

Health Consultation

Air Surveillance

TOMS RIVER GENERAL POST OFFICE
TOMS RIVER, OCEAN COUNTY, NEW JERSEY

DECEMBER 1, 1998

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

Agency for Toxic Substances and Disease Registry

Division of Health Assessment and Consultation

Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members.

This document has previously been released for a 30 day public comment period. Subsequent to the public comment period, ATSDR addressed all public comments and revised or appended the document as appropriate. The health consultation has now been reissued. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

Air Surveillance

TOMS RIVER GENERAL POST OFFICE

TOMS RIVER, OCEAN COUNTY, NEW JERSEY

Prepared by:

Exposure Investigation and Consultation Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

BACKGROUND

United States Senator Robert Torricelli of New Jersey asked the Agency for Toxic Substances and Disease Registry (ATSDR) to review contaminant and cancer prevalence information provided by an employee of the United States Postal Service. The information was provided in relation to questions posed regarding (a) the possibility of environmental contamination in the Toms River General Post Office (TRGPO) and (b) whether there is a potential for adverse health effects from exposure to any environmental contamination that may exist.

Postal employees (through their union representatives, Congressmen, and Senators) and the U. S Postal Service had previously consulted the U.S. Occupational Safety and Health Administration (OSHA)^(1,2) and the New Jersey Department of Environmental Protection (NJDEP) regarding the postal employees' concerns. These agencies provided the opinion that environmental conditions did not warrant concerns for health effects. Furthermore, environmental sampling and analysis conducted by industrial hygienists and consultants for the U.S. Postal Service did not indicate contamination at or above levels of health concern.^(3,4) Despite these indications, it was clear from interviews and availability sessions conducted by ATSDR that concerns for health effects persisted with employees and their union representatives.

In response to these concerns, ATSDR completed a preliminary analysis of historical environmental monitoring information and released a draft health consultation on the Toms River General Post Office for public comment in September 1997.⁽⁵⁾ The final health consultation document, which addressed comments from the postal workers, was released in February 1998.⁽⁶⁾

In that consultation, ATSDR concluded that the available information regarding the TRGPO did not present a strong indication that the health effects of concern to employees have been caused by contaminants in the post office's environment. However, ATSDR also concluded that the available information did not completely rule out possible chemical exposures resulting in adverse health effects.

On the basis of the analysis presented in the consultation, ATSDR recommended collecting further information to make a more complete assessment of the post office environment. ATSDR worked directly with the U.S. Postal Service to collect that information, which included indoor and ambient air sampling that targeted a broad range of contaminants and exposure scenarios.

A draft of this consultation was provided for public comment on July 13, 1998. No comments were received as of the date of finalization.

METHODS

Site Visits and Availability Sessions

ATSDR representatives visited the TRGPO on 29 September 1997 to meet with postal employees, their local and national union representatives, and U.S. Postal Service Central NJ Performance Cluster personnel to present the draft health consultation and to conduct an availability session to discuss worker concerns. During this visit, a sampling strategy was conceptualized and sample locations chosen.

A second availability session was held on 18 November 1997 at the request of postal employees, to allow for further discussion of concerns related to the facility and health outcomes. The sessions were requested to afford an opportunity for employees who were unable to attend the 29 September 1997 session to communicate their concerns and information they felt relevant to the consultation. Prior notices of the time and date of this session were made to the union leadership. Sign up sheets for times to speak with ATSDR representatives regarding health concerns were posted on two bulletin boards in the post office facility.^(7,8)

Air Sampling

An air sampling approach was conceptualized by ATSDR, the U.S. Postal Service - Central NJ Performance Cluster representatives, and union leadership personnel. The approach strategy and methodology were also reviewed by the National Institute for Occupational Safety and Health (NIOSH). The following is a summary of the sampling plan:

- Sampling activities were conducted by the U.S. Postal Service with technical assistance and field Quality Assurance/Quality Control (QA/QC) from ATSDR; and ATSDR and NIOSH technical review of the resultant data.⁽⁹⁾
- Air sampling activities for volatile organic chemicals (VOCs) and polynuclear aromatic hydrocarbons (PNAs) were conducted at the TRGPO during two separate days, with two sampling events occurring on each date (17 November and 4 December 1997). Sampling for VOCs was conducted for eight hour durations simultaneously at three indoor and two outdoor locations. The indoor stations were positioned in the mail sorting room, with outdoor stations located in close proximity to the northeast and southwest corners of the building.

