AR Doc # 3511

NEW MEXICO
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 28, 2011

Colonel Robert L. Maness
Base Commander
377 ABW/CC
2000 Wyoming Blvd. SE
Kirtland AFB, NM 87117-5606

Mr. John Pike
Director, Environmental Management Section
377 MSG/CEANR
2050 Wyoming Blvd., Suite 116
Kirtland AFB, NM 87117-5270

RE: SCREENING-LEVEL RISK EVALUATION FOR PETROLEUM HYDROCARBON FUEL COMPOUNDS IN SUBSLAB SOIL VAPOR – BULK FUELS FACILITY, KIRTLAND AIR FORCE BASE, OCTOBER 27, 2009
KIRTLAND AIR FORCE BASE
EPA ID# NM9570024423, HWB-KAFB-MISC

Dear Col. Maness and Mr. Pike:

The New Mexico Environment Department (NMED) has reviewed the document "*Screening-level Risk Evaluation for Petroleum Hydrocarbon Fuel Compounds in Subslab Soil Vapor – Bulk Fuels Facility, Kirtland Air Force Base*" (Report), dated October 27, 2009. The Report documents the analysis of subslab soil-vapor samples collected at the Fuels Facility Office (Building 1032) and the 90-Day Hazardous Waste Storage Area (Building 1048). Results from the soil-vapor sampling were used to conduct a screening-level risk evaluation of indoor air quality at these two buildings.

The initial soil-vapor analytical results indicate subsurface contamination of sufficient volatility and toxicity, and concentrations that could potentially result in unacceptable indoor air inhalation risk for workers that occupy Buildings 1032 and 1048. Furthermore, modeling of the sampling results suggests that the exposure pathway to occupants in Buildings 1032 and 1048 may be complete which could lead to long-term exposure to vapor-phase contaminants. The Report concludes that additional data should be collected to more rigorously determine the air quality inside the buildings.

The U. S. Air Force (Permittee) must therefore submit a work plan to perform direct measurement of indoor and ambient air using either multiple canisters or sorbent tubes. The vapor samples shall be analyzed using EPA Method TO-15. If sorbent tube sampling is used care shall be taken to assess the potential for interaction of target compounds with other reactive compounds such as ozone. The indoor air samples shall be collected on at least two separate occasions, and during the summer and winter to account for seasonal variability that may affect vapor intrusion. In addition, a survey of all buildings within 100 feet horizontally from or vertically above documented subsurface contamination shall be performed to assess if additional buildings should be included in the indoor-air sampling work plan.

The analytical results of the indoor air sampling must be used to construct a site-specific fate and transport model (such as the Johnson and Ettinger model) to assess the vapor intrusion pathway and to determine if exposures need to be mitigated. Key components of the model need to be justified with site-specific data including, but not limited to, the source (chemical constituents, concentrations, mass, phase distributions, depth and aerial extent), pathway (soil texture, moisture and layering) and building (building design, construction and ventilation). Model inputs and outputs shall be identified and appropriately justified.

The results of the vapor intrusion study shall be used to conduct an updated human health risk assessment for the residential land-use scenario. Updated toxicity values for constituents of concern, including TCE, shall be used if available.

Additional guidance to perform an evaluation of the potential for unacceptable indoor air quality is presented in the U. S. Department of Defense's *Tri-Services Handbook for the Assessment of the Vapor Intrusion Pathway, February 2008.*

The work plan must be submitted to NMED within ninety (90) days from the receipt of this letter.

