UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

FEB 24 2010

MEMORANDUM

SUBJECT: Vapor Intrusion Sampling
GSA Buildings 50 and 52
Kansas City, Missouri

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As requested, we have reviewed the analytical results for the vapor intrusion sampling conducted at GSA's Buildings 50 and 52. The vapor intrusion investigation was conducted to determine whether subsurface contamination at the site is or has the potential to impact the indoor air space of these buildings. Below we have broken our review into five parts including a background on the sampling, a risk-based evaluation of indoor air data, and an evaluation of the vapor intrusion pathway, an uncertainties discussion, and our conclusions. This evaluation is specific to volatile organic compounds (VOCs) in Buildings 50 and 52.

Background

Consistent with EPA vapor intrusion guidance (USEPA, 2002), vapor intrusion sampling consisted of subslab air, indoor air, and outdoor air sampling. Indoor air and subslab air samples were collected from Buildings 50 and 52. In addition, one air sample was collected from a utility tunnel on the south end of Building 50 and two outdoor air samples were collected from the west and south sides of the Building 50 and Building 52 complex. Attachment 1 depicts the sampling locations. The indoor air and utility tunnel samples were collected to evaluate the indoor air quality of Buildings 50 and 52. The subslab air samples were collected to determine whether the subsurface contamination (i.e., groundwater contamination) is impacting the subslab air space below the buildings.

As discussed in guidance, subslab air samples are direct measurements of air that could affect the indoor air of overlying buildings. In addition, the subslab air samples in conjunction with indoor air samples can be used to determine the presence of an indoor air vapor source. The outdoor air samples were specifically collected to identify potential background outdoor sources of contamination that could affect indoor air quality at the time of sampling. The outdoor air samples were not intended to evaluate outdoor air quality nor were they collected in a manner that allows us to evaluate outdoor air quality, in part, because the number of samples, locations, and analytes were limited.

Air samples were collected for VOC analysis and polychlorinated biphenyl (PCB) analysis. SUMMA canisters were used to collect air samples for VOC analysis and polyurethane foam (PUF) sorbent tubes were used to collect air samples for PCB analysis. Additional information on the sampling and analysis procedures can be found in the project's quality assurance project plan (QAPP).

Human Health Risk Evaluation

The human health risk evaluation consists of a comparison of the indoor air sample results against chronic risk-based screening levels for indoor air. Risk-based indoor air screening levels were specifically derived for the workers and children whom occupy Buildings 50 and 52 and account for their exposure time, exposure frequency, and exposure duration. The equations, exposure factors, and toxicity values used to derive the screening levels are presented in Attachment 2 and are consistent with EPA risk assessment guidance (USEPA, 2009). Given that there are two groups of receptors in Buildings 50 and 52, the screening levels were based on the lower of the two derived for each receptor. Also, the screening levels are based on a cancer risk of 1E-06 and a hazard quotient (HQ) of 0.1. The non-cancer screening levels were divided by 10 to account for potential additive non-cancer health effects. Please note that these screening levels differ slightly from the residential indoor air screening levels shown in the QAPP and used during project scoping. Upon further consideration, site-specific screening levels were derived so that a more accurate evaluation of health risks could be performed.

Table 1 below compares the maximum detection of each chemical in each building to its respective screening level. In addition, because these chemicals are found in numerous consumer and industrial products (e.g., cleaners, solvents, fuels, glues, markers, etc.), background concentrations are provided for reference.

Table 1. Indoor Air Results Screening ($\mu g/m^3$)

Chemical	Building 50 Maximum Detection	Building 52 Maximum Detection	Risk-Based Screening Level		Indoor Air Background [1]	
			Cancer risk = 1E-06	Non-cancer HQ = 0.1	50%	95%
Ethylbenzene	7.1	2.5	3.9	350	2.0	14
Benzene	2	1.7	1.3	10.5	2.5	17
Tetrachloroethylene	0.50	0.42	1.7	94.6	0.9	7.4
Toluene	17	10	17,520	1,752	13	106
Trichloroethylene	6.8	0.26	4.9	3.5	0.3	1.6
Vinyl Chloride	ND (0.20)	ND (0.20)	0.22	35	<RL	0.05
o-Xylene	11	3.1	-	73	2.2	16
m-Xylene & p- Xylene	29	8.4	-	73	5.5	41
Chloroform	0.50	0.55	0.43	34.3	1.1	6.0
1,2-Dichlorobenzene	ND (0.48)	ND (0.48)	-	70	NE	NE
1,4-Dichlorobenzene	1.3	ND (0.48)	0.89	280	NE	NE
1,1-Dichloroethylene	ND (0.32)	ND (0.32)	-	70	<RL	<RL
cis-1,2-Dichloroethylene[2]	ND (0.32)	ND (0.32)	-	21	<RL	<RL
trans-1,2-Dichloroethylene	ND (0.32)	ND (0.32)	-	21	<RL	<RL

