19.66	0.37
1,1,1-TRICHLOROETHANE	61.99	109.16	151.14	107.43	0.42
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	T	N	0.11	0.32
1,2,3-TRIMETHYLBENZENE	1.29	1.04	2.19	1.51	0.40
1,2,4-TRIMETHLYBENZENE	5.40	4.61	8.52	6.18	0.33
1,3,5-TRIMETHYLBENZENE	1.53	1.36	2.41	1.76	0.32
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE (OLD), TRIP 1, 5TH FLOOR HALLWAY, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	N	0.54	0.33
BENZENE	4.45	5.51	4.77	4.91	0.11
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.39	8.80	5.99	7.06	0.22
ISOPROPYLBENZENE	0.62	0.87	0.56	0.68	0.24
M-CRESOL	T	T	T	0.58	0.10
M-DICHLOROBENZENE	N	N	N	0.02	0.67
M-ETHYLTOLUENE	5.44	6.96	5.09	5.83	0.17
M-XYLENE	18.45	26.42	18.24	21.04	0.22
N-BUTYLACETATE	3.14	3.39	2.25	2.93	0.20
N-DECANE	1.92	2.54	1.58	2.01	0.24
N-DODECANE	1.30	1.30	T	1.11	0.29
N-PROPYLBENZENE	1.08	1.47	1.01	1.19	0.21
N-UNDECANE	2.49	2.93	2.05	2.49	0.18
P-DICHLOROBENZENE	0.65	0.81	0.60	0.69	0.16
STYRENE	2.37	3.93	2.41	2.90	0.31
TETRACHLOROETHYLENE	6.36	8.65	5.55	6.85	0.24
TRICHLOROETHYLENE	0.43	0.56	0.79	0.60	0.30
O-CRESOL	0.41	T	T	0.41	0.11
O-DICHLOROBENZENE	T	T	N	0.06	0.15
O-ETHYLTOLUENE	1.50	1.94	1.41	1.62	0.18
O-XYLENE	6.44	8.83	6.12	7.13	0.21
1,1,1-TRICHLOROETHANE	23.71	36.34	29.05	29.70	0.21
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.09	0.30
1,2,3-TRIMETHYLBENZENE	1.60	1.97	1.47	1.68	0.15
1,2,4-TRIMETHLYBENZENE	5.57	7.36	5.41	6.11	0.18
1,3,5-TRIMETHYLBENZENE	1.62	2.08	1.44	1.71	0.19
2-ETHOXYETHYLACETATE	1.81	2.07	1.17	1.68	0.27

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OFFICE (OLD), TRIP 1, 5TH FLOOR HALLWAY, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.70	T	T	0.59	0.21
BENZENE	7.74	8.62	8.00	8.12	0.06
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	19.40	22.93	24.96	22.43	0.13
ISOPROPYLBENZENE	1.18	1.30	1.32	1.27	0.06
M-CRESOL	N	N	N	0.02	1.73
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	7.58	8.56	8.30	8.15	0.06
M-XYLENE	37.20	46.55	56.14	46.63	0.20
N-BUTYLACETATE	2.94	3.37	3.95	3.42	0.15
N-DECANE	2.99	3.31	2.84	3.04	0.08
N-DODECANE	1.69	1.66	1.32	1.55	0.13
N-PROPYLBENZENE	1.55	1.68	1.67	1.63	0.04
N-UNDECANE	4.32	4.50	3.84	4.22	0.08
P-DICHLOROBENZENE	0.69	0.68	0.70	0.69	0.01
STYRENE	3.11	2.99	3.12	3.07	0.02
TETRACHLOROETHYLENE	4.66	5.24	5.25	5.05	0.07
TRICHLOROETHYLENE	0.61	0.66	0.58	0.62	0.06
O-CRESOL	0.67	N	T	0.42	0.81
O-DICHLOROBENZENE	T	T	T	0.06	0.13
O-ETHYLTOLUENE	2.15	2.30	2.20	2.22	0.03
O-XYLENE	15.92	19.05	21.11	18.69	0.14
1,1,1-TRICHLOROETHANE	60.50	77.95	98.13	78.86	0.24
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.10	0.42
1,2,3-TRIMETHYLBENZENE	2.12	2.11	2.22	2.15	0.03
1,2,4-TRIMETHLYBENZENE	7.81	8.47	8.63	8.30	0.05
1,3,5-TRIMETHYLBENZENE	2.26	2.52	2.47	2.42	0.06
2-ETHOXYETHYLACETATE	T	2.78	2.70	1.88	0.79

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OFFICE (OLD), TRIP 1, 5TH FLOOR HALLWAY, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.56	0.24
BENZENE	6.42	8.89	7.34	7.55	0.17
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	5.93	9.48	7.42	7.61	0.23
ISOPROPYLBENZENE	0.50	0.83	0.67	0.67	0.25
M-CRESOL	T	T	T	0.60	0.25
M-DICHLOROBENZENE	N	N	N	0.01	1.33
M-ETHYLTOLUENE	4.20	7.34	6.08	5.88	0.27
M-XYLENE	17.81	28.63	22.90	23.11	0.23
N-BUTYLACETATE	5.52	8.66	6.83	7.00	0.23
N-DECANE	1.44	2.33	1.73	1.83	0.25
N-DODECANE	T	T	T	0.90	0.33
N-PROPYLBENZENE	0.84	1.42	1.22	1.16	0.25
N-UNDECANE	1.52	2.86	2.29	2.22	0.30
P-DICHLOROBENZENE	0.45	0.71	0.66	0.61	0.23
STYRENE	2.07	3.33	3.60	3.00	0.27
TETRACHLOROETHYLENE	5.21	6.95	5.72	5.96	0.15
TRICHLOROETHYLENE	0.83	0.51	T	0.56	0.44
O-CRESOL	T	N	N	0.07	0.38
O-DICHLOROBENZENE	0.23	T	N	0.11	1.03
O-ETHYLTOLUENE	1.12	1.92	1.62	1.55	0.26
O-XYLENE	5.74	9.23	7.29	7.42	0.24
1,1,1-TRICHLOROETHANE	53.31	68.73	60.03	60.69	0.13
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	1.24	2.15	1.66	1.69	0.27
1,2,4-TRIMETHLYBENZENE	4.52	7.70	6.51	6.25	0.26
1,3,5-TRIMETHYLBENZENE	1.32	2.12	1.79	1.75	0.23
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (OLD), TRIP 1, 5TH FLOOR HALLWAY, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.83	T	T	0.76	0.08
BENZENE	7.03	8.52	7.79	7.78	0.10
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	17.58	18.65	18.56	18.27	0.03
ISOPROPYLBENZENE	1.18	1.20	1.22	1.20	0.02
M-CRESOL	T	T	N	0.25	0.30
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	8.13	8.24	8.51	8.29	0.02
M-XYLENE	37.30	49.35	48.64	45.10	0.15
N-BUTYLACETATE	4.16	3.77	3.67	3.87	0.07
N-DECANE	3.60	3.30	3.39	3.43	0.04
N-DODECANE	2.21	1.52	1.59	1.77	0.21
N-PROPYLBENZENE	1.60	1.59	1.70	1.63	0.04
N-UNDECANE	5.86	4.54	4.96	5.12	0.13
P-DICHLOROBENZENE	0.69	0.63	0.69	0.67	0.05
STYRENE	2.92	3.07	3.08	3.03	0.03
TETRACHLOROETHYLENE	3.90	3.97	4.06	3.98	0.02
TRICHLOROETHYLENE	1.25	1.24	1.22	1.24	0.01
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.05	0.12
O-ETHYLTOLUENE	2.18	2.13	2.21	2.17	0.02
O-XYLENE	14.94	15.72	16.45	15.70	0.05
1,1,1-TRICHLOROETHANE	57.92	76.84	76.01	70.26	0.15
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.13	0.27
1,2,3-TRIMETHYLBENZENE	1.99	1.82	2.06	1.96	0.06
1,2,4-TRIMETHLYBENZENE	8.07	8.32	8.79	8.39	0.04
1,3,5-TRIMETHYLBENZENE	2.41	2.34	2.40	2.38	0.02
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE (OLD), TRIP 1, 8TH FLOOR HALLWAY, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	N	0.26	0.59
BENZENE	6.27	7.07	7.87	7.07	0.11
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	7.77	7.08	5.12	6.66	0.21
ISOPROPYLBENZENE	0.69	0.61	0.43	0.58	0.23
M-CRESOL	T	T	T	0.81	0.17
M-DICHLOROBENZENE	N	N	T	0.09	1.05
M-ETHYLTOLUENE	5.41	4.96	3.19	4.52	0.26
M-XYLENE	22.36	21.24	15.19	19.60	0.20
N-BUTYLACETATE	1.66	2.20	2.71	2.19	0.24
N-DECANE	2.83	2.37	T	2.19	0.34
N-DODECANE	1.53	1.24	T	1.12	0.44
N-PROPYLBENZENE	1.12	1.01	0.75	0.96	0.20
N-UNDECANE	3.66	2.97	1.90	2.84	0.31
P-DICHLOROBENZENE	0.75	0.70	T	0.65	0.22
STYRENE	2.38	2.26	6.02	3.55	0.60
TETRACHLOROETHYLENE	N	4.69	3.43	2.71	0.90
TRICHLOROETHYLENE	N	0.68	0.52	0.40	0.92
O-CRESOL	1.06	0.92	T	0.87	0.26
O-DICHLOROBENZENE	T	T	T	0.09	0.27
O-ETHYLTOLUENE	1.53	1.29	0.89	1.23	0.26
O-XYLENE	7.01	6.33	4.36	5.90	0.23
1,1,1-TRICHLOROETHANE	20.94	18.97	10.34	16.75	0.34
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.07	0.40
1,2,3-TRIMETHYLBENZENE	1.77	1.86	2.24	1.96	0.13
1,2,4-TRIMETHLYBENZENE	6.03	5.33	3.48	4.95	0.27
1,3,5-TRIMETHYLBENZENE	1.66	1.47	0.98	1.37	0.26
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (OLD), TRIP 1, 8TH FLOOR HALLWAY, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	.	N	N	0.00	0.00
A-PINENE	.	T	N	0.21	0.67
BENZENE	.	2.58	2.46	2.52	0.03
BROMODICHLOROETHANE	.	N	N	0.00	0.00
ETHYLBENZENE	.	5.86	3.11	4.48	0.43
ISOPROPYLBENZENE	.	0.53	0.27	0.40	0.46
M-CRESOL	.	T	T	0.52	0.09
M-DICHLOROBENZENE	.	N	N	0.01	1.91
M-ETHYLTOLUENE	.	5.02	2.79	3.91	0.40
M-XYLENE	.	16.77	9.74	13.26	0.37
N-BUTYLACETATE	.	0.83	T	0.72	0.21
N-DECANE	.	1.70	T	1.24	0.51
N-DODECANE	.	T	N	0.42	0.54
N-PROPYLBENZENE	.	0.95	0.53	0.74	0.40
N-UNDECANE	.	2.85	T	1.91	0.70
P-DICHLOROBENZENE	.	0.51	T	0.39	0.41
STYRENE	.	1.17	0.74	0.95	0.32
TETRACHLOROETHYLENE	.	1.77	1.01	1.39	0.39
TRICHLOROETHYLENE	.	T	T	0.16	0.23
O-CRESOL	.	T	N	0.15	0.91
O-DICHLOROBENZENE	.	T	N	0.05	0.13
O-ETHYLTOLUENE	.	1.39	0.75	1.07	0.43
O-XYLENE	.	5.65	3.19	4.42	0.39
1,1,1-TRICHLOROETHANE	.	12.01	8.66	10.34	0.23
1,1,2,2-TETRACHLOROETHANE	.	N	N	0.00	0.00
1,2-DICHLOROETHANE	.	N	N	0.03	1.41
1,2,3-TRIMETHYLBENZENE	.	1.31	0.78	1.05	0.36
1,2,4-TRIMETHLYBENZENE	.	6.30	3.05	4.67	0.49
1,3,5-TRIMETHYLBENZENE	.	1.64	0.91	1.28	0.40
2-ETHOXYETHYLACETATE	.	2.99	1.83	2.41	0.34

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (OLD), TRIP 1, 8TH FLOOR HALLWAY, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	N	0.45	0.21
BENZENE	6.13	6.05	4.07	5.42	0.21
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	7.04	7.64	6.89	7.19	0.06
ISOPROPYLBENZENE	0.66	0.74	0.59	0.66	0.11
M-CRESOL	T	T	T	0.57	0.05
M-DICHLOROBENZENE	N	N	N	0.01	0.32
M-ETHYLTOLUENE	5.94	6.51	5.17	5.87	0.11
M-XYLENE	20.16	24.67	20.15	21.66	0.12
N-BUTYLACETATE	2.71	4.51	2.32	3.18	0.37
N-DECANE	2.18	2.23	1.68	2.03	0.15
N-DODECANE	1.49	1.65	T	1.30	0.36
N-PROPYLBENZENE	1.15	1.26	1.07	1.16	0.08
N-UNDECANE	3.10	3.47	2.11	2.89	0.24
P-DICHLOROBENZENE	0.60	0.70	0.51	0.61	0.15
STYRENE	2.08	4.13	2.87	3.03	0.34
TETRACHLOROETHYLENE	6.55	7.41	6.25	6.74	0.09
TRICHLOROETHYLENE	0.55	0.59	T	0.48	0.32
O-CRESOL	0.98	1.20	0.83	1.00	0.18
O-DICHLOROBENZENE	T	T	N	0.05	0.18
O-ETHYLTOLUENE	1.56	1.82	1.39	1.59	0.14
O-XYLENE	7.10	8.38	6.66	7.38	0.12
1,1,1-TRICHLOROETHANE	24.04	33.65	23.12	26.94	0.22
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	T	N	0.13	0.38
1,2,3-TRIMETHYLBENZENE	1.50	1.77	1.39	1.55	0.13
1,2,4-TRIMETHLYBENZENE	5.92	6.97	5.59	6.16	0.12
1,3,5-TRIMETHYLBENZENE	1.74	1.96	1.48	1.73	0.14
2-ETHOXYETHYLACETATE	3.51	3.78	2.62	3.30	0.18

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (OLD), TRIP 1, 8TH FLOOR HALLWAY, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.18	0.17
BENZENE	4.81	4.79	4.23	4.61	0.07
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	8.50	6.58	5.94	7.01	0.19
ISOPROPYLBENZENE	0.85	0.64	0.57	0.68	0.21
M-CRESOL	T	T	T	0.57	0.18
M-DICHLOROBENZENE	N	N	N	0.01	1.26
M-ETHYLTOLUENE	7.93	6.06	5.03	6.34	0.23
M-XYLENE	24.44	19.30	18.52	20.75	0.15
N-BUTYLACETATE	1.63	1.83	1.01	1.49	0.29
N-DECANE	2.32	1.32	T	1.52	0.48
N-DODECANE	0.90	T	N	0.54	0.60
N-PROPYLBENZENE	1.53	1.14	0.99	1.22	0.23
N-UNDECANE	2.88	2.17	T	2.04	0.45
P-DICHLOROBENZENE	0.69	0.54	T	0.55	0.25
STYRENE	1.39	1.28	0.96	1.21	0.18
TETRACHLOROETHYLENE	3.41	2.65	2.26	2.77	0.21
TRICHLOROETHYLENE	0.33	T	T	0.26	0.25
O-CRESOL	N	N	N	0.10	0.60
O-DICHLOROBENZENE	T	T	N	0.08	0.39
O-ETHYLTOLUENE	2.06	1.51	1.29	1.62	0.24
O-XYLENE	8.73	6.59	6.19	7.17	0.19
1,1,1-TRICHLOROETHANE	18.22	18.19	16.48	17.63	0.06
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	T	0.13	0.72
1,2,3-TRIMETHYLBENZENE	1.69	1.42	1.05	1.39	0.23
1,2,4-TRIMETHLYBENZENE	7.40	5.99	4.94	6.11	0.20
1,3,5-TRIMETHYLBENZENE	2.33	1.70	1.52	1.85	0.23
2-ETHOXYETHYLACETATE	4.21	2.99	3.84	3.68	0.17

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (OLD), TRIP 1, 8TH FLOOR HALLWAY, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.25	0.43
BENZENE	7.08	7.07	5.79	6.65	0.11
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	8.68	7.50	6.18	7.45	0.17
ISOPROPYLBENZENE	0.78	0.68	0.51	0.66	0.20
M-CRESOL	N	T	N	0.31	0.66
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	3.65	6.53	5.02	5.07	0.28
M-XYLENE	26.78	23.59	19.61	23.33	0.15
N-BUTYLACETATE	2.51	2.06	1.62	2.06	0.22
N-DECANE	2.73	2.20	T	2.07	0.36
N-DODECANE	1.53	1.15	T	1.06	0.50
N-PROPYLBENZENE	1.46	1.26	0.98	1.23	0.20
N-UNDECANE	3.73	3.05	1.87	2.88	0.33
P-DICHLOROBENZENE	0.69	0.62	T	0.58	0.23
STYRENE	3.05	3.41	1.92	2.79	0.28
TETRACHLOROETHYLENE	6.28	5.37	4.44	5.36	0.17
TRICHLOROETHYLENE	0.62	0.68	T	0.54	0.36
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.06	0.40
O-ETHYLTOLUENE	1.76	1.74	1.32	1.61	0.15
O-XYLENE	8.82	7.46	6.34	7.54	0.17
1,1,1-TRICHLOROETHANE	72.37	70.60	80.69	74.55	0.07
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	1.72	1.78	1.44	1.65	0.11
1,2,4-TRIMETHLYBENZENE	7.65	6.80	5.39	6.62	0.17
1,3,5-TRIMETHYLBENZENE	2.15	1.92	1.42	1.83	0.21
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE (OLD), TRIP 1, 8TH FLOOR HALLWAY, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.03	1.73
BENZENE	4.80	5.78	3.88	4.82	0.20
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.22	7.69	3.53	5.81	0.36
ISOPROPYLBENZENE	0.80	1.00	0.47	0.76	0.35
M-CRESOL	T	N	N	0.27	0.10
M-DICHLOROBENZENE	N	N	N	0.02	0.60
M-ETHYLTOLUENE	6.75	8.61	3.88	6.41	0.37
M-XYLENE	20.08	24.61	11.52	18.74	0.35
N-BUTYLACETATE	0.73	1.93	T	1.08	0.69
N-DECANE	2.22	2.73	T	2.00	0.43
N-DODECANE	T	T	N	0.44	0.53
N-PROPYLBENZENE	1.35	1.75	0.78	1.29	0.37
N-UNDECANE	1.99	2.22	T	1.69	0.43
P-DICHLOROBENZENE	0.44	0.57	T	0.42	0.37
STYRENE	1.12	1.51	1.00	1.21	0.22
TETRACHLOROETHYLENE	1.44	1.45	0.81	1.23	0.30
TRICHLOROETHYLENE	0.48	0.51	T	0.40	0.43
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.07	0.39
O-ETHYLTOLUENE	1.60	2.06	0.92	1.53	0.38
O-XYLENE	6.64	8.38	3.97	6.33	0.35
1,1,1-TRICHLOROETHANE	14.13	18.35	9.99	14.16	0.30
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	1.24	1.53	0.85	1.21	0.28
1,2,4-TRIMETHLYBENZENE	6.14	7.69	3.44	5.76	0.37
1,3,5-TRIMETHYLBENZENE	1.88	2.32	1.03	1.75	0.38
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (OLD), TRIP 1, OUTDOORS, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.02	1.19
BENZENE	4.16	6.50	7.68	6.11	0.29
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.36	3.84	3.22	3.81	0.15
ISOPROPYLBENZENE	0.38	0.32	0.29	0.33	0.13
M-CRESOL	0.87	1.23	2.32	1.47	0.51
M-DICHLOROBENZENE	N	N	T	0.09	0.58
M-ETHYLTOLUENE	5.08	4.30	3.90	4.43	0.14
M-XYLENE	13.32	11.90	10.35	11.86	0.13
N-BUTYLACETATE	3.39	1.64	3.00	2.68	0.34
N-DECANE	T	T	T	0.54	0.20
N-DODECANE	T	N	N	0.21	0.18
N-PROPYLBENZENE	0.99	0.86	0.78	0.88	0.12
N-UNDECANE	T	T	T	0.53	0.14
P-DICHLOROBENZENE	T	T	T	0.16	0.06
STYRENE	1.18	1.15	2.31	1.55	0.43
TETRACHLOROETHYLENE	2.38	1.96	1.76	2.03	0.15
TRICHLOROETHYLENE	N	N	N	0.01	1.50
O-CRESOL	T	T	T	0.23	0.40
O-DICHLOROBENZENE	T	T	T	0.07	0.38
O-ETHYLTOLUENE	1.35	1.20	1.09	1.21	0.11
O-XYLENE	4.02	3.51	3.09	3.54	0.13
1,1,1-TRICHLOROETHANE	N	1.29	1.02	0.69	1.19
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.04	0.32
1,2,3-TRIMETHYLBENZENE	1.45	1.62	2.07	1.71	0.19
1,2,4-TRIMETHLYBENZENE	5.28	4.51	4.09	4.63	0.13
1,3,5-TRIMETHYLBENZENE	1.55	1.39	1.18	1.37	0.14
2-ETHOXYETHYLACETATE	T	T	T	0.24	0.27

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OFFICE (OLD), TRIP 1, OUTDOORS, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.15	0.26
BENZENE	3.48	4.95	4.04	4.16	0.18
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.88	2.68	2.98	2.85	0.05
ISOPROPYLBENZENE	0.30	0.29	N	0.20	0.87
M-CRESOL	1.28	T	1.68	1.16	0.50
M-DICHLOROBENZENE	N	N	N	0.03	0.43
M-ETHYLTOLUENE	3.99	3.95	4.27	4.07	0.04
M-XYLENE	9.24	8.74	9.88	9.28	0.06
N-BUTYLACETATE	0.44	N	T	0.32	0.52
N-DECANE	1.00	T	T	0.86	0.15
N-DODECANE	T	T	N	0.30	0.20
N-PROPYLBENZENE	0.80	0.75	0.81	0.78	0.04
N-UNDECANE	1.18	T	T	1.05	0.11
P-DICHLOROBENZENE	0.40	0.37	T	0.38	0.04
STYRENE	0.77	0.72	0.97	0.82	0.16
TETRACHLOROETHYLENE	1.04	0.98	1.08	1.03	0.05
TRICHLOROETHYLENE	T	T	N	0.10	0.12
O-CRESOL	N	N	N	0.06	0.28
O-DICHLOROBENZENE	T	T	T	0.06	0.21
O-ETHYLTOLUENE	1.13	1.06	1.13	1.11	0.04
O-XYLENE	3.48	3.14	3.56	3.39	0.07
1,1,1-TRICHLOROETHANE	1.25	1.54	1.19	1.33	0.14
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	1.09	1.11	1.33	1.18	0.11
1,2,4-TRIMETHLYBENZENE	4.83	4.37	5.02	4.74	0.07
1,3,5-TRIMETHYLBENZENE	1.42	1.28	1.36	1.35	0.05
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (OLD), TRIP 1, OUTDOORS, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.16	0.20
BENZENE	6.15	8.38	8.88	7.81	0.19
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	7.30	8.17	6.23	7.23	0.13
ISOPROPYLBENZENE	0.80	0.83	0.62	0.75	0.15
M-CRESOL	1.33	T	T	0.92	0.59
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	10.10	11.39	8.39	9.96	0.15
M-XYLENE	21.60	24.83	18.94	21.79	0.14
N-BUTYLACETATE	N	T	N	0.09	1.73
N-DECANE	1.65	1.59	T	1.37	0.31
N-DODECANE	T	T	N	0.33	0.39
N-PROPYLBENZENE	2.06	2.18	1.63	1.96	0.15
N-UNDECANE	1.20	1.10	T	0.97	0.33
P-DICHLOROBENZENE	0.32	T	T	0.30	0.14
STYRENE	1.86	1.70	1.94	1.83	0.07
TETRACHLOROETHYLENE	7.95	8.07	6.72	7.58	0.10
TRICHLOROETHYLENE	T	T	T	0.16	0.37
O-CRESOL	T	N	N	0.08	0.73
O-DICHLOROBENZENE	T	T	T	0.07	0.23
O-ETHYLTOLUENE	2.88	3.10	2.20	2.72	0.17
O-XYLENE	8.21	9.21	6.74	8.05	0.15
1,1,1-TRICHLOROETHANE	13.63	15.41	13.10	14.05	0.09
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.07	0.16
1,2,3-TRIMETHYLBENZENE	2.44	2.59	2.44	2.49	0.03
1,2,4-TRIMETHLYBENZENE	9.51	11.91	8.97	10.13	0.15
1,3,5-TRIMETHYLBENZENE	3.30	3.55	2.48	3.11	0.18
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (OLD), TRIP 1, OUTDOORS, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.05	0.94
BENZENE	4.39	5.26	6.81	5.49	0.22
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.72	3.29	3.50	3.50	0.06
ISOPROPYLBENZENE	0.45	0.37	0.40	0.40	0.10
M-CRESOL	N	T	N	0.23	0.34
M-DICHLOROBENZENE	N	N	N	0.04	0.75
M-ETHYLTOLUENE	3.04	5.13	5.29	4.48	0.28
M-XYLENE	11.35	10.75	11.18	11.09	0.03
N-BUTYLACETATE	1.63	T	N	0.68	1.21
N-DECANE	1.35	T	T	1.01	0.30
N-DODECANE	T	N	N	0.20	0.65
N-PROPYLBENZENE	1.04	0.92	0.96	0.97	0.06
N-UNDECANE	1.12	T	T	0.81	0.35
P-DICHLOROBENZENE	0.69	0.57	0.61	0.62	0.09
STYRENE	0.90	0.63	0.83	0.79	0.18
TETRACHLOROETHYLENE	2.75	2.35	2.42	2.51	0.09
TRICHLOROETHYLENE	0.25	T	T	0.22	0.19
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.05	0.22
O-ETHYLTOLUENE	1.48	1.34	1.39	1.41	0.05
O-XYLENE	4.24	3.93	4.09	4.08	0.04
1,1,1-TRICHLOROETHANE	4.43	4.77	4.76	4.65	0.04
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.02	1.73
1,2,3-TRIMETHYLBENZENE	1.37	1.16	1.28	1.27	0.09
1,2,4-TRIMETHLYBENZENE	5.63	5.57	5.85	5.69	0.03
1,3,5-TRIMETHYLBENZENE	1.73	1.52	1.59	1.61	0.07
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (OLD), TRIP 1, OUTDOORS, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	8.24	10.54	12.71	10.50	0.21
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	5.89	5.33	6.41	5.88	0.09
ISOPROPYLBENZENE	0.64	0.57	0.67	0.63	0.09
M-CRESOL	T	T	T	0.90	0.83
M-DICHLOROBENZENE	N	N	N	0.02	0.73
M-ETHYLTOLUENE	8.51	8.39	6.23	7.71	0.17
M-XYLENE	18.73	16.76	20.52	18.67	0.10
N-BUTYLACETATE	T	T	N	0.15	0.90
N-DECANE	2.37	1.81	2.11	2.10	0.13
N-DODECANE	0.78	T	T	0.64	0.21
N-PROPYLBENZENE	1.69	1.52	1.77	1.66	0.08
N-UNDECANE	1.78	1.45	T	1.61	0.10
P-DICHLOROBENZENE	0.23	T	T	0.22	0.09
STYRENE	1.33	1.90	1.79	1.67	0.18
TETRACHLOROETHYLENE	4.83	4.10	5.11	4.68	0.11
TRICHLOROETHYLENE	T	T	T	0.10	0.14
O-CRESOL	N	N	N	0.09	0.64
O-DICHLOROBENZENE	T	T	N	0.05	0.12
O-ETHYLTOLUENE	2.60	2.23	2.64	2.49	0.09
O-XYLENE	6.88	6.13	7.32	6.78	0.09
1,1,1-TRICHLOROETHANE	5.49	5.14	6.48	5.71	0.12
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	2.34	2.24	2.65	2.41	0.09
1,2,4-TRIMETHLYBENZENE	8.59	9.17	10.88	9.55	0.12
1,3,5-TRIMETHYLBENZENE	2.89	2.56	2.97	2.81	0.08
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (OLD), TRIP 1, OUTDOORS, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.02	1.73
BENZENE	6.47	4.90	5.48	5.62	0.14
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.28	3.47	3.86	4.54	0.34
ISOPROPYLBENZENE	0.65	0.34	0.40	0.46	0.36
M-CRESOL	T	N	T	0.40	0.94
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	9.12	4.89	5.78	6.60	0.34
M-XYLENE	20.86	11.45	13.09	15.13	0.33
N-BUTYLACETATE	0.39	T	N	0.31	0.75
N-DECANE	1.35	T	T	0.87	0.48
N-DODECANE	T	N	N	0.14	0.49
N-PROPYLBENZENE	1.59	0.92	1.05	1.19	0.30
N-UNDECANE	0.92	T	T	0.59	0.47
P-DICHLOROBENZENE	0.58	T	T	0.43	0.31
STYRENE	1.06	0.63	0.83	0.84	0.26
TETRACHLOROETHYLENE	2.10	1.29	1.30	1.56	0.30
TRICHLOROETHYLENE	0.33	T	T	0.26	0.31
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	0.11	T	T	0.09	0.22
O-ETHYLTOLUENE	2.29	1.25	1.49	1.67	0.33
O-XYLENE	7.70	4.23	4.89	5.61	0.33
1,1,1-TRICHLOROETHANE	3.71	2.88	3.70	3.43	0.14
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.05	0.66
1,2,3-TRIMETHYLBENZENE	2.13	1.17	1.42	1.58	0.31
1,2,4-TRIMETHLYBENZENE	9.78	5.45	6.41	7.21	0.31
1,3,5-TRIMETHYLBENZENE	2.62	1.47	1.71	1.93	0.32
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 1, SECRETARIAL AREA, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	11.26	7.63	18.35	12.41	0.44
BENZENE	3.13	1.84	9.54	4.84	0.85
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	18.00	9.41	31.98	19.80	0.58
ISOPROPYLBENZENE	4.25	2.21	7.31	4.59	0.56
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	0.55
M-ETHYLTOLUENE	35.96	18.86	63.50	39.44	0.57
M-XYLENE	19.28	17.17	36.86	24.44	0.44
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	281.00	331.05	520.57	377.54	0.33
N-DODECANE	155.78	82.60	279.43	172.60	0.58
N-PROPYLBENZENE	4.65	3.56	8.98	5.73	0.50
N-UNDECANE	193.99	158.57	343.83	232.13	0.42
P-DICHLOROBENZENE	T	T	T	0.15	0.26
STYRENE	2.59	1.42	4.66	2.89	0.57
TETRACHLOROETHYLENE	T	N	T	0.29	0.68
TRICHLOROETHYLENE	0.84	0.35	1.43	0.87	0.62
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	T	0.05	0.70
O-ETHYLTOLUENE	12.07	6.99	22.08	13.71	0.56
O-XYLENE	12.57	6.62	22.63	13.94	0.58
1,1,1-TRICHLOROETHANE	47.87	36.55	96.83	60.42	0.53
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	25.22	9.90	33.61	22.91	0.52
1,2,4-TRIMETHLYBENZENE	95.61	65.32	98.75	86.56	0.21
1,3,5-TRIMETHYLBENZENE	27.58	10.86	48.92	29.12	0.66
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 1, SECRETARIAL AREA, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	4.17	7.32	12.09	7.86	0.51
BENZENE	2.29	2.04	4.25	2.86	0.42
BROMODICHLOROETHANE	0.89	1.22	1.75	1.29	0.34
ETHYLBENZENE	94.09	121.74	110.95	108.93	0.13
ISOPROPYLBENZENE	4.13	5.25	3.97	4.45	0.16
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	2.03
M-ETHYLTOLUENE	28.14	38.00	25.69	30.61	0.21
M-XYLENE	44.75	66.19	79.72	63.56	0.28
N-BUTYLACETATE	0.42	T	T	0.50	0.14
N-DECANE	531.50	637.54	706.54	625.19	0.14
N-DODECANE	115.05	159.90	124.10	133.02	0.18
N-PROPYLBENZENE	2.99	4.95	5.04	4.32	0.27
N-UNDECANE	221.52	317.13	280.72	273.12	0.18
P-DICHLOROBENZENE	T	T	T	0.13	0.19
STYRENE	2.27	2.77	3.05	2.70	0.15
TETRACHLOROETHYLENE	T	T	T	0.20	0.25
TRICHLOROETHYLENE	0.22	T	0.39	0.28	0.35
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.03	0.24
O-ETHYLTOLUENE	4.58	8.53	10.64	7.92	0.39
O-XYLENE	26.77	37.61	39.89	34.76	0.20
1,1,1-TRICHLOROETHANE	7.00	7.31	9.83	8.05	0.19
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.41	T	T	0.47	0.16
1,2,3-TRIMETHYLBENZENE	11.87	10.83	19.32	14.01	0.33
1,2,4-TRIMETHLYBENZENE	55.52	123.36	146.10	108.33	0.44
1,3,5-TRIMETHYLBENZENE	14.93	22.82	25.44	21.06	0.26
2-ETHOXYETHYLACETATE	0.50	0.73	T	0.70	0.26