If you have any questions regarding this matter, please contact Mr. Brian Salem of my staff at (505) 222-9576

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

cc: J. Kieling, NMED HWB
W. Moats, NMED, HWB
B. Salem, NMED HWB
L. King, EPA-Region 6 (6PD-N)
File: Reading and KAFB 2011

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Mr. John Pike, Director
Natural Resource Management Branch
377th Civil Engineering Division
2050 Wyoming Blvd. SE, Suite 116
Kirtland Air Force Base, NM 87117-5270

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MEMORANDUM CH2MHILL

DRAFT Screening-level Risk Evaluation for Petroleum Hydrocarbon Fuel Compounds in Subslab Soil Vapor - Bulk Fuels Facility, Kirtland Air Force Base

PREPARED FOR: Kirtland AFB Environmental Restoration

PREPARED BY: CH2M HILL

DATE: October 27, 2009

Introduction

Petroleum hydrocarbon fuel impacts in the vadose zone soils exist on the Kirtland Air Force Base (AFB) Bulk Fuels Facility. The hydrocarbon impacts have produced a hydrocarbon vapor plume in the vadose zone on the premises of the Bulk Fuels Facility. In addition to impacts to the vadose zone, phase-separated hydrocarbon (PSH) is known to be present on the water table below the Bulk Fuels Facility. The potential exists for vapor-phase hydrocarbon fuel to pose a risk to potential receptors if it moves from the subsurface to indoor air in occupied buildings at the Bulk Fuels Facility. The vapor-phase hydrocarbon fuel can result from volatilization of either the fuel in the vadose zone or the PSH on the groundwater table. Receptors could potentially be exposed to hydrocarbon fuel compounds through an indoor air vapor intrusion pathway. This potential exposure may occur in the vicinity of vadose zone impacts or overlying areas where PSH is present on the groundwater.

Subslab soil vapor samples were collected from two buildings (Buildings 1032 and 1048) that are located within the general Bulk Fuels Facility area. Two subslab soil vapor samples were collected in Building 1032, which is in the vicinity of the main source area where fuel discharged to the subsurface and where there is vadose contamination. Building 1032 is the Fuels Facility office. The vapor probe was installed through the concrete floor in the garage area on the west side of the structure away from exterior walls. One subslab soil vapor sample was collected in Building 1048 which is not located within the immediate vicinity of the known vadose zone contamination, but which overlies the area of the site where there is PSH on the groundwater. Building 1048 is the 90-Day Hazardous Storage area office building. The vapor probe was installed in the interior janitor's closet in the structure.

The analytical results from these subslab samples were used to assess the potential risk to workers in the buildings from subsurface petroleum hydrocarbon vapors through the vapor intrusion pathway. As a simplified, screening-level approach, subslab vapor-phase petroleum hydrocarbon concentrations were compared to shallow soil vapor screening levels for an industrial land use setting. The shallow soil vapor screening levels are based on USEPA Regional Screening Levels (RSLs) for ambient air with an attenuation factor of 0.1 applied to account for the reduction of concentrations between the subslab soil vapor and ambient outdoor air. This attenuation factor of 0.1 is recommended in USEPA vapor intrusion guidance to be used for estimating indoor air concentrations from shallow soil vapor concentrations. Additional information regarding the purpose, scope, and methods associated with samples collected for this vapor intrusion evaluation is presented in the *Vapor Intrusion Workplan, Bulk Fuels Facility (ST-106), Kirtland AFB memorandum* (CH2M HILL, 2008).

Sampling Activities- Subslab Soil Vapor Sampling

Subslab vapor sampling was conducted to assess the potential for soil vapor intrusion of air concentrations of petroleum hydrocarbon fuel compounds attributable to the PSH release at the facility to present unacceptable risk to potential indoor receptors.

Subslab soil vapor samples were collected from installed soil vapor probes in Buildings 1032 and 1048 on July 24, 2009 and again from Building 1032 on July 27, 2009. Entrance to Building 1048 could not be gained on July 27, 2009 so a second sample was not collected from that location. Sampling was conducted as outlined in the *Vapor Intrusion Workplan, Bulk Fuels Facility (ST-106), Kirtland AFB memorandum* (CH2M HILL, 2008).

