

Health Consultation

SPACE AGE DRY CLEANERS SITE

AMESBURY, ESSEX COUNTY, MASSACHUSETTS

EPA FACILITY ID: MAD019147446

SEPTEMBER 9, 2009

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 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

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Prepared By:

U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

Background and Statement of Issues

The U.S. Environmental Protection Agency (EPA) Region I office asked the Agency for Toxic Substances and Disease Registry (ATSDR) to review and evaluate indoor air data collected in January 2009 and May 2009 in six buildings located at the former Space Age Dry Cleaners site in Amesbury, Essex County, Massachusetts. The purpose of this health consultation is to determine if contaminant levels in the indoor air and sub-surface vapors of buildings at and adjacent to the Space Age Dry Cleaner site pose a public health hazard to those occupying the adjacent buildings [1].

The Space Age Dry Cleaners Site (P-04) is located at 6 School Street (see Figure 1) in Amesbury, MA and was used as a dry cleaning establishment beginning in the 1940s until operations ceased in 2003. All dry cleaning materials and equipment were removed from the building in 2006 and the building is currently empty and unoccupied. At some unknown time during its use as a dry cleaner, oil and hazardous materials associated with dry cleaning were released to the environment.

In May 2006, in preparation for a potential real estate transaction, Space Age Dry Cleaners engaged Higgins Environmental Associates, Inc. (HEA) to complete an environmental site assessment to evaluate whether chlorinated solvents associated with dry cleaning operations had been released to the environment. Based on laboratory findings from this evaluation, HEA determined that volatile organic compounds (VOCs) were present in ground water, soil, and soil-gas samples generally consistent with dry cleaning operations. Tetrachloroethylene (PCE), trichloroethylene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1 – dichloroethene (1,1-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), and vinyl chloride (VC) were determined to be the primary contaminants of concern and HEA began excavating potentially contaminated soil from the site in April 2007. Between 12 and 16 cubic yards of soil were excavated from the site and stockpiled first in a lined and covered roll off container and later moved inside the Space Age Dry Cleaners building (P-04) and covered. Currently, this pile of soil remains on the first floor of the building. In 2007, indoor air sampling results prompted the Massachusetts Department of Environmental Protection (MassDEP) to conclude that conditions could pose an imminent public health hazard, using MassDEP criteria, if human exposure occurred due to the high levels of VOCs in indoor air within currently unoccupied portions of this property.

Building P-04 shares a common wall with a property (P-05) that has residential apartments on the first and second floors. The occupants of apartment Unit 2 include two young children, while all other apartment residents appear to be adults [2]. Another residential property abuts the site to the south (P-02) and the site is bordered by residential buildings to the north, south, and west (P-01, P-03, and P-06) (see Figure 1).

This health consultation addresses adult and child exposure to VOCs in indoor air in the Space Age Dry Cleaners building (P-04) and the adjacent commercial spaces and residences as well as soil VOC contamination as potential contributors to indoor air levels.

This EPA request is being managed by ATSDR under the “Strike” process, which is a rapid-response, focused effort that does not include comprehensive review of the technical memorandum, site contaminants, and exposure pathways.

Discussion

January 2009 Sampling Event –

Based on a site visit on January 6, 2009 and available indoor air, soil, and groundwater data, MassDEP and EPA decided to collect indoor air and sub-slab soil gas samples inside five buildings (P-01, P-02, P-03, P-05, and P-06) during the week of January 16, 2009. The concentrations detected for compounds not considered chemicals of concern in all samples were similar or slightly higher than the concentrations detected in ambient air samples from the area. Results for this sampling event can be seen in Tables 1 and 2.

P-01 School Street:

One 24-hour indoor air, three indoor air grab, and two soil-gas grab samples were collected in the basement of P-01 School Street. PCE was detected in the 24 hour indoor air sample as well as the soil-gas samples, but no measurements were above the Chronic Environmental Media Evaluation Guide (EMEG) for indoor air, an estimated contaminant concentration that would not be expected to result in adverse noncarcinogenic health effects, or any of ATSDR’s health-based comparison values. No other contaminants of concern were detected above analytical reporting limits, the CREG for indoor air, or any of ATSDR’s comparison values in any of the indoor air samples. The detected levels for contaminants of concern in soil-gas and indoor air when compared to the ambient air data do not suggest a contaminant source adversely impacting indoor air at P-01 School Street.