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OFFICE (NEW), TRIP 1, SECRETARIAL AREA, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	15.01	21.05	13.31	16.46	0.25
BENZENE	1.34	2.57	1.24	1.72	0.43
BROMODICHLOROETHANE	0.31	0.45	T	0.34	0.28
ETHYLBENZENE	53.48	82.15	54.52	63.38	0.26
ISOPROPYLBENZENE	3.57	4.53	2.64	3.58	0.26
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.05	0.47
M-ETHYLTOLUENE	24.52	34.21	21.21	26.65	0.25
M-XYLENE	31.68	51.60	46.34	43.21	0.24
N-BUTYLACETATE	T	T	N	0.33	0.35
N-DECANE	281.92	463.44	567.96	437.77	0.33
N-DODECANE	120.91	176.64	127.30	141.62	0.22
N-PROPYLBENZENE	4.11	6.18	4.45	4.91	0.23
N-UNDECANE	177.96	217.53	235.89	210.46	0.14
P-DICHLOROBENZENE	T	T	T	0.16	0.20
STYRENE	1.86	2.70	1.44	2.00	0.32
TETRACHLOROETHYLENE	T	T	N	0.15	0.52
TRICHLOROETHYLENE	0.24	T	T	0.23	0.22
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.05	0.51
O-ETHYLTOLUENE	7.15	10.84	6.86	8.28	0.27
O-XYLENE	13.85	21.23	17.61	17.56	0.21
1,1,1-TRICHLOROETHANE	3.60	5.79	2.32	3.90	0.45
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.26	0.46
1,2,3-TRIMETHYLBENZENE	8.91	14.81	11.28	11.67	0.25
1,2,4-TRIMETHLYBENZENE	71.83	93.35	67.09	77.43	0.18
1,3,5-TRIMETHYLBENZENE	12.44	13.22	12.87	12.84	0.03
2-ETHOXYETHYLACETATE	T	T	T	0.37	0.13

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OFFICE (NEW), TRIP 1, SECRETARIAL AREA, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	15.48	27.62	13.87	18.99	0.40
BENZENE	1.21	2.21	1.53	1.65	0.31
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	36.78	84.67	35.42	52.29	0.54
ISOPROPYLBENZENE	2.69	4.96	2.15	3.27	0.46
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.35
M-ETHYLTOLUENE	10.02	10.05	17.01	12.36	0.33
M-XYLENE	6.23	78.72	42.76	42.57	0.85
N-BUTYLACETATE	T	T	T	0.35	0.10
N-DECANE	261.76	359.91	501.78	374.48	0.32
N-DODECANE	123.45	212.16	116.36	150.66	0.35
N-PROPYLBENZENE	3.55	7.25	3.72	4.84	0.43
N-UNDECANE	65.31	262.89	208.34	178.85	0.57
P-DICHLOROBENZENE	T	T	T	0.13	0.20
STYRENE	1.54	2.54	1.18	1.76	0.40
TETRACHLOROETHYLENE	T	T	T	0.22	0.59
TRICHLOROETHYLENE	0.18	T	T	0.16	0.29
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.04	0.67
O-ETHYLTOLUENE	6.47	3.55	5.54	5.19	0.29
O-XYLENE	11.00	30.37	13.32	18.23	0.58
1,1,1-TRICHLOROETHANE	1.89	5.47	1.78	3.05	0.69
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.24	0.58
1,2,3-TRIMETHYLBENZENE	11.58	16.07	11.78	13.14	0.19
1,2,4-TRIMETHLYBENZENE	56.80	71.53	30.55	52.96	0.39
1,3,5-TRIMETHYLBENZENE	4.24	5.53	8.44	6.07	0.35
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 1, SECRETARIAL AREA, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	19.15	21.25	16.02	18.81	0.14
BENZENE	2.25	4.08	3.22	3.18	0.29
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	36.34	47.48	35.35	39.72	0.17
ISOPROPYLBENZENE	2.64	3.74	2.64	3.01	0.21
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	21.28	26.35	19.11	22.25	0.17
M-XYLENE	26.11	35.68	41.69	34.49	0.23
N-BUTYLACETATE	0.44	T	T	0.39	0.18
N-DECANE	322.72	398.74	423.90	381.79	0.14
N-DODECANE	129.45	161.88	126.95	139.42	0.14
N-PROPYLBENZENE	4.34	4.93	3.80	4.36	0.13
N-UNDECANE	61.17	211.07	204.22	158.82	0.53
P-DICHLOROBENZENE	T	T	T	0.15	0.34
STYRENE	2.10	2.57	1.69	2.12	0.21
TETRACHLOROETHYLENE	0.75	1.14	T	0.81	0.38
TRICHLOROETHYLENE	T	0.33	T	0.22	0.46
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.04	0.09
O-ETHYLTOLUENE	6.53	8.11	6.10	6.91	0.15
O-XYLENE	10.48	13.93	13.41	12.61	0.15
1,1,1-TRICHLOROETHANE	2.83	3.88	2.17	2.96	0.29
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	T	0.22	0.29
1,2,3-TRIMETHYLBENZENE	11.99	14.95	12.05	12.99	0.13
1,2,4-TRIMETHLYBENZENE	56.80	56.38	35.91	49.70	0.24
1,3,5-TRIMETHYLBENZENE	11.28	13.49	9.75	11.51	0.16
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 1, SECRETARIAL AREA, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	16.04	22.11	13.51	17.22	0.26
BENZENE	2.14	1.95	1.92	2.00	0.06
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	32.48	44.00	26.38	34.29	0.26
ISOPROPYLBENZENE	3.03	3.63	2.42	3.03	0.20
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.03	0.52
M-ETHYLTOLUENE	20.81	26.54	17.30	21.55	0.22
M-XYLENE	24.84	40.32	39.50	34.89	0.25
N-BUTYLACETATE	T	T	T	0.41	0.36
N-DECANE	200.79	399.01	389.25	329.69	0.34
N-DODECANE	123.42	176.53	113.06	137.67	0.25
N-PROPYLBENZENE	3.96	5.16	3.58	4.23	0.19
N-UNDECANE	152.82	263.11	194.71	203.55	0.27
P-DICHLOROBENZENE	T	T	T	0.21	0.38
STYRENE	1.90	2.34	1.62	1.95	0.19
TETRACHLOROETHYLENE	T	T	T	0.27	0.17
TRICHLOROETHYLENE	0.24	T	T	0.23	0.04
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	T	N	0.04	0.49
O-ETHYLTOLUENE	6.78	8.98	5.46	7.07	0.25
O-XYLENE	10.52	14.40	11.89	12.27	0.16
1,1,1-TRICHLOROETHANE	4.24	4.17	3.46	3.96	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.57	0.65	T	0.54	0.24
1,2,3-TRIMETHYLBENZENE	11.65	15.56	11.17	12.79	0.19
1,2,4-TRIMETHLYBENZENE	57.05	84.44	30.51	57.33	0.47
1,3,5-TRIMETHYLBENZENE	11.34	23.44	9.64	14.81	0.51
2-ETHOXYETHYLACETATE	T	T	T	0.34	0.15

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OFFICE (NEW), TRIP 1, OFFICE, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	2.45	13.20	10.66	8.77	0.64
BENZENE	5.04	4.94	4.71	4.90	0.03
BROMODICHLOROETHANE	0.69	2.20	0.64	1.18	0.75
ETHYLBENZENE	26.61	31.34	23.39	27.11	0.15
ISOPROPYLBENZENE	5.17	7.20	4.87	5.75	0.22
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	1.30
M-ETHYLTOLUENE	35.14	55.58	39.01	43.24	0.25
M-XYLENE	21.67	34.76	30.20	28.87	0.23
N-BUTYLACETATE	0.96	1.16	2.00	1.37	0.40
N-DECANE	451.09	601.96	565.11	539.39	0.15
N-DODECANE	150.53	217.40	169.67	179.20	0.19
N-PROPYLBENZENE	3.74	7.43	5.56	5.58	0.33
N-UNDECANE	57.32	125.39	280.10	154.27	0.74
P-DICHLOROBENZENE	N	0.42	T	0.22	0.86
STYRENE	3.65	4.18	2.89	3.57	0.18
TETRACHLOROETHYLENE	0.40	0.71	T	0.49	0.38
TRICHLOROETHYLENE	1.23	1.56	1.05	1.28	0.20
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.09	0.65
O-ETHYLTOLUENE	5.72	12.33	13.52	10.52	0.40
O-XYLENE	12.98	20.81	14.48	16.09	0.26
1,1,1-TRICHLOROETHANE	50.28	71.33	87.03	69.55	0.27
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.70	1.34	1.23	1.42	0.17
1,2,3-TRIMETHYLBENZENE	11.76	46.17	11.56	23.16	0.86
1,2,4-TRIMETHLYBENZENE	62.28	179.66	112.65	118.20	0.50
1,3,5-TRIMETHYLBENZENE	15.61	42.73	19.32	25.89	0.57
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 1, OFFICE, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	4.66	4.94	9.67	6.42	0.44
BENZENE	2.38	3.10	2.45	2.65	0.15
BROMODICHLOROETHANE	0.67	0.67	0.87	0.74	0.16
ETHYLBENZENE	80.05	96.50	80.11	85.56	0.11
ISOPROPYLBENZENE	4.27	4.45	3.91	4.21	0.07
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	3.17
M-ETHYLTOLUENE	30.40	34.56	27.82	30.92	0.11
M-XYLENE	43.53	61.56	50.22	51.77	0.18
N-BUTYLACETATE	T	T	T	0.41	0.25
N-DECANE	691.68	742.42	659.97	698.02	0.06
N-DODECANE	134.67	152.26	128.97	138.63	0.09
N-PROPYLBENZENE	3.52	4.39	4.31	4.08	0.12
N-UNDECANE	125.71	195.38	199.07	173.39	0.24
P-DICHLOROBENZENE	T	T	T	0.19	0.15
STYRENE	2.45	2.73	2.40	2.53	0.07
TETRACHLOROETHYLENE	T	T	T	0.20	0.24
TRICHLOROETHYLENE	0.32	T	0.40	0.32	0.24
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	T	T	0.05	0.50
O-ETHYLTOLUENE	5.48	8.35	9.22	7.68	0.25
O-XYLENE	26.98	33.62	27.09	29.23	0.13
1,1,1-TRICHLOROETHANE	8.17	7.09	7.30	7.52	0.08
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.61	0.57	T	0.56	0.11
1,2,3-TRIMETHYLBENZENE	7.83	21.10	14.60	14.51	0.46
1,2,4-TRIMETHLYBENZENE	69.98	117.08	107.25	98.10	0.25
1,3,5-TRIMETHYLBENZENE	16.58	23.38	19.98	19.98	0.17
2-ETHOXYETHYLACETATE	0.82	1.20	1.16	1.06	0.19

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OFFICE (NEW), TRIP 1, OFFICE, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	13.62	19.44	6.71	13.26	0.48
BENZENE	1.41	2.04	2.41	1.95	0.26
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	60.17	80.69	62.90	67.92	0.16
ISOPROPYLBENZENE	4.22	5.29	3.65	4.39	0.19
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	T	0.05	1.79
M-ETHYLTOLUENE	29.68	38.35	29.78	32.60	0.15
M-XYLENE	36.14	59.37	53.51	49.67	0.24
N-BUTYLACETATE	0.47	T	T	0.41	0.22
N-DECANE	616.84	778.74	575.01	656.86	0.16
N-DODECANE	172.45	199.61	165.34	179.13	0.10
N-PROPYLBENZENE	4.68	6.20	5.92	5.60	0.14
N-UNDECANE	277.71	284.74	305.90	289.45	0.05
P-DICHLOROBENZENE	T	T	T	0.27	0.18
STYRENE	2.18	2.84	2.44	2.49	0.13
TETRACHLOROETHYLENE	T	T	T	0.20	0.21
TRICHLOROETHYLENE	0.20	0.30	T	0.27	0.24
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.07	0.35
O-ETHYLTOLUENE	10.97	14.99	11.98	12.65	0.17
O-XYLENE	17.55	24.19	21.17	20.97	0.16
1,1,1-TRICHLOROETHANE	4.64	6.10	4.57	5.11	0.17
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.43	0.78	T	0.52	0.44
1,2,3-TRIMETHYLBENZENE	17.66	23.03	12.41	17.70	0.30
1,2,4-TRIMETHLYBENZENE	96.75	102.43	90.26	96.48	0.06
1,3,5-TRIMETHYLBENZENE	18.46	24.70	21.12	21.43	0.15
2-ETHOXYETHYLACETATE	1.06	1.12	T	0.92	0.32

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OFFICE (NEW), TRIP 1, OFFICE, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	16.30	18.51	19.10	17.97	0.08
BENZENE	1.99	1.78	1.37	1.71	0.18
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	48.13	52.93	52.63	51.23	0.05
ISOPROPYLBENZENE	3.36	4.35	3.96	3.89	0.13
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.61
M-ETHYLTOLUENE	28.24	29.13	6.43	21.26	0.60
M-XYLENE	28.88	36.72	44.17	36.59	0.21
N-BUTYLACETATE	T	T	T	0.38	0.09
N-DECANE	399.24	420.10	494.46	437.93	0.11
N-DODECANE	158.20	182.10	182.86	174.39	0.08
N-PROPYLBENZENE	4.48	5.29	5.58	5.12	0.11
N-UNDECANE	125.58	289.47	167.56	194.20	0.44
P-DICHLOROBENZENE	T	T	T	0.24	0.19
STYRENE	2.48	2.34	2.72	2.51	0.08
TETRACHLOROETHYLENE	T	T	T	0.25	0.02
TRICHLOROETHYLENE	0.39	T	N	0.25	0.61
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	T	T	0.05	0.53
O-ETHYLTOLUENE	8.80	9.36	8.70	8.95	0.04
O-XYLENE	12.23	14.58	20.31	15.71	0.26
1,1,1-TRICHLOROETHANE	5.73	4.98	5.88	5.53	0.09
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.53	T	T	0.48	0.13
1,2,3-TRIMETHYLBENZENE	12.35	17.75	17.67	15.93	0.19
1,2,4-TRIMETHLYBENZENE	81.31	91.03	77.11	83.15	0.09
1,3,5-TRIMETHYLBENZENE	15.69	17.70	17.42	16.94	0.06
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 1, OFFICE, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	28.01	29.97	18.63	25.54	0.24
BENZENE	3.31	7.07	3.71	4.70	0.44
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	49.47	66.63	46.26	54.12	0.20
ISOPROPYLBENZENE	4.91	5.53	3.89	4.78	0.17
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	0.74
M-ETHYLTOLUENE	34.40	35.54	26.96	32.30	0.14
M-XYLENE	36.40	60.99	42.74	46.71	0.27
N-BUTYLACETATE	0.52	0.64	T	0.53	0.20
N-DECANE	414.41	477.31	583.60	491.77	0.17
N-DODECANE	222.44	282.11	157.45	220.67	0.28
N-PROPYLBENZENE	6.70	8.19	5.46	6.78	0.20
N-UNDECANE	298.07	498.10	179.02	325.06	0.50
P-DICHLOROBENZENE	0.44	0.53	T	0.44	0.23
STYRENE	3.02	3.63	2.41	3.02	0.20
TETRACHLOROETHYLENE	1.26	1.92	0.83	1.34	0.41
TRICHLOROETHYLENE	0.50	1.15	T	0.63	0.74
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.08	0.16
O-ETHYLTOLUENE	11.48	13.34	8.37	11.06	0.23
O-XYLENE	15.77	28.23	19.21	21.07	0.31
1,1,1-TRICHLOROETHANE	5.07	9.60	4.97	6.54	0.40
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.54	1.02	T	0.69	0.41
1,2,3-TRIMETHYLBENZENE	22.31	26.57	16.20	21.69	0.24
1,2,4-TRIMETHLYBENZENE	109.72	112.94	70.46	97.71	0.24
1,3,5-TRIMETHYLBENZENE	19.93	24.75	16.00	20.22	0.22
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 1, OFFICE, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	16.25	18.90	16.55	17.23	0.08
BENZENE	3.24	1.90	1.50	2.21	0.41
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	37.02	37.69	31.65	35.45	0.09
ISOPROPYLBENZENE	4.03	4.17	3.27	3.82	0.13
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.03	0.91
M-ETHYLTOLUENE	25.67	26.67	21.48	24.60	0.11
M-XYLENE	27.29	36.00	43.61	35.64	0.23
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	250.53	202.04	489.45	314.01	0.49
N-DODECANE	140.78	178.06	178.48	165.77	0.13
N-PROPYLBENZENE	4.64	5.05	4.65	4.78	0.05
N-UNDECANE	192.79	165.44	243.91	200.71	0.20
P-DICHLOROBENZENE	T	T	T	0.26	0.35
STYRENE	2.40	2.28	2.00	2.23	0.09
TETRACHLOROETHYLENE	0.50	T	T	0.42	0.31
TRICHLOROETHYLENE	0.41	0.47	T	0.37	0.36
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	T	0.07	0.20
O-ETHYLTOLUENE	8.82	9.12	7.92	8.62	0.07
O-XYLENE	11.52	15.94	14.31	13.93	0.16
1,1,1-TRICHLOROETHANE	6.91	6.96	3.22	5.70	0.38
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.15	1.09	T	0.96	0.30
1,2,3-TRIMETHYLBENZENE	13.33	15.85	15.84	15.01	0.10
1,2,4-TRIMETHLYBENZENE	70.49	65.48	43.37	59.78	0.24
1,3,5-TRIMETHYLBENZENE	13.09	13.94	14.54	13.86	0.05
2-ETHOXYETHYLACETATE	0.50	T	T	0.49	0.11

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OFFICE (NEW), TRIP 1, OFFICE, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	16.09	9.88	11.91	12.62	0.25
BENZENE	2.80	2.89	2.02	2.57	0.19
BROMODICHLOROETHANE	0.33	0.32	T	0.29	0.26
ETHYLBENZENE	9.18	11.27	10.03	10.16	0.10
ISOPROPYLBENZENE	3.95	4.05	3.20	3.73	0.12
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	T	N	T	0.07	1.04
M-ETHYLTOLUENE	30.98	32.42	26.69	30.03	0.10
M-XYLENE	22.83	27.31	25.71	25.28	0.09
N-BUTYLACETATE	2.02	T	1.18	1.24	0.62
N-DECANE	337.97	235.30	377.35	316.87	0.23
N-DODECANE	173.00	153.32	137.94	154.75	0.11
N-PROPYLBENZENE	5.46	5.68	5.34	5.50	0.03
N-UNDECANE	215.89	232.44	243.91	230.75	0.06
P-DICHLOROBENZENE	T	T	N	0.14	0.25
STYRENE	2.96	3.27	2.16	2.80	0.20
TETRACHLOROETHYLENE	T	T	N	0.18	0.24
TRICHLOROETHYLENE	0.77	0.46	0.60	0.61	0.26
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.05	0.30
O-ETHYLTOLUENE	9.41	10.23	8.33	9.32	0.10
O-XYLENE	26.01	13.89	10.26	16.72	0.49
1,1,1-TRICHLOROETHANE	28.19	31.13	25.36	28.23	0.10
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.97	T	0.71	0.69	0.42
1,2,3-TRIMETHYLBENZENE	15.65	15.79	14.18	15.20	0.06
1,2,4-TRIMETHLYBENZENE	88.62	63.97	68.72	73.77	0.18
1,3,5-TRIMETHYLBENZENE	15.26	15.98	11.04	14.09	0.19
2-ETHOXYETHYLACETATE	0.92	T	T	0.67	0.34

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OFFICE (NEW), TRIP 1, OFFICE, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	12.99	10.92	8.67	10.86	0.20
BENZENE	2.37	2.49	3.72	2.86	0.26
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	37.65	99.80	80.34	72.59	0.44
ISOPROPYLBENZENE	6.25	4.51	3.22	4.66	0.33
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	42.19	28.71	18.86	29.92	0.39
M-XYLENE	70.51	58.22	54.41	61.04	0.14
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	441.60	436.48	407.54	428.54	0.04
N-DODECANE	184.60	111.23	87.15	127.66	0.40
N-PROPYLBENZENE	6.30	4.83	4.14	5.09	0.22
N-UNDECANE	282.39	151.77	189.39	207.85	0.32
P-DICHLOROBENZENE	T	T	N	0.14	0.51
STYRENE	3.49	4.20	1.99	3.22	0.35
TETRACHLOROETHYLENE	T	T	N	0.21	0.33
TRICHLOROETHYLENE	0.22	T	T	0.16	0.33
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.45
O-ETHYLTOLUENE	14.09	10.94	7.40	10.81	0.31
O-XYLENE	34.41	27.52	14.29	25.41	0.40
1,1,1-TRICHLOROETHANE	5.26	3.85	2.85	3.99	0.30
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.52	T	T	0.34	0.44
1,2,3-TRIMETHYLBENZENE	8.70	6.50	11.07	8.76	0.26
1,2,4-TRIMETHLYBENZENE	124.43	88.58	14.08	75.70	0.74
1,3,5-TRIMETHYLBENZENE	24.07	17.07	14.97	18.70	0.25
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 1, OFFICE, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	15.92	19.73	13.75	16.47	0.18
BENZENE	1.72	1.72	0.99	1.48	0.29
BROMODICHLOROETHANE	0.22	T	T	0.18	0.25
ETHYLBENZENE	62.93	71.65	59.01	64.53	0.10
ISOPROPYLBENZENE	3.99	4.18	2.68	3.61	0.23
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	T	N	N	0.04	1.47
M-ETHYLTOLUENE	27.14	28.81	21.13	25.69	0.16
M-XYLENE	36.25	50.65	48.40	45.10	0.17
N-BUTYLACETATE	0.92	1.13	1.05	1.03	0.10
N-DECANE	372.47	N	453.80	275.42	0.88
N-DODECANE	132.47	161.22	120.76	138.15	0.15
N-PROPYLBENZENE	4.77	5.63	4.22	4.87	0.15
N-UNDECANE	144.62	185.36	190.70	173.56	0.15
P-DICHLOROBENZENE	N	N	T	0.07	1.10
STYRENE	2.03	2.58	1.77	2.13	0.19
TETRACHLOROETHYLENE	T	T	N	0.13	0.24
TRICHLOROETHYLENE	T	T	N	0.12	0.32
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.87
O-ETHYLTOLUENE	8.62	9.49	6.99	8.37	0.15
O-XYLENE	15.02	18.53	18.44	17.33	0.12
1,1,1-TRICHLOROETHANE	3.11	2.56	1.80	2.49	0.26
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	T	0.21	0.11
1,2,3-TRIMETHYLBENZENE	14.59	T	11.25	8.61	0.89
1,2,4-TRIMETHLYBENZENE	63.64	5.67	34.87	34.73	0.83
1,3,5-TRIMETHYLBENZENE	14.90	16.08	17.70	16.23	0.09
2-ETHOXYETHYLACETATE	0.61	T	T	0.60	0.11

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OFFICE (NEW), TRIP 1, OFFICE, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	.	N	0.00	0.00
A-PINENE	T	.	N	0.15	0.63
BENZENE	0.80	.	2.11	1.45	0.64
BROMODICHLOROETHANE	N	.	N	0.00	0.00
ETHYLBENZENE	43.53	.	43.82	43.67	0.00
ISOPROPYLBENZENE	3.33	.	2.70	3.02	0.15
M-CRESOL	N	.	N	0.00	0.00
M-DICHLOROBENZENE	N	.	N	0.01	0.50
M-ETHYLTOLUENE	17.69	.	19.08	18.38	0.05
M-XYLENE	35.54	.	50.09	42.81	0.24
N-BUTYLACETATE	0.80	.	T	0.77	0.06
N-DECANE	386.44	.	422.95	404.70	0.06
N-DODECANE	166.22	.	128.64	147.43	0.18
N-PROPYLBENZENE	4.80	.	4.02	4.41	0.13
N-UNDECANE	146.72	.	246.21	196.47	0.36
P-DICHLOROBENZENE	T	.	T	0.12	0.27
STYRENE	2.42	.	1.62	2.02	0.28
TETRACHLOROETHYLENE	T	.	T	0.25	0.12
TRICHLOROETHYLENE	T	.	N	0.12	0.43
O-CRESOL	N	.	N	0.00	0.00
O-DICHLOROBENZENE	T	.	N	0.04	0.04
O-ETHYLTOLUENE	7.91	.	6.23	7.07	0.17
O-XYLENE	7.78	.	18.48	13.13	0.58
1,1,1-TRICHLOROETHANE	1.67	.	2.22	1.95	0.20
1,1,2,2-TETRACHLOROETHANE	N	.	N	0.00	0.00
1,2-DICHLOROETHANE	T	.	T	0.19	0.11
1,2,3-TRIMETHYLBENZENE	14.66	.	12.75	13.70	0.10
1,2,4-TRIMETHLYBENZENE	69.31	.	27.15	48.23	0.62
1,3,5-TRIMETHYLBENZENE	13.54	.	12.18	12.86	0.07
2-ETHOXYETHYLACETATE	N	.	N	0.00	0.00

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OFFICE (NEW), TRIP 1, OFFICE, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	20.34	22.86	17.38	20.19	0.14
BENZENE	3.11	5.52	3.36	4.00	0.33
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	41.31	54.00	37.12	44.14	0.20
ISOPROPYLBENZENE	3.57	4.08	3.00	3.55	0.15
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	0.50
M-ETHYLTOLUENE	25.08	30.72	21.70	25.83	0.18
M-XYLENE	30.61	39.02	40.80	36.81	0.15
N-BUTYLACETATE	0.72	0.77	T	0.75	0.04
N-DECANE	201.32	335.84	296.62	277.93	0.25
N-DODECANE	N	181.13	138.08	106.41	0.89
N-PROPYLBENZENE	4.89	6.10	4.43	5.14	0.17
N-UNDECANE	188.21	291.90	219.47	233.19	0.23
P-DICHLOROBENZENE	T	T	T	0.26	0.16
STYRENE	2.31	3.05	1.88	2.41	0.25
TETRACHLOROETHYLENE	0.69	1.23	T	0.86	0.37
TRICHLOROETHYLENE	0.23	T	T	0.22	0.22
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.15
O-ETHYLTOLUENE	5.01	9.91	6.89	7.27	0.34
O-XYLENE	11.76	10.90	17.09	13.25	0.25
1,1,1-TRICHLOROETHANE	3.44	4.43	2.73	3.53	0.24
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	T	0.26	0.22
1,2,3-TRIMETHYLBENZENE	13.25	17.73	12.99	14.66	0.18
1,2,4-TRIMETHLYBENZENE	62.22	24.28	35.20	40.57	0.48
1,3,5-TRIMETHYLBENZENE	20.95	9.06	12.94	14.32	0.42
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 1, OFFICE, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	17.19	7.43	14.87	13.16	0.39
BENZENE	1.40	2.95	3.33	2.56	0.40
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	45.68	57.51	40.35	47.85	0.18
ISOPROPYLBENZENE	3.43	4.40	2.63	3.49	0.25
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.86
M-ETHYLTOLUENE	25.93	30.11	21.34	25.79	0.17
M-XYLENE	34.81	45.07	52.53	44.14	0.20
N-BUTYLACETATE	1.91	1.21	0.96	1.36	0.36
N-DECANE	441.01	408.25	611.58	486.95	0.22
N-DODECANE	139.19	152.75	132.00	141.31	0.07
N-PROPYLBENZENE	3.92	5.43	4.46	4.61	0.17
N-UNDECANE	108.41	163.40	203.80	158.54	0.30
P-DICHLOROBENZENE	T	T	T	0.19	0.28
STYRENE	2.18	2.50	4.38	3.02	0.39
TETRACHLOROETHYLENE	T	T	T	0.28	0.10
TRICHLOROETHYLENE	T	T	N	0.10	0.16
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.03	0.10
O-ETHYLTOLUENE	8.73	9.72	7.34	8.59	0.14
O-XYLENE	18.54	22.19	16.06	18.93	0.16
1,1,1-TRICHLOROETHANE	3.25	3.65	2.61	3.17	0.17
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.43	T	T	0.43	0.17
1,2,3-TRIMETHYLBENZENE	15.55	15.94	14.55	15.35	0.05
1,2,4-TRIMETHLYBENZENE	76.38	75.18	41.89	64.48	0.30
1,3,5-TRIMETHYLBENZENE	15.04	16.88	14.46	15.46	0.08
2-ETHOXYETHYLACETATE	0.56	T	T	0.56	0.12

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 1, OUTDOORS, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	2.35	2.33	3.30	2.66	0.21
BROMODICHLOROETHANE	N	N	N	0.04	0.51
ETHYLBENZENE	0.27	0.33	0.44	0.34	0.25
ISOPROPYLBENZENE	T	T	T	0.05	0.40
M-CRESOL	N	T	N	0.30	1.51
M-DICHLOROBENZENE	N	T	N	0.08	1.27
M-ETHYLTOLUENE	0.28	0.48	0.67	0.48	0.41
M-XYLENE	0.68	1.10	1.67	1.15	0.44
N-BUTYLACETATE	N	N	T	0.11	0.80
N-DECANE	0.95	1.01	2.15	1.37	0.49
N-DODECANE	0.78	N	N	0.26	1.73
N-PROPYLBENZENE	T	T	T	0.12	0.42
N-UNDECANE	0.97	N	T	0.49	1.00
P-DICHLOROBENZENE	N	T	N	0.08	0.95
STYRENE	0.13	0.53	T	0.28	0.82
TETRACHLOROETHYLENE	T	N	T	0.24	0.79
TRICHLOROETHYLENE	T	T	T	0.18	0.67
O-CRESOL	N	2.48	N	0.83	1.71
O-DICHLOROBENZENE	N	N	N	0.00	1.73
O-ETHYLTOLUENE	0.08	0.10	0.20	0.13	0.51
O-XYLENE	0.26	0.40	0.62	0.43	0.43
1,1,1-TRICHLOROETHANE	0.60	1.24	2.10	1.31	0.57
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	T	0.25	0.37
1,2,3-TRIMETHYLBENZENE	0.23	0.46	0.30	0.33	0.35
1,2,4-TRIMETHLYBENZENE	0.38	0.59	0.91	0.62	0.43
1,3,5-TRIMETHYLBENZENE	T	T	T	0.14	0.47
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE (NEW), TRIP 1, OUTDOORS, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	2.29	4.35	3.43	3.36	0.31
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.54	0.48	0.41	0.48	0.13
ISOPROPYLBENZENE	T	N	N	0.03	0.25
M-CRESOL	N	N	N	0.03	0.42
M-DICHLOROBENZENE	N	N	T	0.06	0.70
M-ETHYLTOLUENE	0.40	0.36	T	0.37	0.07
M-XYLENE	1.45	1.21	1.16	1.27	0.12
N-BUTYLACETATE	N	N	N	0.03	0.38
N-DECANE	0.98	T	T	0.82	0.18
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	T	N	0.07	0.24
N-UNDECANE	N	N	N	0.05	1.00
P-DICHLOROBENZENE	N	N	N	0.01	0.33
STYRENE	0.35	0.21	0.72	0.43	0.62
TETRACHLOROETHYLENE	N	T	N	0.10	0.17
TRICHLOROETHYLENE	N	T	N	0.05	1.26
O-CRESOL	N	N	N	0.00	0.93
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.12	0.12	0.11	0.12	0.07
O-XYLENE	0.43	0.37	T	0.38	0.12
1,1,1-TRICHLOROETHANE	1.05	1.04	T	0.87	0.36
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.17	0.11
1,2,3-TRIMETHYLBENZENE	0.19	0.59	0.58	0.45	0.50
1,2,4-TRIMETHLYBENZENE	0.55	0.51	0.60	0.55	0.08
1,3,5-TRIMETHYLBENZENE	T	T	N	0.11	0.14
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 1, OUTDOORS, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.10	0.44
BENZENE	2.69	1.96	2.91	2.52	0.20
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.07	0.96	0.85	0.96	0.11
ISOPROPYLBENZENE	T	T	T	0.07	0.18
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	4.48
M-ETHYLTOLUENE	1.16	0.93	0.97	1.02	0.12
M-XYLENE	2.72	2.05	2.17	2.31	0.15
N-BUTYLACETATE	N	N	N	0.03	0.35
N-DECANE	T	T	N	0.43	0.54
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	T	T	0.19	0.10
N-UNDECANE	N	N	N	0.05	1.73
P-DICHLOROBENZENE	N	N	N	0.03	0.17
STYRENE	0.26	0.43	0.44	0.38	0.27
TETRACHLOROETHYLENE	T	N	N	0.14	0.18
TRICHLOROETHYLENE	T	N	N	0.04	0.31
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.31	0.25	0.28	0.28	0.12
O-XYLENE	1.00	0.72	0.78	0.84	0.18
1,1,1-TRICHLOROETHANE	0.81	0.44	T	0.56	0.38
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.13	0.41
1,2,3-TRIMETHYLBENZENE	0.14	0.30	0.28	0.24	0.36
1,2,4-TRIMETHLYBENZENE	1.54	1.23	1.20	1.33	0.14
1,3,5-TRIMETHYLBENZENE	0.36	T	T	0.30	0.17
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 1, OUTDOORS, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.07	0.24
BENZENE	3.79	4.24	3.47	3.83	0.10
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.34	1.39	1.21	1.31	0.07
ISOPROPYLBENZENE	0.12	T	T	0.12	0.18
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.43	1.38	1.12	1.31	0.13
M-XYLENE	3.78	3.19	2.56	3.18	0.19
N-BUTYLACETATE	N	N	N	0.07	0.26
N-DECANE	0.81	T	N	0.51	0.55
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	0.28	T	T	0.27	0.14
N-UNDECANE	T	T	N	0.25	0.40
P-DICHLOROBENZENE	N	N	N	0.05	0.22
STYRENE	0.34	1.53	1.18	1.02	0.60
TETRACHLOROETHYLENE	0.53	T	T	0.49	0.11
TRICHLOROETHYLENE	T	N	N	0.03	0.50
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.44	0.40	0.32	0.39	0.16
O-XYLENE	1.10	1.10	0.95	1.05	0.09
1,1,1-TRICHLOROETHANE	0.61	0.59	T	0.48	0.43
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.09	0.24
1,2,3-TRIMETHYLBENZENE	0.46	0.44	0.40	0.43	0.07
1,2,4-TRIMETHLYBENZENE	2.00	1.68	1.37	1.68	0.19
1,3,5-TRIMETHYLBENZENE	0.43	T	T	0.37	0.18
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 1, OUTDOORS, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	N	0.44	0.34
BENZENE	10.27	6.61	10.87	9.25	0.25
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	5.77	4.63	2.92	4.44	0.32
ISOPROPYLBENZENE	0.42	0.25	0.27	0.31	0.30
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.45
M-ETHYLTOLUENE	5.54	4.61	4.03	4.73	0.16
M-XYLENE	12.78	11.78	10.07	11.54	0.12
N-BUTYLACETATE	N	N	N	0.05	0.35
N-DECANE	2.38	1.62	T	1.78	0.31
N-DODECANE	T	T	N	0.53	0.35
N-PROPYLBENZENE	0.99	0.78	0.74	0.84	0.16
N-UNDECANE	1.73	T	T	1.12	0.48
P-DICHLOROBENZENE	T	T	T	0.20	0.12
STYRENE	1.10	0.83	0.89	0.94	0.15
TETRACHLOROETHYLENE	1.58	1.40	1.19	1.39	0.14
TRICHLOROETHYLENE	T	T	N	0.07	0.40
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.16
O-ETHYLTOLUENE	1.49	1.18	1.02	1.23	0.20
O-XYLENE	4.97	4.18	3.52	4.22	0.17
1,1,1-TRICHLOROETHANE	2.07	1.74	1.10	1.64	0.30
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.17	0.45
1,2,3-TRIMETHYLBENZENE	1.60	1.28	1.08	1.32	0.20
1,2,4-TRIMETHLYBENZENE	7.20	5.98	5.36	6.18	0.15
1,3,5-TRIMETHYLBENZENE	1.71	1.34	1.27	1.44	0.17
2-ETHOXYETHYLACETATE	T	N	N	0.11	0.24