Sample collection activities occurred from approximately 0700-1500 hours and were repeated from approximately 1500 -

2300 hours, to cover potential effects of tidal fluctuation. The second sample collection date followed a rain event in order to evaluate potential hydrologic displacement of vapors from the soil pore spaces within the site vicinity. Indoor air sampling locations were identical to the first round. High moisture content in the ambient air due to precipitation made it infeasible to collect outdoor samples during the second sampling date.

- Air samples for VOCs and PNAs were also obtained from two conduit/vent areas in an effort to evaluate potential migration of sub-surface vapors into the post office building. All sample collection activities occurred simultaneously to allow for comparative analysis of data points.
- Positive identification of VOCs and low level quantitation for 24 individual VOCs was conducted by gas chromatograph/mass spectroscopy (GC/MS) analysis, following U.S. Environmental Protection Agency (U.S. EPA) Methods TO-1, *Method for Determination of Volatile Organic Compounds in Ambient Air Using Tenax Adsorption and Gas Chromatography /Mass Spectrometry (GC/MS)*; and TO-2, *Method for the Determination of Volatile Organic Compounds in Ambient Air by Carbon Molecular Sieve Adsorption and Gas Chromatograph/Mass Spectrometry (GC/MS)*. Samples were collected on Tenax/Carbon Molecular Sieve (CMS) tubes.
- Analysis for 16 PNAs was performed via NIOSH Method 5515, *Polynuclear Aromatic Hydrocarbons by GC*, after the collection of samples on glass fiber filters followed by XAD-2 sorbent tubes.
- Sample collection locations are shown in Figure 1, located in the Appendix.

On 17 November 1997 and again on 04 December 1997, samples were collected during two concurrent eight-hour periods, beginning at approximately 0700 hours and ending at approximately 2300 hours. VOCs were collected using U.S.EPA Methods TO-1 and TO-2. Detection limits ranged from 0.58 to 1.15 ug/M³. Polynuclear aromatic hydrocarbons were collected using glass fiber filter cassettes and XAD-2 tubes connected in series. Analysis was via NIOSH Method 5515, with the detection limit at 0.01 mg/m³.⁽¹⁰⁾

RESULTS

Individual analytical results of collected air samples are presented in Tables I-IV, located in the appendix. Tables V-VIII display the sampling time period, flow rate, and sample volume for the air sampling conducted on 17 November and 4 December 1997.

All sampling data were submitted to NIOSH for review. The results of that review are incorporated in this consultation.⁽¹¹⁾

DISCUSSION

The most prevalent VOCs identified during the first day of sampling were toluene, ethyl benzene, and xylene, all at concentrations below 1 part per million (ppm). The most prevalent VOCs identified during the second day of sampling included methylene chloride, toluene, and xylene, also at concentrations less than 1 ppm. These concentrations are well below the relevant evaluation criteria for ethyl benzene, toluene, and xylene. The lowest criteria established for these compounds is the 50 ppm used by the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for toluene. The methylene chloride concentrations were also well below the OSHA Permissible Exposure Level (PEL) of 25 ppm.⁽¹¹⁾

Acrylonitrile was also detected at low concentrations in several air samples collected inside the facility on 4 December 1997. The compound is used in the manufacture of acrylic fibers, plastics, surface coatings and adhesives.⁽¹²⁾ Its presence in low concentrations inside of the post office is not considered unusual due to the use of adhesive materials and plastics in the building. The airborne levels of acrylonitrile are well below the OSHA permissible exposure limit, the NIOSH recommended exposure limit, and the ACGIH threshold limit value for occupational exposures.

Sample results for PNAs show concentrations at the level of detection. Three samples from the first round of sample collection show naphthalene present in four samples at the analytical level of detection, 0.01 mg/m³. The NIOSH Recommended Exposure Limit (REL) and the OSHA PEL are 50 mg/m³. The ACGIH TLV for naphthalene is 52 mg/m³. ACGIH notes that naphthalene is not classifiable as a human carcinogen. As naphthalene was found at the method detection level and no other PNAs were detected during either sampling date, our review of the data treats these samples as not detectable by the analytical method.

The indoor air investigation conducted at the Toms River General Post Office shows the presence of low levels of VOCs. For example, benzene, a VOC which is a component of gasoline and coal tar and a commonly detected indoor air contaminant throughout the U.S., was found to be at levels which are typical for indoor air. Other VOCs were also present in the indoor air, but these chemicals, at the concentrations detected,

are also typical of indoor air environments.