P-02 School Street:

One 24-hour indoor air, one indoor air grab sample, and three soil-gas samples were collected from the basement of P-02 School Street. PCE was detected at 0.09 parts per billion volume (ppb/v) in the 24-hour sample and at 0.3 ppb/v in the indoor air grab sample. PCE was detected in soil-gas samples at levels ranging from 386 – 881 ppb/v, which is above the Chronic EMEG for indoor air. Additionally, TCE was detected at 0.8 ppb/v and 3.7 ppb/v in soil-gas samples. No other chemicals of concern were detected above analytical reporting limits or ATSDR comparison values in either sample. Of further note, the basement of P-02 School Street has a dirt floor and thus there may be greater potential for soil gas to migrate into the building and effect indoor air levels. These results suggest there is a VOC source, such as contaminated soil, impacting indoor air quality.

P-03 School Street:

One 24-hour indoor air, one indoor air grab, and three soil-gas samples were collected in the basement of P-03 School Street. No chemicals of concern were detected above reporting limits or ATSDR comparison values in the 24-hour or indoor air grab sample.

PCE was detected in all soil-gas samples at levels ranging 3.7 – 10 ppb/v. No other chemicals of concern were detected in soil-gas samples. The levels of chemicals of concern detected in soil-gas and indoor air when compared to the ambient air data do not suggest that a contaminant source is present under the building and that indoor air quality is being adversely impacted.

P-05 School Street:

One 24-hour indoor air sample, one duplicate 24-hour sample, three indoor air grab, and eight soil-gas grab samples were collected in the basement of P-05 School Street. PCE was detected in the 24-hour indoor air samples at 0.52 ppb/v and 0.49 ppb/v, and in a range of 0.5 – 0.6 ppb/v in indoor air grab samples. No other chemicals of concern were detected in these indoor air samples.

PCE was detected in soil-gas samples in a range of 36 – 1,546 ppb/v, which is above the Chronic EMEG for this compound. TCE was detected in four of eight soil-gas samples in a range of 0.5 – 3.8 ppb/v.

24-hour indoor air samples were collected from three of four occupied apartment units on the first and second floors of P-05 School Street. PCE was detected at 1.8 ppb/v in Unit 1 and 0.29 ppb/v in Unit 2, both of which are on the first floor of P-05 School Street. PCE was detected at 0.46 ppb/v in Unit 4, which is on the second floor. No other contaminants of concern were detected above reporting limits or ATSDR comparison values at this location.

Overall, PCE and TCE were detected in indoor air and soil-gas at P-05 School Street. These results suggest there is a VOC source, such as contaminated soil, impacting indoor air quality.

P-06 School Street:

Two 24-hour indoor air, one soil-gas, and three indoor grab samples were collected from the basement of P-06 School Street. PCE was detected in one 24-hour sample at a level below ATSDR comparison values. No other chemicals of concern were detected at levels above the analytical reporting limit in any other samples. Contaminant detection in soil-gas and indoor air samples when compared to ambient air data does not indicate that indoor air quality is being impacted.

May 2009 Sampling Event –

Based on the results from the January 2009 indoor air survey, additional air samples were collected on May 12 and 13, 2009. EPA performed indoor air sampling inside P-04 School Street and P-05 School Street for VOCs. In addition, residents of P-05 School Street were asked to provide information identifying potential indoor sources of VOCs prior to sampling. Results from the May sampling event can be seen in Table 2.

P-04 School Street:

One 24-hour indoor air and one duplicate 24-hour indoor air sample were collected from the basement of P-04 School Street. PCE, TCE, and cis-1,2-DCE were detected in both samples. PCE was detected at 140 ppb/v and 120 ppb/v, which is above the Chronic

EMEG for the compound. TCE was detected at 3.2 ppb/v and 3.1 ppb/v, while cis-1,2-DCE was detected at 1.5 ppb/v and 1.6 ppb/v. No other chemicals of concern were measured above analytical detection limits or ATSDR comparison values in these samples.