N = BELOW THE LIMIT OF DETECTION
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OFFICE (NEW), TRIP 1, OUTDOORS, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.08	0.14
BENZENE	3.11	2.73	2.66	2.83	0.09
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.63	1.12	1.47	1.40	0.19
ISOPROPYLBENZENE	0.12	T	T	0.12	0.04
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.55	1.40	1.40	1.45	0.06
M-XYLENE	3.93	3.42	3.33	3.56	0.09
N-BUTYLACETATE	N	N	N	0.07	0.20
N-DECANE	T	T	N	0.52	0.33
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	0.29	T	T	0.27	0.08
N-UNDECANE	T	T	N	0.46	0.32
P-DICHLOROBENZENE	N	N	N	0.02	0.25
STYRENE	0.29	0.36	0.36	0.33	0.12
TETRACHLOROETHYLENE	T	T	N	0.17	0.14
TRICHLOROETHYLENE	N	N	N	0.02	0.85
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.42	0.40	0.39	0.40	0.03
O-XYLENE	1.45	1.19	1.22	1.29	0.11
1,1,1-TRICHLOROETHANE	1.33	1.42	0.95	1.24	0.20
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.21	0.40
1,2,3-TRIMETHYLBENZENE	0.48	0.44	0.50	0.48	0.06
1,2,4-TRIMETHLYBENZENE	2.17	1.77	1.83	1.92	0.11
1,3,5-TRIMETHYLBENZENE	0.50	T	T	0.45	0.09
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	43.02	31.73	48.07	40.94	0.20
BENZENE	7.77	5.85	10.49	8.04	0.29
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	7.55	6.11	9.06	7.57	0.19
ISOPROPYLBENZENE	1.01	0.73	1.03	0.92	0.18
M-CRESOL	3.45	3.44	5.60	4.16	0.30
M-DICHLOROBENZENE	N	N	N	0.00	1.25
M-ETHYLTOLUENE	7.97	5.59	8.67	7.41	0.22
M-XYLENE	20.51	16.13	22.72	19.79	0.17
N-BUTYLACETATE	9.55	10.84	12.95	11.12	0.15
N-DECANE	23.94	17.60	20.18	20.57	0.15
N-DODECANE	26.63	23.97	31.54	27.38	0.14
N-PROPYLBENZENE	1.57	1.20	1.82	1.53	0.20
N-UNDECANE	37.83	38.03	50.17	42.01	0.17
P-DICHLOROBENZENE	3.14	2.36	2.71	2.73	0.14
STYRENE	3.87	3.05	3.89	3.60	0.13
TETRACHLOROETHYLENE	2.74	2.10	3.11	2.65	0.19
TRICHLOROETHYLENE	16.14	7.62	21.23	15.00	0.46
O-CRESOL	1.28	0.74	1.22	1.08	0.27
O-DICHLOROBENZENE	0.28	0.23	0.23	0.25	0.10
O-ETHYLTOLUENE	2.92	2.10	3.16	2.73	0.20
O-XYLENE	4.98	3.58	5.41	4.66	0.21
1,1,1-TRICHLOROETHANE	75.83	60.95	88.84	75.21	0.19
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	17.76	14.39	22.24	18.13	0.22
1,2,3-TRIMETHYLBENZENE	T	2.57	3.94	2.17	0.92
1,2,4-TRIMETHLYBENZENE	N	7.52	10.06	5.85	0.90
1,3,5-TRIMETHYLBENZENE	3.63	2.87	4.45	3.65	0.22
2-ETHOXYETHYLACETATE	2.49	1.85	2.90	2.41	0.22

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	35.71	24.92	30.24	30.29	0.18
BENZENE	3.75	2.89	4.74	3.79	0.24
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.24	4.14	5.67	5.35	0.20
ISOPROPYLBENZENE	0.80	0.49	0.71	0.67	0.24
M-CRESOL	4.15	4.61	6.03	4.93	0.20
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	6.51	4.31	6.02	5.62	0.21
M-XYLENE	17.11	13.21	18.35	16.22	0.17
N-BUTYLACETATE	7.02	5.13	8.03	6.73	0.22
N-DECANE	20.74	16.30	22.18	19.74	0.16
N-DODECANE	27.82	23.56	34.55	28.64	0.19
N-PROPYLBENZENE	1.36	0.88	1.27	1.17	0.22
N-UNDECANE	37.30	37.18	46.62	40.36	0.13
P-DICHLOROBENZENE	2.93	1.89	2.73	2.52	0.22
STYRENE	2.48	1.82	4.17	2.82	0.43
TETRACHLOROETHYLENE	1.56	0.96	1.29	1.27	0.23
TRICHLOROETHYLENE	6.89	4.40	6.03	5.77	0.22
O-CRESOL	0.97	T	T	0.67	0.48
O-DICHLOROBENZENE	0.26	T	T	0.21	0.28
O-ETHYLTOLUENE	2.58	1.70	2.42	2.23	0.21
O-XYLENE	3.88	2.70	3.63	3.40	0.18
1,1,1-TRICHLOROETHANE	52.74	47.96	69.56	56.75	0.20
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	4.54	2.65	3.63	3.61	0.26
1,2,3-TRIMETHYLBENZENE	3.37	2.11	3.55	3.01	0.26
1,2,4-TRIMETHLYBENZENE	9.37	6.40	9.08	8.28	0.20
1,3,5-TRIMETHYLBENZENE	3.40	2.14	3.06	2.87	0.23
2-ETHOXYETHYLACETATE	3.00	1.20	1.74	1.98	0.47

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 3

CONCENTRATION (NG/L)

COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	29.48	16.68	26.88	24.35	0.28
BENZENE	6.70	3.83	7.04	5.86	0.30
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.26	4.00	6.59	5.62	0.25
ISOPROPYLBENZENE	0.88	0.52	0.81	0.74	0.26
M-CRESOL	5.61	5.62	6.99	6.07	0.13
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	6.61	4.19	6.43	5.74	0.23
M-XYLENE	15.42	12.99	20.30	16.24	0.23
N-BUTYLACETATE	8.99	4.96	6.34	6.76	0.30
N-DECANE	13.79	11.51	16.09	13.80	0.17
N-DODECANE	23.65	19.71	29.21	24.19	0.20
N-PROPYLBENZENE	1.31	0.87	1.32	1.17	0.28
N-UNDECANE	32.65	29.71	39.56	33.98	0.15
P-DICHLOROBENZENE	3.74	2.19	3.36	3.10	0.26
STYRENE	3.07	2.17	4.21	3.15	0.33
TETRACHLOROETHYLENE	3.26	1.90	3.12	2.76	0.27
TRICHLOROETHYLENE	11.20	6.85	12.04	10.03	0.28
O-CRESOL	1.05	0.62	0.98	0.89	0.26
O-DICHLOROBENZENE	0.24	T	T	0.17	0.38
O-ETHYLTOLUENE	2.48	1.50	2.31	2.09	0.25
O-XYLENE	3.97	2.55	3.97	3.50	0.23
1,1,1-TRICHLOROETHANE	29.72	16.81	31.36	25.96	0.31
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	2.57	1.04	2.16	1.92	0.41
1,2,3-TRIMETHYLBENZENE	4.21	1.88	3.87	3.32	0.38
1,2,4-TRIMETHLYBENZENE	7.94	5.59	8.41	7.31	0.21
1,3,5-TRIMETHYLBENZENE	3.16	2.10	2.96	2.74	0.20
2-ETHOXYETHYLACETATE	3.31	1.70	2.47	2.49	0.32

N = BELOW THE LIMIT OF DETECTION
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OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	23.10	14.51	20.62	19.41	0.23
BENZENE	4.12	3.02	5.07	4.07	0.25
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.80	3.40	4.80	4.33	0.19
ISOPROPYLBENZENE	0.66	0.45	0.61	0.57	0.19
M-CRESOL	4.97	7.31	7.23	6.50	0.20
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	5.50	3.96	5.59	5.01	0.18
M-XYLENE	13.43	10.11	13.67	12.40	0.16
N-BUTYLACETATE	3.00	2.48	4.06	3.18	0.25
N-DECANE	13.30	11.19	16.17	13.55	0.18
N-DODECANE	22.51	17.16	27.47	22.38	0.23
N-PROPYLBENZENE	1.03	0.79	1.09	0.97	0.16
N-UNDECANE	33.43	29.17	40.38	34.33	0.16
P-DICHLOROBENZENE	2.81	1.84	2.52	2.39	0.21
STYRENE	2.23	1.49	2.40	2.04	0.24
TETRACHLOROETHYLENE	1.94	1.25	1.79	1.66	0.22
TRICHLOROETHYLENE	6.44	3.08	6.87	5.47	0.38
O-CRESOL	0.71	0.79	T	0.71	0.12
O-DICHLOROBENZENE	0.19	T	T	0.17	0.22
O-ETHYLTOLUENE	2.01	1.45	2.01	1.82	0.18
O-XYLENE	3.27	2.37	3.13	2.92	0.17
1,1,1-TRICHLOROETHANE	16.77	11.32	18.07	15.39	0.23
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.40	0.77	1.15	1.10	0.29
1,2,3-TRIMETHYLBENZENE	2.90	1.83	2.80	2.51	0.23
1,2,4-TRIMETHLYBENZENE	7.11	5.35	7.50	6.65	0.17
1,3,5-TRIMETHYLBENZENE	2.96	1.91	2.63	2.50	0.22
2-ETHOXYETHYLACETATE	3.31	2.22	2.56	2.70	0.21

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OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	20.47	12.06	13.93	15.49	0.29
BENZENE	5.14	3.82	6.40	5.12	0.25
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.50	2.98	3.64	3.71	0.21
ISOPROPYLBENZENE	0.67	0.42	0.45	0.51	0.27
M-CRESOL	13.43	6.89	11.28	10.53	0.32
M-DICHLOROBENZENE	N	N	N	0.00	1.25
M-ETHYLTOLUENE	6.11	3.70	4.58	4.80	0.25
M-XYLENE	12.48	8.35	11.07	10.63	0.20
N-BUTYLACETATE	12.50	8.80	10.72	10.67	0.17
N-DECANE	9.12	8.37	10.75	9.41	0.13
N-DODECANE	28.02	18.20	27.02	24.41	0.22
N-PROPYLBENZENE	1.07	0.71	0.82	0.87	0.21
N-UNDECANE	34.46	28.90	40.60	34.65	0.17
P-DICHLOROBENZENE	2.47	1.61	1.98	2.02	0.21
STYRENE	2.74	1.94	2.43	2.37	0.17
TETRACHLOROETHYLENE	1.03	0.61	0.75	0.80	0.26
TRICHLOROETHYLENE	6.92	3.00	4.37	4.76	0.42
O-CRESOL	1.31	0.57	1.15	1.01	0.39
O-DICHLOROBENZENE	0.16	T	T	0.10	0.46
O-ETHYLTOLUENE	1.98	1.25	1.52	1.58	0.23
O-XYLENE	3.51	2.00	2.41	2.64	0.30
1,1,1-TRICHLOROETHANE	18.27	13.13	20.29	17.23	0.21
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.85	T	T	0.58	0.41
1,2,3-TRIMETHYLBENZENE	2.95	1.92	2.37	2.41	0.21
1,2,4-TRIMETHLYBENZENE	6.83	4.65	5.78	5.75	0.19
1,3,5-TRIMETHYLBENZENE	2.42	1.47	2.37	2.08	0.26
2-ETHOXYETHYLACETATE	3.02	1.84	2.16	2.34	0.26

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OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	28.94	19.46	25.30	24.57	0.19
BENZENE	5.01	3.06	4.56	4.21	0.24
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.37	4.11	4.89	5.12	0.22
ISOPROPYLBENZENE	0.86	0.50	0.60	0.65	0.29
M-CRESOL	3.92	4.68	10.49	6.36	0.57
M-DICHLOROBENZENE	T	N	N	0.04	1.83
M-ETHYLTOLUENE	6.34	4.28	5.32	5.31	0.19
M-XYLENE	15.70	11.45	14.70	13.95	0.16
N-BUTYLACETATE	4.24	2.50	2.94	3.23	0.28
N-DECANE	14.83	13.15	16.97	14.99	0.13
N-DODECANE	25.72	21.52	31.57	26.27	0.19
N-PROPYLBENZENE	1.34	0.87	1.08	1.10	0.21
N-UNDECANE	34.44	32.30	44.50	37.08	0.18
P-DICHLOROBENZENE	2.58	1.72	2.15	2.15	0.20
STYRENE	4.60	2.23	2.79	3.20	0.39
TETRACHLOROETHYLENE	0.83	T	T	0.61	0.34
TRICHLOROETHYLENE	5.31	3.08	4.19	4.19	0.27
O-CRESOL	0.93	T	0.82	0.74	0.31
O-DICHLOROBENZENE	0.19	T	T	0.13	0.44
O-ETHYLTOLUENE	2.27	1.56	1.94	1.93	0.18
O-XYLENE	3.75	2.67	3.29	3.24	0.17
1,1,1-TRICHLOROETHANE	21.78	14.29	18.86	18.31	0.21
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.08	T	T	0.71	0.46
1,2,3-TRIMETHYLBENZENE	3.52	2.08	2.45	2.68	0.28
1,2,4-TRIMETHLYBENZENE	7.90	5.99	7.49	7.12	0.14
1,3,5-TRIMETHYLBENZENE	3.04	2.15	2.65	2.61	0.17
2-ETHOXYETHYLACETATE	3.16	1.66	1.69	2.17	0.40

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OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	.	N	0.00	0.00
A-PINENE	41.87	.	46.85	44.36	0.08
BENZENE	8.73	.	8.97	8.85	0.02
BROMODICHLOROETHANE	N	.	N	0.00	0.00
ETHYLBENZENE	9.65	.	8.32	8.99	0.10
ISOPROPYLBENZENE	1.16	.	0.99	1.07	0.11
M-CRESOL	4.13	.	7.66	5.89	0.42
M-DICHLOROBENZENE	N	.	N	0.02	1.17
M-ETHYLTOLUENE	8.93	.	7.66	8.30	0.11
M-XYLENE	23.91	.	22.54	23.22	0.04
N-BUTYLACETATE	9.94	.	7.56	8.75	0.19
N-DECANE	20.45	.	24.69	22.57	0.13
N-DODECANE	26.55	.	35.55	31.05	0.20
N-PROPYLBENZENE	1.90	.	1.71	1.80	0.08
N-UNDECANE	36.94	.	49.79	43.36	0.21
P-DICHLOROBENZENE	3.82	.	3.56	3.69	0.05
STYRENE	3.98	.	5.00	4.49	0.16
TETRACHLOROETHYLENE	3.08	.	2.76	2.92	0.08
TRICHLOROETHYLENE	22.24	.	13.47	17.86	0.35
O-CRESOL	1.25	.	1.03	1.14	0.14
O-DICHLOROBENZENE	0.38	.	0.35	0.37	0.05
O-ETHYLTOLUENE	3.25	.	2.99	3.12	0.06
O-XYLENE	5.53	.	5.11	5.32	0.06
1,1,1-TRICHLOROETHANE	84.64	.	104.09	94.37	0.15
1,1,2,2-TETRACHLOROETHANE	N	.	N	0.00	0.00
1,2-DICHLOROETHANE	21.75	.	22.07	21.91	0.01
1,2,3-TRIMETHYLBENZENE	3.94	.	4.05	3.99	0.02
1,2,4-TRIMETHLYBENZENE	9.98	.	10.22	10.10	0.02
1,3,5-TRIMETHYLBENZENE	4.21	.	4.31	4.26	0.02
2-ETHOXYETHYLACETATE	2.23	.	2.25	2.24	0.01

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OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 2

COMPOUNDS	CONCENTRATION (NG/L)				
	[illegible]	MEDIAN	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	24.[illegible]	26.76	23.26	24.91	0.07
BENZENE	3.[illegible]	3.65	4.81	3.97	0.18
BROMODICHLOROMETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.[illegible]	5.67	4.81	5.11	0.09
ISOPROPYLBENZENE	0.[illegible]	0.66	0.52	0.60	0.12
M-CRESOL	4.[illegible]	5.69	6.10	5.41	0.16
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	4.[illegible]	5.53	4.75	5.06	0.08
M-XYLENE	1[illegible].[illegible]	15.36	14.29	14.52	0.05
N-BUTYLACETATE	[illegible]	5.69	3.76	5.56	0.30
N-DECANE	1[illegible]	20.9[illegible]	18.52	18.78	0.11
N-DODECANE	22.[illegible]	24.10	22.02	22.98	0.05
N-PROPYLBENZENE	[illegible]	1.22	1.01	1.08	0.11
N-UNDECANE	2[illegible]	30.61	34.78	33.71	0.11
P-DICHLOROBENZENE	2.[illegible]	2.64	2.20	2.36	0.10
STYRENE	[illegible]	3.32	1.95	2.43	0.32
TETRACHLOROETHYLENE	1.20	1.26	1.14	1.20	0.05
TRICHLOROETHYLENE	[illegible]	8.61	4.10	6.66	0.35
O-CRESOL	0.[illegible]	0.60	T	0.59	0.02
O-DICHLOROBENZENE	0.[illegible]	0.20	T	0.19	0.13
O-ETHYLTOLUENE	1.09	2.17	1.92	2.03	0.06
O-XYLENE	3.09	3.35	3.09	3.18	0.05
1,1,1-TRICHLOROETHANE	48.[illegible]	56.93	61.30	55.55	0.12
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	3.[illegible]	3.07	3.31	3.53	0.05
1,2,3-TRIMETHYLBENZENE	2.[illegible]	2.99	2.48	2.66	0.11
1,2,4-TRIMETHYLBENZENE	[illegible]	8.80	7.08	7.39	0.10
1,3,5-TRIMETHYLBENZENE	2.[illegible]	2.70	2.45	2.61	0.06
2-ETHOXYETHYLACETATE	2.[illegible]	1.52	1.42	1.70	0.21

N = BELOW THE LIMIT OF DETECTION
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OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	25.07	19.42	18.00	20.83	0.18
BENZENE	4.95	4.46	4.84	4.75	0.05
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.18	5.09	5.00	5.42	0.12
ISOPROPYLBENZENE	0.80	0.62	0.60	0.68	0.17
M-CRESOL	3.94	8.01	5.54	5.83	0.35
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	6.16	5.46	5.39	5.67	0.08
M-XYLENE	17.20	14.35	14.39	15.31	0.11
N-BUTYLACETATE	8.56	4.67	3.72	5.65	0.45
N-DECANE	11.74	13.67	14.48	13.30	0.11
N-DODECANE	22.76	25.32	23.63	23.90	0.05
N-PROPYLBENZENE	1.21	1.02	1.02	1.08	0.10
N-UNDECANE	31.36	34.06	34.84	33.42	0.05
P-DICHLOROBENZENE	3.68	3.24	3.01	3.31	0.10
STYRENE	3.01	2.44	3.07	2.84	0.12
TETRACHLOROETHYLENE	2.90	2.33	2.40	2.54	0.12
TRICHLOROETHYLENE	10.45	8.62	8.44	9.17	0.12
O-CRESOL	1.06	1.07	T	0.95	0.20
O-DICHLOROBENZENE	0.22	0.23	T	0.20	0.25
O-ETHYLTOLUENE	2.31	2.00	1.90	2.07	0.10
O-XYLENE	3.91	3.34	3.27	3.50	0.10
1,1,1-TRICHLOROETHANE	25.80	23.14	25.21	24.72	0.06
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.98	1.49	1.50	1.66	0.17
1,2,3-TRIMETHYLBENZENE	3.53	2.66	3.08	3.09	0.14
1,2,4-TRIMETHLYBENZENE	8.02	6.99	6.93	7.32	0.08
1,3,5-TRIMETHYLBENZENE	2.83	2.46	2.43	2.58	0.09
2-ETHOXYETHYLACETATE	2.93	2.22	1.77	2.30	0.25

N = BELOW THE LIMIT OF DETECTION
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OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	17.14	16.25	13.99	15.79	0.10
BENZENE	5.67	2.70	3.39	3.92	0.40
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.27	3.72	3.68	3.89	0.08
ISOPROPYLBENZENE	0.57	0.50	0.46	0.51	0.11
M-CRESOL	4.06	6.82	8.32	6.40	0.34
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	4.64	4.35	4.19	4.39	0.05
M-XYLENE	11.97	10.87	11.81	11.55	0.05
N-BUTYLACETATE	3.40	2.48	2.19	2.69	0.24
N-DECANE	12.92	12.00	11.44	12.12	0.06
N-DODECANE	18.24	17.52	17.44	17.74	0.02
N-PROPYLBENZENE	0.97	0.86	0.80	0.88	0.10
N-UNDECANE	24.15	26.81	24.86	25.27	0.05
P-DICHLOROBENZENE	2.38	2.03	1.95	2.12	0.11
STYRENE	1.79	3.95	1.60	2.45	0.53
TETRACHLOROETHYLENE	1.71	1.38	1.31	1.47	0.15
TRICHLOROETHYLENE	7.33	3.72	3.93	4.99	0.41
O-CRESOL	0.59	0.68	T	0.58	0.17
O-DICHLOROBENZENE	0.18	T	T	0.15	0.25
O-ETHYLTOLUENE	1.84	1.62	1.53	1.67	0.10
O-XYLENE	2.92	2.66	3.06	2.88	0.07
1,1,1-TRICHLOROETHANE	25.23	18.51	19.27	21.00	0.18
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.69	0.95	0.84	1.16	0.40
1,2,3-TRIMETHYLBENZENE	2.55	2.39	2.04	2.33	0.11
1,2,4-TRIMETHLYBENZENE	6.60	5.97	5.81	6.12	0.07
1,3,5-TRIMETHYLBENZENE	2.25	2.13	2.18	2.19	0.03
2-ETHOXYETHYLACETATE	3.07	2.16	1.62	2.28	0.32

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	19.47	15.40	13.73	16.20	0.18
BENZENE	5.31	4.52	8.21	6.02	0.32
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.55	4.01	4.34	4.30	0.06
ISOPROPYLBENZENE	0.68	0.55	0.52	0.59	0.15
M-CRESOL	5.52	6.17	10.50	7.40	0.37
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	5.32	4.82	4.68	4.94	0.07
M-XYLENE	12.65	11.71	12.34	12.24	0.04
N-BUTYLACETATE	5.48	4.61	6.42	5.50	0.16
N-DECANE	5.50	7.66	9.73	7.63	0.28
N-DODECANE	24.11	24.40	19.99	22.83	0.11
N-PROPYLBENZENE	1.03	0.93	0.89	0.95	0.08
N-UNDECANE	33.84	32.40	29.80	32.01	0.06
P-DICHLOROBENZENE	2.64	2.33	2.20	2.39	0.09
STYRENE	2.43	2.31	2.82	2.52	0.11
TETRACHLOROETHYLENE	1.12	0.88	1.00	1.00	0.12
TRICHLOROETHYLENE	6.60	5.28	10.36	7.41	0.36
O-CRESOL	1.27	1.15	1.22	1.21	0.05
O-DICHLOROBENZENE	0.16	T	T	0.13	0.27
O-ETHYLTOLUENE	2.01	1.78	1.66	1.81	0.10
O-XYLENE	2.98	2.72	4.91	3.54	0.34
1,1,1-TRICHLOROETHANE	24.56	22.29	27.48	24.78	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.08	0.70	1.08	0.95	0.23
1,2,3-TRIMETHYLBENZENE	3.60	2.56	2.48	2.88	0.22
1,2,4-TRIMETHLYBENZENE	7.42	6.60	6.34	6.79	0.08
1,3,5-TRIMETHYLBENZENE	2.65	2.56	2.50	2.57	0.03
2-ETHOXYETHYLACETATE	2.58	2.01	1.61	2.07	0.24

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (SMOKERS), PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	.	0.00	0.00
A-PINENE	28.32	25.39	.	26.86	0.08
BENZENE	4.12	3.67	.	3.90	0.08
BROMODICHLOROETHANE	N	N	.	0.00	0.00
ETHYLBENZENE	6.46	5.81	.	6.14	0.07
ISOPROPYLBENZENE	0.83	0.71	.	0.77	0.11
M-CRESOL	5.45	5.68	.	5.57	0.03
M-DICHLOROBENZENE	N	N	.	0.00	0.00
M-ETHYLTOLUENE	6.61	5.97	.	6.29	0.07
M-XYLENE	16.05	15.27	.	15.66	0.04
N-BUTYLACETATE	5.51	5.12	.	5.32	0.05
N-DECANE	18.00	17.90	.	17.95	0.00
N-DODECANE	25.37	25.29	.	25.33	0.00
N-PROPYLBENZENE	1.34	1.22	.	1.28	0.06
N-UNDECANE	34.43	34.41	.	34.42	0.00
P-DICHLOROBENZENE	2.67	2.37	.	2.52	0.08
STYRENE	2.92	2.33	.	2.62	0.16
TETRACHLOROETHYLENE	0.75	0.59	.	0.67	0.16
TRICHLOROETHYLENE	8.93	7.28	.	8.10	0.14
O-CRESOL	0.98	0.82	.	0.90	0.12
O-DICHLOROBENZENE	0.17	T	.	0.15	0.15
O-ETHYLTOLUENE	2.47	2.27	.	2.37	0.06
O-XYLENE	5.12	6.48	.	5.80	0.16
1,1,1-TRICHLOROETHANE	25.92	23.13	.	24.52	0.08
1,1,2,2-TETRACHLOROETHANE	N	N	.	0.00	0.00
1,2-DICHLOROETHANE	1.37	0.90	.	1.14	0.29
1,2,3-TRIMETHYLBENZENE	3.79	3.37	.	3.58	0.08
1,2,4-TRIMETHLYBENZENE	9.14	8.24	.	8.69	0.07
1,3,5-TRIMETHYLBENZENE	3.41	3.24	.	3.32	0.04
2-ETHOXYETHYLACETATE	2.81	2.19	.	2.50	0.18

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (NONSMOKERS), PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	32.80	43.88	40.33	39.00	0.15
BENZENE	6.42	8.36	7.46	7.41	0.13
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.63	8.41	7.26	7.43	0.12
ISOPROPYLBENZENE	0.83	1.07	0.84	0.91	0.15
M-CRESOL	3.73	6.29	9.88	6.64	0.47
M-DICHLOROBENZENE	N	N	N	0.01	1.35
M-ETHYLTOLUENE	6.68	8.34	7.56	7.53	0.11
M-XYLENE	18.56	23.05	20.80	20.80	0.11
N-BUTYLACETATE	10.33	14.61	13.59	12.84	0.17
N-DECANE	18.40	25.90	22.71	22.33	0.17
N-DODECANE	25.25	29.10	29.44	27.93	0.08
N-PROPYLBENZENE	1.37	1.67	1.56	1.54	0.10
N-UNDECANE	30.92	42.45	44.90	39.42	0.19
P-DICHLOROBENZENE	3.31	4.13	3.59	3.68	0.11
STYRENE	2.91	4.96	4.93	4.26	0.28
TETRACHLOROETHYLENE	2.50	3.31	2.78	2.86	0.14
TRICHLOROETHYLENE	14.58	17.41	14.97	15.65	0.10
O-CRESOL	0.95	0.97	0.80	0.91	0.10
O-DICHLOROBENZENE	0.28	0.37	0.27	0.31	0.18
O-ETHYLTOLUENE	2.51	3.19	2.80	2.83	0.12
O-XYLENE	4.05	5.06	4.50	4.54	0.11
1,1,1-TRICHLOROETHANE	83.29	104.82	122.33	103.48	0.19
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	16.38	18.77	17.64	17.60	0.07
1,2,3-TRIMETHYLBENZENE	3.69	4.91	4.46	4.35	0.14
1,2,4-TRIMETHLYBENZENE	8.62	11.41	10.48	10.17	0.14
1,3,5-TRIMETHYLBENZENE	3.15	4.02	3.48	3.55	0.12
2-ETHOXYETHYLACETATE	1.82	2.24	1.68	1.92	0.15

N = BELOW THE LIMIT OF DETECTION
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OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (NONSMOKERS), PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	28.17	33.60	24.05	28.61	0.17
BENZENE	2.74	2.80	2.95	2.83	0.04
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	5.34	6.43	5.00	5.59	0.13
ISOPROPYLBENZENE	0.66	0.79	0.57	0.67	0.17
M-CRESOL	4.61	3.38	3.91	3.97	0.16
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	5.25	6.36	5.11	5.57	0.12
M-XYLENE	14.38	18.07	14.71	15.72	0.13
N-BUTYLACETATE	7.73	6.24	5.09	6.35	0.21
N-DECANE	17.72	22.73	18.44	19.63	0.14
N-DODECANE	22.26	27.62	23.78	24.56	0.11
N-PROPYLBENZENE	1.07	1.34	1.04	1.15	0.14
N-UNDECANE	29.04	39.93	36.76	35.24	0.16
P-DICHLOROBENZENE	2.36	2.74	2.16	2.42	0.12
STYRENE	3.76	2.79	2.15	2.90	0.28
TETRACHLOROETHYLENE	1.23	1.44	1.04	1.24	0.16
TRICHLOROETHYLENE	5.05	5.30	4.74	5.03	0.06
O-CRESOL	0.47	T	T	0.41	0.16
O-DICHLOROBENZENE	0.19	0.22	T	0.19	0.16
O-ETHYLTOLUENE	2.13	2.55	2.01	2.23	0.13
O-XYLENE	3.47	5.42	3.10	4.00	0.31
1,1,1-TRICHLOROETHANE	49.92	60.95	58.65	56.50	0.10
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	3.31	3.69	3.10	3.37	0.09
1,2,3-TRIMETHYLBENZENE	2.83	3.30	2.83	2.99	0.09
1,2,4-TRIMETHLYBENZENE	7.37	9.08	7.59	8.01	0.12
1,3,5-TRIMETHYLBENZENE	2.78	3.21	2.61	2.87	0.11
2-ETHOXYETHYLACETATE	2.18	2.00	1.34	1.84	0.24

N = BELOW THE LIMIT OF DETECTION
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OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (NONSMOKERS), PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	.	N	0.00	0.00
A-PINENE	19.72	.	18.71	19.21	0.04
BENZENE	3.56	.	3.83	3.70	0.05
BROMODICHLOROETHANE	N	.	N	0.00	0.00
ETHYLBENZENE	4.47	.	4.09	4.28	0.06
ISOPROPYLBENZENE	0.60	.	0.49	0.54	0.14
M-CRESOL	3.83	.	7.56	5.69	0.46
M-DICHLOROBENZENE	N	.	N	0.00	0.00
M-ETHYLTOLUENE	4.64	.	4.42	4.53	0.03
M-XYLENE	13.15	.	11.96	12.55	0.07
N-BUTYLACETATE	6.85	.	6.45	6.65	0.04
N-DECANE	12.25	.	12.85	12.55	0.03
N-DODECANE	17.90	.	20.36	19.13	0.09
N-PROPYLBENZENE	0.93	.	0.86	0.90	0.06
N-UNDECANE	23.93	.	28.40	26.17	0.12
P-DICHLOROBENZENE	3.45	.	3.21	3.33	0.05
STYRENE	2.12	.	1.84	1.98	0.10
TETRACHLOROETHYLENE	2.84	.	2.54	2.69	0.08
TRICHLOROETHYLENE	9.26	.	8.92	9.09	0.03
O-CRESOL	0.75	.	T	0.72	0.05
O-DICHLOROBENZENE	0.17	.	T	0.14	0.21
O-ETHYLTOLUENE	1.75	.	1.61	1.68	0.06
O-XYLENE	3.00	.	2.66	2.83	0.09
1,1,1-TRICHLOROETHANE	25.23	.	21.70	23.46	0.11
1,1,2,2-TETRACHLOROETHANE	N	.	N	0.00	0.00
1,2-DICHLOROETHANE	1.72	.	1.10	1.41	0.31
1,2,3-TRIMETHYLBENZENE	2.42	.	3.47	2.95	0.25
1,2,4-TRIMETHLYBENZENE	6.43	.	5.99	6.21	0.05
1,3,5-TRIMETHYLBENZENE	2.36	.	2.06	2.21	0.10
2-ETHOXYETHYLACETATE	2.26	.	1.63	1.95	0.23