Vapor samples were analyzed by CH2M HILL's Applied Sciences Laboratory in Corvallis, Oregon for VOCs including the target petroleum hydrocarbon compounds benzene, toluene, ethylbenzene, xylenes, and naphthalene by Method TO-14, and fixed gases (oxygen, nitrogen, carbon monoxide, carbon dioxide, and methane) by Method SM 2720C. This is a subset of the suite of parameters routinely analyzed for as part of other vapor sampling conducted in support of the Bulk Fuels Facility remedial actions.

Screening-level Risk Evaluation

Analytical results for soil vapor samples are presented in Table 1. The direct subslab soil vapor analytical results have the attenuation factor applied to them and then are compared to soil vapor screening levels developed from USEPA RSLs for air for industrial land use (USEPA, 2009). The EPA standard attenuation factor of 0.1 was used to account for dilution between the subsurface soil vapor and indoor air. Table 1 provides the both the direct vapor sample results as well as the analytical results modified to reflect the 0.1 attenuation factor applied to the results for use in risk assessment comparisons.

Table 1 presents the subslab soil vapor results, as well as the modified results to account for attenuation, and the residential and industrial shallow soil vapor screening levels. Only one constituent, benzene, in one sample has a concentration, modified for attenuation, that exceeds the industrial soil vapor screening levels.

In addition to comparing each measured result to the industrial soil vapor screening levels, potential cumulative carcinogenic risks and noncarcinogenic hazard indices (HI) were calculated using the data from each sample. EPA's risk management range for site-related exposures is 1×10^{-4} to 1×10^{-6}. An excess lifetime cancer risk of 1×10^{-6} indicates that an individual experiencing the reasonable maximum site exposure estimate has a 1 in one million chance of developing cancer as a result of that exposure. A hazard index less than one indicates that, based on the sum of all hazard quotients, noncarcinogenic adverse effects are unlikely.

To obtain an estimate of excess carcinogenic risk, detected concentrations were divided by the risk–based screening level (based on carcinogenic effects and a target carcinogenic risk of 1×10^{-6}), and the resulting ratio was multiplied by the target risk of 1×10^{-6}. The carcinogenic risk estimates for the individual petroleum hydrocarbon fuel compounds were then summed to provide a cumulative carcinogenic risk estimate. To obtain the noncarcinogenic hazard quotient (HQ) for the individual petroleum hydrocarbon fuel compounds, each compound's concentration was divided by the risk–based screening level (based on noncarcinogenic effects and a HQ of 1), and the resulting ratio was multiplied by the target HQ of 1. The HQs for the individual compounds were summed to provide the cumulative HI.

Table 1 presents the results for carcinogenic risk and noncarcinogenic HI estimates for the industrial scenario. Cumulative carcinogenic risk estimates for Building 1032 ranged from 6×10^{-7} to 1×10^{-6}, which is at the low end and below EPA's risk management range of 1×10^{-4} to 1×10^{-6}. The cumulative carcinogenic risk estimate for Building 1048 was 2×10^{-6}, also at the low end of EPA's risk management range. Noncarcinogenic HI estimates were below 1 for the three subslab soil vapor samples from both buildings.

Uncertainties

Uncertainties associated with the screening-level risk results presented above include the following:

As part of this assessment, a total of three subslab soil vapor samples were collected at two locations, one location in each of two buildings. The buildings where samples were collected are those most commonly occupied by workers. Uncertainty associated with the building-specific and overall potential for vapor intrusion in buildings at or near the Bulk Fuels Facility will increase or decrease with a greater or lesser sampling frequency.

Soil vapor screening levels for vapor-phase petroleum hydrocarbon fuel compounds were calculated using EPA's generic attenuation factor of 0.1 based on indoor air vapor intrusion guidance. This attenuation is generally considered a conservative (i.e. protective), screening-level assumption for evaluating potential vapor intrusion using subslab soil vapor data.