In addition to these basement samples, 24-hour indoor air samples were collected from the alleyway and first floor of P-04 School Street. PCE was detected at 24 ppb/v and TCE was detected at 0.60 ppb/v in the alleyway sample. PCE was detected at 59 ppb/v in the first floor sample, which is above the Chronic EMEG for this compound. TCE was detected on the first floor at 0.84 ppb/v. No other chemicals of concern were measured above analytical detection limits or ATSDR comparison values in these samples. These results suggest there is a VOC source, such as contaminated soil, impacting indoor air quality. The data indicates that the excavated soil currently inside P-04 School Street is impacting indoor air quality in P-04 School Street.

P-05 School Street:

24-hour indoor air samples were collected at P-05 School Street in the basement and in each of four occupied apartment units. PCE and TCE were detected in all samples. PCE measurements ranged from 0.36 – 2.8 ppb/v. The highest detection of PCE was measured in apartment Unit 1, which is located on the first floor. TCE measurements ranged from 0.06 – 0.12 ppb/v. No other chemicals of concern were found above analytical detection limits or ATSDR comparison values in any samples from P-05 School Street.

PCE and TCE concentrations in indoor air during this May 2009 study were higher compared to the January 2009 study in apartment Units 1 and 2. Measurements of PCE in apartment Unit 4 during the May 2009 study were slightly lower compared to those taken in January 2009, while measurements of TCE were higher in May 2009.

Health Implications –

Tetrachloroethylene (PCE) and trichloroethylene (TCE) are synthetic chemicals that have been used in the dry cleaning of fabrics and can contaminate groundwater and soil. These compounds belong to a class of compounds known as volatile organic compounds (VOCs) and are capable of off-gassing from soil and groundwater and contaminating the air of homes and commercial buildings. PCE travels quickly through soil and can remain in the air for several months before it is broken down into other chemicals. TCE evaporates easily and breaks down to other chemicals that include lung irritants.

Vapor intrusion of PCE and TCE into indoor air can be a public health concern because these compounds are readily absorbed into the lungs. Acute health effects from PCE and TCE include headache, nausea, eye irritation, and respiratory irritation. However, all indoor air levels of PCE and TCE were below ATSDR's health-based comparison values for acute (short-term) exposures. Therefore, short-term exposures are not of health concern.

Chronic health effects associated with long-term inhalation include both cancer and non-cancer health effects. The non-cancer health effects associated with long-term exposure to PCE and TCE include damage to the liver, kidney, and nervous system. However, no

chemical concentrations in indoor air exceeded ATSDR's chronic non-cancer health-based comparisons value at locations P-01, P-02, P-03, P-05, and P-06. Therefore, harmful health effects would not be expected at these locations. Although PCE was detected above ATSDR's chronic health-based comparison value at location P-04, no one currently resides or works in P-04 so no one is currently exposed there. Where there is no exposure, there can be no harmful health effects. However, levels of PCE at P-04 could be a public health concern if this unit is occupied in the future. Additional monitoring is necessary to ensure that potential future residents are not exposed to high levels of PCE.

Animal studies conducted with PCE exposures much higher than most people are exposed to show that the chemical can cause liver and kidney cancers, although this has not been demonstrated in humans [4]. The U.S. Department of Health and Human Services has determined that PCE may reasonably be anticipated to be a human carcinogen. The International Agency for Research on Cancer (IARC) has determined that PCE is a probable human carcinogen [5].

An increasing number of peer-reviewed studies indicate that people who breathe air or drink water contaminated with TCE are at a higher risk of cancer or of having reproductive effects [6]. Based on evidence that high doses of trichloroethylene can cause cancer in animals and limited data in humans regarding trichloroethylene exposure and cancer, IARC has determined that TCE is probably carcinogenic to humans [5].

Despite the relatively low likelihood that indoor air concentrations of PCE and TCE at this site will result in observable increases in cancer for exposed populations, prudent public health practice is to minimize exposure to these chemicals.