N = BELOW THE LIMIT OF DETECTION
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OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (NONSMOKERS), PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	17.24	19.20	15.73	17.39	0.10
BENZENE	4.51	5.75	5.11	5.12	0.12
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.17	5.09	4.32	4.53	0.11
ISOPROPYLBENZENE	0.57	0.66	0.51	0.58	0.13
M-CRESOL	3.45	6.16	9.25	6.29	0.46
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	4.55	5.39	4.49	4.81	0.10
M-XYLENE	12.27	15.86	12.78	13.64	0.14
N-BUTYLACETATE	3.45	3.86	3.38	3.57	0.07
N-DECANE	11.90	13.40	11.84	12.38	0.07
N-DODECANE	16.37	20.48	15.38	17.41	0.16
N-PROPYLBENZENE	0.93	1.13	0.94	1.00	0.11
N-UNDECANE	23.67	28.27	22.67	24.87	0.12
P-DICHLOROBENZENE	2.19	2.63	2.14	2.32	0.12
STYRENE	1.85	2.30	1.92	2.02	0.12
TETRACHLOROETHYLENE	1.52	1.90	1.56	1.66	0.12
TRICHLOROETHYLENE	3.99	5.27	3.94	4.40	0.17
O-CRESOL	0.45	0.79	0.80	0.68	0.30
O-DICHLOROBENZENE	0.16	0.22	T	0.18	0.24
O-ETHYLTOLUENE	1.66	1.99	1.69	1.78	0.10
O-XYLENE	2.77	3.41	2.91	3.03	0.11
1,1,1-TRICHLOROETHANE	19.64	24.92	20.55	21.70	0.13
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.15	1.35	0.99	1.16	0.16
1,2,3-TRIMETHYLBENZENE	2.30	2.57	2.41	2.43	0.06
1,2,4-TRIMETHLYBENZENE	5.85	7.41	6.25	6.50	0.12
1,3,5-TRIMETHYLBENZENE	2.33	2.81	2.16	2.43	0.14
2-ETHOXYETHYLACETATE	2.58	2.62	2.12	2.44	0.11

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (NONSMOKERS), PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	15.54	17.69	12.82	15.35	0.16
BENZENE	4.47	3.65	4.24	4.12	0.10
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.07	4.85	4.16	4.36	0.10
ISOPROPYLBENZENE	0.54	0.65	0.50	0.56	0.14
M-CRESOL	9.53	10.21	7.08	8.94	0.18
M-DICHLOROBENZENE	N	N	N	0.00	2.76
M-ETHYLTOLUENE	4.28	5.22	4.32	4.61	0.12
M-XYLENE	11.79	13.66	10.85	12.10	0.12
N-BUTYLACETATE	6.21	9.78	5.13	7.04	0.35
N-DECANE	9.63	12.53	10.76	10.97	0.13
N-DODECANE	20.47	25.64	21.01	22.37	0.13
N-PROPYLBENZENE	0.88	1.09	0.86	0.94	0.14
N-UNDECANE	26.15	36.75	32.08	31.66	0.17
P-DICHLOROBENZENE	2.47	2.99	2.36	2.60	0.13
STYRENE	2.53	2.86	5.12	3.51	0.40
TETRACHLOROETHYLENE	1.09	1.15	0.88	1.04	0.13
TRICHLOROETHYLENE	7.02	6.73	4.29	6.01	0.25
O-CRESOL	0.72	0.76	T	0.63	0.29
O-DICHLOROBENZENE	0.13	T	T	0.13	0.14
O-ETHYLTOLUENE	1.60	1.99	1.54	1.71	0.14
O-XYLENE	2.60	3.13	2.49	2.74	0.13
1,1,1-TRICHLOROETHANE	19.40	19.89	18.78	19.36	0.03
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.69	T	T	0.51	0.32
1,2,3-TRIMETHYLBENZENE	2.18	2.70	2.52	2.47	0.11
1,2,4-TRIMETHLYBENZENE	5.81	7.20	5.72	6.25	0.13
1,3,5-TRIMETHYLBENZENE	1.90	2.78	2.10	2.26	0.20
2-ETHOXYETHYLACETATE	2.08	2.45	1.58	2.04	0.22

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 2, OCCUPIED OFFICE (NONSMOKERS), PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	16.77	23.88	19.27	19.98	0.18
BENZENE	2.79	4.47	2.90	3.39	0.28
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.09	5.95	4.70	4.91	0.19
ISOPROPYLBENZENE	0.50	0.71	0.51	0.57	0.21
M-CRESOL	4.01	5.62	6.92	5.52	0.26
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	4.04	5.60	4.40	4.68	0.17
M-XYLENE	11.90	17.59	13.51	14.33	0.20
N-BUTYLACETATE	1.99	2.93	2.39	2.44	0.19
N-DECANE	10.00	14.30	12.10	12.13	0.18
N-DODECANE	15.81	23.21	17.63	18.88	0.20
N-PROPYLBENZENE	0.78	1.08	0.87	0.91	0.17
N-UNDECANE	23.02	35.00	28.38	28.80	0.21
P-DICHLOROBENZENE	1.74	2.26	1.75	1.92	0.15
STYRENE	2.35	3.11	2.09	2.51	0.21
TETRACHLOROETHYLENE	0.43	0.65	T	0.52	0.22
TRICHLOROETHYLENE	2.55	3.99	3.04	3.19	0.23
O-CRESOL	0.64	0.66	T	0.57	0.22
O-DICHLOROBENZENE	T	T	T	0.11	0.29
O-ETHYLTOLUENE	1.54	2.11	1.69	1.78	0.17
O-XYLENE	3.02	6.79	3.06	4.29	0.50
1,1,1-TRICHLOROETHANE	18.63	25.21	19.15	21.00	0.17
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	0.70	0.90	T	0.73	0.22
1,2,3-TRIMETHYLBENZENE	2.25	2.88	2.38	2.50	0.13
1,2,4-TRIMETHLYBENZENE	5.38	7.46	6.14	6.33	0.17
1,3,5-TRIMETHYLBENZENE	2.04	2.67	2.11	2.27	0.15
2-ETHOXYETHYLACETATE	1.46	1.89	1.32	1.56	0.19

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 2, OUTDOORS, PERIOD 1

COMPOUND	CONCENTRATION (PPB) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	3.17	[illegible]	[illegible]	[illegible]	0.06
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.70	0.56	1.32	0.83	0.47
ISOPROPYLBENZENE	T	T	T	[illegible]	0.41
M-CRESOL	4.74	[illegible]	6.31	[illegible]	0.17
M-DICHLOROBENZENE	N	T	N	[illegible]	0.99
M-ETHYLTOLUENE	0.63	0.65	[illegible]	[illegible]	0.16
M-XYLENE	1.83	1.60	[illegible]	[illegible]	0.35
N-BUTYLACETATE	T	T	[illegible]	0.80	0.12
N-DECANE	T	T	T	[illegible]	0.90
N-DODECANE	T	T	T	0.30	0.31
N-PROPYLBENZENE	T	T	T	0.19	0.14
N-UNDECANE	T	T	T	0.67	0.12
P-DICHLOROBENZENE	T	T	T	[illegible]	0.07
STYRENE	0.31	0.56	[illegible]	[illegible]	0.56
TETRACHLOROETHYLENE	2.59	2.61	[illegible]	2.58	0.07
TRICHLOROETHYLENE	T	T	[illegible]	0.33	1.31
O-CRESOL	N	N	[illegible]	0.39	0.37
O-DICHLOROBENZENE	T	T	T	0.06	0.20
O-ETHYLTOLUENE	0.24	[illegible]	0.34	0.28	0.22
O-XYLENE	0.62	0.75	0.89	0.75	0.18
1,1,1-TRICHLOROETHANE	1.51	1.56	7.76	3.66	0.97
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	T	0.11	0.77
1,2,3-TRIMETHYLBENZENE	0.29	0.27	0.28	0.28	0.04
1,2,4-TRIMETHLYBENZENE	0.80	0.89	1.06	0.92	0.14
1,3,5-TRIMETHYLBENZENE	T	T	T	0.26	0.24
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE (NEW), TRIP 2, OUTDOORS, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.33	1.31	1.22	1.29	0.04
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.31	0.27	T	0.26	0.19
ISOPROPYLBENZENE	T	N	N	0.02	0.20
M-CRESOL	14.20	11.23	3.96	9.80	0.54
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.43	0.42	0.41	0.42	0.03
M-XYLENE	0.95	0.91	0.81	0.89	0.08
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	T	N	N	0.08	1.12
N-DODECANE	N	N	N	0.04	1.73
N-PROPYLBENZENE	T	N	N	0.08	0.06
N-UNDECANE	T	N	N	0.17	0.90
P-DICHLOROBENZENE	T	N	N	0.08	0.08
STYRENE	0.30	2.46	0.39	1.05	1.16
TETRACHLOROETHYLENE	0.42	T	T	0.37	0.14
TRICHLOROETHYLENE	N	N	N	0.00	0.00
O-CRESOL	T	N	N	0.10	0.80
O-DICHLOROBENZENE	N	N	N	0.01	0.20
O-ETHYLTOLUENE	0.13	0.12	0.12	0.12	0.06
O-XYLENE	0.30	0.44	T	0.37	0.19
1,1,1-TRICHLOROETHANE	0.67	T	T	0.46	0.43
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.02	1.07
1,2,3-TRIMETHYLBENZENE	0.16	0.14	0.10	0.13	0.22
1,2,4-TRIMETHLYBENZENE	0.50	0.49	0.48	0.49	0.02
1,3,5-TRIMETHYLBENZENE	T	T	N	0.12	0.08
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 2, OUTDOORS, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	2.58	3.47	3.24	3.10	0.15
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.79	0.81	0.70	0.77	0.07
ISOPROPYLBENZENE	T	T	T	0.06	0.06
M-CRESOL	1.90	2.47	5.50	3.29	0.59
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.03	1.23	1.15	1.14	0.09
M-XYLENE	2.14	3.47	3.11	2.91	0.24
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	T	N	N	0.18	0.45
N-DODECANE	N	N	N	0.07	0.92
N-PROPYLBENZENE	T	T	T	0.20	0.06
N-UNDECANE	T	N	N	0.21	0.34
P-DICHLOROBENZENE	T	N	N	0.06	0.04
STYRENE	0.98	1.12	0.67	0.92	0.25
TETRACHLOROETHYLENE	2.80	3.08	2.95	2.94	0.05
TRICHLOROETHYLENE	N	N	N	0.01	1.74
O-CRESOL	N	N	N	0.06	1.17
O-DICHLOROBENZENE	N	N	N	0.02	0.20
O-ETHYLTOLUENE	0.30	0.34	0.32	0.32	0.06
O-XYLENE	0.70	1.40	0.79	0.96	0.40
1,1,1-TRICHLOROETHANE	0.81	0.87	0.77	0.82	0.06
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.02	0.42
1,2,3-TRIMETHYLBENZENE	0.22	0.28	0.38	0.30	0.27
1,2,4-TRIMETHLYBENZENE	1.06	1.27	1.21	1.18	0.09
1,3,5-TRIMETHYLBENZENE	T	T	T	0.32	0.07
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 2, OUTDOORS, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	4.64	4.02	5.01	4.56	0.11
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.67	0.62	0.58	0.62	0.07
ISOPROPYLBENZENE	T	T	N	0.05	0.15
M-CRESOL	2.85	19.87	14.41	12.38	0.70
M-DICHLOROBENZENE	N	N	N	0.00	1.66
M-ETHYLTOLUENE	0.84	0.98	1.00	0.94	0.09
M-XYLENE	1.90	2.39	2.26	2.18	0.12
N-BUTYLACETATE	N	N	T	0.14	1.24
N-DECANE	N	N	N	0.07	0.87
N-DODECANE	N	N	N	0.03	1.73
N-PROPYLBENZENE	T	T	T	0.17	0.05
N-UNDECANE	N	N	N	0.00	0.00
P-DICHLOROBENZENE	T	T	T	0.15	0.06
STYRENE	0.33	0.47	T	0.34	0.38
TETRACHLOROETHYLENE	0.52	T	T	0.50	0.08
TRICHLOROETHYLENE	T	N	N	0.03	0.89
O-CRESOL	N	T	N	0.08	1.06
O-DICHLOROBENZENE	T	T	T	0.10	0.14
O-ETHYLTOLUENE	0.24	0.27	0.27	0.26	0.07
O-XYLENE	0.72	0.73	0.75	0.73	0.02
1,1,1-TRICHLOROETHANE	1.11	0.95	0.68	0.91	0.24
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.03	0.45
1,2,3-TRIMETHYLBENZENE	0.16	0.23	0.17	0.19	0.19
1,2,4-TRIMETHLYBENZENE	0.91	1.08	1.04	1.01	0.09
1,3,5-TRIMETHYLBENZENE	T	T	T	0.28	0.07
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 2, OUTDOORS, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	2.84	3.31	3.46	3.20	0.10
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.74	0.87	0.67	0.76	0.13
ISOPROPYLBENZENE	T	T	T	0.06	0.13
M-CRESOL	4.38	3.84	19.69	9.30	0.97
M-DICHLOROBENZENE	N	N	N	0.01	0.95
M-ETHYLTOLUENE	1.05	0.91	0.97	0.97	0.07
M-XYLENE	2.01	2.07	2.64	2.24	0.16
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	T	T	N	0.21	0.99
N-DODECANE	T	N	N	0.22	1.01
N-PROPYLBENZENE	T	T	T	0.19	0.06
N-UNDECANE	T	T	N	0.27	0.92
P-DICHLOROBENZENE	N	N	N	0.05	0.27
STYRENE	0.41	1.21	1.41	1.01	0.52
TETRACHLOROETHYLENE	T	T	N	0.18	0.14
TRICHLOROETHYLENE	T	0.92	N	0.35	1.39
O-CRESOL	N	N	T	0.12	1.35
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.29	0.25	0.30	0.28	0.10
O-XYLENE	0.68	0.79	1.08	0.85	0.24
1,1,1-TRICHLOROETHANE	4.15	4.44	3.51	4.03	0.12
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.04	0.25
1,2,3-TRIMETHYLBENZENE	0.29	0.24	0.33	0.28	0.17
1,2,4-TRIMETHLYBENZENE	1.11	0.93	0.98	1.01	0.09
1,3,5-TRIMETHYLBENZENE	T	T	0.75	0.43	0.64
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE (NEW), TRIP 2, OUTDOORS, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.70	T	T	0.92	0.26
BENZENE	3.97	4.22	6.09	4.76	0.24
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.21	2.20	2.46	2.29	0.06
ISOPROPYLBENZENE	0.15	T	T	0.15	0.12
M-CRESOL	2.14	11.22	8.53	7.30	0.64
M-DICHLOROBENZENE	N	N	N	0.01	1.38
M-ETHYLTOLUENE	2.46	2.43	2.60	2.50	0.04
M-XYLENE	6.03	8.98	9.38	8.13	0.23
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	1.04	T	T	0.85	0.20
N-DODECANE	0.82	T	T	0.60	0.32
N-PROPYLBENZENE	0.47	0.44	0.48	0.47	0.04
N-UNDECANE	1.10	T	T	0.95	0.16
P-DICHLOROBENZENE	T	N	N	0.08	0.13
STYRENE	2.03	0.77	2.86	1.89	0.56
TETRACHLOROETHYLENE	0.37	T	T	0.37	0.01
TRICHLOROETHYLENE	0.19	T	N	0.12	0.56
O-CRESOL	N	T	N	0.12	0.67
O-DICHLOROBENZENE	T	T	T	0.09	0.08
O-ETHYLTOLUENE	0.69	0.67	0.74	0.70	0.05
O-XYLENE	2.18	3.73	4.08	3.33	0.30
1,1,1-TRICHLOROETHANE	1.83	1.39	1.05	1.42	0.28
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.06	0.35
1,2,3-TRIMETHYLBENZENE	0.59	0.59	0.55	0.58	0.05
1,2,4-TRIMETHLYBENZENE	2.71	2.65	2.82	2.73	0.03
1,3,5-TRIMETHYLBENZENE	0.84	0.79	0.81	0.81	0.03
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE/SCHOOL (OLD), TRIP 1, 1ST FLOOR RENOVATED OFFICE, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.73	2.66	1.61	2.00	0.29
BENZENE	3.07	2.80	2.83	2.90	0.05
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.67	4.14	1.61	2.80	0.45
ISOPROPYLBENZENE	0.34	0.46	0.26	0.35	0.29
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.03	0.43
M-ETHYLTOLUENE	2.03	3.25	2.16	2.48	0.27
M-XYLENE	12.74	12.80	6.63	10.72	0.33
N-BUTYLACETATE	0.65	T	T	0.43	0.43
N-DECANE	1.91	2.85	2.76	2.51	0.21
N-DODECANE	0.98	T	T	0.83	0.27
N-PROPYLBENZENE	0.47	0.70	T	0.55	0.24
N-UNDECANE	2.24	2.45	2.10	2.26	0.08
P-DICHLOROBENZENE	T	T	T	0.13	0.24
STYRENE	0.75	0.94	0.56	0.75	0.25
TETRACHLOROETHYLENE	1.27	1.80	0.77	1.28	0.40
TRICHLOROETHYLENE	1.25	1.39	0.80	1.15	0.27
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.02	0.15
O-ETHYLTOLUENE	0.50	0.81	0.61	0.64	0.25
O-XYLENE	4.41	5.71	2.03	4.05	0.46
1,1,1-TRICHLOROETHANE	2.10	3.00	2.03	2.37	0.23
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.08	0.72
1,2,3-TRIMETHYLBENZENE	0.94	1.00	0.84	0.93	0.09
1,2,4-TRIMETHLYBENZENE	2.31	3.48	3.28	3.02	0.21
1,3,5-TRIMETHYLBENZENE	0.65	1.01	0.68	0.78	0.26
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE/SCHOOL (OLD), TRIP 1, 1ST FLOOR RENOVATED OFFICE, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	2.21	2.02	T	1.85	0.25
BENZENE	4.24	4.89	5.51	4.88	0.13
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.24	4.10	2.87	3.74	0.20
ISOPROPYLBENZENE	0.68	0.60	0.44	0.58	0.21
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.53
M-ETHYLTOLUENE	4.12	4.14	3.02	3.76	0.17
M-XYLENE	10.60	14.50	9.29	11.46	0.24
N-BUTYLACETATE	1.07	0.99	1.74	1.27	0.32
N-DECANE	15.22	13.74	11.77	13.58	0.13
N-DODECANE	3.52	2.39	2.25	2.72	0.26
N-PROPYLBENZENE	0.98	0.88	0.66	0.84	0.20
N-UNDECANE	12.11	10.10	9.61	10.61	0.12
P-DICHLOROBENZENE	T	T	T	0.16	0.15
STYRENE	2.56	2.39	2.01	2.32	0.12
TETRACHLOROETHYLENE	1.67	1.78	1.23	1.56	0.19
TRICHLOROETHYLENE	5.63	5.44	4.10	5.06	0.16
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.31
O-ETHYLTOLUENE	1.59	1.28	1.01	1.29	0.23
O-XYLENE	5.91	5.58	3.31	4.94	0.29
1,1,1-TRICHLOROETHANE	3.60	3.11	2.58	3.10	0.16
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.10	0.43
1,2,3-TRIMETHYLBENZENE	1.52	1.52	1.20	1.41	0.13
1,2,4-TRIMETHLYBENZENE	3.94	4.62	3.45	4.01	0.15
1,3,5-TRIMETHYLBENZENE	2.61	1.96	1.61	2.06	0.25
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE/SCHOOL (OLD), TRIP 1, 1ST FLOOR RENOVATED OFFICE, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.67	2.43	T	1.74	0.38
BENZENE	4.62	5.99	6.57	5.73	0.17
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.22	2.56	1.46	2.08	0.27
ISOPROPYLBENZENE	0.27	0.36	T	0.28	0.28
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.33
M-ETHYLTOLUENE	2.46	2.68	1.72	2.28	0.22
M-XYLENE	6.71	8.01	4.71	6.47	0.26
N-BUTYLACETATE	0.78	1.59	T	0.91	0.69
N-DECANE	3.48	4.37	2.51	3.45	0.27
N-DODECANE	1.32	2.07	T	1.39	0.46
N-PROPYLBENZENE	0.48	0.53	T	0.45	0.21
N-UNDECANE	4.82	5.88	3.14	4.62	0.30
P-DICHLOROBENZENE	T	T	N	0.14	0.27
STYRENE	0.81	0.94	0.65	0.80	0.18
TETRACHLOROETHYLENE	1.99	2.29	1.31	1.86	0.27
TRICHLOROETHYLENE	3.08	3.56	2.25	2.96	0.22
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.02	0.38
O-ETHYLTOLUENE	0.82	0.93	0.55	0.76	0.26
O-XYLENE	2.75	3.22	1.82	2.60	0.28
1,1,1-TRICHLOROETHANE	3.37	5.10	2.26	3.58	0.40
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.07	0.05
1,2,3-TRIMETHYLBENZENE	0.90	1.15	0.65	0.90	0.28
1,2,4-TRIMETHLYBENZENE	2.71	3.22	2.04	2.66	0.22
1,3,5-TRIMETHYLBENZENE	0.96	1.08	0.63	0.89	0.26
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE/SCHOOL (OLD), TRIP 1, 1ST FLOOR RENOVATED OFFICE, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.98	1.89	T	1.62	0.34
BENZENE	2.02	3.54	3.79	3.12	0.31
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.47	1.60	0.97	1.35	0.25
ISOPROPYLBENZENE	0.19	0.21	T	0.17	0.28
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.73	1.94	1.13	1.60	0.26
M-XYLENE	4.60	5.13	3.27	4.33	0.22
N-BUTYLACETATE	T	T	0.79	0.46	0.62
N-DECANE	2.68	3.86	2.42	2.99	0.26
N-DODECANE	1.33	1.39	T	1.06	0.49
N-PROPYLBENZENE	0.36	0.39	T	0.33	0.26
N-UNDECANE	4.03	4.38	2.85	3.75	0.21
P-DICHLOROBENZENE	T	T	N	0.08	0.38
STYRENE	0.63	0.70	0.47	0.60	0.19
TETRACHLOROETHYLENE	0.64	0.72	T	0.60	0.23
TRICHLOROETHYLENE	2.17	2.39	1.57	2.04	0.21
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.57	0.67	0.49	0.58	0.15
O-XYLENE	1.82	2.05	1.22	1.70	0.25
1,1,1-TRICHLOROETHANE	2.59	3.05	1.81	2.48	0.25
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.07	0.27
1,2,3-TRIMETHYLBENZENE	0.60	0.80	0.42	0.60	0.32
1,2,4-TRIMETHLYBENZENE	1.86	2.40	1.65	1.97	0.20
1,3,5-TRIMETHYLBENZENE	0.71	0.81	T	0.66	0.26
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE/SCHOOL (OLD), TRIP 1, 1ST FLOOR RENOVATED OFFICE, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.58	1.57	N	1.14	0.65
BENZENE	2.89	3.67	2.78	3.11	0.16
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.36	1.38	0.38	1.04	0.55
ISOPROPYLBENZENE	0.17	T	N	0.13	0.58
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	T	T	N	0.10	0.94
M-ETHYLTOLUENE	1.60	1.65	0.42	1.22	0.57
M-XYLENE	4.14	4.27	1.18	3.20	0.55
N-BUTYLACETATE	T	0.81	T	0.44	0.76
N-DECANE	2.54	2.71	T	1.93	0.63
N-DODECANE	0.76	T	N	0.62	0.59
N-PROPYLBENZENE	0.33	T	N	0.25	0.59
N-UNDECANE	2.64	3.08	T	2.15	0.58
P-DICHLOROBENZENE	T	T	N	0.09	0.72
STYRENE	0.57	0.78	0.46	0.60	0.27
TETRACHLOROETHYLENE	0.95	1.00	T	0.74	0.53
TRICHLOROETHYLENE	3.43	3.81	1.28	2.84	0.48
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.29
O-ETHYLTOLUENE	0.54	0.56	0.13	0.41	0.59
O-XYLENE	1.85	1.63	0.45	1.31	0.58
1,1,1-TRICHLOROETHANE	8.39	12.56	4.11	8.35	0.51
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.07	0.45
1,2,3-TRIMETHYLBENZENE	0.55	0.55	0.11	0.40	0.63
1,2,4-TRIMETHLYBENZENE	1.80	1.97	0.51	1.43	0.56
1,3,5-TRIMETHYLBENZENE	0.62	0.65	T	0.47	0.61
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE/SCHOOL (OLD), TRIP 1, 2ND FLOOR UNOCCUPIED OFFICE, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	2.09	2.26	2.64	2.33	0.12
BENZENE	2.24	1.67	3.11	2.34	0.31
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.10	3.54	4.24	3.63	0.16
ISOPROPYLBENZENE	0.38	0.40	0.57	0.45	0.23
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	0.50
M-ETHYLTOLUENE	2.15	2.47	2.60	2.41	0.10
M-XYLENE	9.54	18.29	15.09	14.30	0.31
N-BUTYLACETATE	0.94	1.60	1.17	1.23	0.27
N-DECANE	2.57	4.07	3.72	3.45	0.23
N-DODECANE	1.24	1.84	2.10	1.73	0.25
N-PROPYLBENZENE	0.47	0.48	0.60	0.52	0.14
N-UNDECANE	3.00	4.92	4.94	4.29	0.26
P-DICHLOROBENZENE	T	T	T	0.12	0.16
STYRENE	1.38	1.04	1.24	1.22	0.14
TETRACHLOROETHYLENE	1.61	1.65	1.82	1.70	0.07
TRICHLOROETHYLENE	1.94	2.17	2.26	2.12	0.08
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.02	0.35
O-ETHYLTOLUENE	0.48	0.60	0.64	0.57	0.15
O-XYLENE	4.53	5.60	5.24	5.12	0.11
1,1,1-TRICHLOROETHANE	2.15	2.41	3.05	2.54	0.18
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.07	0.21
1,2,3-TRIMETHYLBENZENE	1.18	1.51	1.42	1.37	0.13
1,2,4-TRIMETHLYBENZENE	2.42	3.31	3.24	2.99	0.17
1,3,5-TRIMETHYLBENZENE	0.75	0.85	0.86	0.82	0.07
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE/SCHOOL (OLD), TRIP 1, 2ND FLOOR UNOCCUPIED OFFICE, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	2.93	3.05	3.45	3.14	0.09
BENZENE	2.65	2.40	2.65	2.57	0.06
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.87	4.20	4.66	4.24	0.09
ISOPROPYLBENZENE	0.71	0.78	0.84	0.78	0.09
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	0.23
M-ETHYLTOLUENE	5.04	5.34	5.52	5.30	0.05
M-XYLENE	13.22	15.24	16.76	15.07	0.12
N-BUTYLACETATE	1.65	1.69	T	1.38	0.36
N-DECANE	10.50	15.85	16.73	14.36	0.23
N-DODECANE	3.67	4.43	4.38	4.16	0.10
N-PROPYLBENZENE	1.11	1.20	1.26	1.19	0.06
N-UNDECANE	12.68	15.41	15.98	14.69	0.12
P-DICHLOROBENZENE	T	T	T	0.14	0.07
STYRENE	2.23	2.72	2.59	2.51	0.10
TETRACHLOROETHYLENE	1.43	1.66	1.79	1.62	0.11
TRICHLOROETHYLENE	4.34	2.54	4.90	3.93	0.31
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	T	N	0.04	0.22
O-ETHYLTOLUENE	0.20	0.56	0.83	0.53	0.59
O-XYLENE	4.55	5.53	6.61	5.56	0.19
1,1,1-TRICHLOROETHANE	2.85	1.19	3.89	2.64	0.52
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.06	0.65
1,2,3-TRIMETHYLBENZENE	2.27	2.23	2.15	2.22	0.03
1,2,4-TRIMETHLYBENZENE	2.98	4.11	4.69	3.93	0.22
1,3,5-TRIMETHYLBENZENE	2.62	2.82	2.92	2.79	0.05
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE/SCHOOL (OLD), TRIP 1, 2ND FLOOR UNOCCUPIED OFFICE, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	4.45	4.73	4.25	4.48	0.05
BENZENE	6.87	7.63	6.04	6.85	0.12
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.21	3.16	3.43	3.27	0.04
ISOPROPYLBENZENE	0.47	0.46	0.48	0.47	0.02
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.33
M-ETHYLTOLUENE	3.83	3.87	3.91	3.87	0.01
M-XYLENE	9.30	10.37	11.22	10.30	0.09
N-BUTYLACETATE	2.22	3.88	2.66	2.92	0.30
N-DECANE	9.58	11.09	10.68	10.45	0.07
N-DODECANE	4.47	4.66	4.33	4.49	0.04
N-PROPYLBENZENE	0.81	0.84	0.81	0.82	0.02
N-UNDECANE	12.35	13.23	12.80	12.79	0.03
P-DICHLOROBENZENE	T	T	T	0.15	0.13
STYRENE	1.64	1.58	1.62	1.62	0.02
TETRACHLOROETHYLENE	1.26	1.24	1.39	1.30	0.06
TRICHLOROETHYLENE	7.29	7.07	7.78	7.38	0.05
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.27
O-ETHYLTOLUENE	0.83	1.10	1.20	1.04	0.19
O-XYLENE	4.08	4.04	4.25	4.13	0.03
1,1,1-TRICHLOROETHANE	5.09	4.85	5.27	5.07	0.04
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.05	0.48
1,2,3-TRIMETHYLBENZENE	1.81	1.74	1.58	1.71	0.07
1,2,4-TRIMETHLYBENZENE	3.59	4.15	4.23	3.99	0.09
1,3,5-TRIMETHYLBENZENE	1.75	1.76	1.78	1.76	0.01
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE/SCHOOL (OLD), TRIP 1, 2ND FLOOR UNOCCUPIED OFFICE, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	2.96	2.69	2.50	2.72	0.08
BENZENE	2.91	5.24	5.94	4.69	0.34
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.17	2.19	2.18	2.18	0.00
ISOPROPYLBENZENE	0.33	0.28	0.29	0.30	0.08
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	0.20
M-ETHYLTOLUENE	2.83	2.54	2.55	2.64	0.06
M-XYLENE	6.11	6.38	7.04	6.51	0.07
N-BUTYLACETATE	1.10	2.58	2.21	1.96	0.39
N-DECANE	6.71	5.77	6.22	6.24	0.07
N-DODECANE	3.45	3.35	3.30	3.37	0.02
N-PROPYLBENZENE	0.59	0.53	T	0.54	0.09
N-UNDECANE	8.46	8.36	8.88	8.57	0.03
P-DICHLOROBENZENE	T	T	T	0.15	0.05
STYRENE	1.04	1.52	1.02	1.19	0.24
TETRACHLOROETHYLENE	1.80	1.81	1.85	1.82	0.01
TRICHLOROETHYLENE	2.96	3.23	3.23	3.14	0.05
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.22
O-ETHYLTOLUENE	0.58	0.69	0.80	0.69	0.16
O-XYLENE	2.52	2.45	2.77	2.58	0.06
1,1,1-TRICHLOROETHANE	2.60	3.25	3.11	2.99	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.05	0.35
1,2,3-TRIMETHYLBENZENE	1.19	1.10	1.16	1.15	0.04
1,2,4-TRIMETHLYBENZENE	2.44	2.66	2.86	2.65	0.08
1,3,5-TRIMETHYLBENZENE	1.24	1.14	1.10	1.16	0.06
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE/SCHOOL (OLD), TRIP 1, 2ND FLOOR UNOCCUPIED OFFICE, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	4.33	2.75	3.23	3.44	0.24
BENZENE	1.88	3.60	5.79	3.76	0.52
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.04	2.02	1.72	1.93	0.09
ISOPROPYLBENZENE	0.30	0.25	0.29	0.28	0.11
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	2.38	2.12	2.12	2.21	0.07
M-XYLENE	5.87	6.45	5.77	6.03	0.06
N-BUTYLACETATE	1.51	0.92	0.81	1.08	0.35
N-DECANE	5.72	6.62	5.69	6.01	0.09
N-DODECANE	3.52	2.13	2.71	2.79	0.25
N-PROPYLBENZENE	0.50	0.43	T	0.47	0.08
N-UNDECANE	8.52	8.48	7.51	8.17	0.07
P-DICHLOROBENZENE	T	T	T	0.15	0.08
STYRENE	0.89	0.86	0.89	0.88	0.02
TETRACHLOROETHYLENE	1.30	1.26	0.96	1.18	0.16
TRICHLOROETHYLENE	4.64	4.52	3.78	4.31	0.11
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.02	0.21
O-ETHYLTOLUENE	0.81	0.75	0.74	0.77	0.05
O-XYLENE	2.46	2.03	2.35	2.28	0.10
1,1,1-TRICHLOROETHANE	4.09	4.78	4.72	4.53	0.08
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.09	0.21
1,2,3-TRIMETHYLBENZENE	1.11	1.17	0.72	1.00	0.24
1.2,4-TRIMETHLYBENZENE	2.75	2.66	2.50	2.64	0.05
1,3,5-TRIMETHYLBENZENE	1.08	0.97	1.00	1.02	0.06
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE/SCHOOL (OLD), TRIP 1, 3RD FLOOR OCCUPIED OFFICE, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	4.00	3.88	3.10	3.66	0.13
BENZENE	2.72	5.87	4.67	4.42	0.36
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.30	3.28	2.85	3.14	0.08
ISOPROPYLBENZENE	0.37	0.37	0.31	0.35	0.09
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	0.56
M-ETHYLTOLUENE	2.53	2.68	2.23	2.48	0.09
M-XYLENE	9.83	10.74	9.15	9.91	0.08
N-BUTYLACETATE	1.21	1.04	0.96	1.07	0.12
N-DECANE	4.11	5.04	4.37	4.51	0.11
N-DODECANE	1.99	2.31	1.85	2.05	0.12
N-PROPYLBENZENE	0.54	0.54	T	0.52	0.08
N-UNDECANE	5.37	6.53	5.09	5.66	0.13
P-DICHLOROBENZENE	T	T	T	0.22	0.06
STYRENE	1.37	1.44	1.18	1.33	0.10
TETRACHLOROETHYLENE	5.23	5.13	4.39	4.92	0.09
TRICHLOROETHYLENE	24.18	28.92	25.76	26.29	0.09
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.17
O-ETHYLTOLUENE	0.82	0.87	0.66	0.78	0.14
O-XYLENE	3.99	4.22	3.53	3.91	0.09
1,1,1-TRICHLOROETHANE	11.81	17.36	15.56	14.91	0.19
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	T	0.14	0.46
1,2,3-TRIMETHYLBENZENE	0.98	0.97	0.69	0.88	0.18
1,2,4-TRIMETHLYBENZENE	2.66	2.88	2.46	2.67	0.08
1,3,5-TRIMETHYLBENZENE	1.02	1.07	0.87	0.98	0.11
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE/SCHOOL (OLD), TRIP 1, 3RD FLOOR OCCUPIED OFFICE, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	3.61	3.77	2.56	3.31	0.20
BENZENE	4.04	4.03	4.00	4.02	0.01
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.81	4.11	2.78	3.56	0.20
ISOPROPYLBENZENE	0.50	0.53	0.37	0.47	0.18
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	0.21
M-ETHYLTOLUENE	3.47	3.71	2.68	3.29	0.16
M-XYLENE	11.67	13.15	9.26	11.36	0.17
N-BUTYLACETATE	3.92	4.01	4.19	4.04	0.03
N-DECANE	9.35	11.18	8.21	9.58	0.16
N-DODECANE	2.72	2.80	2.08	2.53	0.16
N-PROPYLBENZENE	0.78	0.79	0.56	0.71	0.18
N-UNDECANE	9.19	9.73	7.67	8.86	0.12
P-DICHLOROBENZENE	T	T	T	0.22	0.17
STYRENE	2.12	2.28	1.61	2.00	0.17
TETRACHLOROETHYLENE	3.98	4.46	3.16	3.87	0.17
TRICHLOROETHYLENE	23.52	30.12	21.97	25.20	0.17
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.21
O-ETHYLTOLUENE	1.07	1.16	0.84	1.02	0.16
O-XYLENE	4.79	5.13	3.66	4.53	0.17
1,1,1-TRICHLOROETHANE	14.11	14.82	11.23	13.39	0.14
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.09	0.24
1,2,3-TRIMETHYLBENZENE	1.38	1.24	0.87	1.16	0.23
1,2,4-TRIMETHLYBENZENE	3.58	4.14	3.08	3.60	0.15
1,3,5-TRIMETHYLBENZENE	1.59	1.64	1.25	1.49	0.14
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE/SCHOOL (OLD), TRIP 1, 3RD FLOOR OCCUPIED OFFICE, PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	4.19	4.66	3.82	4.22	0.10
BENZENE	4.54	7.58	5.56	5.89	0.26
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.70	4.46	3.52	3.89	0.13
ISOPROPYLBENZENE	0.39	0.46	0.37	0.41	0.12
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.32
M-ETHYLTOLUENE	2.98	3.54	2.75	3.09	0.13
M-XYLENE	9.85	12.60	11.33	11.26	0.12
N-BUTYLACETATE	1.77	2.85	1.92	2.18	0.27
N-DECANE	6.50	8.15	6.64	7.10	0.13
N-DODECANE	2.68	3.25	2.76	2.90	0.11
N-PROPYLBENZENE	0.62	0.74	0.56	0.64	0.15
N-UNDECANE	7.82	9.27	8.03	8.37	0.09
P-DICHLOROBENZENE	T	T	T	0.22	0.10
STYRENE	1.73	2.11	1.63	1.83	0.14
TETRACHLOROETHYLENE	3.47	4.08	3.21	3.59	0.12
TRICHLOROETHYLENE	19.84	27.50	25.76	24.37	0.16
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.13
O-ETHYLTOLUENE	0.92	1.12	0.88	0.97	0.13
O-XYLENE	4.47	5.37	4.54	4.79	0.10
1,1,1-TRICHLOROETHANE	15.23	18.74	15.12	16.36	0.13
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.10	0.28
1,2,3-TRIMETHYLBENZENE	1.25	1.52	0.90	1.22	0.25
1,2,4-TRIMETHLYBENZENE	2.99	3.76	3.22	3.32	0.12
1,3,5-TRIMETHYLBENZENE	1.26	1.45	1.09	1.27	0.14
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE/SCHOOL (OLD), TRIP 1, 3RD FLOOR OCCUPIED OFFICE, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	2.12	2.30	1.50	1.98	0.21
BENZENE	3.88	6.05	15.12	8.35	0.71
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.31	2.82	2.07	2.40	0.16
ISOPROPYLBENZENE	0.28	0.33	0.28	0.30	0.10
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.59
M-ETHYLTOLUENE	2.25	2.69	1.99	2.31	0.15
M-XYLENE	6.81	8.05	6.14	7.00	0.14
N-BUTYLACETATE	2.00	2.58	1.28	1.95	0.33
N-DECANE	3.42	4.22	3.30	3.64	0.14
N-DODECANE	1.88	2.17	T	1.80	0.23
N-PROPYLBENZENE	0.46	0.56	T	0.47	0.16
N-UNDECANE	4.71	5.65	4.54	4.96	0.12
P-DICHLOROBENZENE	T	T	T	0.23	0.15
STYRENE	0.95	1.16	1.09	1.07	0.10
TETRACHLOROETHYLENE	14.94	18.26	14.05	15.75	0.14
TRICHLOROETHYLENE	17.47	21.87	17.06	18.80	0.14
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.00
O-ETHYLTOLUENE	0.72	0.83	0.65	0.73	0.12
O-XYLENE	2.72	3.10	2.37	2.73	0.13
1,1,1-TRICHLOROETHANE	25.27	32.96	37.54	31.92	0.19
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.11	0.30
1,2,3-TRIMETHYLBENZENE	0.94	0.99	0.74	0.89	0.15
1,2,4-TRIMETHLYBENZENE	2.44	2.90	2.30	2.55	0.12
1,3,5-TRIMETHYLBENZENE	0.85	0.99	0.80	0.88	0.11
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE/SCHOOL (OLD), TRIP 1, 3RD FLOOR OCCUPIED OFFICE, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	3.32	3.41	2.46	3.07	0.17
BENZENE	2.34	4.60	2.19	3.04	0.44
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.35	2.60	2.06	2.34	0.12
ISOPROPYLBENZENE	0.25	0.26	T	0.23	0.13
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.61
M-ETHYLTOLUENE	1.62	1.83	1.39	1.61	0.14
M-XYLENE	7.14	8.02	6.48	7.21	0.11
N-BUTYLACETATE	0.98	1.62	1.30	1.30	0.25
N-DECANE	3.46	4.35	3.53	3.78	0.13
N-DODECANE	1.68	2.07	1.55	1.76	0.15
N-PROPYLBENZENE	0.35	0.39	T	0.35	0.13
N-UNDECANE	5.04	5.73	4.85	5.20	0.09
P-DICHLOROBENZENE	T	T	T	0.18	0.10
STYRENE	1.09	1.21	0.96	1.09	0.11
TETRACHLOROETHYLENE	19.38	24.54	20.34	21.42	0.13
TRICHLOROETHYLENE	23.10	29.37	27.76	26.74	0.12
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.33
O-ETHYLTOLUENE	0.54	0.60	0.45	0.53	0.14
O-XYLENE	2.80	3.12	2.55	2.83	0.10
1,1,1-TRICHLOROETHANE	36.77	39.29	41.52	39.19	0.06
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.07	0.26
1,2,3-TRIMETHYLBENZENE	0.57	0.84	0.45	0.62	0.32
1,2,4-TRIMETHLYBENZENE	1.78	2.15	1.70	1.88	0.13
1,3,5-TRIMETHYLBENZENE	0.67	0.73	T	0.65	0.13
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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OFFICE/SCHOOL (OLD), TRIP 1, 3RD FLOOR OCCUPIED OFFICE, PERIOD 6