ND: Not Detected (reporting limit).
NE: Not Evaluated.
<RL: Below Reporting Limit.
[1] Background concentrations obtained from Dawson & McAlary (2009). The values shown represent the the 50th and 95th percentile for background indoor air concentrations measured in North American residences since 1990.
[2] Screening levels for *cis*-1,2-dichloroethylene are not available. Non-cancer screening level for *trans*-1,2-dichloroethylene is used as a surrogate value.

As shown in Table 1, the maximum detected concentrations (or reporting limits for non-detects) were generally, with a few exceptions, below risk-based screening levels. The maximum detected concentrations of all chemicals (reporting limits for non-detects) in both buildings were below their respective non-cancer screening levels. With the exception of benzene and chloroform in Building 52, and benzene, ethylbenzene, chloroform, trichloroethylene, and 1,4-dichlorobenzene in Building 50, the maximum detections were also below the carcinogenic screening levels. However, the exceedences are slightly greater than the screening levels and still within EPA's target cancer risk range (i.e., 1E-06 to 1E-04). When considering the average detections of those chemicals, they are all below the screening levels (see Attachment 3).

In addition, the levels of chemicals in both buildings fall within residential background concentrations. Given that the background concentrations shown in Table 1 are based on residential housing, they may under-predict background concentrations in commercial and industrial buildings. In other words, background concentrations in commercial and industrial buildings may be higher. However, given that Buildings 50 and 52 are used as office space and daycare facilities, the residential background levels are appropriate.

In addition to the indoor air samples, the concentrations of the utility tunnel sample were also evaluated for potential human health risks. Because access to the utility tunnel is limited (i.e., not accessible to the public) and exposures to workers are intermittent and of short duration, the utility air sample results were compared against short-term screening levels (see Attachment 4). As shown in the attachment, all chemicals were found well below screening levels.

Vapor Intrusion Pathway Evaluation

The collection of indoor air, subslab air, and outdoor air samples allows us to perform a thorough evaluation of the vapor intrusion pathway. Consistent with relevant vapor intrusion guidance (USEPA, 2002, 2008; ITRC, 2007), our evaluation included an analysis of the subslab air data, subslab-to-indoor attenuation factors, and potential background sources. Below we have provided a summary of our findings.

As shown in Attachment 5, several chemicals are present in the subslab air below Buildings 50 and 52. The main groundwater contaminant, trichloroethylene, was detected in the subslab air of both buildings, but at higher levels under Building 50. This confirms that subsurface contaminants are volatilizing and migrating upward through the soil column and collecting below the buildings' foundations. Conservative subslab screening levels are provided in the Attachment 5 for reference.

Because indoor air and subslab samples were collected, subslab-air-to-indoor-air attenuation factors (α) can be derived that enables us to determine whether the subslab air is affecting indoor air quality and the potential source of the indoor air detections. The attenuation factors are calculated by dividing the indoor air concentrations by the subslab air concentrations. Attachment 6 presents the attenuation factors for collocated indoor and subslab air samples. Table 2 below provides the attenuation factor for each chemical, which are based on the average detections in indoor and subslab air.