The following table illustrates typical indoor air concentrations of selected compounds and their associated household sources. Household comparisons were chosen to provide a very conservative basis for evaluating the indoor air data at the TRGPO. Concentration ranges found at the TRGPO are listed beside the average household ranges, in **bold type** for comparative purposes.

Typical Indoor Air Chemical Concentrations and Sources

Compound	Concentration		Reference	Common Sources*
	Average household	TRGPO		
Toluene	10.3-620.5	<0.88-271.2	14,16,17, 18,13	Solvents, paints, adhesives, detergents, cleaners, fuel components (gasoline)
Benzene	9.9-52	1.65-15.1	14,15,16, 17	Solvents, paints, stains, sealants, cleaners, tobacco smoke, fuel components (gasoline)
Ethylbenzene	5.3-40.6	1.77-82.33	14,15,16, 17	Solvents, varnishes, paints, polishes, cleaners, fuel components (gasoline)
Xylenes	4.41-352.8	1.4-381	12,15,16, 13,19	Solvents, varnishes, paints, polishes, cleaners, fuel components (gasoline)
Methylene chloride	1,313	2.68-648	11	Common spray can propellant, tar removers and tire patch, paint strippers, some mothballs, car engine cleaners

*See references 20, 21, 22, 23, 24, 25, 26.

ATSDR personnel noted that adhesives, cleaners, waxes, degreasers, polishes and insecticides are routinely used in the facility. Such materials are commonly found in many buildings and businesses.

The contaminant concentrations present in the air samples collected from the TRGPO appear to be consistent with the materials used in the normal course of the postal facility operation. Substances identified from the indoor air sampling conducted at the TRGPO were compared to a list of materials regularly used at the facility. Many of the substances noted in the air sample analysis are consistent with those materials as well as with gasoline and gasoline by-products. The gasoline compounds likely emanate from the fleet of gasoline powered vehicles used by the Postal Service which are stored and fueled on the premises.

Historical data from on-site monitor well sampling conducted for the Postal Service documented low-level VOC contamination in the groundwater underlying the facility.^(5,6) While the air sampling data from the facility does not indicate there is migration of these chemicals from the groundwater into the facility, the potential for airborne release exists if large scale soil excavation is undertaken. Low level VOCs, potentially in the shallow groundwater table as a result of previous spills and discharges in the area, could transfer into the air phase if uncovered. During such construction activity, construction personnel may be exposed to low level VOCs.

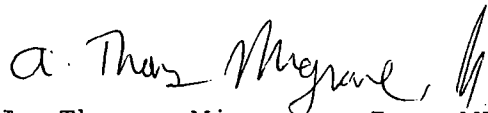
During discussions held with postal employees, concern was raised regarding the potential for leaching of chemicals, primarily lead, from the building's plumbing into the drinking water. No data from interior sources (i.e., sinks, drinking fountains) was available for ATSDR to review relative to this matter.

CONCLUSIONS

1. Analytical results from the samples collected at the TRGPO do not identify any chemicals at levels of health concern. Substances noted in the air sampling results are consistent with materials used inside of the facility and are commonly found in indoor air. Evidence was not found which would indicate that contaminants are entering the building from waste material allegedly disposed of on the property prior to the original building construction.
2. The data from the PNA air sampling do not indicate that air migration of residual coal tar (related to the Toms River Former Manufactured Gas Plant Facility) is occurring.
3. Facility expansion and associated construction may result in the release of low level volatile organic chemicals, if such activities disturb subsurface areas that may be contaminated by previous spills.

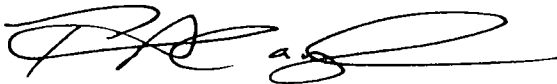
RECOMMENDATIONS

1. Conduct air monitoring for volatile organic chemicals during intrusive construction activities conducted on the property, to ensure that construction personnel are not exposed to chemicals above applicable occupational health standards. Such excavation activities are planned as part of the facility expansion project. ATSDR is available to provide review of the air monitoring plan.
2. Information beyond that distributed by ATSDR about cancer and its epidemiology should be provided to interested employees of the Toms River General Post Office. The purpose of this effort would be to efficiently communicate relevant health topics (e.g., the relationships between risk factors and various types of cancers). Such educational efforts may help to raise the awareness level of postal employees about potential risk factors and their effects on the incidence of cancer.
3. In response to concerns expressed by postal employees to ATSDR relative to their concerns about the quality of the drinking water, consideration should be given to periodic collection of additional environmental samples from the potable water supply at the facility.