As recommended by the EPA and the Interstate Technology and Regulatory Council (ITRC), in their vapor intrusion guidance document [7], multiple lines of evidence were used in the evaluation of this site. As previously described, seasonal sampling of indoor air was performed, background sources were identified in a questionnaire filled out by residents of the apartments on the site, soil-gas and ambient air sampling was performed, meteorology was recorded during sampling events, and building structural conditions were considered. These multiple lines of evidence have resulted in a conceptual site model that is sufficiently comprehensive for indoor air and vapor intrusion evaluation.

Child Health Considerations

Children could be at greater risk than adults from certain kinds of exposure to hazardous substances. Children typically weigh less than adults which results in a greater dose of hazardous substance per unit of body mass. They are also generally shorter than adults and breathe air that is closer to the ground. This can lead to higher levels of exposure to PCE and TCE as these compounds are more dense than air. Increased tendency towards active play may lead to higher rates of respiration. Children are particularly vulnerable to exposure to hazardous compounds because their body systems are still developing.

While current measurements of PCE and TCE in the residential units adjacent to the Space Age Dry Cleaner Site are not above ATSDR's screening levels for adults or

children, young children live in at least one of the apartment units. Thus, children's health should be taken into consideration in future site activities.

Conclusions and Recommendations

ATSDR concludes that a VOC source, such as contaminated soil, currently exists inside P-04 School Street that is impacting the indoor air quality of this unoccupied building. Because no one currently resides or works in P-04, no one is currently exposed. Where there is no exposure, there can be no harmful health effects. However, PCE was detected above ATSDR's chronic health-based comparison value. ATSDR finds that these levels would be a health concern if P-04 were to be occupied in the future. ATSDR recommends that the excavated soil inside P-04 School Street be removed and additional indoor air sampling be conducted before the building is occupied to ensure VOC levels are not of health concern for future inhabitants of this building.

Based on the January and May 2009 sampling events, ATSDR concludes that a contaminant source exists at P-05 and P-02 School Street that has the potential to impact indoor air quality in these structures. Currently, levels of PCE and TCE in these residences are not of health concern. However, in light of (1) the potential for increases in PCE and TCE contamination in indoor air at P-05 School Street, (2) the levels of PCE in soil-gas samples at P-05 and P-02 School Street, (3) the indoor air samples at P-04 School Street that are above ATSDR comparison values, (4) the presence of young children living at P-05 School Street, and (5) the identified indoor air exposures to potential carcinogens, ATSDR recommends continued seasonal monitoring of indoor air at P-04, P-05, and P-02 to protect public health, monitor the progress of the remediation, and to ensure accurate characterization and removal of the contaminant source.

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References

- 1) Agency for Toxic Substances and Disease Registry. 2009. ATSDR Strike Team Request Form. Prepared by Gary Perlman, ATSDR. Boston, MA. June 23, 2009.
- 2) Kahn, Peter R. 2009. US Environmental Protection Agency, New England Regional Laboratory. Indoor Air Soil Vapor Intrusion Study, Space Age Cleaners, Amesbury, MA. May 2009. Appendix C: Occupied Dwelling Questionnaire
- 3) Kahn, Peter R. 2009. US Environmental Protection Agency, New England Regional Laboratory. Indoor Air Soil Vapor Intrusion Study, Space Age Cleaners, Amesbury, MA. May 2009.
- 4) Agency for Toxic Substances and Disease Registry. 1997. Toxicological Profile for Tetrachloroethylene. Atlanta: US Department of Health and Human Services.
- 5) International Agency for Research on Cancer. 1995. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Dry cleaning, some chlorinate solvents and other industrial chemicals. 63: 159-221.
- 6) Agency for Toxic Substances and Disease Registry. 1997. Toxicological Profile for Trichloroethylene. Atlanta: US Department of Health and Human Services.
- 7) US Environmental Protection Agency Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 29, 2002.