Table 2. Subslab-to-Indoor Air Attenuation Factors (α)

Chemical	Building 50			Building 52		
	Indoor Air[1] (μg/m³)	Subslab Air[2] (μg/m³)	α	Indoor Air[1] (μg/m³)	Subslab Air[2] (μg/m³)	α
Ethylbenzene	2.2	2.7	**0.82**	0.8	5.3	**0.16**
Benzene	1.3	2.8	**0.46**	1.0	5.8	**0.17**
Tetrachloroethylene	0.3	5.0	**0.06**	nd	nd	**ne**
Toluene	6.5	6.8	**0.96**	3.0	12.1	**0.25**
Trichloroethylene	3.3	238.4	**0.01**	0.2	5.7	**0.03**
o-Xylene	3.2	3.5	**0.90**	0.9	6.9	**0.13**
m-Xylene & p- Xylene	8.6	8.4	**1.0**	2.5	15.7	**0.16**
Chloroform	0.3	6.6	**0.04**	0.2	15.7	**0.01**
1,4-Dichlorobenzene	1.3	nd	**ne**	nd	1.8	**ne**

α = Indoor Air/Subslab Air
nd: Chemical not detected
ne: Not evaluated, chemical was not detected in the indoor air and/or the subslab air sample.
[1] Concentration represents the average detected value in indoor air.
[2] Concentration represents the average detected value in subslab air.

As shown in Table 2, the same chemicals detected in the subslab air were also detected in the indoor air, which indicates that the vapor intrusion pathway may be complete. However, the calculated attenuation factors support that indoor air sources (i.e., background) may have contributed to many of the detections in indoor air. When considering the calculated attenuation factors, all but three of the chemicals detected in Building 50 and Building 52 have attenuation factors that indicate the presence of indoor air sources. Per EPA's attenuation factor database, upper-bound 75th to 95th percentile subslab-to-indoor air attenuation factors range from approximately 0.01 to 0.1 (USEPA, 2008). When large attenuation factors (i.e., >0.1) are observed at low indoor air and subslab air concentrations, which was observed for a majority of the chemicals, background air concentrations are likely biasing attenuation factors (USEPA, 2008). As discussed above, the levels of chemicals detected in Buildings 50 and 52 fall within the range of background.

The attenuation factors derived for trichloroethylene, chloroform, and tetrachloroethylene also support that background sources may have contributed to many of the detections in indoor air. The attenuation factors for these compounds fall within the range of observed attenuation factors at vapor intrusion sites. Assuming that no background sources are present, the attenuation factors should be roughly the same for all of the chemicals.

In addition to the attenuation factors being indicative of the presence of background indoor air sources, we also evaluated the outdoor air samples as a potential background source. With the exception of tetrachloroethylene, the levels of chemicals in outdoor air were less than indoor air. Trichloroethylene was not detected in the outdoor air samples. Based on these findings, the outdoor air was not a significant background source for the chemicals evaluated in the indoor air samples, except for tetrachloroethylene.

Uncertainties

When evaluating the vapor intrusion pathway and human health risks, it is important to address the uncertainties in the evaluations. Although the uncertainties are not expected to affect our findings, they are important for conveying information about the pathway and health risks. First, there is some uncertainty in how representative the air samples are of long-term indoor air concentrations. We note that the evaluation was based on the assumption that the sample results from one round of sampling are representative of long-term conditions over many years. Although the samples were collected during the time of year that would likely represent worst case conditions (i.e., during the winter, when the building depressurization is expected to be the greatest (USEPA, 2002)), the levels of chemicals, regardless of the source, in indoor, subslab, and outdoor air can fluctuate daily and seasonally. In addition, the exact levels of chemicals in air that are due to background sources are uncertain. While the attenuation factor data supports that background sources contributed to most, if not all of the detections for a majority of the chemicals, information on specific background sources and their emissions is not available.

Conclusions

Based on our evaluation of the indoor air and utility tunnel air sampling results, the levels of chemicals analyzed for in Buildings 50 and 52 do not pose short-term or long-term health risks of concern. Levels of the chemicals in both buildings fall below or within EPA's target cancer risk range and are consistent with background levels found in residences. Also, while chemicals have been detected in the subslab vapor below the foundations of Buildings 50 and 52, our evaluation has found that the vapor intrusion pathway is not a significant pathway at Buildings 50 and 52 under current conditions. The attenuation factor data supports that background indoor air sources have contributed to the majority of the detections in indoor air.

In light of these findings, we support the recent installation of the subslab vapor mitigation system. This precautionary measure will ensure that the chemicals detected below the buildings will not significantly affect indoor air quality.