Summary

Petroleum hydrocarbon fuel compounds were detected in the subslab soil vapor samples from Buildings 1032 and 1048. The detected fuel compound concentrations are below screening levels for the industrial use scenario except for benzene in Building 1048 where the concentration slightly exceeds the screening level; cumulative carcinogenic risk estimates and non-carcinogenic hazard index estimates based on the industrial scenario are at the low end or below the EPA's acceptable ranges. These results suggest that vapor intrusion may not be a significant exposure concern for workers in buildings at the Bulk Fuel Facilities, but more data are needed to confirm this preliminary conclusion.

Soil Gas Cumulative Cancer Risk and Noncancer Hazard Index
Kirtland Bulk Fuels Facility
Kirtland Air Force Base, Albuquerque, New Mexico

FieldID	Analyte	Result (ug/m^3)	Result Modifed for Attenuation Factor (ug/m3)	Carcinogenic Residential Air RSL[1,2,3] (ug/m^3)	Noncancer Residential Air RSL[1,2,3] (ug/m^3)	Residential Risk	Residential HI	Carcinogenic Industrial Air RSL[1,2,3] (ug/m^3)	Noncancer Industrial Air RSL[1,2,3] (ug/m^3)	Industrial Risk	Industrial HI
Bldg-1032											
Bldg-1032	Ethylbenzene	1.39	0.14	0.97	1000	1.4E-07	1.4E-04	4.9	4400	2.8E-08	3.2E-05
Bldg-1032	Styrene	1.35	0.13		1000	--	1.3E-04		4400	--	3.1E-05
Bldg-1032	cis-1,3-Dichloropropene	ND		0.61	21	--	--	3.1	88	--	--
Bldg-1032	trans-1,3-Dichloropropene	ND		0.61	21	--	--	3.1	88	--	--
Bldg-1032	1,4-DCB	3.31	0.33	0.22	830	1.5E-06	4.0E-04	1.1	3500	3.0E-07	9.5E-05
Bldg-1032	1,2-EDB	ND		0.0041	9.4	--	--	0.02	39	--	--
Bldg-1032	1,2-DCA	ND		0.094	2500	--	--	0.47	11000	--	--
Bldg-1032	m,p-Xylene	3.51	0.35		730	--	4.8E-04		3100	--	1.1E-04
Bldg-1032	1,3,5-Trimethylbenzene	ND			6.3	--	--		26	--	--
Bldg-1032	Toluene	80.52	8.05		5200	--	0.002		22000	--	3.7E-04
Bldg-1032	Chlorobenzene	ND			52	--	--		220	--	--
Bldg-1032	1,2,4-Trichlorobenzene	ND			4.2	--	--		18	--	--
Bldg-1032	Tetrachloroethylene	ND		0.41	280	--	--	2.1	1200	--	--
Bldg-1032	cis-1,2-DCE	ND				--	--			--	--
Bldg-1032	MTBE (Methyl tert-Butyl Ether)	3.03	0.30	9.4	3100	3.2E-08	9.8E-05	47	13000	6.4E-09	2.3E-05
Bldg-1032	1,3-DCB	ND		0.22	830	--	--	1.1	3500	--	--
Bldg-1032	Carbon tetrachloride	ND		0.16	200	--	--	0.82	830	--	--
Bldg-1032	Acetone	61.44	6.14		32000	--	1.9E-04		140000	--	4.4E-05
Bldg-1032	Chloroform	ND		0.11	100	--	--	0.53	430	--	--