Figure 1: Space Age Dry Cleaners Site
Amesbury, MA



**Table 1: Soil-Gas Sampling Data
Space Age Dry Cleaners, Amesbury, MA
January 2009**

			Tetrachloroethylene (ppb/v)	Trichloroethylene (ppb/v)	1,1- Dichloroethene (ppb/v)	cis-1,2- Dichloroethene (ppb/v)	trans-1,2- Dichloroethene (ppb/v)	Vinyl Chloride (ppb/v)
EMEG			40 (Chronic)	100 (Intermediate)	20 (Intermediate)		200 (Intermediate)	30 (Intermediate)
Sample Location	Sample	Date						
P-01 School St	SG-1	01/2009	4.7	ND(0.9)	NA	ND(5)	NA	NA
P-01 School St	SG-1 Conf.	01/2009	4.8	ND(0.7)	NA	ND(0.07)	ND (0.07)	ND(0.07)
P-02 School St	SG-1	01/2009	881	0.8	NA	NA	NA	NA
P-02 School St	SG-2	01/2009	386	3.7	NA	NA	NA	NA
P-02 School St	SG-2 Conf.	01/2009	440	ND(7.3)	ND(7.3)	ND(7.3)	ND(7.3)	ND(7.3)
P-02 School St	SG-3	01/2009	108	ND(0.5)	NA	NA	NA	NA
P-03 School St	SG-1	01/2009	10	ND(0.9)	NA	ND(5)	NA	NA
P-03 School St	SG-1 Conf.	01/2009	5.5	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)
P-03 School St	SG-2	01/2009	3.7	ND(0.9)	NA	ND(5)	NA	NA
P-05 School St	SG-1, without purge	01/2009	36	ND(1.5)	NA	NA	NA	NA

P-05 School St	SG-1, with purge	01/2009	190	3.8	NA	NA	NA	NA
P-05 School St	SG-2, without purge	01/2009	200	ND(1.0)	NA	NA	NA	NA
P-05 School St	SG-2, with purge	01/2009	1,283	2.9	NA	NA	NA	NA
P-05 School St	SG-3, without purge	01/2009	497	ND(1.5)	NA	NA	NA	NA
P-05 School St	SG-3, with purge	01/2009	1,546	1.6	NA	NA	NA	NA
P-05 School St	SG-4, without purge	01/2009	181	ND(1.0)	NA	NA	NA	NA
P-05 School St	SG-4, with purge	01/2009	864	0.5	NA	NA	NA	NA
P-06 School St	SG-1	01/2009	ND(0.5)	ND(0.9)	NA	ND(5)	NA	NA

NOTES:

ND = Not detected above reporting limits; reporting limits in parentheses

NA = Not applicable, concentrations for these compounds were either less than 10 times the reporting limit or not detected above reporting limits to calculate

EMEG = ^{an RPD} Environmental Media Evaluation Guide

ppb/v = parts per billion volume

**Table 2: Indoor and Ambient Air Sampling Data
Space Age Dry Cleaners, Amesbury, MA
January and May 2009**

			Tetrachloroethylene (ppb/v)	Trichloroethylene (ppb/v)	1,1- Dichloroethene (ppb/v)	cis-1,2- Dichloroethene (ppb/v)	trans-1,2- Dichloroethene (ppb/v)	Vinyl Chloride (ppb/v)
EMEG			40 (Chronic)	100 (Intermediate)	20 (Intermediate)		200 (Intermediate)	30 (Intermediate)
Sample Location	Sample	Date						
P-01 School St	Grab-1, Basement	01/2009	ND(0.5)	ND(0.9)	NA	ND(5)	NA	NA
P-01 School St	24h Basement	01/2009	0.09 L	ND(0.09)	ND(0.09)	ND(0.09)	ND(0.09)	ND(0.09)
P-01 School St	Grab-2, Basement	01/2009	ND(0.5)	ND(0.9)	NA	ND(5)	NA	NA
P-01 School St	Grab-3, Basement	01/2009	ND(0.5)	ND(0.9)	NA	ND(5)	NA	NA
P-01 School St	Ambient	01/2009	0.05 L	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)
P-02 School St	Grab-1, Basement	01/2009	0.3	ND(0.5)	NA	NA	NA	NA
P-02 School St	24h, Basement	01/2009	0.09	ND(0.08)	ND(0.08)	ND(0.08)	ND(0.08)	ND(0.08)
P-02 School St	Ambient	01/2009	0.05 L	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)
P-03 School St	Grab-1, Basement	01/2009	ND(0.5)	ND(0.9)	NA	ND(5)	NA	NA
P-03 School St	24h, Basement	01/2009	ND(0.08)	ND(0.08)	ND(0.08)	ND(0.08)	ND(0.08)	ND(0.08)
P-03 School St	Ambient	01/2009	0.05 L	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)