CONCENTRATION (NG/L)

COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.04	2.60	1.63	1.76	0.45
BENZENE	9.55	4.76	4.73	6.34	0.44
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.36	1.85	1.31	1.51	0.20
ISOPROPYLBENZENE	0.16	0.21	T	0.17	0.21
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	T	0.07	1.00
M-ETHYLTOLUENE	1.20	1.62	1.17	1.33	0.19
M-XYLENE	3.77	5.53	3.99	4.43	0.22
N-BUTYLACETATE	1.57	0.72	1.06	1.12	0.38
N-DECANE	1.91	2.51	1.94	2.12	0.16
N-DODECANE	1.49	1.94	T	1.49	0.31
N-PROPYLBENZENE	0.27	T	T	0.29	0.18
N-UNDECANE	3.27	4.25	2.50	3.34	0.26
P-DICHLOROBENZENE	T	T	T	0.16	0.05
STYRENE	1.99	0.91	1.13	1.34	0.43
TETRACHLOROETHYLENE	2.22	3.22	2.20	2.54	0.23
TRICHLOROETHYLENE	15.44	21.85	16.43	17.91	0.19
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	0.13	N	N	0.05	1.42
O-ETHYLTOLUENE	0.45	0.59	0.38	0.47	0.22
O-XYLENE	1.82	2.08	1.59	1.83	0.13
1,1,1-TRICHLOROETHANE	13.80	24.00	15.08	17.63	0.32
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	T	N	0.10	0.55
1,2,3-TRIMETHYLBENZENE	0.65	0.61	0.40	0.55	0.25
1,2,4-TRIMETHLYBENZENE	1.30	1.81	1.42	1.51	0.18
1,3,5-TRIMETHYLBENZENE	0.53	0.71	T	0.56	0.26
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE/SCHOOL (OLD), TRIP 1, OUTDOORS, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.02	0.04
BENZENE	2.70	4.38	9.14	5.40	0.62
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.04	0.80	0.96	0.93	0.13
ISOPROPYLBENZENE	T	T	T	0.09	0.11
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.39
M-ETHYLTOLUENE	1.35	1.09	1.36	1.27	0.12
M-XYLENE	3.34	2.63	3.23	3.07	0.13
N-BUTYLACETATE	N	N	T	0.31	1.06
N-DECANE	T	T	N	0.36	0.24
N-DODECANE	T	N	N	0.17	0.18
N-PROPYLBENZENE	0.26	T	T	0.23	0.15
N-UNDECANE	T	T	N	0.32	0.18
P-DICHLOROBENZENE	T	T	N	0.12	0.13
STYRENE	0.24	0.21	0.26	0.24	0.11
TETRACHLOROETHYLENE	1.28	0.95	1.14	1.12	0.14
TRICHLOROETHYLENE	0.50	0.38	0.47	0.45	0.15
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.23
O-ETHYLTOLUENE	0.38	0.31	0.38	0.36	0.12
O-XYLENE	1.30	0.97	1.24	1.17	0.15
1,1,1-TRICHLOROETHANE	1.72	1.19	2.06	1.66	0.27
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.08	0.27
1,2,3-TRIMETHYLBENZENE	0.32	0.20	0.34	0.29	0.26
1,2,4-TRIMETHLYBENZENE	1.51	1.14	1.48	1.38	0.15
1,3,5-TRIMETHYLBENZENE	0.47	T	T	0.42	0.14
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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OFFICE/SCHOOL (OLD), TRIP 1, OUTDOORS, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.01	1.00
BENZENE	4.06	6.06	6.21	5.44	0.22
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.07	1.09	1.12	1.09	0.03
ISOPROPYLBENZENE	T	T	T	0.10	0.08
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.03	0.61
M-ETHYLTOLUENE	1.39	1.45	1.59	1.48	0.07
M-XYLENE	3.30	3.33	3.50	3.38	0.03
N-BUTYLACETATE	T	T	T	0.20	0.28
N-DECANE	T	N	N	0.27	0.03
N-DODECANE	N	N	N	0.11	0.14
N-PROPYLBENZENE	0.27	T	T	0.28	0.03
N-UNDECANE	T	N	N	0.21	0.08
P-DICHLOROBENZENE	N	N	N	0.04	0.04
STYRENE	0.36	0.70	0.61	0.56	0.31
TETRACHLOROETHYLENE	1.21	1.28	1.27	1.25	0.03
TRICHLOROETHYLENE	0.49	0.45	T	0.42	0.21
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.36
O-ETHYLTOLUENE	0.39	0.41	0.42	0.41	0.03
O-XYLENE	1.27	1.29	1.31	1.29	0.02
1,1,1-TRICHLOROETHANE	1.02	1.10	0.87	1.00	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.06	0.30
1,2,3-TRIMETHYLBENZENE	0.44	0.43	0.36	0.41	0.11
1,2,4-TRIMETHLYBENZENE	1.47	1.50	1.63	1.54	0.06
1,3,5-TRIMETHYLBENZENE	0.45	T	T	0.46	0.02
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE/SCHOOL (OLD), TRIP 1, OUTDOORS, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	.	0.00	0.00
A-PINENE	N	N	.	0.00	0.00
BENZENE	7.50	2.37	.	4.93	0.73
BROMODICHLOROETHANE	N	N	.	0.00	0.00
ETHYLBENZENE	0.97	0.69	.	0.83	0.23
ISOPROPYLBENZENE	T	T	.	0.08	0.27
M-CRESOL	N	N	.	0.00	0.00
M-DICHLOROBENZENE	N	N	.	0.01	0.33
M-ETHYLTOLUENE	1.20	1.02	.	1.11	0.11
M-XYLENE	2.82	2.06	.	2.44	0.22
N-BUTYLACETATE	T	N	.	0.20	0.49
N-DECANE	T	N	.	0.23	0.47
N-DODECANE	N	N	.	0.06	1.41
N-PROPYLBENZENE	0.25	T	.	0.22	0.16
N-UNDECANE	T	N	.	0.19	0.51
P-DICHLOROBENZENE	T	N	.	0.06	0.25
STYRENE	0.27	0.26	.	0.26	0.01
TETRACHLOROETHYLENE	1.24	0.90	.	1.07	0.22
TRICHLOROETHYLENE	0.79	0.49	.	0.64	0.33
O-CRESOL	N	N	.	0.00	0.00
O-DICHLOROBENZENE	N	N	.	0.01	0.28
O-ETHYLTOLUENE	0.34	0.30	.	0.32	0.08
O-XYLENE	1.05	0.71	.	0.88	0.27
1,1,1-TRICHLOROETHANE	5.20	3.52	.	4.36	0.27
1,1,2,2-TETRACHLOROETHANE	N	N	.	0.00	0.00
1,2-DICHLOROETHANE	T	N	.	0.13	1.12
1,2,3-TRIMETHYLBENZENE	0.36	0.18	.	0.27	0.48
1,2,4-TRIMETHLYBENZENE	1.30	1.11	.	1.20	0.11
1,3,5-TRIMETHYLBENZENE	0.40	T	.	0.38	0.06
2-ETHOXYETHYLACETATE	N	N	.	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE/SCHOOL (OLD), TRIP 1, OUTDOORS, PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.02	0.13
BENZENE	4.01	5.94	7.58	5.85	0.31
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.12	1.09	1.12	1.11	0.02
ISOPROPYLBENZENE	0.16	T	T	0.15	0.05
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.42	1.36	1.32	1.37	0.04
M-XYLENE	3.20	3.01	3.28	3.16	0.04
N-BUTYLACETATE	T	T	T	0.39	0.59
N-DECANE	0.87	T	T	0.79	0.12
N-DODECANE	N	N	N	0.12	0.16
N-PROPYLBENZENE	0.29	T	T	0.28	0.04
N-UNDECANE	0.72	T	T	0.65	0.10
P-DICHLOROBENZENE	T	N	N	0.06	0.04
STYRENE	0.23	0.29	0.30	0.27	0.13
TETRACHLOROETHYLENE	2.07	1.92	2.07	2.02	0.04
TRICHLOROETHYLENE	0.33	T	T	0.31	0.06
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	T	N	0.04	1.21
O-ETHYLTOLUENE	0.41	0.40	0.39	0.40	0.03
O-XYLENE	1.14	1.14	1.17	1.15	0.01
1,1,1-TRICHLOROETHANE	2.60	3.04	3.06	2.90	0.09
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	1.07	N	0.42	1.35
1,2,3-TRIMETHYLBENZENE	0.31	0.34	0.27	0.31	0.13
1,2,4-TRIMETHLYBENZENE	1.45	1.35	1.34	1.38	0.04
1,3,5-TRIMETHYLBENZENE	0.44	T	T	0.41	0.06
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE/SCHOOL (OLD), TRIP 1, OUTDOORS, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	4.95	3.23	7.04	5.07	0.38
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.56	0.46	0.39	0.47	0.18
ISOPROPYLBENZENE	T	T	N	0.05	0.10
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.65	0.59	0.53	0.59	0.10
M-XYLENE	1.52	1.32	1.16	1.33	0.14
N-BUTYLACETATE	T	0.78	T	0.46	0.64
N-DECANE	T	N	N	0.18	0.52
N-DODECANE	N	N	N	0.02	1.73
N-PROPYLBENZENE	T	T	N	0.12	0.17
N-UNDECANE	T	N	N	0.25	0.48
P-DICHLOROBENZENE	N	N	N	0.03	0.40
STYRENE	T	T	T	0.12	0.66
TETRACHLOROETHYLENE	T	T	N	0.16	0.30
TRICHLOROETHYLENE	T	N	N	0.08	0.55
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.19	0.19	0.16	0.18	0.09
O-XYLENE	0.54	0.60	0.52	0.55	0.07
1,1,1-TRICHLOROETHANE	1.69	1.08	0.99	1.25	0.30
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.08	0.75
1,2,3-TRIMETHYLBENZENE	0.18	0.12	0.14	0.15	0.18
1,2,4-TRIMETHLYBENZENE	0.68	0.60	0.51	0.60	0.14
1,3,5-TRIMETHYLBENZENE	T	T	T	0.21	0.11
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

OFFICE/SCHOOL (OLD), TRIP 1, OUTDOORS, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	0.62	3.43	3.15	2.40	0.65
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.12	0.88	0.64	0.88	0.27
ISOPROPYLBENZENE	T	T	T	0.09	0.26
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.32
M-ETHYLTOLUENE	1.39	1.14	0.95	1.16	0.19
M-XYLENE	3.21	2.73	2.06	2.67	0.22
N-BUTYLACETATE	T	T	T	0.29	0.63
N-DECANE	T	N	N	0.24	0.46
N-DODECANE	N	N	N	0.06	0.94
N-PROPYLBENZENE	0.29	T	T	0.23	0.24
N-UNDECANE	T	N	N	0.24	0.48
P-DICHLOROBENZENE	N	N	N	0.03	0.35
STYRENE	0.27	0.46	0.42	0.38	0.26
TETRACHLOROETHYLENE	1.62	1.17	0.86	1.22	0.32
TRICHLOROETHYLENE	0.59	0.42	T	0.43	0.34
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.32
O-ETHYLTOLUENE	0.43	0.36	0.29	0.36	0.20
O-XYLENE	1.51	0.93	0.74	1.06	0.38
1,1,1-TRICHLOROETHANE	2.31	1.69	1.12	1.71	0.35
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.16	0.84
1,2,3-TRIMETHYLBENZENE	0.37	0.24	0.20	0.27	0.34
1,2,4-TRIMETHLYBENZENE	1.45	1.15	0.91	1.17	0.23
1,3,5-TRIMETHYLBENZENE	0.51	T	T	0.42	0.23
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 1, DAY ROOM, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	7.62	5.04	.	6.33	0.29
BENZENE	1.98	2.23	2.56	2.26	0.13
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	13.40	10.29	13.60	12.43	0.15
ISOPROPYLBENZENE	3.73	2.65	.	3.19	0.24
M-CRESOL	N	N	.	0.00	0.00
M-DICHLOROBENZENE	N	N	.	0.00	0.00
M-ETHYLTOLUENE	13.29	12.89	.	13.09	0.02
M-XYLENE	48.56	40.91	53.97	47.81	0.14
N-BUTYLACETATE	0.88	T	T	0.72	0.20
N-DECANE	91.42	74.75	.	83.08	0.14
N-DODECANE	30.49	32.05	.	31.27	0.04
N-PROPYLBENZENE	4.01	3.39	.	3.70	0.12
N-UNDECANE	81.69	77.51	.	79.60	0.04
P-DICHLOROBENZENE	2.37	1.64	.	2.00	0.26
STYRENE	6.70	4.89	.	5.79	0.22
TETRACHLOROETHYLENE	1.77	1.39	1.93	1.70	0.16
TRICHLOROETHYLENE	3.29	2.17	3.94	3.13	0.29
O-CRESOL	N	N	.	0.00	0.00
O-DICHLOROBENZENE	N	N	.	0.02	0.35
O-ETHYLTOLUENE	5.30	4.45	.	4.88	0.12
O-XYLENE	17.05	14.49	.	15.77	0.11
1,1,1-TRICHLOROETHANE	2.35	1.88	3.01	2.41	0.24
1,1,2,2-TETRACHLOROETHANE	N	N	.	0.00	0.00
1,2-DICHLOROETHANE	T	T	T	0.21	0.25
1,2,3-TRIMETHYLBENZENE	8.74	4.66	.	6.70	0.43
1,2,4-TRIMETHLYBENZENE	10.58	11.47	.	11.03	0.06
1,3,5-TRIMETHYLBENZENE	7.48	7.76	.	7.62	0.03
2-ETHOXYETHYLACETATE	N	N	.	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 1, DAY ROOM, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	8.25	5.80	3.06	5.70	0.45
BENZENE	2.03	1.50	3.78	2.44	0.49
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	9.79	5.56	6.19	7.18	0.32
ISOPROPYLBENZENE	3.39	2.90	1.80	2.70	0.30
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	1.46
M-ETHYLTOLUENE	18.83	16.62	10.40	15.28	0.29
M-XYLENE	16.95	16.22	24.75	19.31	0.24
N-BUTYLACETATE	0.49	N	1.34	0.63	1.02
N-DECANE	48.90	71.99	57.40	59.43	0.20
N-DODECANE	23.96	29.99	28.72	27.56	0.12
N-PROPYLBENZENE	4.10	4.16	2.38	3.54	0.28
N-UNDECANE	49.61	78.34	61.33	63.09	0.23
P-DICHLOROBENZENE	1.54	1.85	0.99	1.46	0.30
STYRENE	3.06	1.91	2.93	2.63	0.24
TETRACHLOROETHYLENE	1.19	0.94	0.97	1.03	0.13
TRICHLOROETHYLENE	2.12	1.94	2.56	2.21	0.14
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.02	0.21
O-ETHYLTOLUENE	5.12	5.92	3.31	4.78	0.28
O-XYLENE	8.15	6.07	8.27	7.50	0.16
1,1,1-TRICHLOROETHANE	2.23	2.26	1.93	2.14	0.08
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.07	0.49
1,2,3-TRIMETHYLBENZENE	4.52	7.07	3.78	5.12	0.34
1,2,4-TRIMETHLYBENZENE	11.38	16.63	11.33	13.11	0.23
1,3,5-TRIMETHYLBENZENE	7.58	9.05	5.53	7.39	0.24
2-ETHOXYETHYLACETATE	18.24	9.32	8.54	12.03	0.45

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 1, DAY ROOM, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	5.46	3.70	6.27	5.14	0.26
BENZENE	1.62	2.07	1.34	1.67	0.22
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	7.99	5.13	7.36	6.82	0.22
ISOPROPYLBENZENE	1.91	1.47	2.25	1.88	0.21
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	10.08	7.62	11.35	9.68	0.20
M-XYLENE	22.11	18.07	21.30	20.50	0.10
N-BUTYLACETATE	0.85	0.69	T	0.63	0.41
N-DECANE	51.07	43.69	56.96	50.57	0.13
N-DODECANE	30.51	25.51	33.04	29.69	0.13
N-PROPYLBENZENE	2.35	1.65	2.62	2.21	0.23
N-UNDECANE	57.32	54.94	72.37	61.54	0.15
P-DICHLOROBENZENE	0.94	0.68	0.97	0.86	0.18
STYRENE	3.27	2.62	3.07	2.99	0.11
TETRACHLOROETHYLENE	1.17	0.85	1.23	1.08	0.19
TRICHLOROETHYLENE	3.18	2.17	3.38	2.91	0.22
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.54
O-ETHYLTOLUENE	3.40	2.47	3.59	3.15	0.19
O-XYLENE	8.75	6.10	10.39	8.41	0.26
1,1,1-TRICHLOROETHANE	1.12	0.90	1.72	1.25	0.34
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.04	0.10
1,2,3-TRIMETHYLBENZENE	4.81	2.57	3.66	3.68	0.30
1,2,4-TRIMETHLYBENZENE	11.65	9.16	12.99	11.27	0.17
1,3,5-TRIMETHYLBENZENE	5.59	4.23	6.43	5.42	0.20
2-ETHOXYETHYLACETATE	8.85	9.04	10.51	9.47	0.10

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NURSING HOME (NEW), TRIP 1, DAY ROOM, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	5.34	4.48	6.71	5.51	0.20
BENZENE	1.70	1.69	1.54	1.64	0.05
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.22	7.28	7.32	6.94	0.09
ISOPROPYLBENZENE	2.19	2.12	2.91	2.41	0.18
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.18
M-ETHYLTOLUENE	9.14	12.26	17.43	12.94	0.32
M-XYLENE	21.08	17.92	19.27	19.42	0.08
N-BUTYLACETATE	0.62	T	N	0.35	0.73
N-DECANE	54.37	54.51	85.64	64.84	0.28
N-DODECANE	30.15	14.96	36.45	27.19	0.41
N-PROPYLBENZENE	2.24	2.95	4.20	3.13	0.32
N-UNDECANE	63.10	43.30	83.72	63.37	0.32
P-DICHLOROBENZENE	0.89	1.06	1.57	1.17	0.30
STYRENE	2.38	2.18	2.47	2.34	0.06
TETRACHLOROETHYLENE	1.35	1.34	1.52	1.41	0.07
TRICHLOROETHYLENE	2.96	2.83	2.84	2.88	0.03
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.02	0.37
O-ETHYLTOLUENE	3.20	3.98	5.81	4.33	0.31
O-XYLENE	8.09	5.88	7.54	7.17	0.16
1,1,1-TRICHLOROETHANE	1.02	1.00	1.18	1.07	0.09
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.07	0.22
1,2,3-TRIMETHYLBENZENE	4.43	4.41	5.67	4.83	0.15
1,2,4-TRIMETHLYBENZENE	11.71	12.16	16.44	13.44	0.19
1,3,5-TRIMETHYLBENZENE	4.95	6.93	9.80	7.23	0.34
2-ETHOXYETHYLACETATE	8.48	9.55	10.13	9.39	0.09

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 1, DAY ROOM, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	5.42	2.48	4.11	4.00	0.37
BENZENE	1.05	0.82	1.09	0.98	0.15
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	5.93	3.72	4.61	4.75	0.23
ISOPROPYLBENZENE	1.78	1.28	1.48	1.51	0.17
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	10.21	8.11	10.03	9.45	0.12
M-XYLENE	17.92	10.28	12.25	13.48	0.29
N-BUTYLACETATE	T	T	N	0.17	0.60
N-DECANE	23.63	35.75	49.69	36.36	0.36
N-DODECANE	17.91	13.40	21.19	17.50	0.22
N-PROPYLBENZENE	2.15	1.91	2.21	2.09	0.08
N-UNDECANE	33.10	26.78	51.73	37.20	0.35
P-DICHLOROBENZENE	0.83	0.95	1.21	1.00	0.20
STYRENE	2.44	1.38	1.96	1.93	0.27
TETRACHLOROETHYLENE	0.68	T	T	0.57	0.23
TRICHLOROETHYLENE	0.89	0.46	0.75	0.70	0.31
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	2.25	2.74	3.20	2.73	0.17
O-XYLENE	7.35	3.66	4.39	5.13	0.38
1,1,1-TRICHLOROETHANE	1.96	1.35	2.28	1.86	0.25
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	2.45	2.60	3.91	2.99	0.27
1,2,4-TRIMETHLYBENZENE	7.67	10.14	12.97	10.26	0.26
1,3,5-TRIMETHYLBENZENE	4.39	4.24	5.21	4.61	0.11
2-ETHOXYETHYLACETATE	14.23	8.12	9.29	10.55	0.31

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 1, DAY ROOM, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	3.66	2.80	3.47	3.31	0.14
BENZENE	1.64	1.04	1.13	1.27	0.26
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	13.09	8.40	7.26	9.58	0.32
ISOPROPYLBENZENE	4.09	3.28	4.34	3.90	0.14
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	16.07	16.17	22.35	18.20	0.20
M-XYLENE	16.39	23.79	24.69	21.62	0.21
N-BUTYLACETATE	0.47	N	N	0.21	1.06
N-DECANE	53.03	72.23	126.16	83.81	0.45
N-DODECANE	27.29	23.37	34.50	28.39	0.20
N-PROPYLBENZENE	3.69	3.81	5.37	4.29	0.22
N-UNDECANE	55.01	47.53	89.48	64.01	0.35
P-DICHLOROBENZENE	0.33	0.40	0.55	0.43	0.26
STYRENE	1.99	1.51	1.39	1.63	0.20
TETRACHLOROETHYLENE	1.56	1.07	1.24	1.29	0.19
TRICHLOROETHYLENE	0.61	0.35	T	0.41	0.44
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	4.20	5.11	7.40	5.57	0.30
O-XYLENE	11.78	9.81	12.64	11.41	0.13
1,1,1-TRICHLOROETHANE	2.61	1.69	2.04	2.11	0.22
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.01	0.32
1,2,3-TRIMETHYLBENZENE	4.31	4.41	5.93	4.88	0.19
1,2,4-TRIMETHLYBENZENE	11.96	17.29	19.95	16.40	0.25
1,3,5-TRIMETHYLBENZENE	7.84	8.54	11.20	9.19	0.19
2-ETHOXYETHYLACETATE	10.49	6.22	6.00	7.57	0.33

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 1, NURSES STATION, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	9.65	6.92	6.63	7.74	0.22
BENZENE	1.70	1.62	1.81	1.71	0.05
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	10.39	8.84	9.34	9.52	0.08
ISOPROPYLBENZENE	4.27	3.41	N	2.56	0.88
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	5.98
M-ETHYLTOLUENE	14.27	16.03	17.20	15.83	0.09
M-XYLENE	40.83	40.38	40.00	40.41	0.01
N-BUTYLACETATE	1.38	1.04	0.94	1.12	0.21
N-DECANE	112.30	117.06	129.46	119.61	0.07
N-DODECANE	47.16	49.26	49.12	48.51	0.02
N-PROPYLBENZENE	4.49	4.63	4.53	4.55	0.02
N-UNDECANE	100.15	105.33	113.56	106.35	0.06
P-DICHLOROBENZENE	5.77	4.96	4.13	4.96	0.17
STYRENE	5.75	6.43	4.66	5.61	0.16
TETRACHLOROETHYLENE	1.38	1.26	1.27	1.31	0.05
TRICHLOROETHYLENE	4.49	4.04	3.96	4.16	0.07
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.02	0.43
O-ETHYLTOLUENE	6.44	6.81	6.72	6.66	0.03
O-XYLENE	16.15	15.13	14.70	15.33	0.05
1,1,1-TRICHLOROETHANE	2.61	2.49	2.46	2.52	0.03
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.19	0.31
1,2,3-TRIMETHYLBENZENE	11.15	9.51	10.97	10.55	0.09
1,2,4-TRIMETHLYBENZENE	14.80	16.38	16.53	15.90	0.06
1,3,5-TRIMETHYLBENZENE	8.52	9.38	10.74	9.54	0.12
2-ETHOXYETHYLACETATE	23.78	19.20	11.93	18.30	0.33

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 1, NURSES STATION, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	6.66	3.47	5.83	5.32	0.31
BENZENE	1.90	1.54	2.36	1.93	0.21
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.72	4.55	7.18	6.15	0.23
ISOPROPYLBENZENE	2.00	1.31	1.98	1.76	0.22
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	1.69
M-ETHYLTOLUENE	12.38	8.33	12.46	11.06	0.21
M-XYLENE	23.22	18.86	24.09	22.06	0.13
N-BUTYLACETATE	1.12	T	0.88	0.79	0.48
N-DECANE	75.45	62.31	92.41	76.72	0.20
N-DODECANE	40.89	29.58	46.43	38.96	0.22
N-PROPYLBENZENE	2.86	1.88	2.92	2.56	0.23
N-UNDECANE	85.95	71.27	103.10	86.78	0.18
P-DICHLOROBENZENE	2.16	1.44	2.27	1.96	0.23
STYRENE	4.35	2.43	2.79	3.19	0.32
TETRACHLOROETHYLENE	1.04	0.69	1.15	0.96	0.25
TRICHLOROETHYLENE	3.77	2.34	3.97	3.36	0.26
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.36
O-ETHYLTOLUENE	3.01	2.69	4.10	3.27	0.22
O-XYLENE	9.47	7.03	9.90	8.80	0.18
1,1,1-TRICHLOROETHANE	1.76	1.49	3.30	2.18	0.45
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.06	0.54
1,2,3-TRIMETHYLBENZENE	7.54	4.80	6.88	6.41	0.22
1,2,4-TRIMETHLYBENZENE	16.84	12.29	18.94	16.02	0.21
1,3,5-TRIMETHYLBENZENE	6.27	5.11	7.58	6.32	0.20
2-ETHOXYETHYLACETATE	17.53	8.59	17.07	14.40	0.35

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 1, NURSES STATION, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	.	N	0.00	0.00
A-PINENE	10.13	7.16	8.73	9.43	0.11
BENZENE	1.60	.	1.77	1.69	0.07
BROMODICHLOROETHANE	N	.	N	0.00	0.00
ETHYLBENZENE	8.47	6.49	6.54	7.50	0.18
ISOPROPYLBENZENE	2.33	1.89	2.00	2.16	0.11
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.42
M-ETHYLTOLUENE	13.48	12.01	13.09	13.28	0.02
M-XYLENE	15.31	26.48	31.79	23.55	0.49
N-BUTYLACETATE	1.49	1.16	T	1.11	0.49
N-DECANE	80.36	96.53	114.91	97.63	0.25
N-DODECANE	42.76	50.53	53.40	48.08	0.16
N-PROPYLBENZENE	2.88	2.74	3.15	3.01	0.06
N-UNDECANE	88.93	102.73	120.68	104.80	0.21
P-DICHLOROBENZENE	5.86	5.33	5.23	5.55	0.08
STYRENE	3.69	6.52	7.28	5.48	0.46
TETRACHLOROETHYLENE	1.37	1.13	1.10	1.24	0.16
TRICHLOROETHYLENE	6.58	.	4.86	5.72	0.21
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	T	N	N	0.03	0.06
O-ETHYLTOLUENE	3.93	3.98	3.42	3.68	0.10
O-XYLENE	6.22	9.22	10.29	8.26	0.35
1,1,1-TRICHLOROETHANE	2.41	.	1.81	2.11	0.20
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	.	N	0.05	0.65
1,2,3-TRIMETHYLBENZENE	7.07	5.61	8.19	7.63	0.10
1,2,4-TRIMETHLYBENZENE	17.18	17.55	19.50	18.34	0.09
1,3,5-TRIMETHYLBENZENE	8.60	7.53	7.66	8.13	0.08
2-ETHOXYETHYLACETATE	17.05	22.28	15.84	16.44	0.05