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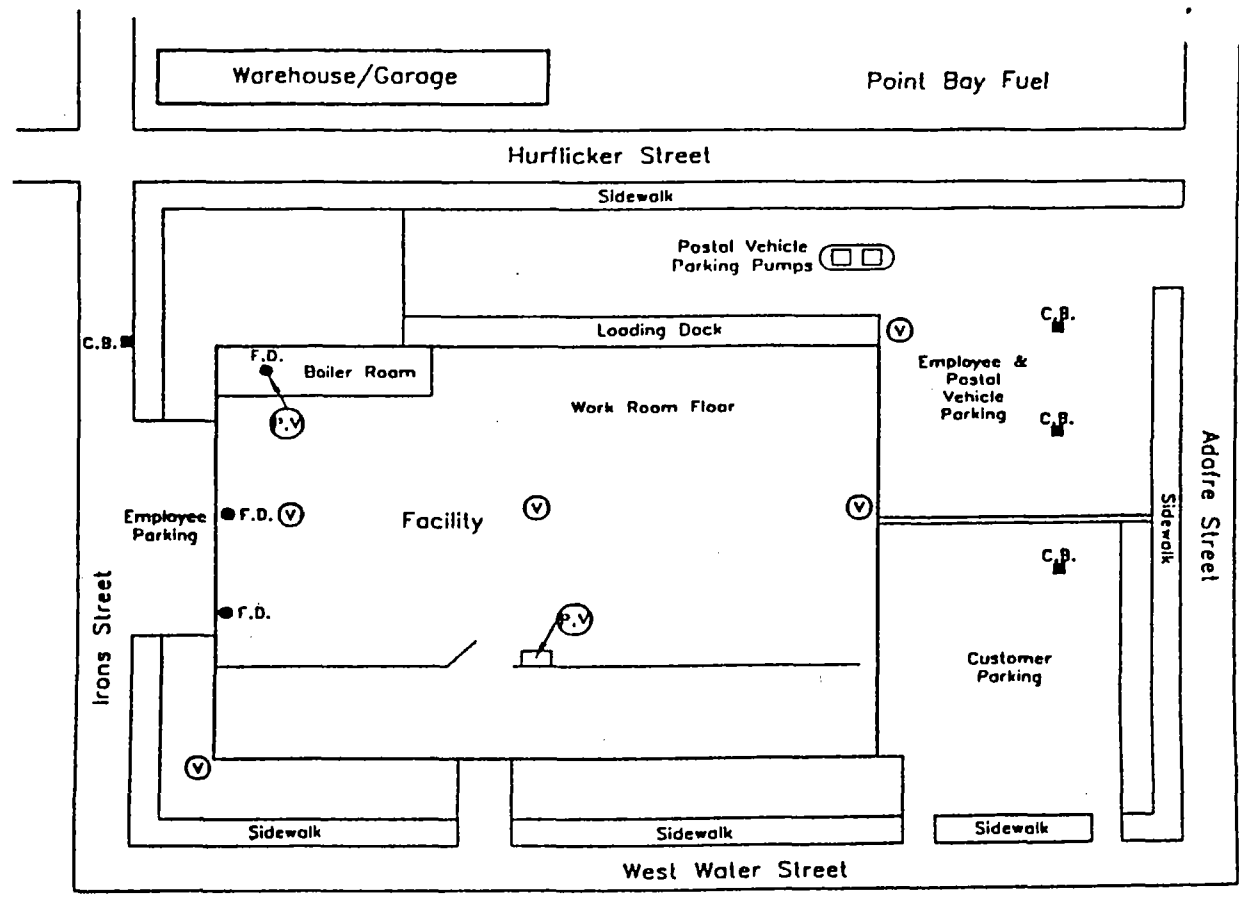
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APPENDIX

Figure 1
Toms River Post Office Air Sampling Locations
Toms River, New Jersey



- Legend**
- C.B. ■ Catch Basin
 - F.D. ● Floor Drain
 - Ⓟ PNA Air Sample
 - Ⓥ VOC Air Sample

Schematic: Not to Scale

Note: See field sample data sheets for sample identification.