References

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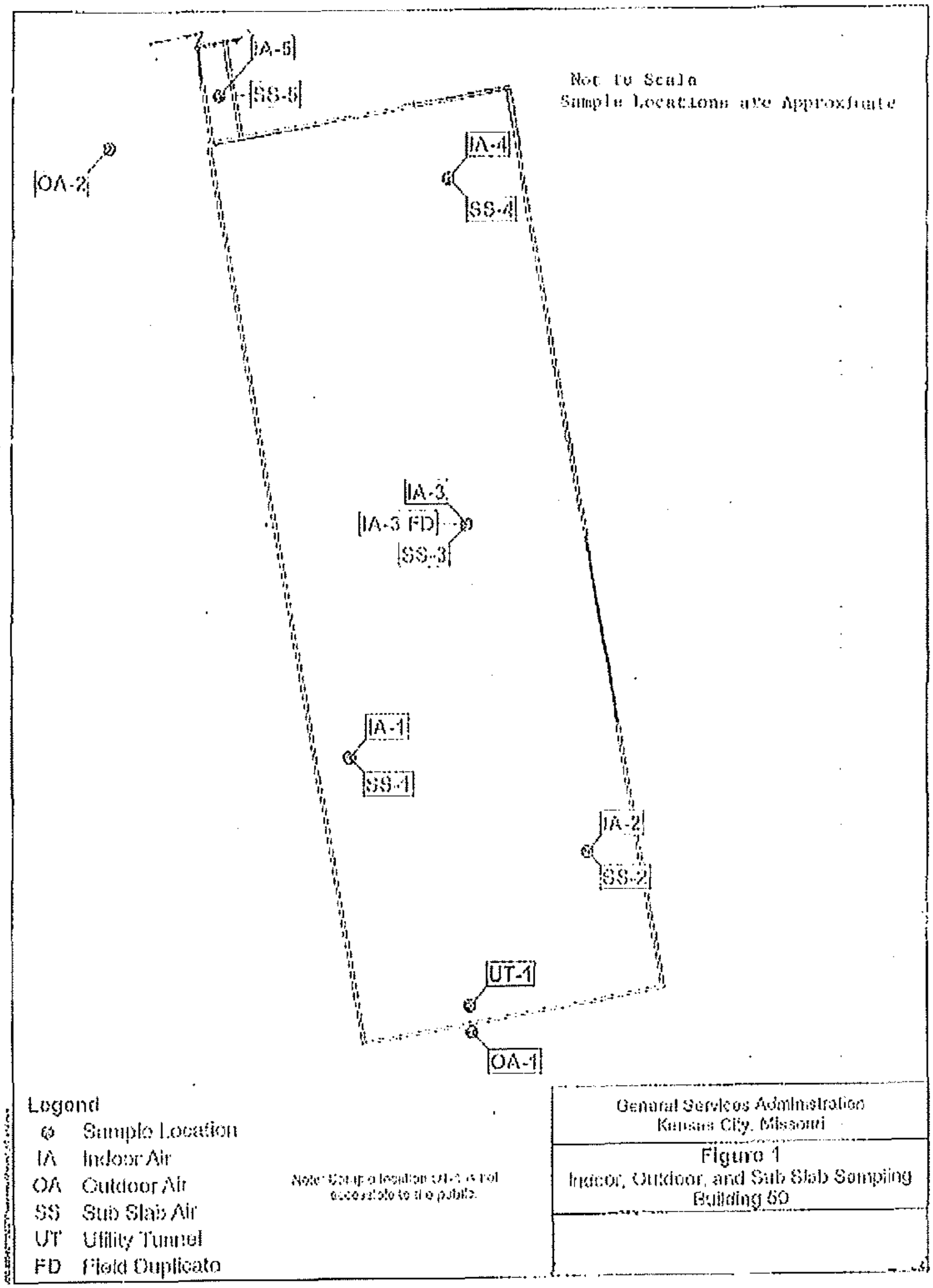