Bldg-1032	Benzene	8.23	0.82	0.31	31	2.7E-06	0.03	1.6	130	5.1E-07	0.006
Bldg-1032	1,1,1-TCA	ND			5200	--	--		22000	--	--
Bldg-1032	Bromomethane	ND			5.2	--	--		22	--	--
Bldg-1032	Chloromethane	1.01	0.10		94	--	0.001		390	--	2.6E-04
Bldg-1032	Chloroethane	ND			10000	--	--		44000	--	--
Bldg-1032	Vinyl chloride	ND		0.16	100	--	--	2.8	440	--	--
Bldg-1032	Methylene chloride	9.80	0.98	5.2	1100	1.9E-07	8.9E-04	26	4600	3.8E-08	2.1E-04
Bldg-1032	1,1-DCA	ND		1.5		--	--	7.7		--	--
Bldg-1032	1,1-DCE	ND			210	--	--		880	--	--
Bldg-1032	Trichlorofluoromethane	1.40	0.14		730	--	1.9E-04		3100	--	4.5E-05
Bldg-1032	Dichlorodifluoromethane	2.52	0.25		210	--	0.001		880	--	2.9E-04
Bldg-1032	1,1,2-Trichloro-1,2,2-trifluoroethane	1.84	0.18		31000	--	5.9E-06		130000	--	1.4E-06
Bldg-1032	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND				--	--			--	--
Bldg-1032	1,2-Dichloropropane	1.43	0.14	0.24	4.2	6.0E-07	0.03	1.2	18	1.2E-07	0.008
Bldg-1032	MEK (2-Butanone)	12.50	1.25		5200	--	2.4E-04		22000	--	5.7E-05
Bldg-1032	1,1,2-TCA	ND		0.15		--	--	0.77		--	--
Bldg-1032	TCE	3.24	0.32	1.2		2.7E-07	--	6.1		5.3E-08	--
Bldg-1032	1,1,2,2-Tetrachloroethane	ND		0.042		--	--	0.21		--	--
Bldg-1032	Hexachlorobutadiene	ND		0.11		--	--	0.56		--	--
Bldg-1032	o-Xylene	1.39	0.14		730	--	1.9E-04		3100	--	4.5E-05
Bldg-1032	1,2-DCB	ND			210	--	--		880	--	--
Bldg-1032	1,2,4-Trimethylbenzene	ND			7.3	--	--		31	--	--
		Bldg-1032 Cumulative Risk and HI:				**5.E-06**	**0.07**			**1.E-06**	**0.02**
Bldg-1048											
Bldg-1048	Ethylbenzene	1.39	0.14	0.97	1000	1.4E-07	1.4E-04	4.9	4400	2.8E-08	3.2E-05
Bldg-1048	Styrene	2.49	0.25		1000	--	2.5E-04		4400	--	5.7E-05
Bldg-1048	cis-1,3-Dichloropropene	ND		0.61	21	--	--	3.1	88	--	--
Bldg-1048	trans-1,3-Dichloropropene	ND		0.61	21	--	--	3.1	88	--	--
Bldg-1048	1,4-DCB	2.70	0.27	0.22	830	1.2E-06	3.3E-04	1.1	3500	2.5E-07	7.7E-05
Bldg-1048	1,2-EDB	ND		0.0041	9.4	--	--	0.02	39	--	--
Bldg-1048	1,2-DCA	ND		0.094	2500	--	--	0.47	11000	--	--
Bldg-1048	m,p-Xylene	3.15	0.31		730	--	4.3E-04		3100	--	1.0E-04
Bldg-1048	1,3,5-Trimethylbenzene	ND			6.3	--	--		26	--	--
Bldg-1048	Toluene	7.07	0.71		5200	--	1.4E-04		22000	--	3.2E-05
Bldg-1048	Chlorobenzene	ND			52	--	--		220	--	--
Bldg-1048	1,2,4-Trichlorobenzene	ND			4.2	--	--		18	--	--
Bldg-1048	Tetrachloroethylene	3.27	0.33	0.41	280	8.0E-07	0.001	2.1	1200	1.6E-07	2.7E-04