PMC
 01800 85/02.17.98-DST/A101-1A

TABLE I
Toms River General Post Office
Results of VOC Air Sampling-17 November 1997 (Non-rain)
Collection Time 0700 - 1500 hrs.

Location:	Electric Panel	Mail Process West	Mail Process Center	Mail Process East	Boiler Room	Ext. SW	Ext. NE
Sample ID	VOC-1	VOC-2	VOC-3	VOC-5	VOC-4	VOC-6	VOC-7
UNITS (ug/M ³)							
acrylonitrile	<0.88	<0.92	<1.14	<1.05	<1.15	<0.89	<0.97
allyl chloride	16.396	<0.92	10.091	7.992	<1.15	4.275	<0.97
benzene	6.290	3.413	3,562	2.824	3.53	1.753	1.65
toluene	<0.88	73.06	51.14	66.95	22.56	1.825	2.39
ethylbenzene	82.33	73.06	51.14	66.95	22.56	1.825	2.39
xylene	222.6	252.8	184.02	217.6	1.56	3.369	1.96
cumene	6.661	<0.92	4.292	4.812	2.04	<0.89	<0.97
heptane	<0.88	<<0.92	<1.14	<1.05	3.55	<0.89	<0.97
1-heptane	4.70	1.882	2,557	2.762	2.17	<0.89	<0.97
PCE	4.982	3.229	3.516	5.669	2.29	<0.89	<0.97
TCE	1.254	1.033	<1.14	<1.05	<1.15	<0.89	<0.97
methylene chloride	32.33	10.129	6.849	6.192	6.560	3.363	3.56

TCE - Trichloroethylene
PCE - Tetrachloroethylene

TABLE II
Toms River General Post Office
Results of VOC Air Sampling-17 November 1997 (Non-rain)
Collection Time 1500-2300 hrs.

Location:	Electric Panel	Mail Process West	Mail Process East	Boiler Room	Ext. SW	Ext. NE
Sample ID	VOC-9	VOC-10	VOC-13	VOC-12	VOC-14	VOC-15
UNITS (ug/M ³)						
acrylonitrile	<1.06	<1.08	<0.85	<0.97	<1.00	<0.97
allyl chloride	14.597	15.476	11.193	20.27	<1.00	3.301
benzene	4.831	5.584	5.060	6.699	1.813	1.748
toluene	271.2	404.8	170.19	63.90	13.964	19.068
ethyl benzene	58.90	106.93	59.28	6.583	1.773	2.00
xylene	199.15	381.0	158.60	22.97	1.414	6.738
cumene	4.322	6.364	3.083	<0.97	<1.00	<0.97
heptane	<1.06	<1.08	2.947	2.085	<1.00	<0.97
1-heptane	2.203	2.078	3.629	1.544	<1.00	<0.97
carbon tet.	<1.06	<1.08	<0.85	<0.97	<1.00	<0.97
PCE	1.419	1.710	1.346	<0.97	<1.00	<0.97
TCE	<1.06	1.797	0.903	<0.97	<1.00	<0.97
methylene chloride	15.297	14.913	8.296	6.737	2.291	2.680

TCE - Trichloroethylene
PCE - Tetrachloroethylene

TABLE III
Toms River General Post Office
Results of VOC Air Sampling-04 December 1997 (rain event)
Collection Time 0700 - 1500 hrs.

Location:	Electric Panel	Mail Process West	Mail Process Center	Mail Process East	Boiler Room
Sample ID	VOC-1	VOC-2	VOC-3	VOC-5	VOC-4
UNITS (ug/M ³)					
acrylonitrile	4.6	8.3	6.84	<0.58	4.8
allyl chloride	27.6	53.8	46.1	3.4	38.0
benzene	6.5	9.3	16.8	9.9	10.0
toluene	330.0	340.0	323.0	115.0	296.0
ethyl benzene	50.2	51.2	46.3	7.4	39.1
xylene	120.0	126.0	112.0	20.4	91.0
cumene	3.3	3.5	3.2	1.5	3.0
heptane	5.1	6.2	6.74	6.6	<0.58
1-heptane	<0.64	<0.61	<0.62	<0.58	<0.58
carbon tet.	<0.64	0.69	0.76	1.0	<0.58
PCE	1.9	1.8	1.7	0.67	1.8
TCE	3.7	4.7	5.4	1.9	1.9
methylene chloride	648.0	648.0	349.0	193.0	153.0

TCE - Trichloroethylene
PCE - Tetrachloroethylene

TABLE IV
Toms River General Post Office
Results of VOC Air Sampling-04 December 1997 (rain event)
Collection Time 1500 - 2300 hrs.