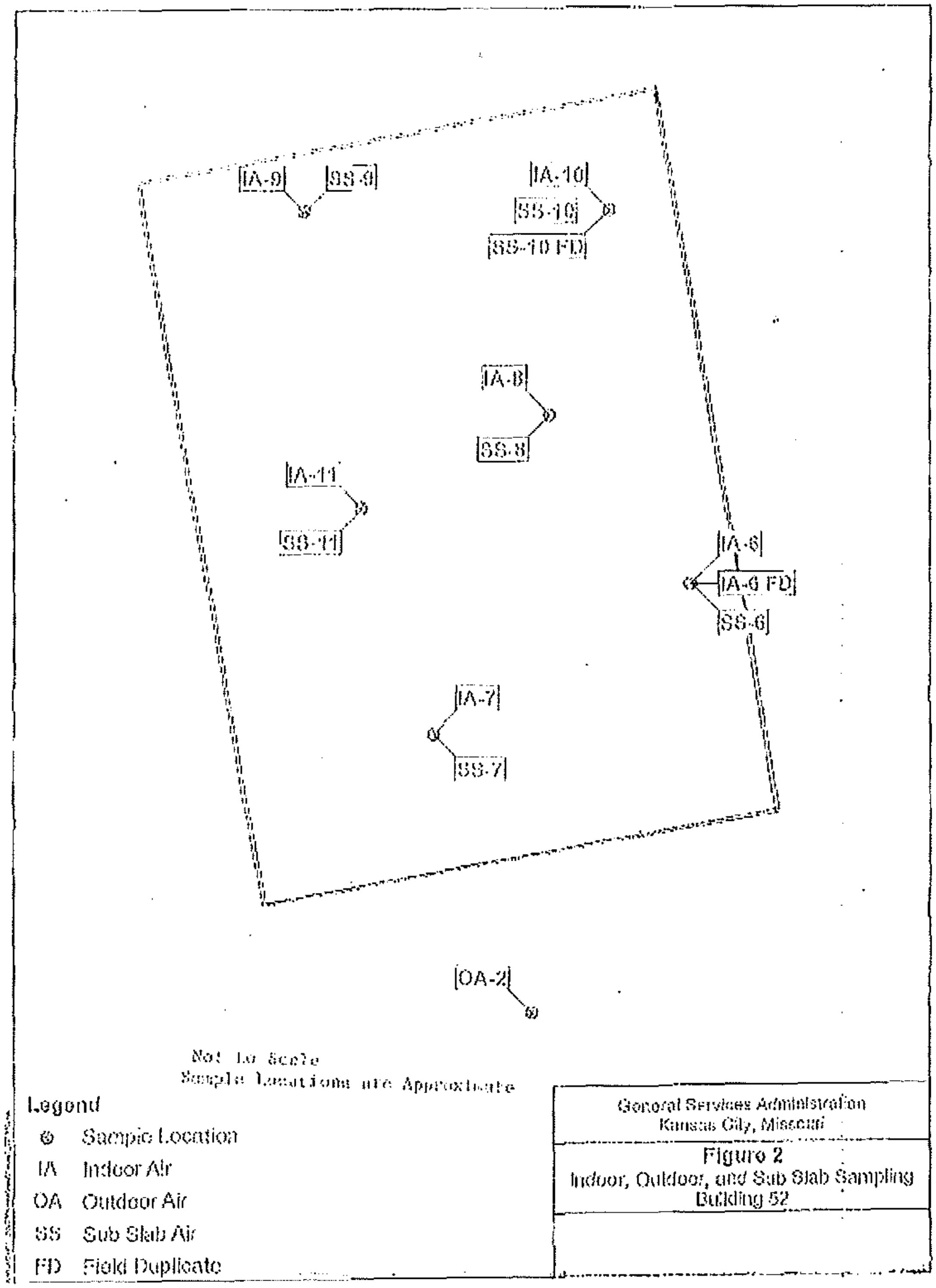
ATTACHMENT 1 – Sampling Location Figures