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 1, NURSES STATION, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	2.70	1.85	2.25	2.27	0.19
BENZENE	1.41	1.52	1.60	1.51	0.06
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.05	2.68	3.21	2.98	0.09
ISOPROPYLBENZENE	1.01	0.76	0.83	0.86	0.15
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	0.30
M-ETHYLTOLUENE	6.79	5.21	5.78	5.93	0.13
M-XYLENE	9.53	8.37	9.00	8.97	0.06
N-BUTYLACETATE	T	T	N	0.27	0.50
N-DECANE	35.45	36.47	31.24	34.39	0.08
N-DODECANE	17.34	12.41	18.41	16.05	0.20
N-PROPYLBENZENE	1.60	1.19	1.31	1.37	0.15
N-UNDECANE	30.76	44.33	38.61	37.90	0.18
P-DICHLOROBENZENE	1.65	1.25	1.25	1.38	0.17
STYRENE	1.31	1.08	1.74	1.38	0.24
TETRACHLOROETHYLENE	1.12	1.01	1.20	1.11	0.09
TRICHLOROETHYLENE	1.87	1.69	1.81	1.79	0.05
O-CRESOL	N	N	N	0.00	1.73
O-DICHLOROBENZENE	N	N	1.25	0.42	1.71
O-ETHYLTOLUENE	2.31	1.73	1.75	1.93	0.17
O-XYLENE	4.85	4.74	3.04	4.21	0.24
1,1,1-TRICHLOROETHANE	33.77	32.53	34.91	33.74	0.04
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.10	0.36
1,2,3-TRIMETHYLBENZENE	2.44	3.04	2.72	2.73	0.11
1,2,4-TRIMETHLYBENZENE	10.68	7.48	8.08	8.74	0.19
1,3,5-TRIMETHYLBENZENE	4.14	3.06	3.33	3.51	0.16
2-ETHOXYETHYLACETATE	7.17	5.98	6.08	6.41	0.10

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 1, NURSES STATION, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	9.09	6.16	5.99	7.08	0.25
BENZENE	1.53	1.35	1.57	1.49	0.08
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	7.73	5.39	5.03	6.05	0.24
ISOPROPYLBENZENE	2.30	1.43	1.31	1.68	0.32
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	11.72	8.17	7.94	9.27	0.23
M-XYLENE	33.04	18.93	14.27	22.08	0.44
N-BUTYLACETATE	T	T	N	0.29	0.43
N-DECANE	42.99	38.77	43.66	41.80	0.06
N-DODECANE	24.59	18.05	24.70	22.45	0.17
N-PROPYLBENZENE	2.54	1.96	1.78	2.09	0.19
N-UNDECANE	48.24	27.68	40.73	38.88	0.27
P-DICHLOROBENZENE	1.65	1.38	1.45	1.49	0.09
STYRENE	3.58	2.03	2.19	2.60	0.33
TETRACHLOROETHYLENE	0.86	0.63	0.74	0.74	0.16
TRICHLOROETHYLENE	1.80	0.82	1.33	1.32	0.37
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.90
O-ETHYLTOLUENE	2.83	2.44	2.47	2.58	0.08
O-XYLENE	10.50	7.62	5.16	7.76	0.34
1,1,1-TRICHLOROETHANE	3.50	2.66	3.31	3.16	0.14
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.06	0.29
1,2,3-TRIMETHYLBENZENE	3.34	2.41	3.00	2.92	0.16
1,2,4-TRIMETHLYBENZENE	11.32	10.08	10.53	10.64	0.06
1,3,5-TRIMETHYLBENZENE	5.79	4.65	4.37	4.94	0.15
2-ETHOXYETHYLACETATE	22.67	14.00	10.33	15.67	0.40

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NURSING HOME (NEW), TRIP 1, NURSES STATION, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	3.46	2.90	2.46	2.94	0.17
BENZENE	1.81	1.23	1.51	1.52	0.19
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	19.45	16.21	14.53	16.73	0.15
ISOPROPYLBENZENE	3.26	3.33	2.74	3.11	0.10
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	16.51	16.92	14.56	16.00	0.08
M-XYLENE	33.15	22.32	20.62	25.36	0.27
N-BUTYLACETATE	T	T	N	0.23	0.33
N-DECANE	35.41	65.67	64.76	55.28	0.31
N-DODECANE	21.09	19.40	18.98	19.82	0.06
N-PROPYLBENZENE	3.65	4.44	3.71	3.93	0.11
N-UNDECANE	40.71	39.62	51.50	43.94	0.15
P-DICHLOROBENZENE	0.51	0.74	0.68	0.64	0.18
STYRENE	1.67	1.42	1.33	1.47	0.12
TETRACHLOROETHYLENE	1.76	1.41	1.29	1.49	0.17
TRICHLOROETHYLENE	1.05	0.72	0.66	0.81	0.26
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	3.86	5.59	4.61	4.69	0.18
O-XYLENE	9.35	7.66	6.70	7.91	0.17
1,1,1-TRICHLOROETHANE	2.63	1.98	1.73	2.11	0.22
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.03	0.58
1,2,3-TRIMETHYLBENZENE	2.45	3.84	3.58	3.29	0.22
1,2,4-TRIMETHLYBENZENE	10.91	15.04	12.58	12.85	0.16
1,3,5-TRIMETHYLBENZENE	6.10	8.72	7.57	7.46	0.18
2-ETHOXYETHYLACETATE	11.52	8.69	8.86	9.69	0.16

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NURSING HOME (NEW), TRIP 1, PATIENT ROOM, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	7.04	8.30	8.94	8.09	0.12
BENZENE	1.39	1.54	1.65	1.53	0.08
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	10.08	11.47	11.56	11.04	0.08
ISOPROPYLBENZENE	4.02	4.39	4.42	4.28	0.05
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.01	1.69
M-ETHYLTOLUENE	21.79	24.46	19.69	21.98	0.11
M-XYLENE	39.63	48.78	55.80	48.07	0.17
N-BUTYLACETATE	2.70	2.35	1.09	2.05	0.41
N-DECANE	102.24	124.20	139.71	122.05	0.15
N-DODECANE	44.18	56.88	59.57	53.54	0.15
N-PROPYLBENZENE	4.81	5.30	5.68	5.26	0.08
N-UNDECANE	96.97	107.52	133.08	112.52	0.17
P-DICHLOROBENZENE	4.17	4.50	4.53	4.40	0.04
STYRENE	4.49	5.28	5.32	5.03	0.09
TETRACHLOROETHYLENE	0.98	1.16	1.17	1.10	0.10
TRICHLOROETHYLENE	4.29	4.76	3.98	4.34	0.09
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.02	0.29
O-ETHYLTOLUENE	6.63	7.31	8.42	7.45	0.12
O-XYLENE	16.60	18.70	19.15	18.15	0.07
1,1,1-TRICHLOROETHANE	2.11	2.49	2.61	2.40	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	T	N	0.15	0.28
1,2,3-TRIMETHYLBENZENE	9.33	13.71	11.49	11.51	0.19
1,2,4-TRIMETHLYBENZENE	28.12	28.37	20.03	25.50	0.19
1,3,5-TRIMETHYLBENZENE	13.43	13.22	11.38	12.68	0.09
2-ETHOXYETHYLACETATE	17.17	16.44	17.40	17.00	0.03

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NURSING HOME (NEW), TRIP 1, PATIENT ROOM, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	4.63	4.63	4.36	4.54	0.03
BENZENE	1.92	1.79	2.07	1.93	0.07
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.13	5.89	6.44	6.15	0.04
ISOPROPYLBENZENE	1.80	1.76	1.87	1.81	0.03
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	0.37
M-ETHYLTOLUENE	11.32	10.91	11.89	11.37	0.04
M-XYLENE	23.41	20.30	22.24	21.98	0.07
N-BUTYLACETATE	0.86	2.10	1.48	1.48	0.42
N-DECANE	71.41	67.62	83.85	74.29	0.11
N-DODECANE	40.26	40.43	41.87	40.86	0.02
N-PROPYLBENZENE	2.62	2.52	2.71	2.62	0.04
N-UNDECANE	76.40	77.17	129.12	94.23	0.32
P-DICHLOROBENZENE	2.15	2.06	2.16	2.12	0.03
STYRENE	3.96	2.90	2.88	3.25	0.19
TETRACHLOROETHYLENE	0.87	0.86	0.89	0.87	0.02
TRICHLOROETHYLENE	2.77	2.96	2.95	2.89	0.04
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.21
O-ETHYLTOLUENE	3.73	3.61	3.87	3.74	0.03
O-XYLENE	8.89	8.37	9.67	8.98	0.07
1,1,1-TRICHLOROETHANE	1.89	2.16	2.28	2.11	0.09
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.08	0.15
1,2,3-TRIMETHYLBENZENE	5.06	6.79	5.99	5.95	0.15
1,2,4-TRIMETHLYBENZENE	16.13	16.74	18.37	17.08	0.07
1,3,5-TRIMETHYLBENZENE	2.06	6.78	7.36	5.40	0.54
2-ETHOXYETHYLACETATE	14.89	11.33	13.09	13.10	0.14

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 1, PATIENT ROOM, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	6.75	6.66	7.51	6.97	0.07
BENZENE	1.30	1.85	2.61	1.92	0.34
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.18	7.40	8.19	7.26	0.14
ISOPROPYLBENZENE	2.06	2.35	2.28	2.23	0.07
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	2.48
M-ETHYLTOLUENE	12.24	14.37	13.74	13.45	0.08
M-XYLENE	23.28	28.32	31.50	27.70	0.15
N-BUTYLACETATE	1.42	0.79	T	0.98	0.40
N-DECANE	72.00	92.84	113.36	92.73	0.22
N-DODECANE	40.20	48.77	51.83	46.93	0.13
N-PROPYLBENZENE	2.79	3.37	3.26	3.14	0.10
N-UNDECANE	80.72	108.02	120.86	103.20	0.20
P-DICHLOROBENZENE	5.56	5.43	5.49	5.49	0.01
STYRENE	2.77	3.29	4.65	3.57	0.27
TETRACHLOROETHYLENE	0.96	1.19	1.27	1.14	0.14
TRICHLOROETHYLENE	4.81	6.08	6.32	5.74	0.14
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.97
O-ETHYLTOLUENE	4.25	4.78	4.52	4.52	0.06
O-XYLENE	9.19	11.41	8.34	9.65	0.16
1,1,1-TRICHLOROETHANE	1.74	2.08	2.80	2.20	0.25
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.03	0.12
1,2,3-TRIMETHYLBENZENE	5.31	8.69	7.58	7.19	0.24
1,2,4-TRIMETHLYBENZENE	14.23	21.38	20.74	18.78	0.21
1,3,5-TRIMETHYLBENZENE	7.80	9.23	8.67	8.57	0.08
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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NURSING HOME (NEW), TRIP 1, PATIENT ROOM, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.63	1.69	T	1.50	0.13
BENZENE	0.92	1.59	1.58	1.36	0.28
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.47	3.35	2.60	2.81	0.17
ISOPROPYLBENZENE	0.78	.	0.77	0.78	0.01
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	5.20	6.61	5.24	5.22	0.01
M-XYLENE	7.34	10.13	7.83	8.43	0.18
N-BUTYLACETATE	T	T	N	0.23	0.59
N-DECANE	30.85	40.33	32.29	31.57	0.03
N-DODECANE	13.37	22.50	24.68	19.02	0.42
N-PROPYLBENZENE	1.21	1.51	1.20	1.20	0.00
N-UNDECANE	24.95	36.26	47.45	36.20	0.44
P-DICHLOROBENZENE	1.48	1.82	1.49	1.48	0.00
STYRENE	1.11	1.32	0.99	1.14	0.15
TETRACHLOROETHYLENE	0.70	1.09	0.88	0.89	0.22
TRICHLOROETHYLENE	0.71	1.84	0.96	1.17	0.50
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.01
O-ETHYLTOLUENE	1.71	2.23	1.72	1.72	0.00
O-XYLENE	3.54	.	2.51	3.03	0.24
1,1,1-TRICHLOROETHANE	1.86	7.59	2.66	4.04	0.77
1,1,2,2-TETRACHLOROETHANE	N	.	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.04	0.40
1,2,3-TRIMETHYLBENZENE	2.63	4.05	3.01	2.82	0.09
1,2,4-TRIMETHLYBENZENE	8.54	9.98	8.39	8.47	0.01
1,3,5-TRIMETHYLBENZENE	3.20	4.13	3.16	3.18	0.01
2-ETHOXYETHYLACETATE	5.36		4.82	5.09	0.07

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 1, PATIENT ROOM, PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	4.85	7.66	5.67	6.06	0.24
BENZENE	2.21	1.66	1.80	1.89	0.15
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	6.42	8.59	8.05	7.69	0.15
ISOPROPYLBENZENE	1.67	2.39	1.99	2.01	0.18
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	8.16	11.42	11.37	10.31	0.18
M-XYLENE	15.74	20.73	22.03	19.50	0.17
N-BUTYLACETATE	T	T	T	0.48	0.31
N-DECANE	41.15	66.38	61.13	56.22	0.24
N-DODECANE	25.76	27.90	32.71	28.79	0.12
N-PROPYLBENZENE	1.81	3.18	2.66	2.55	0.27
N-UNDECANE	51.99	43.90	64.38	53.42	0.19
P-DICHLOROBENZENE	1.63	2.39	2.01	2.01	0.19
STYRENE	1.90	2.87	2.69	2.49	0.21
TETRACHLOROETHYLENE	0.82	0.95	0.85	0.87	0.08
TRICHLOROETHYLENE	1.96	2.27	2.08	2.10	0.08
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	0.29
O-ETHYLTOLUENE	2.31	3.86	3.55	3.24	0.25
O-XYLENE	5.04	7.48	8.16	6.89	0.24
1,1,1-TRICHLOROETHANE	2.86	3.26	2.88	3.00	0.08
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.06	0.29
1,2,3-TRIMETHYLBENZENE	3.52	3.31	4.16	3.67	0.12
1,2,4-TRIMETHLYBENZENE	9.73	16.37	13.62	13.24	0.25
1,3,5-TRIMETHYLBENZENE	4.58	7.10	6.58	6.09	0.22
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 1, PATIENT ROOM, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.61	1.94	T	1.57	0.25
BENZENE	1.48	1.80	2.03	1.77	0.15
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	9.39	12.61	10.10	10.70	0.16
ISOPROPYLBENZENE	1.82	2.31	1.91	2.01	0.13
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	9.08	12.07	10.59	10.58	0.14
M-XYLENE	15.54	21.06	18.04	18.21	0.15
N-BUTYLACETATE	T	T	N	0.28	0.35
N-DECANE	43.26	52.30	49.94	48.50	0.10
N-DODECANE	18.56	23.61	20.82	21.00	0.12
N-PROPYLBENZENE	2.28	2.94	2.49	2.57	0.13
N-UNDECANE	39.13	51.24	48.28	46.22	0.14
P-DICHLOROBENZENE	0.63	0.75	0.64	0.67	0.10
STYRENE	1.18	1.36	1.20	1.25	0.08
TETRACHLOROETHYLENE	1.36	1.72	1.45	1.51	0.12
TRICHLOROETHYLENE	0.71	0.88	0.72	0.77	0.12
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	2.92	3.72	3.18	3.28	0.12
O-XYLENE	5.33	7.11	6.13	6.19	0.14
1,1,1-TRICHLOROETHANE	1.85	2.26	2.00	2.04	0.10
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.03	0.20
1,2,3-TRIMETHYLBENZENE	2.36	3.40	2.95	2.90	0.18
1,2,4-TRIMETHLYBENZENE	7.99	11.17	11.11	10.09	0.18
1,3,5-TRIMETHYLBENZENE	5.08	6.47	5.29	5.61	0.13
2-ETHOXYETHYLACETATE	7.84	7.65	6.22	7.24	0.12

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 1, OUTDOORS, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	2.73	3.05	1.92	2.57	0.23
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.04	0.90	0.62	0.85	0.25
ISOPROPYLBENZENE	T	T	N	0.07	0.31
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.02	1.51
M-ETHYLTOLUENE	1.20	1.15	0.92	1.09	0.14
M-XYLENE	4.64	3.99	3.72	4.12	0.11
N-BUTYLACETATE	T	T	N	0.21	0.74
N-DECANE	T	1.13	T	0.78	0.39
N-DODECANE	N	N	N	0.04	1.73
N-PROPYLBENZENE	T	T	T	0.20	0.18
N-UNDECANE	T	T	T	0.64	0.10
P-DICHLOROBENZENE	T	T	N	0.09	0.41
STYRENE	1.35	1.72	T	1.09	0.74
TETRACHLOROETHYLENE	1.40	1.19	0.93	1.18	0.20
TRICHLOROETHYLENE	0.46	0.52	0.39	0.46	0.14
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.01	1.15
O-ETHYLTOLUENE	0.32	0.32	0.25	0.30	0.13
O-XYLENE	1.19	1.12	0.80	1.04	0.20
1,1,1-TRICHLOROETHANE	1.53	1.52	0.96	1.34	0.24
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.18	0.69
1,2,3-TRIMETHYLBENZENE	0.30	0.40	0.19	0.30	0.36
1,2,4-TRIMETHLYBENZENE	1.28	1.28	1.05	1.20	0.11
1,3,5-TRIMETHYLBENZENE	0.39	T	T	0.35	0.18
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 1, OUTDOORS, PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	2.10	2.21	3.33	2.55	0.27
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.62	1.25	0.89	1.26	0.29
ISOPROPYLBENZENE	0.12	T	T	0.10	0.29
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.47	1.32	1.05	1.28	0.17
M-XYLENE	4.27	3.58	2.43	3.43	0.27
N-BUTYLACETATE	N	N	N	0.07	0.25
N-DECANE	1.83	1.50	T	1.42	0.33
N-DODECANE	T	N	N	0.07	1.73
N-PROPYLBENZENE	0.28	T	T	0.24	0.22
N-UNDECANE	1.27	1.18	T	1.02	0.35
P-DICHLOROBENZENE	N	N	N	0.04	0.11
STYRENE	0.17	0.26	T	0.21	0.21
TETRACHLOROETHYLENE	1.25	1.16	T	1.04	0.28
TRICHLOROETHYLENE	0.86	0.76	0.50	0.71	0.26
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.43	0.38	0.26	0.36	0.24
O-XYLENE	0.96	1.21	0.73	0.96	0.25
1,1,1-TRICHLOROETHANE	2.57	2.24	2.28	2.36	0.07
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.07	0.53
1,2,3-TRIMETHYLBENZENE	0.35	0.24	0.21	0.26	0.28
1,2,4-TRIMETHLYBENZENE	1.71	1.50	1.15	1.45	0.19
1,3,5-TRIMETHYLBENZENE	0.55	0.46	T	0.45	0.26
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 1, OUTDOORS, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.60	1.79	1.70	1.70	0.06
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.95	0.77	0.60	0.77	0.22
ISOPROPYLBENZENE	T	T	N	0.06	0.19
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	2.44
M-ETHYLTOLUENE	0.88	0.81	0.67	0.79	0.13
M-XYLENE	2.00	2.06	1.68	1.92	0.11
N-BUTYLACETATE	T	N	N	0.11	0.62
N-DECANE	1.62	1.27	T	1.27	0.27
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	T	N	0.16	0.23
N-UNDECANE	1.77	1.15	T	1.22	0.43
P-DICHLOROBENZENE	T	N	N	0.08	0.28
STYRENE	0.22	0.20	T	0.21	0.06
TETRACHLOROETHYLENE	1.67	1.54	1.07	1.43	0.22
TRICHLOROETHYLENE	0.60	0.83	0.61	0.68	0.19
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.26	0.24	0.17	0.22	0.21
O-XYLENE	0.62	0.88	0.41	0.64	0.37
1,1,1-TRICHLOROETHANE	1.61	1.50	1.15	1.42	0.17
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.02	0.62
1,2,3-TRIMETHYLBENZENE	0.22	0.21	0.14	0.19	0.25
1,2,4-TRIMETHLYBENZENE	1.00	0.94	0.74	0.89	0.15
1,3,5-TRIMETHYLBENZENE	0.35	T	T	0.28	0.25
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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NURSING HOME (NEW), TRIP 1, OUTDOORS, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.61	1.40	1.75	1.58	0.11
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.57	0.48	0.41	0.49	0.17
ISOPROPYLBENZENE	T	T	N	0.03	0.88
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.84	0.75	0.49	0.69	0.27
M-XYLENE	1.79	1.51	1.32	1.54	0.15
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	T	N	N	0.23	0.94
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	T	N	0.11	0.27
N-UNDECANE	T	N	N	0.26	0.57
P-DICHLOROBENZENE	N	N	N	0.04	0.50
STYRENE	0.14	T	T	0.16	0.23
TETRACHLOROETHYLENE	0.79	0.60	T	0.57	0.43
TRICHLOROETHYLENE	T	T	N	0.08	0.32
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.25	0.20	0.06	0.17	0.55
O-XYLENE	0.52	0.45	T	0.45	0.16
1,1,1-TRICHLOROETHANE	1.29	1.17	1.04	1.17	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.03	0.97
1,2,3-TRIMETHYLBENZENE	0.17	0.16	0.11	0.15	0.24
1,2,4-TRIMETHLYBENZENE	1.06	0.90	0.53	0.83	0.33
1,3,5-TRIMETHYLBENZENE	T	N	N	0.15	0.89
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 1, OUTDOORS, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.54	1.83	1.30	1.56	0.17
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.48	0.46	T	0.37	0.47
ISOPROPYLBENZENE	T	T	N	0.04	0.21
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	0.65	0.34	0.48	0.49	0.31
M-XYLENE	1.35	1.46	0.92	1.24	0.23
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	T	N	N	0.17	0.93
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	N	N	0.08	0.19
N-UNDECANE	T	N	N	0.12	1.73
P-DICHLOROBENZENE	T	N	N	0.05	0.41
STYRENE	T	T	N	0.06	0.20
TETRACHLOROETHYLENE	1.47	1.41	0.85	1.24	0.27
TRICHLOROETHYLENE	0.20	T	T	0.17	0.26
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.19	0.19	0.10	0.16	0.31
O-XYLENE	0.40	0.59	T	0.43	0.35
1,1,1-TRICHLOROETHANE	1.58	1.82	1.15	1.52	0.23
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.07	0.39
1,2,3-TRIMETHYLBENZENE	1.69	T	0.07	0.59	1.63
1,2,4-TRIMETHLYBENZENE	0.87	0.78	0.55	0.73	0.22
1,3,5-TRIMETHYLBENZENE	T	T	N	0.18	0.24
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 1, OUTDOORS, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	2.43	1.64	3.10	2.39	0.31
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.67	0.67	T	0.52	0.50
ISOPROPYLBENZENE	T	T	N	0.06	0.88
M-CRESOL	N	N	N	0.00	0.00
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	1.27	1.13	1.02	1.14	0.11
M-XYLENE	2.27	2.06	1.71	2.01	0.14
N-BUTYLACETATE	N	N	N	0.00	0.00
N-DECANE	1.47	1.14	T	1.06	0.44
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	T	T	0.19	0.14
N-UNDECANE	0.91	T	N	0.58	0.55
P-DICHLOROBENZENE	N	N	N	0.03	0.39
STYRENE	T	T	T	0.12	0.19
TETRACHLOROETHYLENE	1.11	0.94	T	0.93	0.20
TRICHLOROETHYLENE	T	T	N	0.09	0.37
O-CRESOL	N	N	N	0.00	0.00
O-DICHLOROBENZENE	N	N	N	0.00	0.00
O-ETHYLTOLUENE	0.41	0.33	0.28	0.34	0.19
O-XYLENE	0.69	0.61	0.48	0.59	0.18
1,1,1-TRICHLOROETHANE	2.71	2.26	1.73	2.24	0.22
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.04	0.18
1,2,3-TRIMETHYLBENZENE	0.40	0.28	0.21	0.30	0.32
1,2,4-TRIMETHLYBENZENE	1.83	1.51	1.28	1.54	0.18
1,3,5-TRIMETHYLBENZENE	0.50	0.44	T	0.44	0.15
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, DAY ROOM, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.23	0.21
BENZENE	1.61	1.73	1.76	1.70	0.05
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.57	1.61	1.47	1.55	0.04
ISOPROPYLBENZENE	0.19	0.19	T	0.19	0.01
M-CRESOL	2.73	6.24	10.38	6.45	0.59
M-DICHLOROBENZENE	N	N	N	0.02	0.72
M-ETHYLTOLUENE	1.68	1.62	1.68	1.66	0.02
M-XYLENE	3.56	3.68	3.79	3.68	0.03
N-BUTYLACETATE	T	T	T	0.51	0.26
N-DECANE	1.42	1.29	T	1.23	0.19
N-DODECANE	T	T	N	0.22	0.87
N-PROPYLBENZENE	0.40	0.39	T	0.41	0.04
N-UNDECANE	1.52	1.38	1.41	1.44	0.05
P-DICHLOROBENZENE	0.33	T	T	0.33	0.02
STYRENE	0.98	1.20	1.12	1.10	0.10
TETRACHLOROETHYLENE	0.60	0.70	T	0.65	0.08
TRICHLOROETHYLENE	T	0.38	N	0.17	1.02
O-CRESOL	N	T	T	0.15	0.60
O-DICHLOROBENZENE	N	N	N	0.02	0.31
O-ETHYLTOLUENE	0.44	0.42	0.45	0.43	0.03
O-XYLENE	1.35	1.30	1.36	1.34	0.02
1,1,1-TRICHLOROETHANE	0.83	0.95	0.74	0.84	0.12
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.04	0.33
1,2,3-TRIMETHYLBENZENE	0.44	0.33	0.45	0.41	0.16
1,2,4-TRIMETHLYBENZENE	1.53	1.56	1.58	1.56	0.01
1,3,5-TRIMETHYLBENZENE	0.57	0.57	0.59	0.57	0.02
2-ETHOXYETHYLACETATE	T	N	T	0.17	0.47

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, DAY ROOM, PERIOD 2

CONCENTRATION (NG/L)

COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	.	N	0.00	0.00
A-PINENE	N	.	N	0.11	0.11
BENZENE	1.58	.	2.38	1.98	0.29
BROMODICHLOROETHANE	N	.	N	0.00	0.00
ETHYLBENZENE	0.90	.	1.03	0.96	0.10
ISOPROPYLBENZENE	0.13	.	T	0.14	0.03
M-CRESOL	2.85	.	T	2.18	0.44
M-DICHLOROBENZENE	T	.	N	0.05	0.09
M-ETHYLTOLUENE	1.30	.	1.35	1.32	0.02
M-XYLENE	3.13	.	3.59	3.36	0.10
N-BUTYLACETATE	T	.	T	0.31	0.33
N-DECANE	1.32	.	N	0.69	1.11
N-DODECANE	N	.	N	0.00	0.00
N-PROPYLBENZENE	0.33	.	T	0.34	0.03
N-UNDECANE	1.26	.	N	0.63	1.41
P-DICHLOROBENZENE	0.30	.	T	0.30	0.01
STYRENE	0.79	.	0.59	0.69	0.20
TETRACHLOROETHYLENE	T	.	T	0.24	0.25
TRICHLOROETHYLENE	N	.	N	0.02	2.68
O-CRESOL	T	.	N	0.17	0.06
O-DICHLOROBENZENE	T	.	N	0.04	0.30
O-ETHYLTOLUENE	0.46	.	0.36	0.41	0.19
O-XYLENE	1.54	.	1.15	1.34	0.20
1,1,1-TRICHLOROETHANE	0.77	.	1.55	1.16	0.47
1,1,2,2-TETRACHLOROETHANE	N	.	N	0.00	0.00
1,2-DICHLOROETHANE	N	.	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.42	.	0.30	0.36	0.25
1,2,4-TRIMETHLYBENZENE	1.49	.	1.39	1.44	0.05
1,3,5-TRIMETHYLBENZENE	0.54	.	T	0.53	0.03
2-ETHOXYETHYLACETATE	T	.	T	0.38	0.26

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, DAY ROOM, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	N	0.23	0.87
BENZENE	0.66	0.84	1.07	0.86	0.24
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.53	1.97	1.89	1.80	0.13
ISOPROPYLBENZENE	0.40	0.36	0.35	0.37	0.06
M-CRESOL	1.75	3.72	6.15	3.87	0.57
M-DICHLOROBENZENE	N	N	N	0.00	0.00
M-ETHYLTOLUENE	2.11	2.38	2.27	2.25	0.06
M-XYLENE	3.25	3.98	3.62	3.62	0.10
N-BUTYLACETATE	1.14	1.59	1.14	1.29	0.20
N-DECANE	3.84	4.05	3.19	3.69	0.12
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	0.56	0.63	0.61	0.60	0.05
N-UNDECANE	3.19	3.17	2.71	3.02	0.09
P-DICHLOROBENZENE	0.27	T	T	0.28	0.06
STYRENE	1.07	1.22	1.26	1.18	0.08
TETRACHLOROETHYLENE	T	T	T	0.33	0.03
TRICHLOROETHYLENE	T	T	T	0.14	0.18
O-CRESOL	N	N	N	0.09	0.61
O-DICHLOROBENZENE	N	N	N	0.01	0.32
O-ETHYLTOLUENE	0.55	0.59	0.57	0.57	0.04
O-XYLENE	1.25	1.47	1.54	1.42	0.11
1,1,1-TRICHLOROETHANE	0.76	0.78	0.60	0.72	0.14
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.02	0.13
1,2,3-TRIMETHYLBENZENE	0.58	0.46	0.43	0.49	0.16
1,2,4-TRIMETHLYBENZENE	1.65	1.88	1.76	1.76	0.06
1,3,5-TRIMETHYLBENZENE	0.75	0.84	0.81	0.80	0.06
2-ETHOXYETHYLACETATE	T	T	T	0.42	0.38

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, DAY ROOM, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.03	T	T	0.72	0.41
BENZENE	1.53	1.65	2.23	1.81	0.21
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.23	3.04	3.39	3.22	0.06
ISOPROPYLBENZENE	0.61	0.57	0.56	0.58	0.05
M-CRESOL	2.07	5.39	6.02	4.49	0.47
M-DICHLOROBENZENE	N	N	N	0.02	0.81
M-ETHYLTOLUENE	4.19	4.08	4.01	4.10	0.02
M-XYLENE	8.15	8.59	8.64	8.46	0.03
N-BUTYLACETATE	3.61	3.29	3.70	3.53	0.06
N-DECANE	7.69	7.50	6.89	7.36	0.06
N-DODECANE	1.64	N	T	0.90	0.92
N-PROPYLBENZENE	1.04	1.04	1.06	1.05	0.01
N-UNDECANE	6.79	6.36	5.62	6.26	0.10
P-DICHLOROBENZENE	T	T	T	0.25	0.03
STYRENE	1.76	1.71	1.79	1.75	0.02
TETRACHLOROETHYLENE	1.14	1.06	1.05	1.08	0.05
TRICHLOROETHYLENE	1.16	0.86	0.95	0.99	0.15
O-CRESOL	N	N	N	0.09	0.14
O-DICHLOROBENZENE	N	N	N	0.01	0.91
O-ETHYLTOLUENE	1.07	1.04	1.05	1.05	0.01
O-XYLENE	2.93	3.17	3.26	3.12	0.06
1,1,1-TRICHLOROETHANE	2.74	2.34	2.24	2.44	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.08	0.13
1,2,3-TRIMETHYLBENZENE	0.89	0.88	0.87	0.88	0.01
1,2,4-TRIMETHLYBENZENE	3.53	3.43	3.52	3.49	0.01
1,3,5-TRIMETHYLBENZENE	1.46	1.43	1.45	1.45	0.01
2-ETHOXYETHYLACETATE	1.24	1.02	T	1.04	0.18

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, DAY ROOM, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.55	0.36
BENZENE	2.49	2.50	2.43	2.47	0.01
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.45	4.34	3.27	4.02	0.16
ISOPROPYLBENZENE	0.84	0.86	0.74	0.82	0.08
M-CRESOL	2.99	3.39	6.63	4.34	0.46
M-DICHLOROBENZENE	N	N	N	0.00	1.73
M-ETHYLTOLUENE	4.99	5.27	4.88	5.05	0.04
M-XYLENE	10.30	9.32	8.50	9.38	0.10
N-BUTYLACETATE	3.23	2.57	2.08	2.63	0.22
N-DECANE	8.99	7.23	5.77	7.33	0.22
N-DODECANE	1.34	T	N	0.73	0.93
N-PROPYLBENZENE	1.39	1.39	1.24	1.34	0.06
N-UNDECANE	6.35	5.08	4.03	5.16	0.23
P-DICHLOROBENZENE	0.61	0.54	0.47	0.54	0.13
STYRENE	2.53	2.33	2.08	2.31	0.10
TETRACHLOROETHYLENE	3.03	2.57	2.30	2.63	0.14
TRICHLOROETHYLENE	1.66	0.47	0.41	0.85	0.83
O-CRESOL	N	N	N	0.10	0.14
O-DICHLOROBENZENE	N	N	N	0.02	0.10
O-ETHYLTOLUENE	1.48	1.31	1.08	1.29	0.16
O-XYLENE	3.97	3.68	3.34	3.66	0.09
1,1,1-TRICHLOROETHANE	3.78	2.93	2.81	3.17	0.17
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	2.10	1.67	1.60	1.79	0.15
1,2,3-TRIMETHYLBENZENE	1.46	1.14	1.42	1.34	0.13
1,2,4-TRIMETHLYBENZENE	4.44	3.87	3.39	3.90	0.13
1,3,5-TRIMETHYLBENZENE	1.87	1.67	1.51	1.68	0.11
2-ETHOXYETHYLACETATE	T	T	T	0.34	0.09