Bldg-1048	cis-1,2-DCE	ND				--	--			--	--
Bldg-1048	MTBE (Methyl tert-Butyl Ether)	ND		9.4	3100	--	--	47	13000	--	--
Bldg-1048	1,3-DCB	ND		0.22	830	--	--	1.1	3500	--	--
Bldg-1048	Carbon tetrachloride	ND		0.16	200	--	--	0.82	830	--	--
Bldg-1048	Acetone	69.51	6.95		32000	--	2.2E-04		140000	--	5.0E-05
Bldg-1048	Chloroform	ND		0.11	100	--	--	0.53	430	--	--
Bldg-1048	Benzene	20.64	2.06	0.31	31	6.7E-06	0.07	1.6	130	1.3E-06	0.02
Bldg-1048	1,1,1-TCA	1.97	0.20		5200	--	3.8E-05		22000	--	8.9E-06
Bldg-1048	Bromomethane	ND			5.2	--	--		22	--	--
Bldg-1048	Chloromethane	ND			94	--	--		390	--	--
Bldg-1048	Chloroethane	ND			10000	--	--		44000	--	--
Bldg-1048	Vinyl chloride	ND		0.16	100	--	--	2.8	440	--	--
Bldg-1048	Methylene chloride	3.62	0.36	5.2	1100	7.0E-08	3.3E-04	26	4600	1.4E-08	7.9E-05
Bldg-1048	1,1-DCA	ND		1.5		--	--	7.7		--	--
Bldg-1048	1,1-DCE	ND			210	--	--		880	--	--
Bldg-1048	Trichlorofluoromethane	154.50	15.45		730	--	0.02		3100	--	0.005
Bldg-1048	Dichlorodifluoromethane	954.45	95.45		210	--	0.5		880	--	0.1
Bldg-1048	1,1,2-Trichloro-1,2,2-trifluoroethane	ND			31000	--	--		130000	--	--
Bldg-1048	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND				--	--			--	--
Bldg-1048	1,2-Dichloropropane	ND		0.24	4.2	--	--	1.2	18	--	--
Bldg-1048	MEK (2-Butanone)	7.82	0.78		5200	--	1.5E-04		22000	--	3.6E-05
Bldg-1048	1,1,2-TCA	ND		0.15		--	--	0.77		--	--
Bldg-1048	TCE	1.70	0.17	1.2		1.4E-07	--	6.1		2.8E-08	--
Bldg-1048	1,1,2,2-Tetrachloroethane	ND		0.042		--	--	0.21		--	--
Bldg-1048	Hexachlorobutadiene	ND		0.11		--	--	0.56		--	--
Bldg-1048	o-Xylene	1.57	0.16		730	--	2.2E-04		3100	--	5.1E-05
Bldg-1048	1,2-DCB	ND			210	--	--		880	--	--
Bldg-1048	1,2,4-Trimethylbenzene	ND			7.3	--	--		31	--	--
		Bldg-1048 Cumulative Risk and HI:				**9.E-06**	**0.5**			**2.E-06**	**0.1**
Bldg-1032-2											
Bldg-1032-2	Ethylbenzene	0.72	0.07	0.97	1000	7.4E-08	7.2E-05	4.9	4400	1.5E-08	1.6E-05
Bldg-1032-2	Styrene	ND			1000	--	--		4400	--	--
Bldg-1032-2	cis-1,3-Dichloropropene	ND		0.61	21	--	--	3.1	88	--	--
Bldg-1032-2	trans-1,3-Dichloropropene	ND		0.61	21	--	--	3.1	88	--	--
Bldg-1032-2	1,4-DCB	1.41	0.14	0.22	830	6.4E-07	1.7E-04	1.1	3500	1.3E-07	4.0E-05
Bldg-1032-2	1,2-EDB	ND		0.0041	9.4	--	--	0.02	39	--	--
Bldg-1032-2	1,2-DCA	ND		0.094	2500	--	--	0.47	11000	--	--
Bldg-1032-2	m,p-Xylene	1.89	0.19		730	--	2.6E-04		3100	--	6.1E-05
Bldg-1032-2	1,3,5-Trimethylbenzene	ND			6.3	--	--		26	--	--