IA-9
SS-9
IA-10
SS-10
SS-10 FD
IA-8
SS-8
IA-11
SS-11
IA-6
IA-6 FD
SS-6
IA-7
SS-7
OA-2
Not to Scale
Sample Locations are Approximate
Legend
Sample Location
IA Indoor Air
OA Outdoor Air
SS Sub Slab Air
FD Field Duplicate
General Services Administration
Kansas City, Missouri
Figure 2
Indoor, Outdoor, and Sub Slab Sampling
Building 52

ATTACHMENT 2 - Risk-Based Screening Levels for Indoor Air

Chemical	Toxicity Values				Industrial/Occupational ($\mu g/m^3$)		Daycare ($\mu g/m^3$)	
	RfC (mg/m^3)		IUR ($\mu g/m^3$)$^{-1}$		HQ = 0.1	1.E-06	HQ = 0.1	1.E-06
Benzene	3.0E-02	i	7.8E-06	i	11	1.3	11	6.3
Chloroform	9.8E-02	a	2.3E-05	i	34	0.43	34	2.1
1,2-Dichlorobenzene	2.0E-01	h	-		70	-	70	-
1,4-Dichlorobenzene	8.0E-01	i	1.1E-05	c	280	0.89	280	4.5
1,1-Dichloroethylene	2.0E-01	i	-		70	-	70	-
cis-1,2-Dichloroethylene	-		-		-	-	-	-
trans-1,2-Dichloroethylene	6.0E-02	p	-		21	-	21	-
Ethylbenzene	1.0E+00	i	2.5E-06	c	350	3.9	350	20
Tetrachloroethylene	2.7E-01	a	5.9E-06	c	95	1.7	95	8.3
Toluene	5.0E+00	i	-		1752	-	1752	-
Trichloroethylene	1.0E-02	n	2.0E-06	c	4	4.9	3.5	25
Vinyl Chloride	1.0E-01	i	4.4E-06	i	35	2.2	35	0.22
Xylene	1.0E-01	i	-		35	-	35	-

i: IRIS (USEPA, 2010a)
a: ATSDR (2009)
h: HEAST (USEPA, 1997)
p: PPRTV (USEPA, 2010b)
n: NYSDOH (2009)
c: CalEPA (2010)
IUR: Inhalation Unit Risk, used to evaluate cancer risks.
RfC: Reference Concentration, used to evaluate non-cancer hazards.

Exposure Factors

	Worker	Child (Daycare)
Exposure Duration (ED) (years)	25	5
Exposure Frequency (EF) (days/year)	250	250
Exposure Time (ET) (hours/day)	10	10
Averaging Time (non-cancer) (ATnc) (days)	9125	1825
Averaging Time (cancer) (ATc) (days)	25550	25550
Target Cancer Risk (TR)	1.00E-06	1.00E-06
Target Hazard Quotient (THQ)	0.1	0.1
Conversion Factor (CF) (µg/mg)	1000	1000

Screening Level Equation (USEPA, 2009)

Cancer Target Indoor Air Level ($\mu g/m^3$) = (TR x Atc)/(ED x EF x (ET/24hours) x IUR)

Noncancer Target Indoor Air Level ($\mu g/m^3$) = (THQ x Atnc x CF)/(ED x EF x (ET/24hours) x (1/RfC))

Vinyl Chloride - Child(Daycare) (µg/m3) = (TR/(IUR + (EF x ED x (ET/24hours) x IUR)/AT)

ATTACHMENT 3 - Average Indoor Air Concentrations

Chemical	Building 50 Average Detection[1]	Building 52 Average Detection[1]	Risk-Based Screening Level	
			Cancer risk = 1E-06	Non-cancer HQ = 0.1
Ethylbenzene	2.2	0.82	3.9	350
Benzene	1.3	1.0	1.3	10.5
Tetrachloroethylene	0.28	0.35	1.7	94.6
Toluene	6.5	3.0	-	1,752
Trichloroethylene	3.3	0.19	4.9	3.5
Vinyl Chloride	ND	ND	0.22	35
o-Xylene	3.2	0.92	-	73
m-Xylene & p- Xylene	8.6	2.5	-	73
Chloroform	0.27	0.20	0.43	34.3
1,2-Dichlorobenzene	ND	ND	-	70
1,4-Dichlorobenzene	1.3	ND	0.89	280
1,1-Dichloroethylene	ND	ND	-	70
cis-1,2-Dichloroethylene[2]	ND	ND	-	21
trans-1,2-Dichloroethylene	ND	ND	-	21

ND: Not Detected, detection limit not shown.

1 Represents the average value of the detections.

2 Screening levels for *cis*-1,2-dichloroethylene are not available. Non-cancer screening level for *trans*-1,2-dichloroethylene is used as a surrogate value.