P-04 School St	24h, Basement	05/2009	140	3.2	ND(0.1)	1.5	ND(0.1)	ND(0.1)
P-04 School St	24h, Basement Duplicate	05/2009	120	3.1	ND(0.09)	1.6	ND(0.09)	ND(0.09)
P-04 School St	24h, 1st Floor	05/2009	59	0.84	ND(0.09)	0.25	ND(0.09)	ND(0.09)
P-04 School St	24h, Alleyway	05/2009	24	0.6	ND(0.48)	ND(0.48)	ND(0.48)	ND(0.48)
P-04 School St	Ambient	05/2009	0.12	0.06 L	ND(0.09)	ND(0.09)	ND(0.09)	ND(0.09)
P-05 School St	Grab-1, Basement	01/2009	0.6	ND(0.7)	NA	NA	NA	NA
P-05 School St	Grab-2, Basement	01/2009	0.5	ND(0.7)	NA	NA	NA	NA
P-05 School St	Grab-3, Basement	01/2009	0.5	ND(0.7)	NA	NA	NA	NA
P-05 School St	24h, Basement	01/2009	0.52	ND(0.08)	ND(0.08)	ND(0.08)	ND(0.08)	ND(0.08)
P-05 School St	24h, Basement Duplicate	01/2009	0.49 J	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)
P-05 School St	24h, First Floor Unit #1	01/2009	1.8	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
P-05 School St	24h, First Floor, Unit #2	01/2009	0.29	ND(0.09)	ND(0.09)	ND(0.09)	ND(0.09)	ND(0.09)
P-05 School St	24h, Second Floor, Unit #4	01/2009	0.46	ND(0.09)	ND(0.09)	ND(0.09)	ND(0.09)	ND(0.09)
P-05 School St	Ambient	01/2009	0.05 L	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)	ND(0.07)
P-05 School St	24h, Basement	05/2009	1.6	0.09 L	ND(0.1)	ND(0.1)	ND(0.10)	ND(0.10)
P-05 School St	24h, First Floor, Unit #1	05/2009	2.8	0.12	ND(0.1)	ND(0.10)	ND(0.10)	ND(0.10)
P-05 School St	24h, First Floor, Unit #2	05/2009	0.58	0.07 L	ND(0.1)	ND(0.10)	ND(0.10)	ND(0.10)

P-05 School St	24h, Second Floor, Unit #3	05/2009	0.65	0.1	ND(0.09)	ND(0.09)	ND(0.09)	ND(0.09)
P-05 School St	24h, Second Floor, Unit #4	05/2009	0.36	0.06 L	ND(0.1)	ND(0.10)	ND(0.10)	ND(0.10)
P-05 School St	Ambient	05/2009	0.12	0.06 L	ND(0.09)	ND(0.09)	ND(0.09)	ND(0.09)
P-06 School St	Grab-1, Basement	01/2009	ND(0.5)	ND(0.9)	NA	ND(5)	NA	NA
P-06 School St	Grab-2, Basement	01/2009	ND(0.5)	ND(0.9)	NA	ND(5)	NA	NA
P-06 School St	24h-2, Basement	01/2009	ND(0.08)	ND(0.08)	ND(0.08)	ND(0.08)	NA(0.08)	NA(0.08)
P-06 School St	Grab-3, Basement	01/2009	ND(0.5)	ND(0.9)	NA	ND(5)	NA	NA
P-06 School St	24h-3, Basement	01/2009	0.06 L	ND(0.09)	ND(0.09)	ND(0.09)	NA(0.09)	NA(0.09)
P-06 School St	Ambient	01/2009	0.05 L	ND(0.07)	ND(0.07)	ND(0.07)	NA(0.07)	NA(0.07)

NOTES:

ND = Not detected above reporting limits; reporting limits in parentheses

L = Estimated value, is below concentration range

NA = Not applicable, concentrations for these compounds were either less than 10 times the reporting limit or not detected above reporting limits to calculate

J = Estimated value, sample was not collected over the entire 24-hour period

EMEG = Environmental Media Evaluation Guide

ppb/v = parts per billion volume