Bldg-1032-2	Toluene	1.24	0.12		5200	--	2.4E-05		22000	--	5.6E-06
Bldg-1032-2	Chlorobenzene	ND			52	--	--		220	--	--
Bldg-1032-2	1,2,4-Trichlorobenzene	ND			4.2	--	--		18	--	--
Bldg-1032-2	Tetrachloroethylene	ND		0.41	280	--	--	2.1	1200	--	--
Bldg-1032-2	cis-1,2-DCE	ND				--	--			--	--
Bldg-1032-2	MTBE (Methyl tert-Butyl Ether)	ND		9.4	3100	--	--	47	13000	--	--
Bldg-1032-2	1,3-DCB	ND		0.22	830	--	--	1.1	3500	--	--
Bldg-1032-2	Carbon tetrachloride	ND		0.16	200	--	--	0.82	830	--	--
Bldg-1032-2	Acetone	22.37	2.24		32000	--	7.0E-05		140000	--	1.6E-05
Bldg-1032-2	Chloroform	ND		0.11	100	--	--	0.53	430	--	--
Bldg-1032-2	Benzene	1.63	0.16	0.31	31	5.2E-07	0.005	1.6	130	1.0E-07	0.001
Bldg-1032-2	1,1,1-TCA	ND			5200	--	--		22000	--	--
Bldg-1032-2	Bromomethane	ND			5.2	--	--		22	--	--
Bldg-1032-2	Chloromethane	1.16	0.12		94	--	0.001		390	--	3.0E-04
Bldg-1032-2	Chloroethane	ND			10000	--	--		44000	--	--
Bldg-1032-2	Vinyl chloride	ND		0.16	100	--	--	2.8	440	--	--
Bldg-1032-2	Methylene chloride	3.13	0.31	5.2	1100	6.0E-08	2.8E-04	26	4600	1.2E-08	6.8E-05
Bldg-1032-2	1,1-DCA	ND		1.5		--	--	7.7		--	--
Bldg-1032-2	1,1-DCE	ND			210	--	--		880	--	--
Bldg-1032-2	Trichlorofluoromethane	1.40	0.14		730	--	1.9E-04		3100	--	4.5E-05
Bldg-1032-2	Dichlorodifluoromethane	2.57	0.26		210	--	0.001		880	--	2.9E-04
Bldg-1032-2	1,1,2-Trichloro-1,2,2-trifluoroethane	ND			31000	--	--		130000	--	--
Bldg-1032-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND				--	--			--	--
Bldg-1032-2	1,2-Dichloropropane	ND		0.24	4.2	--	--	1.2	18	--	--
Bldg-1032-2	MEK (2-Butanone)	11.24	1.12		5200	--	2.2E-04		22000	--	5.1E-05
Bldg-1032-2	1,1,2-TCA	ND		0.15		--	--	0.77		--	--
Bldg-1032-2	TCE	1.97	0.20	1.2		1.6E-07	--	6.1		3.2E-08	--
Bldg-1032-2	1,1,2,2-Tetrachloroethane	ND		0.042		--	--	0.21		--	--
Bldg-1032-2	Hexachlorobutadiene	1.60	0.16	0.11		1.5E-06	--	0.56		2.9E-07	--
Bldg-1032-2	o-Xylene	ND			730	--	--		3100	--	--
Bldg-1032-2	1,2-DCB	ND			210	--	--		880	--	--
Bldg-1032-2	1,2,4-Trimethylbenzene	ND			7.3	--	--		31	--	--
		Bldg-1032-2 Cumulative Risk and HI:				**3.E-06**	**0.009**			**6.E-07**	**0.002**

Notes:
[1] 1,3-dichloropropene was used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
[2] m-xylene was used as a surrogate for m,p-xylene.
[3] 1,4-dichlorobenzene was used as a surrogate for 1,3-dichlorobenzene.

(yellow highlight) = main contributors to risk estimates