ATTACHMENT 4 - Utility Tunnel Risk-Based Screening

Chemical	Utility Tunnel ($\mu g/m^3$)	Chronic Risk-Based Screening Level [1] ($\mu g/m^3$)		Short-Term Risk-Based Screening Levels (1-30 days) ($\mu g/m3$)
		Cancer risk = 1E-06	Non-cancer HQ = 0.1	
Ethylbenzene	0.36	3.9	350	4,340 ai
Benzene	0.82	1.3	10.5	80 pprtv sc
Tetrachloroethylene	0.14	1.7	94.6	na
Toluene	1.8	-	1,752	5,000 pprtv sc
Trichloroethylene	12	4.9	3.5	537 ai
Vinyl Chloride	ND (0.20)	0.22	35	77 ai
o-Xylene	0.38	-	73	2,604 ai
m-Xylene & p- Xylene	0.99	-	73	2,604 ai
Chloroform	0.18	0.43 c	34.3	244 ai
1,2-Dichlorobenzene	ND (0.48)	-	70	na
1,4-Dichlorobenzene	ND (0.48)	0.89 c	280	240 ai
1,1-Dichloroethylene	ND (0.32)		70	na
cis -1,2-Dichloroethylene[2]	0.22		21	794 ai
trans -1,2-Dichloroethylene	ND (0.32)	-	21	794 ai

[1] See Attachment 2 for derivation of chronic screening levels.

[2] Screening levels for *cis* -1,2-dichloroethylene are not available. Non-cancer screening level for *trans* -1,2-dichloroethylene is used as a surrogate value.

ai: ATSDR Intermediate MRL (ATSDR, 2009). ATSDR Intermediate MRLs are applicable to exposures lasting 14-365 days. As a conservative measure they are being applied to an exposure lasting 1-30 days, which is defined by EPA as a short-term exposure (USEPA, 2010a).

pprtv sc: EPA's subchronic PPRTV toxicity value. These values are applicable to exposures lasting up to 10% of a lifetime. As a conservative measure they are being applied to an exposure lasting 1-30 days.

na: use chronic value

ND: Not Detected (Reporting Limit)

ATTACHMENT 5 - Subslab Vapor Screening

Chemical	Building 50 Maximum Detection ($\mu g/m^3$)	Building 52 Maximum Detection ($\mu g/m^3$)	Subslab Screening Levels[1] ($\mu g/m^3$) Cancer risk = 1E-06	Non-cancer HQ = 0.1
Ethylbenzene	3.2	11	39	3,500
Benzene	4.1	24	13	105
Tetrachloroethylene	5	ND	17	946
Toluene	11	23	-	17,520
Trichloroethylene	840	13	49	35
Vinyl Chloride	ND	ND	2.2	350
o-Xylene	5.2	11	-	730
m-Xylene & p- Xylene	13	22	-	730
Chloroform	12	34	4.3	343
1,2-Dichlorobenzene	ND	ND	-	700
1,4-Dichlorobenzene	ND	1.8	8.9	2,800
1,1-Dichloroethylene	ND	ND	-	700
cis -1,2-Dichloroethylene[2]	ND	ND	-	210
trans -1,2-Dichloroethylene	ND	ND	-	210

ND: Not Detected, detection limit not shown.

[1] Subslab screening levels = (Indoor Air Screening Level)/0.1 (USEPA, 2002)

[2] Screening levels for *cis* -1,2-dichloroethylene are not available. Non-cancer screening level for *trans* -1,2-dichloroethylene is used as a surrogate value.