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 2, DAY ROOM, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.55	0.33
BENZENE	3.75	5.34	7.05	5.38	0.31
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.74	2.60	2.82	2.72	0.04
ISOPROPYLBENZENE	0.36	0.31	0.33	0.33	0.08
M-CRESOL	3.94	6.52	4.71	5.06	0.26
M-DICHLOROBENZENE	T	T	N	0.09	0.45
M-ETHYLTOLUENE	2.88	2.66	2.59	2.71	0.06
M-XYLENE	6.12	7.29	6.54	6.65	0.09
N-BUTYLACETATE	2.41	3.32	3.50	3.08	0.19
N-DECANE	5.31	5.15	5.35	5.27	0.02
N-DODECANE	0.93	T	T	0.68	0.37
N-PROPYLBENZENE	0.82	0.80	0.76	0.79	0.04
N-UNDECANE	4.05	3.71	3.41	3.72	0.09
P-DICHLOROBENZENE	0.78	0.80	0.83	0.80	0.03
STYRENE	1.51	1.40	1.82	1.58	0.14
TETRACHLOROETHYLENE	0.73	0.66	T	0.71	0.06
TRICHLOROETHYLENE	0.24	0.57	0.70	0.50	0.48
O-CRESOL	T	T	T	0.20	0.07
O-DICHLOROBENZENE	T	T	T	0.12	0.18
O-ETHYLTOLUENE	0.90	0.84	0.90	0.88	0.04
O-XYLENE	2.27	2.34	3.33	2.64	0.22
1,1,1-TRICHLOROETHANE	1.31	1.12	1.37	1.27	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.02	0.20
1,2,3-TRIMETHYLBENZENE	0.87	0.81	0.93	0.87	0.07
1,2,4-TRIMETHLYBENZENE	2.93	2.80	3.08	2.93	0.05
1,3,5-TRIMETHYLBENZENE	1.12	1.09	1.16	1.12	0.03
2-ETHOXYETHYLACETATE	0.81	T	T	0.66	0.20

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, NURSES STATION, PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.16	0.87
A-PINENE	T	T	T	0.39	0.13
BENZENE	1.73	2.26	4.17	2.72	0.47
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.55	1.66	1.54	1.58	0.04
ISOPROPYLBENZENE	0.20	0.22	T	0.20	0.06
M-CRESOL	4.90	13.13	2.15	6.73	0.85
M-DICHLOROBENZENE	N	N	N	0.02	0.48
M-ETHYLTOLUENE	1.76	1.81	1.70	1.76	0.03
M-XYLENE	3.74	4.10	3.79	3.87	0.05
N-BUTYLACETATE	T	T	T	0.34	0.13
N-DECANE	2.54	2.57	1.93	2.34	0.15
N-DODECANE	1.10	T	T	0.83	0.35
N-PROPYLBENZENE	0.43	0.46	0.46	0.45	0.04
N-UNDECANE	2.75	3.31	2.34	2.80	0.17
P-DICHLOROBENZENE	0.66	0.68	0.55	0.63	0.11
STYRENE	0.98	1.24	1.21	1.14	0.12
TETRACHLOROETHYLENE	0.51	T	T	0.51	0.03
TRICHLOROETHYLENE	T	T	N	0.08	0.38
O-CRESOL	2.46	2.59	1.87	2.31	0.17
O-DICHLOROBENZENE	N	N	N	0.03	0.30
O-ETHYLTOLUENE	0.47	0.49	0.44	0.47	0.06
O-XYLENE	1.35	1.47	1.42	1.41	0.04
1,1,1-TRICHLOROETHANE	0.93	1.10	0.66	0.90	0.24
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.04	0.39
1,2,3-TRIMETHYLBENZENE	0.41	0.47	0.46	0.45	0.07
1,2,4-TRIMETHLYBENZENE	1.69	1.83	1.61	1.71	0.07
1,3,5-TRIMETHYLBENZENE	0.64	0.67	0.63	0.65	0.03
2-ETHOXYETHYLACETATE	T	T	T	0.37	0.15

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, NURSES STATION, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.10	0.30
BENZENE	1.11	1.61	2.34	1.69	0.37
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.68	1.40	1.23	1.10	0.34
ISOPROPYLBENZENE	T	T	T	0.14	0.21
M-CRESOL	1.67	5.07	5.84	4.19	0.53
M-DICHLOROBENZENE	N	N	N	0.02	0.87
M-ETHYLTOLUENE	0.96	1.60	1.40	1.32	0.24
M-XYLENE	2.40	3.58	3.42	3.13	0.20
N-BUTYLACETATE	T	T	T	0.20	0.27
N-DECANE	T	T	T	0.70	0.31
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	T	T	0.33	0.23
N-UNDECANE	0.82	1.22	T	0.99	0.21
P-DICHLOROBENZENE	0.27	T	T	0.33	0.17
STYRENE	0.48	0.67	0.76	0.64	0.23
TETRACHLOROETHYLENE	T	T	T	0.25	0.13
TRICHLOROETHYLENE	N	N	N	0.00	0.00
O-CRESOL	N	N	N	0.09	0.53
O-DICHLOROBENZENE	N	N	N	0.01	0.32
O-ETHYLTOLUENE	0.28	0.42	0.36	0.35	0.20
O-XYLENE	0.82	1.37	1.29	1.16	0.26
1,1,1-TRICHLOROETHANE	1.68	1.65	1.37	1.57	0.11
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.01	0.22
1,2,3-TRIMETHYLBENZENE	0.21	0.31	0.28	0.27	0.19
1,2,4-TRIMETHLYBENZENE	1.00	1.46	1.31	1.26	0.19
1,3,5-TRIMETHYLBENZENE	0.37	0.53	T	0.47	0.19
2-ETHOXYETHYLACETATE	N	N	N	0.15	0.52

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, NURSES STATION, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	.	N	0.00	0.00
A-PINENE	T	.	N	0.13	1.41
BENZENE	0.72	.	0.91	0.82	0.17
BROMODICHLOROETHANE	N	.	N	0.00	0.00
ETHYLBENZENE	1.26	.	0.94	1.10	0.21
ISOPROPYLBENZENE	0.19	.	T	0.17	0.12
M-CRESOL	2.34	.	6.14	4.24	0.63
M-DICHLOROBENZENE	N	.	N	0.01	0.46
M-ETHYLTOLUENE	1.31	.	1.29	1.30	0.01
M-XYLENE	2.70	.	2.78	2.74	0.02
N-BUTYLACETATE	0.48	.	T	0.44	0.13
N-DECANE	2.65	.	1.68	2.17	0.32
N-DODECANE	T	.	N	0.27	1.41
N-PROPYLBENZENE	0.37	.	T	0.36	0.06
N-UNDECANE	2.63	.	1.98	2.31	0.20
P-DICHLOROBENZENE	0.43	.	T	0.42	0.04
STYRENE	0.76	.	0.76	0.76	0.00
TETRACHLOROETHYLENE	0.38	.	T	0.34	0.14
TRICHLOROETHYLENE	0.28	.	T	0.25	0.16
O-CRESOL	N	.	T	0.13	0.56
O-DICHLOROBENZENE	N	.	N	0.01	0.46
O-ETHYLTOLUENE	0.38	.	0.34	0.36	0.08
O-XYLENE	1.03	.	0.97	1.00	0.04
1,1,1-TRICHLOROETHANE	0.95	.	0.71	0.83	0.21
1,1,2,2-TETRACHLOROETHANE	N	.	N	0.00	0.00
1,2-DICHLOROETHANE	N	.	N	0.02	0.17
1,2,3-TRIMETHYLBENZENE	0.32	.	0.31	0.32	0.03
1,2,4-TRIMETHLYBENZENE	1.34	.	1.26	1.30	0.04
1,3,5-TRIMETHYLBENZENE	0.54	.	T	0.52	0.03
2-ETHOXYETHYLACETATE	0.50	.	T	0.48	0.04

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, NURSES STATION, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.49	0.34
BENZENE	2.21	2.53	2.33	2.36	0.07
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.49	2.51	2.55	2.52	0.01
ISOPROPYLBENZENE	0.37	0.42	0.42	0.40	0.08
M-CRESOL	2.35	9.69	10.64	7.56	0.60
M-DICHLOROBENZENE	N	N	N	0.01	0.35
M-ETHYLTOLUENE	2.80	3.68	3.75	3.41	0.15
M-XYLENE	6.94	8.14	7.79	7.62	0.08
N-BUTYLACETATE	1.40	1.51	1.29	1.40	0.08
N-DECANE	6.14	6.45	5.35	5.98	0.09
N-DODECANE	2.19	2.35	1.86	2.13	0.12
N-PROPYLBENZENE	0.71	0.94	0.90	0.85	0.15
N-UNDECANE	7.69	8.23	7.20	7.71	0.07
P-DICHLOROBENZENE	0.79	0.87	0.78	0.81	0.06
STYRENE	0.96	1.10	1.27	1.11	0.14
TETRACHLOROETHYLENE	1.49	1.63	1.50	1.54	0.05
TRICHLOROETHYLENE	0.92	0.95	2.17	1.35	0.53
O-CRESOL	N	T	N	0.14	0.32
O-DICHLOROBENZENE	T	T	T	0.06	0.09
O-ETHYLTOLUENE	0.98	1.03	1.00	1.00	0.02
O-XYLENE	2.57	2.91	2.99	2.82	0.08
1,1,1-TRICHLOROETHANE	3.32	3.25	3.07	3.22	0.04
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.12	0.44
1,2,3-TRIMETHYLBENZENE	1.06	1.07	1.07	1.06	0.01
1,2,4-TRIMETHLYBENZENE	3.60	3.87	3.79	3.75	0.04
1,3,5-TRIMETHYLBENZENE	1.19	1.38	1.32	1.30	0.07
2-ETHOXYETHYLACETATE	0.75	T	1.19	0.86	0.34

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, NURSES STATION, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	T	T	0.47	0.41
BENZENE	2.44	2.63	2.77	2.62	0.06
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.74	2.25	3.05	2.68	0.15
ISOPROPYLBENZENE	0.41	0.38	0.36	0.38	0.07
M-CRESOL	6.09	5.20	12.47	7.92	0.50
M-DICHLOROBENZENE	N	N	N	0.01	0.33
M-ETHYLTOLUENE	3.51	3.32	3.45	3.43	0.03
M-XYLENE	7.34	6.49	6.85	6.89	0.06
N-BUTYLACETATE	0.90	0.61	1.10	0.87	0.28
N-DECANE	4.23	3.21	2.33	3.26	0.29
N-DODECANE	1.13	T	T	0.79	0.42
N-PROPYLBENZENE	0.85	0.84	0.85	0.85	0.01
N-UNDECANE	4.10	3.51	2.91	3.51	0.17
P-DICHLOROBENZENE	1.14	1.05	0.99	1.06	0.07
STYRENE	1.15	1.07	1.18	1.13	0.05
TETRACHLOROETHYLENE	2.91	2.31	2.39	2.54	0.13
TRICHLOROETHYLENE	0.68	0.47	0.44	0.53	0.25
O-CRESOL	T	N	T	0.14	0.29
O-DICHLOROBENZENE	N	N	N	0.02	0.11
O-ETHYLTOLUENE	0.89	0.73	0.72	0.78	0.13
O-XYLENE	3.00	2.63	2.53	2.72	0.09
1,1,1-TRICHLOROETHANE	3.50	2.94	2.94	3.13	0.10
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	2.65	2.01	1.68	2.11	0.23
1,2,3-TRIMETHYLBENZENE	0.89	0.78	0.73	0.80	0.10
1,2,4-TRIMETHLYBENZENE	3.13	2.64	2.60	2.79	0.11
1,3,5-TRIMETHYLBENZENE	1.03	1.03	1.04	1.03	0.01
2-ETHOXYETHYLACETATE	0.79	0.80	T	0.74	0.13

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, NURSES STATION, PERIOD 6

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.27	0.32
BENZENE	2.93	3.13	5.71	3.92	0.40
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.94	1.55	1.52	1.67	0.14
ISOPROPYLBENZENE	0.19	0.19	T	0.20	0.07
M-CRESOL	2.75	6.60	3.71	4.35	0.46
M-DICHLOROBENZENE	N	N	T	0.07	0.81
M-ETHYLTOLUENE	1.96	1.85	1.90	1.90	0.03
M-XYLENE	4.21	4.22	4.06	4.17	0.02
N-BUTYLACETATE	0.47	T	T	0.55	0.18
N-DECANE	3.92	3.44	3.36	3.57	0.08
N-DODECANE	1.11	T	T	0.82	0.31
N-PROPYLBENZENE	0.50	0.46	0.53	0.50	0.07
N-UNDECANE	3.72	3.18	3.12	3.34	0.10
P-DICHLOROBENZENE	1.03	1.00	1.13	1.05	0.06
STYRENE	0.84	0.93	1.31	1.03	0.24
TETRACHLOROETHYLENE	0.63	T	T	0.58	0.08
TRICHLOROETHYLENE	1.44	2.90	1.34	1.89	0.46
O-CRESOL	T	T	T	0.23	0.33
O-DICHLOROBENZENE	T	T	T	0.13	0.65
O-ETHYLTOLUENE	0.68	0.63	0.66	0.66	0.03
O-XYLENE	1.73	1.89	1.81	1.81	0.04
1,1,1-TRICHLOROETHANE	2.14	1.68	1.66	1.83	0.15
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.66	0.66	0.66	0.66	0.01
1,2,4-TRIMETHLYBENZENE	2.22	2.23	2.34	2.26	0.03
1,3,5-TRIMETHYLBENZENE	0.83	0.73	T	0.73	0.13
2-ETHOXYETHYLACETATE	0.72	0.93	T	0.71	0.31

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 2, PATIENT ROOM (UNOCCUPIED), PERIOD 1

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.03	T	T	0.77	0.30
BENZENE	2.60	3.47	3.18	3.08	0.14
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.96	1.83	2.00	1.93	0.05
ISOPROPYLBENZENE	0.29	0.27	0.32	0.29	0.08
M-CRESOL	0.84	7.71	6.23	4.93	0.73
M-DICHLOROBENZENE	N	N	N	0.02	0.11
M-ETHYLTOLUENE	2.40	2.28	2.62	2.43	0.07
M-XYLENE	4.28	4.08	4.66	4.34	0.07
N-BUTYLACETATE	0.81	0.78	0.92	0.84	0.09
N-DECANE	3.32	2.76	3.04	3.04	0.09
N-DODECANE	1.16	T	T	1.08	0.10
N-PROPYLBENZENE	0.65	0.63	0.72	0.67	0.07
N-UNDECANE	4.02	3.23	3.75	3.60	0.11
P-DICHLOROBENZENE	0.51	0.49	0.55	0.52	0.06
STYRENE	1.39	1.46	1.68	1.51	0.10
TETRACHLOROETHYLENE	0.50	T	T	0.49	0.05
TRICHLOROETHYLENE	T	T	T	0.11	0.20
O-CRESOL	T	T	N	0.13	0.29
O-DICHLOROBENZENE	N	N	N	0.02	0.25
O-ETHYLTOLUENE	0.62	0.59	0.68	0.63	0.07
O-XYLENE	1.65	1.61	1.78	1.68	0.05
1,1,1-TRICHLOROETHANE	1.06	0.89	1.07	1.01	0.10
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.04	0.25
1,2,3-TRIMETHYLBENZENE	0.56	0.55	0.67	0.59	0.11
1,2,4-TRIMETHLYBENZENE	2.20	2.12	2.46	2.26	0.08
1,3,5-TRIMETHYLBENZENE	0.79	0.75	0.86	0.80	0.07
2-ETHOXYETHYLACETATE	0.98	0.90	0.96	0.94	0.04

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 2, PATIENT ROOM (UNOCCUPIED), PERIOD 2

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	T	N	N	0.24	0.23
BENZENE	1.09	1.32	2.26	1.56	0.40
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.70	0.83	0.80	0.78	0.09
ISOPROPYLBENZENE	0.14	T	T	0.14	0.09
M-CRESOL	0.97	T	T	1.01	0.04
M-DICHLOROBENZENE	N	N	N	0.01	0.57
M-ETHYLTOLUENE	1.18	1.24	1.32	1.25	0.06
M-XYLENE	2.26	2.58	2.96	2.60	0.14
N-BUTYLACETATE	T	T	T	0.30	0.01
N-DECANE	0.87	T	9.36	3.62	1.37
N-DODECANE	T	N	N	0.09	1.73
N-PROPYLBENZENE	0.33	T	T	0.36	0.09
N-UNDECANE	1.32	N	N	0.44	1.73
P-DICHLOROBENZENE	T	T	T	0.15	0.06
STYRENE	0.56	0.70	0.68	0.65	0.11
TETRACHLOROETHYLENE	T	T	T	0.19	0.02
TRICHLOROETHYLENE	N	N	N	0.00	0.00
O-CRESOL	N	T	T	0.27	0.92
O-DICHLOROBENZENE	N	N	N	0.03	0.75
O-ETHYLTOLUENE	0.33	0.34	0.56	0.41	0.32
O-XYLENE	0.81	0.89	1.01	0.90	0.11
1,1,1-TRICHLOROETHANE	0.85	0.90	0.89	0.88	0.03
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.01	0.33
1,2,3-TRIMETHYLBENZENE	0.27	0.28	0.33	0.29	0.11
1,2,4-TRIMETHLYBENZENE	1.18	1.23	1.44	1.28	0.11
1,3,5-TRIMETHYLBENZENE	0.41	T	T	0.44	0.09
2-ETHOXYETHYLACETATE	0.51	T	T	0.46	0.16

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NURSING HOME (NEW), TRIP 2, PATIENT ROOM (UNOCCUPIED), PERIOD 3

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.98	T	T	0.73	0.30
BENZENE	0.70	0.86	1.44	1.00	0.39
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.42	1.20	1.50	1.37	0.11
ISOPROPYLBENZENE	0.24	0.22	0.26	0.24	0.08
M-CRESOL	1.41	4.70	.	3.05	0.76
M-DICHLOROBENZENE	N	N	.	0.00	1.41
M-ETHYLTOLUENE	1.74	1.86	1.83	1.81	0.03
M-XYLENE	2.95	2.97	3.32	3.08	0.07
N-BUTYLACETATE	0.78	0.84	1.47	1.03	0.37
N-DECANE	3.13	2.59	.	2.86	0.13
N-DODECANE	0.69	T	.	0.62	0.16
N-PROPYLBENZENE	0.51	0.51	0.57	0.53	0.07
N-UNDECANE	3.31	2.82	.	3.07	0.11
P-DICHLOROBENZENE	0.38	0.39	.	0.38	0.01
STYRENE	0.97	0.92	1.14	1.01	0.11
TETRACHLOROETHYLENE	0.37	T	T	0.35	0.07
TRICHLOROETHYLENE	0.29	T	0.90	0.49	0.74
O-CRESOL	N	T	.	0.11	0.47
O-DICHLOROBENZENE	N	N	.	0.01	0.18
O-ETHYLTOLUENE	0.47	0.49	.	0.48	0.02
O-XYLENE	1.09	1.10	1.21	1.13	0.06
1,1,1-TRICHLOROETHANE	0.92	0.88	1.01	0.93	0.07
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.02	0.23
1,2,3-TRIMETHYLBENZENE	0.43	0.43	.	0.43	0.00
1,2,4-TRIMETHLYBENZENE	1.68	1.71	.	1.70	0.01
1,3,5-TRIMETHYLBENZENE	0.64	0.62	.	0.63	0.02
2-ETHOXYETHYLACETATE	1.03	0.83	T	0.90	0.13

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NURSING HOME (NEW), TRIP 2, PATIENT ROOM (UNOCCUPIED), PERIOD 4

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	1.49	1.25	T	1.33	0.10
BENZENE	2.30	2.44	3.09	2.61	0.16
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.12	2.84	3.75	3.24	0.14
ISOPROPYLBENZENE	0.47	0.53	0.57	0.52	0.09
M-CRESOL	6.18	10.34	13.77	10.10	0.38
M-DICHLOROBENZENE	N	N	N	0.02	0.77
M-ETHYLTOLUENE	3.54	4.25	4.29	4.03	0.11
M-XYLENE	8.64	8.24	9.51	8.79	0.07
N-BUTYLACETATE	2.40	1.77	1.78	1.99	0.18
N-DECANE	5.87	5.34	4.68	5.30	0.11
N-DODECANE	1.70	1.34	T	1.48	0.13
N-PROPYLBENZENE	1.02	1.10	1.31	1.14	0.13
N-UNDECANE	5.09	4.79	4.92	4.94	0.03
P-DICHLOROBENZENE	0.80	0.85	0.82	0.83	0.03
STYRENE	1.61	1.67	2.03	1.77	0.13
TETRACHLOROETHYLENE	1.54	1.36	1.58	1.49	0.08
TRICHLOROETHYLENE	1.06	0.82	1.01	0.96	0.13
O-CRESOL	T	T	T	0.28	0.37
O-DICHLOROBENZENE	N	N	N	0.02	0.32
O-ETHYLTOLUENE	1.19	1.10	1.07	1.12	0.06
O-XYLENE	3.21	3.15	3.52	3.29	0.06
1,1,1-TRICHLOROETHANE	2.86	2.41	3.19	2.82	0.14
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.09	0.29
1,2,3-TRIMETHYLBENZENE	1.05	1.16	1.22	1.14	0.07
1,2,4-TRIMETHLYBENZENE	4.10	4.09	4.02	4.07	0.01
1,3,5-TRIMETHYLBENZENE	1.28	1.30	1.51	1.36	0.09
2-ETHOXYETHYLACETATE	1.32	1.93	2.12	1.79	0.23

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 2, PATIENT ROOM (UNOCCUPIED), PERIOD 5

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	2.79	1.68	T	1.72	0.61
BENZENE	2.28	1.99	2.38	2.22	0.09
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	4.06	4.33	4.06	4.15	0.04
ISOPROPYLBENZENE	0.59	0.51	0.46	0.52	0.12
M-CRESOL	3.60	4.36	10.29	6.08	0.60
M-DICHLOROBENZENE	N	N	N	0.02	0.37
M-ETHYLTOLUENE	5.28	4.75	4.15	4.73	0.12
M-XYLENE	7.91	8.47	8.26	8.21	0.03
N-BUTYLACETATE	1.51	1.71	1.24	1.49	0.16
N-DECANE	6.59	6.30	5.85	6.25	0.06
N-DODECANE	1.74	1.35	T	1.44	0.19
N-PROPYLBENZENE	1.32	1.20	1.11	1.21	0.09
N-UNDECANE	5.90	5.58	5.19	5.56	0.06
P-DICHLOROBENZENE	1.39	1.43	1.47	1.43	0.03
STYRENE	1.46	1.77	1.85	1.69	0.12
TETRACHLOROETHYLENE	2.75	2.68	2.40	2.61	0.07
TRICHLOROETHYLENE	0.75	0.68	0.59	0.68	0.12
O-CRESOL	T	T	T	0.24	0.39
O-DICHLOROBENZENE	T	N	N	0.04	0.04
O-ETHYLTOLUENE	1.35	1.43	1.37	1.38	0.03
O-XYLENE	3.08	3.66	3.67	3.47	0.10
1,1,1-TRICHLOROETHANE	3.47	3.22	2.92	3.20	0.09
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	1.79	1.75	1.89	1.81	0.04
1,2,3-TRIMETHYLBENZENE	1.36	1.59	1.63	1.53	0.10
1,2,4-TRIMETHLYBENZENE	4.46	4.71	4.73	4.63	0.03
1,3,5-TRIMETHYLBENZENE	1.60	1.58	1.48	1.56	0.04
2-ETHOXYETHYLACETATE	1.94	2.10	1.25	1.76	0.26

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, PATIENT ROOM (UNOCCUPIED), PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	0.79	T	N	0.52	0.47
BENZENE	2.72	6.93	5.80	5.15	0.42
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.30	2.35	2.12	2.25	0.05
ISOPROPYLBENZENE	0.33	0.30	0.35	0.32	0.08
M-CRESOL	4.51	5.20	3.75	4.49	0.16
M-DICHLOROBENZENE	T	0.36	T	0.31	0.35
M-ETHYLTOLUENE	2.76	2.53	2.57	2.62	0.05
M-XYLENE	5.37	5.29	5.44	5.37	0.01
N-BUTYLACETATE	1.09	0.92	1.20	1.07	0.13
N-DECANE	4.05	3.78	3.82	3.88	0.04
N-DODECANE	1.30	T	T	1.14	0.21
N-PROPYLBENZENE	0.77	0.74	0.89	0.80	0.10
N-UNDECANE	4.25	4.17	3.76	4.06	0.06
P-DICHLOROBENZENE	1.08	1.10	1.20	1.13	0.06
STYRENE	1.28	2.14	1.89	1.77	0.25
TETRACHLOROETHYLENE	0.74	T	T	0.67	0.16
TRICHLOROETHYLENE	2.07	0.89	0.98	1.31	0.50
O-CRESOL	0.70	T	N	0.37	0.77
O-DICHLOROBENZENE	T	T	T	0.10	0.07
O-ETHYLTOLUENE	0.89	0.93	1.01	0.94	0.07
O-XYLENE	2.17	2.21	2.48	2.29	0.07
1,1,1-TRICHLOROETHANE	1.45	2.00	1.84	1.76	0.16
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.02	0.25
1,2,3-TRIMETHYLBENZENE	1.05	1.22	1.05	1.11	0.09
1,2,4-TRIMETHLYBENZENE	3.09	3.12	3.39	3.20	0.05
1,3,5-TRIMETHYLBENZENE	0.94	0.89	1.05	0.96	0.09
2-ETHOXYETHYLACETATE	1.61	1.53	T	1.36	0.26

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, OUTDOORS, PERIOD 1

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.08	0.34
BENZENE	1.84	2.35	2.80	2.33	0.21
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.32	1.24	1.32	1.29	0.03
ISOPROPYLBENZENE	T	T	T	0.11	0.04
M-CRESOL	1.42	2.83	3.32	2.52	0.39
M-DICHLOROBENZENE	N	N	N	0.01	0.57
M-ETHYLTOLUENE	1.44	1.40	1.39	1.41	0.02
M-XYLENE	3.62	3.18	3.37	3.39	0.06
N-BUTYLACETATE	N	T	N	0.10	0.68
N-DECANE	N	N	N	0.04	2.42
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	0.30	T	T	0.32	0.05
N-UNDECANE	T	T	N	0.26	0.90
P-DICHLOROBENZENE	0.39	T	T	0.37	0.05
STYRENE	0.86	0.80	1.05	0.90	0.14
TETRACHLOROETHYLENE	0.50	T	T	0.50	0.01
TRICHLOROETHYLENE	N	N	N	0.03	0.61
O-CRESOL	N	N	N	0.09	0.55
O-DICHLOROBENZENE	N	N	N	0.01	0.60
O-ETHYLTOLUENE	0.39	0.36	0.38	0.38	0.05
O-XYLENE	1.29	1.24	1.26	1.26	0.02
1,1,1-TRICHLOROETHANE	1.08	0.72	0.78	0.86	0.22
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.02	0.57
1,2,3-TRIMETHYLBENZENE	0.29	0.28	0.38	0.32	0.17
1,2,4-TRIMETHLYBENZENE	1.51	1.31	1.38	1.40	0.07
1,3,5-TRIMETHYLBENZENE	0.52	0.49	T	0.51	0.03
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
T = ABOVE THE LIMIT OF DETECTION, BUT BELOW THE QUANTIFIABLE LIMIT

NURSING HOME (NEW), TRIP 2, OUTDOORS, PERIOD 2

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	1.26	1.62	2.54	1.80	0.37
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.01	0.69	0.49	0.73	0.36
ISOPROPYLBENZENE	T	T	N	0.06	0.35
M-CRESOL	3.03	6.96	12.79	7.59	0.65
M-DICHLOROBENZENE	N	N	N	0.01	0.51
M-ETHYLTOLUENE	1.06	0.66	0.53	0.75	0.37
M-XYLENE	2.73	1.90	1.65	2.09	0.27
N-BUTYLACETATE	N	N	N	0.03	0.08
N-DECANE	N	N	N	0.00	0.00
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	T	T	T	0.18	0.29
N-UNDECANE	N	N	N	0.05	1.73
P-DICHLOROBENZENE	T	T	N	0.12	0.30
STYRENE	0.41	0.39	0.62	0.48	0.27
TETRACHLOROETHYLENE	T	T	N	0.21	0.43
TRICHLOROETHYLENE	N	N	N	0.00	0.00
O-CRESOL	N	N	T	0.12	0.57
O-DICHLOROBENZENE	N	N	N	0.01	0.33
O-ETHYLTOLUENE	0.31	0.18	0.18	0.23	0.33
O-XYLENE	1.00	0.68	0.62	0.76	0.27
1,1,1-TRICHLOROETHANE	1.04	0.76	0.70	0.83	0.22
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.01	0.52
1,2,3-TRIMETHYLBENZENE	0.23	0.16	0.13	0.18	0.28
1,2,4-TRIMETHLYBENZENE	1.13	0.70	0.68	0.84	0.30
1,3,5-TRIMETHYLBENZENE	0.39	T	T	0.30	0.26
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

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NURSING HOME (NEW), TRIP 2, OUTDOORS, PERIOD 3

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.01	1.73
BENZENE	1.03	2.82	3.68	2.51	0.54
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	1.10	0.62	0.51	0.74	0.42
ISOPROPYLBENZENE	T	T	T	0.08	0.23
M-CRESOL	1.94	6.95	4.16	4.35	0.58
M-DICHLOROBENZENE	N	T	T	0.06	0.93
M-ETHYLTOLUENE	1.14	1.18	1.03	1.12	0.07
M-XYLENE	3.21	3.64	1.98	2.94	0.29
N-BUTYLACETATE	T	N	N	0.09	0.11
N-DECANE	N	N	N	0.00	0.00
N-DODECANE	N	N	N	0.03	1.73
N-PROPYLBENZENE	0.27	T	T	0.25	0.08
N-UNDECANE	T	N	N	0.07	1.73
P-DICHLOROBENZENE	0.29	T	T	0.27	0.12
STYRENE	0.53	0.84	1.13	0.83	0.36
TETRACHLOROETHYLENE	0.59	T	T	0.39	0.49
TRICHLOROETHYLENE	0.43	0.36	T	0.31	0.45
O-CRESOL	N	T	T	0.15	0.60
O-DICHLOROBENZENE	N	T	T	0.04	0.76
O-ETHYLTOLUENE	0.34	0.45	0.38	0.39	0.14
O-XYLENE	1.24	0.94	0.87	1.02	0.19
1,1,1-TRICHLOROETHANE	1.12	0.66	T	0.76	0.44
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.03	0.76
1,2,3-TRIMETHYLBENZENE	0.31	0.28	0.31	0.30	0.05
1,2,4-TRIMETHLYBENZENE	1.26	1.31	1.13	1.24	0.08
1,3,5-TRIMETHYLBENZENE	0.42	0.47	T	0.43	0.07
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 2, OUTDOORS, PERIOD 4

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.05	1.73
BENZENE	3.17	3.07	6.86	4.37	0.49
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	2.68	1.33	1.24	1.75	0.46
ISOPROPYLBENZENE	0.28	T	T	0.19	0.40
M-CRESOL	4.92	3.93	4.26	4.37	0.12
M-DICHLOROBENZENE	N	N	T	0.04	1.07
M-ETHYLTOLUENE	3.31	1.73	2.46	2.50	0.32
M-XYLENE	8.20	4.19	5.88	6.09	0.33
N-BUTYLACETATE	0.43	T	T	0.30	0.41
N-DECANE	N	N	N	0.00	0.00
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	0.79	0.40	0.54	0.58	0.34
N-UNDECANE	T	N	N	0.16	1.73
P-DICHLOROBENZENE	0.37	T	T	0.29	0.23
STYRENE	0.74	0.70	1.20	0.88	0.32
TETRACHLOROETHYLENE	1.78	1.15	0.97	1.30	0.33
TRICHLOROETHYLENE	0.63	T	0.42	0.44	0.40
O-CRESOL	N	N	T	0.11	0.89
O-DICHLOROBENZENE	N	T	T	0.07	0.91
O-ETHYLTOLUENE	0.80	0.91	0.92	0.88	0.07
O-XYLENE	3.47	1.67	2.40	2.51	0.36
1,1,1-TRICHLOROETHANE	3.23	1.41	1.87	2.17	0.44
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	T	N	N	0.17	0.77
1,2,3-TRIMETHYLBENZENE	0.81	0.73	0.65	0.73	0.11
1,2,4-TRIMETHLYBENZENE	2.50	2.40	2.85	2.58	0.09
1,3,5-TRIMETHYLBENZENE	1.12	0.80	0.96	0.96	0.16
2-ETHOXYETHYLACETATE	N	N	N	0.01	1.73

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NURSING HOME (NEW), TRIP 2, OUTDOORS, PERIOD 5

COMPOUND	CONCENTRATION (NG/L) HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.06	0.92
BENZENE	4.67	3.76	3.74	4.06	0.13
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	3.62	3.65	2.96	3.41	0.11
ISOPROPYLBENZENE	0.38	0.31	0.26	0.32	0.18
M-CRESOL	4.31	4.76	9.62	6.23	0.47
M-DICHLOROBENZENE	N	N	N	0.02	0.84
M-ETHYLTOLUENE	4.05	3.86	3.28	3.73	0.11
M-XYLENE	8.21	9.26	7.48	8.32	0.11
N-BUTYLACETATE	T	T	T	0.29	0.24
N-DECANE	0.99	T	N	0.70	0.45
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	0.92	0.82	0.72	0.82	0.12
N-UNDECANE	0.85	T	T	0.78	0.11
P-DICHLOROBENZENE	1.28	1.10	1.05	1.15	0.11
STYRENE	1.65	0.72	0.72	1.03	0.52
TETRACHLOROETHYLENE	3.45	3.48	2.59	3.17	0.16
TRICHLOROETHYLENE	0.51	0.48	0.41	0.47	0.11
O-CRESOL	T	N	T	0.17	0.39
O-DICHLOROBENZENE	T	N	N	0.03	0.51
O-ETHYLTOLUENE	1.22	1.09	1.12	1.14	0.06
O-XYLENE	4.82	3.64	2.93	3.80	0.25
1,1,1-TRICHLOROETHANE	4.27	4.25	3.05	3.86	0.18
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	2.90	2.15	1.90	2.32	0.22
1,2,3-TRIMETHYLBENZENE	1.23	1.19	1.08	1.16	0.07
1,2,4-TRIMETHLYBENZENE	4.18	3.91	3.91	4.00	0.04
1,3,5-TRIMETHYLBENZENE	1.39	1.06	1.16	1.20	0.14
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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NURSING HOME (NEW), TRIP 2, OUTDOORS, PERIOD 6