Location:	Electric Panel	Mail Process West	Mail Process Center	Mail Process East	Boiler Room
Sample ID	VOC-7	VOC-8	VOC-9	VOC-10	VOC-11
UNITS (ug/M ³)					
acrylonitrile	4.7	5.5	2.6	2.11	6.59
allyl chloride	34.5	40.1	32.5	37.5	48.4
benzene	10.3	11.8	10.3	13.1	15.1
toluene	295.0	106.0	69.3	67.9	282.0
ethyl benzene	42.1	49.9	24.0	6.0	38.7
xylene	97.6	117.0	56.7	15.7	87.6
cumene	2.8	3.3	1.6	<0.60	2.81
heptane	<0.61	7.4	<0.58	7.82	8.7
1-heptane	6.5	<0.61	<0.58	<0.60	6.0
carbon tet.	<0.61	<0.61	<0.58	<0.60	<0.60
PCE	2.1	2.4	1.13	1.83	2.0
TCE	6.7	7.7	4.5	2.41	3.97
methylene chloride	970.0	648.0	341.0	186.0	398.0

TCE - Trichloroethylene
PCE - Tetrachloroethylene

TABLE V
Toms River General Post Office
17 November 1997
Volatile Organic Chemical Sample Data

Sample ID	Flow Rate (cc/min)	Sampling Time (Minutes) (Start/Stop)	Sample Volume (Liters)
VOC-1	109.15	0701-1540	56.6
VOC-2	109.23	0704-1520	54.2
VOC-3	91.18	0706-1506	43.8
VOC-4	91.02	0710-1509	43.6
VOC-5	97.95	0715-1523	47.8
VOC-6	112.5	0712-1529	55.9
VOC-7	103.4	0717-1533	51.3
VOC-8	LOT BLANK	NA	NA
VOC-9	98.3	1544-2344	47.2
VOC-10	96.45	1522-2321	46.2
VOC-11	98.85	1508-2309	47.5
VOC-12	107.7	1513-2314	51.8
VOC-13	124.0	1524-2317	58.7
VOC-14	104.6	1531-2331	50.2
VOC-15	107.0	1533-2336	51.5
VOC-16	FIELD BLANK	NA	NA

NOTE: NA equals Not Applicable

TABLE VI
Toms River General Post Office
04 December 1997
Volatile Organic Chemical Sample Data

Sample ID	Flow Rate (cc/min)	Sampling Time (Minutes) (Start/Stop)	Sample Volume (Liters)
VOC-1	98.24	0651-1451	47.2
VOC-2	100.2	0653-1502	48.9
VOC-3	99.8	0656-1503	48.6
VOC-4	107.5	0703-1508	52.1
VOC-5	106.1	0657-1505	51.8
VOC-6	LOT BLANK	NA	NA
VOC-7	102.4	1452-2250	48.9
VOC-8	102.0	1502-2302	49.0
VOC-9	106.6	1504-2305	51.3
VOC-10	102.9	1508-2311	49.7
VOC-11	102.8	1506-2307	49.4

NOTE: NA equals Not Applicable

TABLE VII
Toms River General Post Office
17 November 1997
Polynuclear Aromatic Hydrocarbon Sample Data

Sample ID	Flow Rate (L/min)	Sampling Time (Minutes) (Start/Stop)	Sample Volume (Liters)
PNA-1	2.013	0701-1540	873.6
PNA-2	2.083	0710-1510	999.8
PNA-3	LOT BLANK	NA	NA
PNA-4	2.09	1544-2344	1003.2
PNA-5	2.18	1515-2000	904.7
PNA-6	FIELD BLANK	NA	NA

NOTE: NA equals Not Applicable

TABLE VIII
Toms River General Post Office
04 December 1997
Polynuclear Aromatic Hydrocarbon Sample Data

Sample ID	Flow Rate (L/min)	Sampling Time (Minutes) (Start/Stop)	Sample Volume (Liters)
PNA-1	2.056	0651-1451	998.8
PNA-2	2.07	0703-1508	1003.9
PNA-3	LOT BLANK	NA	NA
PNA-4	2.1	1510-2311	1001.7
PNA-5	2.09	1510-2311	1005.3
PNA-6	FIELD BLANK	NA	NA

Note: NA equals Not Applicable