ATTACHMENT 6 - Subslab-to-Indoor-Air Attenuation Factors

All Concentrations in μg/m³	Bldg 50														
	Subslab Air (SS-#)					Indoor Air (IA-#)					Attenuation Factors (α)				
Chemical	**1**	**2**	**3**	**4**	**AVG**	**1**	**2**	**3**	**4**	**AVG**	**AVG**	**1**	**2**	**3**	**4**
Ethylbenzene	ND	2.6	3.2	2.4	**2.7**	0.72	0.48	7.1	0.67	**2.2**	0.82	0.28	0.15	2.96	0.25
Benzene	1.7	4.1	3.7	1.7	**2.8**	1.2	1	2	0.98	**1.3**	0.46	0.29	0.27	1.18	0.35
Tetrachloroethylene	ND	ND	ND	5	**5.0**	0.2	0.15	0.5	0.26	**0.3**	0.06	-	-	-	-
Toluene	2.6	7.7	11	6	**6.8**	3.7	2.8	17	2.6	**6.5**	0.96	0.48	0.25	2.83	0.38
Trichloroethylene	58	5.4	840	50	**238.4**	6.8	3.7	1.1	1.6	**3.3**	0.01	1.26	0.004	0.02	0.01
Vinyl Chloride	ND	ND	ND	ND	-	ND	ND	ND	ND	-	-	-	-	-	-
o-Xylene	1.1	3.8	5.2	4	**3.5**	0.77	0.43	11	0.56	**3.2**	0.90	0.20	0.08	2.75	0.16
m-Xylene & p- Xylene	2.3	8.8	13	9.6	**8.4**	2.1	1.3	29	1.8	**8.6**	1.01	0.24	0.10	3.02	0.21
Chloroform	ND	1.3	6.4	12	**6.6**	0.22	0.5	0.19	0.18	**0.3**	0.04	-	0.38	0.03	0.02
1,2-Dichlorobenzene	ND	ND	ND	ND	-	ND	ND	ND	ND	-	-	-	-	-	-
1,4-Dichlorobenzene	ND	ND	ND	ND		ND	ND	1.3	ND	-	-	-	-	-	-
1,1-Dichloroethylene	ND	ND	ND	ND	-	ND	ND	ND	ND	-	-	-	-	-	-
cis -1,2-Dichloroethylene	ND	ND	ND	ND	-	ND	ND	ND	ND	-	-	-	-	-	-
tran -1,2-Dichloroethylene	ND	ND	ND	ND	-	ND	ND	ND	ND	-	-	-	-	-	-

All Concentrations in μg/m³	Bldg 52																							
	Subslab Air (SS-#)								Indoor Air (IA-#)								Attenuation Factors (α)							
Chemical	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**AVG**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**AVG**	**AVG**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Ethylbenzene	3.1	2.3	11	5	4.5	5.9	5	**5.3**	0.35	2.5	0.4	0.4	ND	0.43	ND	**0.8**	**0.16**	0.11	1.09	0.04	0.08	-	0.07	-
Benzene	3.5	1.6	24	2.6	1.7	6.2	1.3	**5.8**	0.95	1.7	0.99	0.89	0.82	0.94	0.76	**1.0**	**0.17**	0.27	1.06	0.04	0.34	0.48	0.15	0.58
Tetrachloroethylene	ND	ND	ND	ND	ND	ND	ND	-	0.31	0.42	0.34	0.34	0.27	0.39	0.36	**0.3**	-	-	-	-	-	-	-	-
Toluene	6.2	7.8	23	11	9.8	14	13	**12.1**	2.4	10	2.6	2.4	1	2.1	0.58	**3.0**	**0.25**	0.39	1.28	0.11	0.22	0.10	0.15	0.04
Trichloroethylene	2.3	ND	6.8	ND	ND	13	0.79	**5.7**	0.23	0.11	0.23	0.21	0.13	0.26	0.16	**0.2**	**0.03**	0.10	-	0.03	-	-	0.02	0.20
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-
o-Xylene	3.6	4.4	11	7.5	5.9	8.6	7.4	**6.9**	0.36	3.1	0.39	0.37	ND	0.38	ND	**0.9**	**0.13**	0.10	0.70	0.04	0.05	-	0.04	-
m-Xylene & p- Xylene	9.7	9.5	20	17	16	22	ND	**15.7**	0.9	8.4	1.1	1.1	ND	1.1	ND	**2.5**	**0.16**	0.09	0.88	-0.06	0.06	-	0.05	-
Chloroform	9.8	ND	3.3	34	ND	ND	ND	**15.7**	0.18	0.1	0.28	0.1	0.1	0.1	0.55	**0.2**	**0.01**	0.02	-	0.08	0.003	-	-	-
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	ND	ND	ND	1.8	ND	ND	ND	**1.8**	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-
1,1-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-
cis -1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-
tran -1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-

AVG: Average

ND: Not Detected, detection limits not shown in this table.