	CONCENTRATION (NG/L)				
COMPOUND	HIGH	MEDIUM	LOW	MEAN	RSD
A-EPICHLOROHYDRIN	N	N	N	0.00	0.00
A-PINENE	N	N	N	0.00	0.00
BENZENE	4.02	3.79	8.15	5.32	0.46
BROMODICHLOROETHANE	N	N	N	0.00	0.00
ETHYLBENZENE	0.96	0.85	1.00	0.94	0.08
ISOPROPYLBENZENE	T	T	T	0.10	0.08
M-CRESOL	3.22	T	3.34	2.28	0.76
M-DICHLOROBENZENE	N	N	N	0.05	0.54
M-ETHYLTOLUENE	1.20	1.13	1.08	1.14	0.05
M-XYLENE	2.78	3.99	2.88	3.22	0.21
N-BUTYLACETATE	T	T	N	0.21	0.37
N-DECANE	T	N	N	0.00	0.00
N-DODECANE	N	N	N	0.00	0.00
N-PROPYLBENZENE	0.29	T	T	0.29	0.04
N-UNDECANE	T	N	N	0.19	1.73
P-DICHLOROBENZENE	0.34	T	T	0.28	0.20
STYRENE	0.57	0.72	1.45	0.91	0.51
TETRACHLOROETHYLENE	0.53	T	T	0.48	0.09
TRICHLOROETHYLENE	T	N	N	0.06	0.83
O-CRESOL	T	N	T	0.13	0.50
O-DICHLOROBENZENE	T	T	T	0.09	0.35
O-ETHYLTOLUENE	0.49	0.39	0.52	0.47	0.14
O-XYLENE	1.18	1.30	1.17	1.22	0.06
1,1,1-TRICHLOROETHANE	0.64	0.62	T	0.58	0.14
1,1,2,2-TETRACHLOROETHANE	N	N	N	0.00	0.00
1,2-DICHLOROETHANE	N	N	N	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.42	0.34	0.01	0.26	0.85
1,2,4-TRIMETHLYBENZENE	1.60	1.26	1.44	1.43	0.12
1,3,5-TRIMETHYLBENZENE	0.47	T	T	0.50	0.15
2-ETHOXYETHYLACETATE	N	N	N	0.00	0.00

N = BELOW THE LIMIT OF DETECTION
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APPENDIX E

Building Materials Tested - Headspace Purge

Source Descriptor	Carpet
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	3/12/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	41 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	16.8 hr
Temperature	32°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0062 m^2
Source Surface/Facility Volume	76 m^{-1}
Ventilation Rate	11 ach.
Air Change/Facility Loading	0.14 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Linoleum tile
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	3/13/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	42 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	17.6 hr
Temperature	34°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0068 m^2
Source Surface/Facility Volume	83 m^{-1}
Ventilation Rate	9.8 ach.
Air Change/Facility Loading	0.12 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Vinyl cove molding
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	3/12/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	41 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	16.6 hr
Temperature	32°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0052 m^2
Source Surface/Facility Volume	63 m^{-1}
Ventilation Rate	10.1 ach.
Air Change/Facility Loading	0.16 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Vinyl edge molding
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	3/14/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	43 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	18.6 hr
Temperature	31°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0049 m^2
Source Surface/Facility Volume	60 m^{-1}
Ventilation Rate	9.7 ach.
Air Change/Facility Loading	0.16 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Interior wall board
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	3/13/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	42 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	17.8 hr
Temperature	34°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0043 m^2
Source Surface/Facility Volume	52 m^{-1}
Ventilation Rate	9.1 ach.
Air Change/Facility Loading	0.18 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Ceiling tile
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	3/13/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	42 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	17.6 hr
Temperature	34°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0051 m^2
Source Surface/Facility Volume	62 m^{-1}
Ventilation Rate	8.0 ach.
Air Change/Facility Loading	0.13 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Black rubber molding
Source Category	Building systems
Source Type	Moisture/thermal protection
Source Evaluation Date	3/14/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	43 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	18.5 hr
Temperature	31°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0034 m^2
Source Surface/Facility Volume	41 m^{-1}
Ventilation Rate	11.1 ach.
Air Change/Facility Loading	0.27 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Particle board
Source Category	Building systems
Source Type	Wood
Source Evaluation Date	3/13/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	42 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	17.8 hr
Temperature	34°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0040 m^2
Source Surface/Facility Volume	49 m^{-1}
Ventilation Rate	10.5 ach.
Air Change/Facility Loading	0.21 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Plastic outlet cover
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	3/21/85
Source Acquisition	Retail outlet
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	1 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	16.9 hr
Temperature	32°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0062 m^2
Source Surface/Facility Volume	76 m^{-1}
Ventilation Rate	10.5 ach.
Air Change/Facility Loading	0.14 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Small diameter telephone cable
Source Category	Building systems
Source Type	Electrical
Source Evaluation Date	3/19/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	48 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	17.6 hr
Temperature	34°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0026 m^2
Source Surface/Facility Volume	32 m^{-1}
Ventilation Rate	10.2 ach.
Air Change/Facility Loading	0.32 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Large diameter telephone cable
Source Category	Building systems
Source Type	Electrical
Source Evaluation Date	3/19/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	48 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	17.7 hr
Temperature	34°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0038 m^2
Source Surface/Facility Volume	48 m^{-1}
Ventilation Rate	10.8 ach.
Air Change/Facility Loading	0.23 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Plastic laminate
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	4/25/85
Source Acquisition	Retail outlet
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	12 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	12.3 hr
Temperature	27°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0045 m^2
Source Surface/Facility Volume	55 m^{-1}
Ventilation Rate	10.8 ach.
Air Change/Facility Loading	0.20 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Fiberglass insulation
Source Category	Building systems
Source Type	Thermal protection
Source Evaluation Date	3/12/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	41 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	16.7 hr
Temperature	32°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0097 m^2
Source Surface/Facility Volume	118 m^{-1}
Ventilation Rate	10.8 ach.
Air Change/Facility Loading	0.09 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Duct insulation
Source Category	Building systems
Source Type	Thermal protection
Source Evaluation Date	3/21/85
Source Acquisition	Retail outlet
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	1 day
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	16.9 hr
Temperature	32°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0084 m^2
Source Surface/Facility Volume	102 m^{-1}
Ventilation Rate	10.5 ach.
Air Change/Facility Loading	0.10 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Polystyrene foam insulation
Source Category	Building systems
Source Type	Thermal protection
Source Evaluation Date	3/21/85
Source Acquisition	Retail outlet
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	1 day
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	16.9 hr
Temperature	32°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0049 m^2
Source Surface/Facility Volume	60 m^{-1}
Ventilation Rate	11.0 ach.
Air Change/Facility Loading	0.18 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Exterior mineral board
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	3/18/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	47 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	17.4 hr
Temperature	33°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0062 m^2
Source Surface/Facility Volume	76 m^{-1}
Ventilation Rate	10.9 ach.
Air Change/Facility Loading	0.14 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Water repellant mineral board
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	3/19/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	48 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	17.7 hr
Temperature	34°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0057 m^2
Source Surface/Facility Volume	70 m^{-1}
Ventilation Rate	8.9 ach.
Air Change/Facility Loading	0.13 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Red clay brick
Source Category	Building systems
Source Type	Masonry
Source Evaluation Date	3/18/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	47 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	17.3 hr
Temperature	33°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0053 m^2
Source Surface/Facility Volume	65 m^{-1}
Ventilation Rate	9.7 ach.
Air Change/Facility Loading	0.15 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Cement block
Source Category	Building systems
Source Type	Masonry
Source Evaluation Date	3/18/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	47 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	17.4 hr
Temperature	33°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0036 m^2
Source Surface/Facility Volume	44 m^{-1}
Ventilation Rate	10.8 ach.
Air Change/Facility Loading	0.25 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	PVC pipe
Source Category	Building systems
Source Type	Mechanical
Source Evaluation Date	3/14/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	43 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	18.5 hr
Temperature	31°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0045 m^2
Source Surface/Facility Volume	55 m^{-1}
Ventilation Rate	9.6 ach.
Air Change/Facility Loading	0.17 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Treated metal roofing
Source Category	Building systems
Source Type	Roofing
Source Evaluation Date	3/19/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	48 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	17.7 hr
Temperature	34°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0041 m^2
Source Surface/Facility Volume	50 m^{-1}
Ventilation Rate	11.6 ach.
Air Change/Facility Loading	0.23 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Tar paper
Source Category	Building systems
Source Type	Moisture protection
Source Evaluation Date	3/14/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	43 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	18.6 hr
Temperature	31°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0038 m^2
Source Surface/Facility Volume	46 m^{-1}
Ventilation Rate	10.7 ach.
Air Change/Facility Loading	0.23 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Cove adhesive
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	4/10/85
Source Acquisition	Manufacturer
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	16 days
Pretest Storage Conditions	Unopened original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70% RH
Conditioning Duration	7 days
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	16.8 hr
Temperature	31°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0029 m^2
Source Surface/Facility Volume	35 m^{-1}
Ventilation Rate	10.2 ach.
Air Change/Facility Loading	0.29 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Carpet adhesive
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	4/25/85
Source Acquisition	Retail outlet
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	24 days
Pretest Storage Conditions	Unopened original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70% RH
Conditioning Duration	7 days
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	1.0 hr
Temperature	30°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0028 m^2
Source Surface/Facility Volume	34 m^{-1}
Ventilation Rate	10.8 ach.
Air Change/Facility Loading	0.32 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Latex caulk
Source Category	Building systems
Source Type	Thermal/moisture protection
Source Evaluation Date	4/10/85
Source Acquisition	Manufacturer
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	14 days
Pretest Storage Conditions	Unopened original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70% RH
Conditioning Duration	7 days
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	16.9 hr
Temperature	31°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0029 m^2
Source Surface/Facility Volume	35 m^{-1}
Ventilation Rate	9.7 ach.
Air Change/Facility Loading	0.28 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Linoleum tile cement
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	4/29/85
Source Acquisition	Local deal
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	12 days
Pretest Storage Conditions	Original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70% RH
Conditioning Duration	10 day
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	1.2 hr
Temperature	34°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calcualted
Source Mass	Not measured
Source Area	0.0015 m^2
Source Surface/Facility Volume	18 m^{-1}
Ventilation Rate	10.0 ach
Air Change/Facility Loading	0.56 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Bruning latex paint
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	4/11/85
Source Acquisition	Manufacturer
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	9 days
Pretest Storage Conditions	Unopened original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70% RH
Conditioning Duration	7 days
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	16.7 hr
Temperature	30°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0029 m^2
Source Surface/Facility Volume	35 m^{-1}
Ventilation Rate	10.7 ach.
Air Change/Facility Loading	0.31 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Glidden texture latex paint
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	4/25/85
Source Acquisition	Manufacturer
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	10 days
Pretest Storage Conditions	Unopened original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70% RH
Conditioning Duration	7 days
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	1.1 hr
Temperature	28°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0029 m^2
Source Surface/Facility Volume	35 m^{-1}
Ventilation Rate	10.5 ach.
Air Change/Facility Loading	0.30 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Joint compound
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	4/25/85
Source Acquisition	Local dealer
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	10 days
Pretest Storage Conditions	Unopened original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70% RH
Conditioning Duration	8 days
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	1.1 hr
Temperature	30°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0028 m^2
Source Surface/Facility Volume	34 m^{-1}
Ventilation Rate	10.3 ach
Air Change/Facility Loading	0.30 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Urethane sealant
Source Category	Building systems
Source Type	Thermal/moisture protection
Source Evaluation Date	4/10/85
Source Acquisition	Manufacturer
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	14 days
Pretest Storage Conditions	Unopened original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70% RH
Conditioning Duration	7 days
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	16.8 hr
Temperature	31°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0029 m^2
Source Surface/Facility Volume	35 m^{-1}
Ventilation Rate	10.4 ach.
Air Change/Facility Loading	0.30 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

EMISSION TESTING DATA (SCOUTING)

Source Descriptor	Wall primer/adhesive
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	4/11/85
Source Acquisition	Manufacturer
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	10 days
Pretest Storage Conditions	Unopened original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70% RH
Conditioning Duration	7 days
Test Facility Operation	Dynamic headspace purge scouting
Test Duration	16.8 hr
Temperature	30°C
Humidity	0% RH
Mixing	By ventilation only
Recirculation	None
Source Volume	Not calculated
Source Mass	Not measured
Source Area	0.0029 m^2
Source Surface/Facility Volume	35 m^{-1}
Ventilation Rate	10.5 ach.
Air Change/Facility Loading	0.30 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Total emission collection

APPENDIX F

Building Materials Tested - Chamber Study

EMISSION TESTING DATA (CHAMBER)

Source Descriptor	Carpet
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	5/3/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	92 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Replicate chambers
Test Duration	4 hr
Temperature	25°C
Humidity	48% RH
Mixing	Fan
Recirculation	None
Source Volume	Not calculated
Source Mass	36.1 to 37.8 g
Source Area	0.0038 to 0.0040 m^2
Source Surface/Facility Volume	0.32 to 0.33 m^{-1}
Ventilation Rate	0.5 ach
Air Change/Facility Loading	1.6 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	ug/m^2 hr
Emissions Determination Method	Sampled chamber atmosphere

EMISSION TESTING DATA (CHAMBER)

Source Descriptor	Cove adhesive
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	4/26/85
Source Acquisition	Manufacturer
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	32 days
Pretest Storage Conditions	Original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70% RH
Conditioning Duration	7 days
Test Facility Operation	Replicate chambers
Test Duration	1 hr
Temperature	25°C
Humidity	48% RH
Mixing	Fan
Recirculation	None
Source Volume	Not calculated
Source Mass	0.40 to 2.41 g
Source Area	0.0006 to 0.0034 m^2
Source Surface/Facility Volume	0.05 to 0.28 m^{-1}
Ventilation Rate	0.5 ach
Air Change/Facility Loading	10 h/hr to 1.8 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	ug/m^2 hr
Emissions Determination Method	Sampled chamber atmosphere

EMISSION TESTING DATA (CHAMBER)

Source Descriptor	Vinyl cove molding
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	5/6/85 to 5/8/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	96 to 98 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Replicate chamber
Test Duration	4.2 to 4.7 hr
Temperature	25°C
Humidity	48 HR
Mixing	Fan
Recirculation	None
Source Volume	Not calculated
Source Mass	41.3 to 43.4 g
Source Area	0.0025 m^2
Source Surface/Facility Volume	0.21 m^{-1}
Ventilation Rate	0.5 ach
Air Change/Facility Loading	2.4 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	ug/m^2 hr
Emissions Determination Method	Sampled chamber atmosphere

EMISSION TESTING DATA (CHAMBER)

Source Descriptor	Particle board
Source Category	Building systems
Source Type	Wood
Source Evaluation Date	5/6/85 to 5/8/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	97 to 99 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Replicate chamber
Test Duration	4.3 to 4.6 hr
Temperature	25°C
Humidity	48% RH
Mixing	Fan
Recirculation	None
Source Volume	Not calculated
Source Mass	31.5 to 42.7 g
Source Area	0.0127 to 0.0148 m^2
Source Surface/Facility Volume	1.1 to 1.2 m^{-1}
Ventilation Rate	0.5 ach
Air Change/Facility Loading	0.45 to 0.42 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Sampled chamber atmosphere

EMISSION TESTING DATA (CHAMBER)

Source Descriptor	Linoleum tile
Source Category	Building syste,s
Source Type	Finishes
Source Evaluation Date	5/6/85 to 5/8/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	97 to 99 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Replicate chamber
Test Duration	6.1 to 6.6 hr
Temperature	25°C
Humidity	48% RH
Mixing	Fan
Recirculation	None
Source Volume	Not calculated
Source Mass	106.9 g
Source Area	0.0324 m^2
Source Surface/Facility Volume	2.7 m^{-1}
Ventilation Rate	0.5 ach
Air Change/Facility Loading	0.19 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	ug/m^2 hr
Emissions Determination Method	Sampled chamber atmosphere

EMISSION TESTING DATA (CHAMBER)

Source Descriptor	Black rubber molding
Source Category	Building systems
Source Type	Moisture/thermal protection
Source Evaluation Date	6/3/85
Source Acquisition	Building site
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	124 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Replicate chamber
Test Duration	6.4 hr
Temperature	25°C
Humidity	48% RH
Mixing	Fan
Recirculation	None
Source Volume	Not calculated
Source Mass	24.1 to 24.9 g
Source Area	0.0024 to 0.0025 m^2
Source Surface/Facility Volume	0.20 to 0.21 m^{-1}
Ventilation Rate	0.5 ach
Air Change/Facility Loading	2.5 to 2.4 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Sampled chamber atmosphere

EMISSION TESTING DATA (CHAMBER)

Source Descriptor	Polystyrene foam insulation
Source Category	Building systems
Source Type	Thermal protection
Source Evaluation Date	6/4/85
Source Acquisition	Retail outlet
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	76 days
Pretest Storage Conditions	Foil wrapped; ambient
Pretest Source Preparation	None
Source Conditioning Protocol	None
Conditioning Duration	None
Test Facility Operation	Replicate chamber
Test Duration	7.2 hr
Temperature	25°C
Humidity	48% RH
Mixing	Fan
Recirculation	None
Source Volume	Not calculated
Source Mass	3.06 to 3.40 g
Source Area	0.0254 to 0.0270 m^2
Source Surface/Facility Volume	2.1 to 2.2 m^{-1}
Ventilation Rate	0.5 ach
Air Change/Facility Loading	0.24 to 0.23 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	$\mu g/m^2$ hr
Emissions Determination Method	Sampled chamber atmosphere

EMISSION TESTING DATA (CHAMBER)

Source Descriptor	Carpet adhesive
Source Category	Building systems
Source Type	Finishes
Source Evaluation Date	10/21/85
Source Acquisition	Retail outlet
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	204 days
Pretest Storage Conditions	Original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70% RH
Conditioning Duration	7 days
Test Facility Operation	Replicate chamber
Test Duration	0.7 hr
Temperature	25°C
Humidity	48% RH
Mixing	Fan
Recirculation	None
Source Volume	Not calculated
Source Mass	0.93 g
Source Area	0.0011 m^2
Source Surface/Facility Volume	0.09 m^{-1}
Ventilation Rate	0.5 ach
Air Change/Facility Loading	5.6 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	ug/m^2 hr
Emissions Determination Method	Sampled chamber atmosphere

EMISSION TESTING DATA (CHAMBER)

Source Descriptor	Glidden texture latex paint
Source Category	Building syste,s
Source Type	Finishes
Source Evaluation Date	7/9/85
Source Acquisition	Manufacturer
Duration: Manufacture to Acquisition	Unknown
Duration: Acquisition to Testing	85 days
Pretest Storage Conditions	Original container
Pretest Source Preparation	Applied to glass slides
Source Conditioning Protocol	22°C, 50-70 RH
Conditioning Duration	7 days
Test Facility Operation	Replicate chamber
Test Duration	6.2 hr
Temperature	25°C
Humidity	48% RH
Mixing	Fan
Recirculation	None
Source Volume	Not calculated
Source Mass	3.75 to 5.07 g
Source Area	0.0018 m^2
Source Surface/Facility Volume	0.15 m^{-1}
Ventilation Rate	0.5 ach
Air Change/Facility Loading	3.3 m/hr
Emissions Analysis	Tenax sorbent; GC/MS analysis
Reported Emission Units	ug/m^2 hr
Emissions Determination Method	Sampled chamber atmosphere

APPENDIX G

Analysis of Distributed Volume Tenax Samples

All 216 Tenax samples were collected in triplicate at widely ranging flow rates (sampling volumes of 7, 14, and 21L). This was done as a quality assurance device first suggested by Walling (1984) to detect possible artifact formation or other problems occurring during sampling. Concentrations that vary with changing flow rate by more than the expected system precision using true duplicate volumes would be "presumptive evidence" that such problems were indeed occurring.

All cases in which measurable quantities of a compound were collected by all three samples were analyzed. The geometric mean concentrations of 29 compounds are listed for each of the three sample volumes in Table 1. To test whether different sampling volumes resulted in significantly different concentrations, the logarithms of all concentrations were compared for the three sampling volumes using a two-way analysis of variance. If the null hypothesis (all three sampling volumes equivalent) was rejected at the $p<.05$ level, pairwise comparisons were performed to isolate the particular sampling volume or volumes that produced significantly different geometric mean concentrations. Only one chemical (benzene) showed a consistent significant trend across all three sampling volumes, reading 10-15% lower with increasing sample volumes. Other chemicals showed one or two differences at the $p<.05$ level, but no consistent significant trend was evident.

The relative standard deviations of the three geometric

means are calculated for all 29 chemicals in Table 2. Differences between geometric means were 10% or less for 25 of the 29 compounds, another indication that varying the sample volumes by a factor of 3 had little effect.

As an independent test of whether different volumes had significantly different concentrations, a nonparametric test (Friedman's chi-square) was employed. This test does not require that the data be distributed normally, and is insensitive to outliers or excessive differences in variance. Concentrations for each triplicate sample were ranked (1=low, 3=high) and then the mean rankings for each volume compared (Table 3). The results indicate that only 2 of 29 compounds showed consistent and significant effects of flow rate on concentration: benzene and m-cresol.

Some of the remaining 27 compounds showed differences in concentration for one or another flow rate, but none showed consistent trends that were statistically significant. Thus, we conclude that for all compounds except benzene and m-cresol, the different sampling volumes gave essentially similar results.

The effects of ozone, NO_2, and humidity on Tenax have been investigated (Pellizzari, 1977). Since the outdoor levels of ozone and relative humidity can differ dramatically from indoor levels, it is possible that outdoor Tenax samples could be affected differently from indoor samples. If so, the precision of the distributed volume samples might reflect the different effects of indoor/outdoor conditions. To check this possibility, we compared the precision of the indoor triplicate samples to

those of the outdoor samples (Table 4). Only three chemicals--benzene, styrene, and 1,2,3-trimethylbenzene--showed a significant ($p<0.05$) difference, with the outdoor precisions being worse than indoor in every case. The remaining 18 chemicals displayed no effect traceable to differences in outdoor/indoor conditions. (Eight other chemicals had no measureable concentrations in outdoor air.)

We conclude that for 25 of our 29 target chemicals, this extensive effort at distributed volume sampling resulted in no indications of chemical reactions or artifact formation during sampling. Other quality assurance procedures had implicated m-cresol as not providing trustworthy results. Only benzene, styrene, and 1,2,3-trimethylbenzene gave evidence of problems, and these problems were all in the 5-15% range.

For future indoor and outdoor programs involving sampling with Tenax, it is suggested that distributed volume sampling be employed on a limited basis (perhaps at the beginning of the program to test for any site-specific problems) rather than on 100% of all samples as in this program.

Table 1. Results of Analysis of Low, Medium, High Sampling Volumes

Compound	No. of Sample Levels	Geo. Mean LO	Geo. S.E. LO	Geo. Mean MED	Geo. S.E. MED	Geo. Mean HI	Geo. S.E. HI	Overall p-Value	Pairwise Comparisons LOW vs. MED	LOW vs. HI	MED vs. HI
a-Pinene	59	8.40	1.12	8.73	1.12	8.98	1.12	0.43	-	-	-
Benzene	215	3.01	1.04	2.72	1.04	2.31	1.04	0.0001	*	*	*
Bromodichloroethane	3	0.99	1.35	1.22	1.41	0.74	1.09	0.4943	-	-	-
Carbon Tetrachloride	19	0.94	1.06	0.75	1.04	0.73	1.06	0.0011	*	*	-
Chlorobenzene	7	1.06	1.11	1.30	1.07	1.12	1.06	0.0204	*	-	*
Ethylbenzene	210	2.49	1.09	2.65	1.09	2.62	1.09	0.0042	*	*	-
Isopropylbenzene	119	0.73	1.09	0.77	1.09	0.78	1.09	0.0112	-	*	-
m-Cresol	41	6.80	1.08	5.72	1.08	3.54	1.10	0.0001	-	*	*
m-Ethyltoluene	196	2.40	1.09	2.69	1.09	2.65	1.09	0.0005	*	*	-
m-Xylene	216	6.51	1.09	6.82	1.08	6.34	1.08	0.0022	-	*	*
n-Butylacetate	65	2.26	1.10	2.28	1.09	2.22	1.10	0.8752	-	-	-
n-Decane	130	10.53	1.18	10.58	1.17	9.71	1.17	0.001	-	*	*
n-Dodecane	63	23.15	1.21	22.86	1.22	22.52	1.21	0.7305	-	-	-
n-Propylbenzene	95	1.54	1.08	1.57	1.09	1.54	1.07	0.8163	-	-	-
n-Undecane	127	11.32	1.17	11.62	1.16	10.81	1.15	0.0570	-	-	-
p-Dichlorobenzene	67	1.73	1.11	1.67	1.12	1.72	1.12	0.3801	-	-	-
Styrene	203	1.32	1.05	1.33	1.05	1.14	1.05	0.0001	-	*	*
Tetrachloroethylene	112	1.69	1.07	1.75	1.07	1.79	1.07	0.0295	-	*	-
Trichloroethylene	94	1.87	1.13	1.79	1.13	1.88	1.13	0.4320	-	-	-
o-Cresol	14	1.07	1.07	1.01	1.11	1.13	1.11	0.4192	-	-	-
o-Dichlorobenzene	4	0.26	1.05	0.28	1.12	0.23	1.14	0.3627	-	-	-
o-Ethyltoluene	212	0.64	1.10	0.69	1.10	0.66	1.10	0.0017	*	-	-
o-Xylene	197	2.72	1.08	2.87	1.08	2.81	1.08	0.0435	*	-	-
1,1,1-Trichloroethane	207	4.36	1.09	4.59	1.09	4.41	1.08	0.0944	-	-	-
1,2-Dichloroethane	43	2.44	1.15	2.52	1.15	2.77	1.15	0.0076	-	*	-
1,2,3-Trimethylbenzene	208	0.98	1.09	1.03	1.09	0.95	1.09	0.0323	-	-	*
1,2,4-Trimethylbenzene	200	2.88	1.10	3.09	1.10	3.04	1.10	0.0048	*	*	-
1,3,5-Trimethylbenzene	108	2.63	1.11	2.71	1.11	2.66	1.10	0.5370	-	-	-
2-Ethoxyethylacetate	50	3.11	1.26	3.72	1.12	3.76	1.14	0.0002	-	*	*

* = significant α = .05
- = not significant

Table 2. Results of Distributed Volume Sampling

Chemical	N	Mean[a]	SD[b]	RSD(%)[c]
n-butylacetate	65	2.25	0.03	1
n-dodecane	63	22.84	0.32	1
n-propylbenzene	95	1.55	0.02	1
1,3,5-trimethylbenzene	108	2.67	0.04	1
p-dichlorobenzene	67	1.71	0.03	2
a-pinene	59	8.70	0.29	3
ethylbenzene	210	2.59	0.08	3
tetrachloroethylene	112	1.74	0.05	3
trichloroethylene	94	1.85	0.05	3
o-xylene	197	2.80	0.075	3
1,1,1-trichloroethane	207	4.45	0.12	3
isopropylbenzene	119	0.76	0.03	4
m-xylene	216	6.56	0.24	4
n-undecane	127	11.25	0.41	4
o-ethyltoluene	212	0.66	0.025	4
1,2,3-trimethylbenzene	208	0.99	0.04	4
1,2,4-trimethylbenzene	200	3.00	0.11	4
n-decane	130	10.27	0.49	5
m-ethyltoluene	196	2.58	0.16	6
o-cresol	14	1.07	0.06	6
1,2-dichloroethane	43	2.58	0.17	7
styrene	203	1.26	0.11	9
chlorobenzene	7	1.16	0.12	10
o-dichlorobenzene	4	1.71	0.025	10
2-ethoxyethylacetate	50	3.53	0.36	10
benzene	215	2.68	0.35	13
carbon tetrachloride	19	0.81	0.12	15
bromodichloromethane	3	0.98	0.24	24
m-cresol	41	5.35	1.66	31

[a] Mean of the three geometric means for the three sampling volumes

[b] Standard deviation of the three geometric means

[c] Relative standard deviation

Table 3. Nonparametric Comparisons of Distributed Volume Samples

Compound	No. of Samples	Mean Rank (LOW)	Mean Rank (MED)	Mean Rank (HIGH)	Overall Test p-value	Pairwise Comparisons LOW vs. MED	Pairwise Comparisons LOW vs. HIGH	Pairwise Comparisons MED vs. HIGH
α-pinene	59	1.7	2.1	2.2	.013	NS	+	NS
Benzene	15	2.4	2.1	1.6	.0001	-	-	-
Bromodichloromethane	3	2.3	2.2	1.5	NS	NS	NS	NS
Carbon Tetrachloride	19	2.6	1.6	1.8	.002	-	-	NS
Chlorobenzene	7	1.4	2.7	1.9	.02	+	NS	NS
Ethylbenzene	210	1.9	2.1	2.0	.05	+	NS	NS
Isopropylbenzene	118	1.8	2.0	2.1	NS	NS	NS	NS
m-Cresol	41	2.5	2.1	1.4	.0001	NS	-	-
m-Ethyltoluene	196	1.8	2.2	2.1	.0004	+	+	NS
m-Xylene	216	2.0	2.1	1.9	.02	NS	NS	-
n-Butylacetate	65	2.0	2.1	1.9	NS	NS	NS	NS
n-Decane	130	2.1	2.2	1.8	.005	NS	-	-
n-Docecane	63	2.0	2.2	1.8	NS	NS	NS	NS
n-Propylbenzene	95	2.0	2.1	1.9	NS	NS	NS	NS
n-Undecane	127	2.0	2.1	1.9	NS	NS	NS	NS
p-Dichlorobenzene	67	2.0	1.9	2.1	NS	NS	NS	NS
Styrene	202	2.1	2.1	1.8	.0002	NS	-	-
Tetrachloroethylene	112	1.9	2.0	2.1	NS	NS	NS	NS
Trichloroethylene	94	2.0	2.0	2.0	NS	NS	NS	NS
o-Cresol	14	1.9	1.9	2.2	NS	NS	NS	NS
o-Dichlorobenzene	4	1.9	2.4	1.8	NS	NS	NS	NS
o-Ethyltoluene	212	1.8	2.2	2.0	.002	+	NS	NS
o-Xylene	197	2.0	2.1	2.0	NS	NS	NS	NS
1,1,1-Trichloroethane	207	1.9	2.1	2.0	.03	+	NS	NS
1,2-Dichloroethane	43	1.7	2.1	2.3	.02	NS	+	NS
1,2,3-Trimethylbenzene	208	1.9	2.2	1.9	.01	+	NS	-
1,2,4-Trimethylbenzene	200	1.9	2.1	2.0	.02	+	NS	NS
1,3,5-Trimethylbenzene	108	1.9	2.1	2.0	NS	NS	NS	NS
2-Ethoxyethylacetate	50	1.7	1.9	2.4	.001	NS	+	+

NOTE: NS - not significant at $p<0.05$
+ increased concentration at higher volume ($p < 0.05$)
- decreased concentration at higher volume ($p < 0.05$)
Overall test: H_o: $_1 = {}_m = {}_h$
H_a: $_1 = {}_m = {}_h$ where $_i$ = mean rank for i^{th} volume

$$_i = \sum_{j=1}^{m} R_{ij}/m$$

where R_{ij} = rank for i^{th} volume within the jth sample.
m = number of sample levels

Table 4. Wilcoxon 2-Sample t-Test for Indoor RSD vs. Outdoor RSD

Compound	Mean Rank by % RSD Indoor (sample size)	Mean Rank by % RSD Outdoor (sample size)	Indoor vs. Outdoor p-value
α-pinene	---	---	---
Benzene	102 (161)	126 (54)	0.02
Bromodichloroethane	---	---	---
Carbon Tetrachloride	11 (9)	9 (10)	NS
Chlorobenzene	---	---	---
Ethylbenzene	103 (162)	113 (48)	NS
Isopropylbenzene	59 (111)	67 (7)	NS
m-Cresol	19 (29)	26 (12)	NS
m-Ethyltoluene	99 (156)	96 (40)	NS
m-Xylene	106 (162)	117 (54)	NS
n-Butylacetate	32 (63)	57 (2)	NS
n-Decane	65 (128)	88 (2)	NS
n-Dodecane	---	---	---
n-Propylbenzene	48 (85)	44 (10)	NS
n-Undecane	---	---	---
p-Dichlorobenzene	34 (65)	30 (2)	NS
Styrene	92 (161)	138 (41)	<0.0001
Tetrachloroethylene	56 (93)	60 (19)	NS
Trichloroethylene	48 (89)	38 (5)	NS
o-Cresol	---	---	---
o-Dichlorobenzene	---	---	---
o-Ethyltoluene	107 (158)	105 (54)	NS
o-Xylene	98 (159)	102 (38)	NS
1,1,1-Trichloroethane	100 (161)	116 (46)	NS
1,2-Dichloroethane	23 (37)	18 (6)	NS
1,2,3-Trimethylbenzene	98 (155)	124 (53)	0.006
1,2,4-Trimethylbenzene	104 (157)	89 (43)	NS
1,3,5-Trimethylbenzene	55 (98)	49 (10)	NS
2-Ethoxyethylacetate	---	---	---

Note: --- indicates either indoor or outdoor group had no data
NS = not significant at 0.05 level

$$\text{Mean rank by \% RSD} = \sum_{i=1}^{n_j} R_{ij}/n_j$$

where R_{ij} = rank of ith sample in the jth location,
and n_j = sample size for the jth location

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